



साउथ ईस्टर्न कोलफिल्ड्स लिमिटेड  
South Eastern Coalfields Limited  
(कोल इंडिया का एक अंश/A Subsidiary Of Coal India Ltd)  
कार्यालय:- महाप्रबंधक, दीपिका क्षेत्र  
OFFICE OF THE GENERAL MANAGER, DIPKA AREA  
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क्रमांक: एस.ई.सी.एल/दी.क्षे./पर्या./2023/3197

दिनांक: 19.12.2023

To,

Deputy Director General of Forests(C),  
Integrated Regional Office,  
Ministry of Environment, Forest and Climate Change,  
Aranya Bhawan, North Block, Sector-19,  
Naya Raipur, Atal Nagar, Chhattisgarh.  
Email: [iro.raipur-mefcc@gov.in](mailto:iro.raipur-mefcc@gov.in)

**Subject: Submission of six monthly EC compliance report (April 2023– September 2023) of Dipka Expansion Project, Dipka Area, SECL.**

Dear Sir,

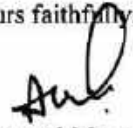
Dipka Opencast Coal Mine of M/S South Eastern Coal Fields Limited, located in the district Korba, Chhattisgarh has been granted Environmental Clearance for production enhancement from 35 MTPA to 37.50 MTPA in the ML area of 1999.293 Ha. (Environment Clearance under OM Vide F. No. 1A3-22/10/2022-IA.III dt: 07.05.2022- Availing total 50% relaxation of OM dealing with exemption of public hearing under clause 7(ii) of EIA notification) vide EC no. J-11015/487/2007-IA-II(M), Dt: 05.09.2022.

In reference to the above subject, please find enclosed herewith the six monthly (April 2023 - September 2023) EC compliance report of Dipka Expansion Project, Dipka Area, SECL.

This is for your kind information.

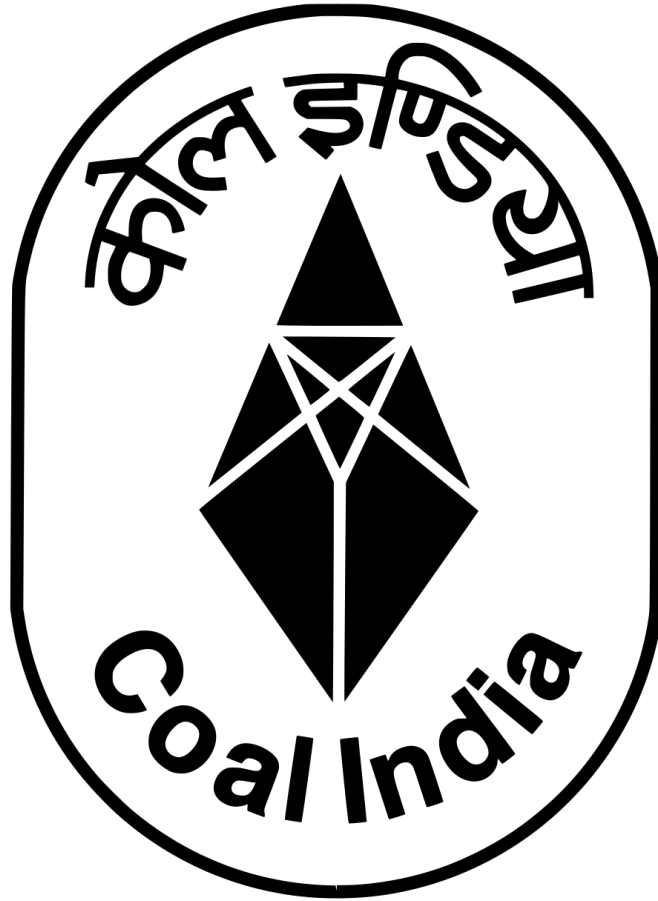
Thanking You.

Yours faithfully,

  
Area General Manager  
Dipka Area, SECL

Copy to:

1. Member Secretary, CECB, Raipur: For kind information please
2. Regional Officer, CECB, Korba.
3. General Manager (Envt.), SECL Bilaspur.
4. General Manager(M), Dipka OCP, SECL.
5. General Manager(Opr.), Dipka Area, SECL.
6. Staff Officer (P&P), Dipka Area, SECL.
7. Nodal Officer (Env), Dipka Area, SECL.



**SOUTH EASTERN COALFIELDS LIMITED**

(A MINI RATNA COMPANY)

**BILASPUR (CHHATTISGARH)**

**DIPKA OC PROJECT**

**SIX MONTHLY REPORT OF MONITORING THE IMPLEMENTATION OF ENVIRONMENT  
SAFEGUARDS FOR THE PERIOD OF APRIL 2023 TO SEPTEMBER 2023**

**&**

**COMPLIANCE STATUS OF THE CONDITIONS IMPOSED IN THE EC LETTERS ISSUED VIDE  
LETTER NO. J 11015/487/2007-IA.II(M)PT, DATED. 20.02.2018, 20.03.2019, 09.03.2020  
FOR EXPANSION OF DIPKA OPENCAST COAL MINE FROM 31 MTPA TO 35 MTPA & EC  
DATED: 05.09.2022 FOR EXPANSION OF DIPKA OPENCAST COAL MINE FROM 35 MTPA TO  
37.5 MTPA**

**SIX MONTHLY REPORT OF MONITORING THE IMPLEMENTATION OF ENVIRONMENT SAFEGUARDS  
IN DIPKA EXPANSION PROJECT, DIPKA AREA, SECL FOR THE PERIOD OF APRIL 2023 TO SEPTEMBER  
2023.**

**PART-I**

**GENERAL PARTICULARS**

1.	Name of the Project	Dipka Expansion Project		
2.	No. & Date of MOEF Clearance letter.	<b>Capacity</b>	<b>MoEF&amp;CC letter no.</b>	<b>Date of Issue</b>
		20.00 MTY	J-11015/087/2003-IA-II(M)	04.10.2004
		25.00 MTY	J-11015/487/2007-IA-II(M)	03.06.2009
		30.00 MTY	J-11015/487/2007-IA-II(M)	12.02.2013
		31.00 MTY	J-11015/487/2007-IA-II(M)	06.02.2015
		35.00 MTY	J-11015/487/2007-IA-II(M)	20.02.2018
		35.00 MTY	J-11015/487/2007-IA-II(M)	20.03.2019
		35.00 MTY	J-11015/487/2007-IA-II(M)	09.03.2020
		37.50 MTY	J-11015/487/2007- IA-II(M)	05.09.2022
3.	Area involved in the Project & breakup purpose wise, if any	<b>As per EMP (37.5 MTY):</b>		
		Area involved	1999.293 Ha	
		<b>Purpose wise land use breakup:</b>		
		Quarry area	1002.053 Ha	
		External OB Dumps	206.000 Ha	
		Road	4.000 Ha	
		Green Belt & Safety zone	153.366 Ha	
Infrastructure & other facilities	633.874 Ha			
4.	Location of the Project	Nearest station from the mine	Gevra Road station (20 Km)	
		District	Korba	
		State	Chhattisgarh	

**PART-II**

**PROJECT STATUS**

5.	<b>Production details of last 05 years:</b>			
	<b>S.No</b>	<b>Year</b>	<b>Coal (MTPA)</b>	<b>OBR Extracted (Mm<sup>3</sup>)</b>
	1.	2018-19	35.00	19.15
	2.	2019-20	25.179	22.34
	3.	2020-21	34.354	25.782
	4.	2021-22	34.375	19.304
	5.	2022-23	32.149	29.544
6.	2023-24 (As on 30.09.2023)	13.436	19.907	
6.	Total manpower civil amenities including free fuel distribution for labor force during construction Period		All the manpower in the project has been provided with civil amenities and LPG connection.	
7.	Project cost original as per Project scheme		Rs.2263.02 Crores	
8.	Expenditure incurred for environmental safe guards.		FY 2022-23	Rs. 79.056 crores
9.	Monitoring cell established Yes/No if any details		<p>i. Yes, Environmental management cell has been constituted at both the project and a t company headquarter level with suitable qualified personnel.</p> <p>ii. The monitoring cell at Dipka Area constitutes of the HoD's of Environment, Civil, Mining, E&amp;M and the Excavation departments. All environmental pollution control measures are executed by Civil, Mining, E&amp;M and Excavation departments at various locations as equipment and machineries are under their control.</p>	
10.	<p>i. How regularly/ quarterly/ six Monthly progress reports are submitted to the ministry</p> <p>ii. Details of last report submitted</p>		<p>i. Compliance reports are submitted twice (April to Sept and Oct to March) in a financial year to MoEF, Raipur.</p> <p>ii. Last EC compliance report was submitted vide our letter no: 3010, dated- 30.05.2023 for the period October 2022 to March 2023. <i>(Annexure-1)</i></p>	
11.	Firefighting system emergency plan details.		Central firefighting station is being maintained at Kusmunda about 17 Km away. Firefighting emergency plan is maintained in the project. <i>(Annexure-2)</i>	

**PART-III**

**REHABILITATION/ RECLAMATION/ RESTORATION PROGRAMME**

**REHABILITATION & RESETTLEMENT:**

12.	<b>No. of families/ persons displaced:</b>				
	<b>Village name</b>	<b>Total PAF's</b>	<b>PAF's Shifted to R&amp;R site</b>	<b>PAF's opted cash grant</b>	<b>PAF's to be settled</b>
	Sirki	388	136	231	21
	Chainpur	385	92	292	01
	Suwabhondi	328	0	162	166
	Jhingatpur	134	65	66	03
	Beltikri	351	124	211	16
	Malgaon	278	53	195	30
	Jhabar	0	0	0	0
	Dipka	0	0	0	0
	Renki	0	0	0	0
	Ratiza	0	0	0	0
	Hardi Bazaar	Village Hardi bazaar has been acquired but not under possession yet			
	Amgaon	R&R for this village will be carried out by Gevra OC project, SECL.			
	<b>Total</b>	<b>1864</b>	<b>470</b>	<b>1157</b>	<b>237</b>
13.	<b>Identified rehabilitation site</b>				
	<b>R&amp;R Site</b>	<b>Amenities</b>		<b>PAF's shifted</b>	
	Nehru Nagar	School, Dispensary, Panchayat Bhawan, Park, Well, training center, hand pumps, Streets light, roads, ponds.		57	
	Gandhi Nagar	School, Panchayat Bhawan, Dispensary, well, pond, hand pumps, internal roads, approach roads		136	
	Vivekanand Nagar	School, Panchayat Bhawan, Dispensary, well, pond, internal approach roads		149	
	Chainpur Batari			74	
	Chainpur Nagar			54	
	<b>Total</b>			<b>470</b>	
14.	<b>No. of PAPs employed-</b> 1513 PAPs have been given employment and 41 have taken cash compensation in lieu of employment.				

**RECLAMATION/ RESTORATION PROGRAMME:**

15.	Location & total Area to be Reclaimed/ restored	External Dump	Total area- 206.00 Ha		
			<i>Area utilized for dumping till 31.03.2019 is 204.26 Ha (no dumping since then)</i>		
		Internal Dump	Total area- 780.00 Ha		
			<i>Area utilized for dumping till 30.09.2023 is 585.26 Ha</i>		
		<b>Reclamation of dumps (30.09.2023)</b>			
		External Dump.	Technical-204.26 Ha		
			Biological-204.26 Ha		
Internal Dump.	Technical-223.00 Ha				
	Biological-127.66 Ha				
16.	Plan for reclaiming the excavated Area/Quarry sites and borrow pits	The area de-coaled is being filled up with OB. After technical reclamation, biological reclamation will be carried on reclaimed area.			
17.	Financial allocation for the year 2022-23 for rehabilitation / CD / CSR / reclamation / restoration	<b>FY</b>	<b>CSR fund allotted</b>	<b>Expenditure incurred</b>	
		2020-21	Rs. 1062.76 Lakhs	Rs. 391.78 lakhs	
		2021-22	Rs. 530.00 Lakhs	Rs.581.35 Lakhs	
		2022-23	0	Rs 261.87 Lakhs	

**PART-IV**

**POLLUTION CONTROL MEASURE**

18.	Facilities provided to collect Industrial wastewater & sewage.	<ul style="list-style-type: none"><li>• Sewage water from colonies is being guided through sewage pipeline up till DETP, Gevra Area. This is a combined DETP facility of capacity 03 MLD for both Dipka Expansion Project &amp; Gevra Project.</li><li>• Mine water is guided to large sumps of capacity 34.42 lakh cum before pumping it to Sedimentation Pond (Sirki Pond having capacity/ volume of 1.04 lakh cum and the overflow to CISF pond of capacity 2.26 lakh cum) for sedimentation process before being discharged to natural streams (Lilagarh river).</li><li>• In workshop, the dumper washed water is allowed to pass through Primary Settling Tank and clear water overflows passes to Oil and Grease Trap for further treatment. Treated effluent is recycled for dumper washing. The ETP/ Oil &amp; Grease trap at workshop has a capacity of 110 KLD.</li></ul>
19.	Quantity/ day discharged Industrial/ Colony waste water, point of discharged & Location map	<ul style="list-style-type: none"><li>• <b>Colony Wastewater:</b> Approximately 840.00 KL/D of domestic wastewater of Dipka Township is channeled through natural gradient to the common DETP located at Gevra Project.</li><li>• <b>Industrial water discharge:</b> Mine water is guided to large sumps of capacity 34.42 lakh cum before pumping it to Sedimentation Pond (Sirki Pond having capacity/ volume of 1.04 lakh cum and the overflow to CISF pond of capacity 2.26 lakh cum) for sedimentation process before being discharged to natural streams (Lilagarh river).<ul style="list-style-type: none"><li>i. Pumped out water during the monsoon of 2022-23 was 5664.689 KLD (avg) in rainy season and 1127.361 KLD (avg) in non- rainy season.</li><li>ii. During the FY 2022-23, the total pumped out water was 9,66,168KL. <i>(Annexure-3)</i></li></ul></li></ul>

20.	Monitoring of treated effluent frequency, No. of sampling point. :-	<ul style="list-style-type: none"> <li>i. The effluent samples are collected fortnightly.</li> <li>ii. No. of sampling points- 04 <ul style="list-style-type: none"> <li>a. Up-stream of Lilagarh Nala before Entering mining lease boundary</li> <li>b. Downstream of Lilagarh Nala after leaving mining lease Boundary.</li> <li>c. Workshop Effluent.</li> <li>d. Mines effluent after settling (<i>Annexure-4</i>)</li> </ul> </li> </ul>
21.	Air quality analysis & its monitoring:- Frequency no. of monitoring station.	<ul style="list-style-type: none"> <li>i. The frequency of samples collection is twice in a week.</li> <li>ii. No. of monitoring stations- 08 <ul style="list-style-type: none"> <li>a. Near railway siding.</li> <li>b. Near excavation workshop</li> <li>c. Malgaon village</li> <li>d. Pragati nagar</li> <li>e. Jhabar</li> <li>f. Batari</li> <li>g. Hardi bazaar</li> <li>h. Ratija</li> </ul> </li> </ul> <p style="text-align: right;"><i>(Annexure-4)</i></p>
22.	Noise Pollution monitoring station :-	<ul style="list-style-type: none"> <li>i. The frequency of samples collection is twice in a week.</li> <li>ii. No. of monitoring stations- 08 <ul style="list-style-type: none"> <li>a. Near railway siding.</li> <li>b. Near excavation workshop</li> <li>c. Malgaon village</li> <li>d. Pragati nagar</li> <li>e. Jhabar</li> <li>f. Batari</li> <li>g. Hardi bazaar</li> <li>h. Ratija</li> </ul> </li> </ul> <p style="text-align: right;"><i>(Annexure-4)</i></p>
23.	Preventive measures for Air, Water & noise pollution:-	<p><b>A) <u>Air Pollution</u></b></p> <ul style="list-style-type: none"> <li>i. 458 no. of fixed sprinklers on approximately 7.5 Km of coal transport road and 28 no. at railway siding has been installed to curb fugitive dust emissions.</li> <li>ii. 09 no. 70KL water tanker and 06 no. 28 KL mobile water tankers has been deployed on haul road, coal transport road and in CHP area for suppression of dust emission.</li> </ul>



		<ul style="list-style-type: none"> <li>iii. 04 no. rain guns in Coal transportation road and 11 no. at railway siding have been provided to curb the dust emission.</li> <li>iv. Every year extensive plantation is being done both on plain and dump area by Chhattisgarh Van Vikas Nigam (a state government organization) and till date, a total of 25.37 lakhs no. of saplings has been planted on OB, Non-OB dumps and other areas. For the year 2023-24, 30000 no. of plants has been planted on OB dump as gap plantation.</li> <li>v. 225 no. of Mist spray and 9 no. of conventional system of spray has been installed in the TRS, crusher, feeder breaker, ground bunker, inpit belt conveyer systems, and silo.</li> <li>vi. Mobile Water sprinkling on coal stock is practiced.</li> <li>vii. Wetting of coal before and during handling in CHP and finally in loading operations, is carried out.</li> <li>viii. The dust and mud accumulation along the haul road and service roads are periodically cleaned to curb fugitive dust emission.</li> <li>ix. Tarpaulin covered trucks is used for coal transportation locally.</li> <li>x. Black topping and concreting of roads has been done to avoid fugitive dust emission.</li> <li>xi. Controlled blasting is adopted.</li> <li>xii. CAAQMS has been installed/ commissioned on 18/01/2014 and is working satisfactorily.</li> <li>xiii. Surface miners' deployment since 2009-10 has largely reduced the dust emission which was emitting through drilling, blasting and crushers.</li> <li>xiv. Long Range Fogging Machine was commissioned at Dipka Project on 02.05.2019, to arrest the dust emissions from temporary coal stocks, coal transportation roads and railway siding.</li> <li>xv. Mechanized Sweeping Machine was commissioned at Dipka Project during Nov 2019</li> </ul>
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		<p>to further minimize the dust near colonies, and office areas.</p>
		<p><b>(B) Water Pollution</b></p> <ul style="list-style-type: none"> <li>i. The sedimentation ponds are provided for treating the mine water discharge. The treated mine water is used for dust suppression activities. There are 02 sedimentation ponds namely Sirki pond (Capacity of 1.03 lakh cum), CISF pond (Capacity of 2.26 lakh cum) and Pragati Nagar pond (Capacity of 2.33 lakh cum) acts as ground water recharge pond.</li> <li>ii. Oil &amp; Grease trap of 110 KL capacity has been installed in workshop area for the treatment of effluent generated from HEMM washing. The effluent generated are treated and the treated effluent is re-used for HEMM washing.</li> <li>iii. 3.2 km pucca catch drain has been constructed around dump no. 3 &amp; 5 to control soil erosion and water pollution. Regular de-siltation of drains is carried out before monsoon.</li> <li>iv. Every year grass beds, and check dams are constructed for SMC work across dump slopes.</li> <li>v. Combined DETP of 3.00 MLD capacity has been constructed at Gevra project.</li> <li>vi. Storm water drains have been constructed in the office buildings and colony.</li> <li>vii. 25 no. of rainwater harvesting structures have been installed in the colony and office buildings.</li> <li>viii. Garland drains are made around the periphery of the quarry to drain off the rainwater away from the workings in order to maintain surface water drainage.</li> </ul>
		<p><b>(C) Noise Pollution</b></p> <ul style="list-style-type: none"> <li>i. Reduced quantity of blasting has resulted in lower noise levels.</li> <li>ii. HEMM are fitted with silencers</li> <li>iii. Lined chutes in silo to reduce noise.</li> <li>iv. Surface miner is deployed to eliminate coal crushing, which will reduce noise.</li> </ul>

		<p>v. Provision of earmuffs/ ear plugs to workers subjected to noise level above recommended limits. Drill cabin is air conditioned and soundproof.</p> <p>vi. Regular monitoring of noise level of project area.</p>						
24.	Financial allocation Capital/ Recurring	<table border="1"> <tr> <td>FY 2021-22</td> <td>Rs. 171.71 Crores</td> </tr> <tr> <td>FY 2022-23</td> <td>Rs. 345.09 Crores</td> </tr> <tr> <td>FY 2023-24</td> <td>Rs 341.47 Crores</td> </tr> </table>	FY 2021-22	Rs. 171.71 Crores	FY 2022-23	Rs. 345.09 Crores	FY 2023-24	Rs 341.47 Crores
FY 2021-22	Rs. 171.71 Crores							
FY 2022-23	Rs. 345.09 Crores							
FY 2023-24	Rs 341.47 Crores							

**PART-V****GREEN BELT AND AFFORESTATION**

<b>25.</b>	<b>Details of the plantation work carried out at Dipka Expansion Project:</b>				
<b>Year</b>	<b>Plantation (no.)</b>	<b>Area (Ha)</b>	<b>Expenditures</b>	<b>Remarks</b>	
1992	19000	7.60	Rs.13,73,714.00	Nil	
1993-94	25800	10.31	Rs. 24,60,314.00	Nil	
1994-95	10000	4.00	Rs. 17,32,210.00	Nil	
1995-96	84500	33.80	Rs. 29,85,411.00	Nil	
1996-97	199000	63.00	Rs. 83,26,957.00	3500 no. distributed to employees	
1997-98	101000	40.40	Rs. 88,47,293.00	Nil	
1998-99	100000	40.00	Rs. 36,92,629.00	Nil	
1999-00	56000	22.40	Rs.28,38,448.00	Nil	
2000-01	42550	17.02	Rs.39,30,257.00	Nil	
2001-02	64000	25.60	Rs.32,88,345.00	Nil	
2002-03	45000	18.00	Rs.22,45,999.00	Nil	
2003-04	59000	22.48	Rs.42,02,261.00	Gap- 2800 no.	
2004-05	100000	40.00	Rs.48,52,919.00	Nil	
2005-06	34500	13.80	Rs.59,89,970.00	Nil	
2006-07	87000	31.05	Rs.28,98,721.00	Nil	
2007-08	60500	20.20	Rs.49,48,774.00	Gap- 10000 no.	
2008-09	66000	26.40	Rs.45,06,591.00	Nil	
2009-10	53000	21.20	Rs.42,92,333.00	Nil	
2010-11	200	0.08	Rs.16,53,073.00	Nil	
2011-12	13950	4.18	Rs.17,03,616.00	Nil	
2012-13	14000	4.20	Rs.20,86,226.00	Nil	
2013-14	106100	31.55	Rs.1,29,30,855.00	Gap- 8000 no.	
2014-15	146250	47.18	Rs.1,39,44,855.00	Nil	

	2015-16	179000	50.10	Rs.2,00,04,064.00	Nil
	2016-17	42250	16.90	Rs.1,97,65,329.00	Gap- 10000 no.
	2017-18	126722	42.28	Rs.2,39,18,136.00	Gap- 7000 no.
	2018-19	108560	33.22	Rs.3,46,14,056.00	5000 no. saplings distributed to nearby villages and employees
	2019-20	150665	57.63	Rs.3,09,42,596.00	Sal species-3000 no. near Lilagarh river Gap- 23000 no.
	2020-21	45500	17.00	Rs.3,09,61,213.00	Nil
	2021-22	100712	26.81	Rs.3,49,21,644.00	Bamboo species-37000 no. on slopes Gap - 29737 no.
	2022-23	80,000	1.00	Rs.3,46,06,354.00	Remaining gap plantation, 3000 no. saplings distributed to nearby villages.
	2023-24	2,20,000	94.69	Rs. 4,07,36,392.14	Gap plantation-30000 no. Plantation outside Minelease-190000 no
<b>Species planted in FY 23-24:</b> Neem, Karenj, Amla, Siras, Sishu, Bel, Bamboo, Ganga Imli, Bahera, Ashok, Gulmohar, Satwan, Teak, Jamun, Bogan vallia, Khamar, Sitaphal, Amruth, Kattel, Imli, Mango, Sisham, Peepal, Bargath etc.					
<b>* Density of Plantation</b> – i. 2500/ha on plain and flat surface of OB dump. ii. 3500/ha on OB dump slopes.					
26.	<b>Financial future allocation for plantation</b>		<b>Financial Year</b>	<b>Fund allotted for 1<sup>st</sup> year and other FY's maintenance period plantations.</b>	<b>Total expenditure incurred for 1<sup>st</sup> year and other FY's maintenance period plantations.</b>
			2022-23	Rs.3.49 Crores	Rs 3.46 Crores
			2023-24	Rs.5.58 Crores	Rs 4.07 Crores
27.	<b>Present condition of plant-</b> Running mine.				

**COMPLIANCE STATUS OF THE CONDITIONS IMPOSED IN THE EC LETTER ISSUED VIDE LETTER  
NO. J 11015/487/2007-IA.II(M)PT DT. 20.02.2018 & 20.03.2019 FOR EXPANSION OF  
DIPKA OPENCAST COAL MINE FROM 31 MTPA TO 35 MTPA**

NO.	EC CONDITIONS	COMPLIANCE STATUS
4. (i)	The environmental clearance for the proposed increase in capacity shall be valid up to 31 <sup>st</sup> March, 2020. Further continuance of the project shall be based on evaluation of the proposed control measures and its impact on the ambient air quality by the EAC in later half of the FY 2018-19.	<p><b>Agreed</b></p> <p>i. To monitor compliance status of the conditions stipulated in the EC, Regional Office, MoEF Nagpur did a site inspection on 05.11.2019.</p> <p>ii. Upon site inspection and evaluation of compliance status, the EC was extended in 2020 for a period of 30 years/ life of mine.</p>
ii	To control the dust generation at source, the crusher and in-pit belt conveyors shall be provided with mist type sprinklers.	<p><b>Being Complied</b></p> <p>i. A total of 225 no. of mist type jet sprinklers have been installed at source like: Crusher, Feeder breaker, Ground bunker and Belt Conveyors for dust suppression <i>(Fig-1)</i>.</p> <p>ii. Surface Miners (12 no.) have been provided with jet sprinklers to curb dust emission at source during coal extraction. <i>(Fig-2)</i></p>
iii	Mitigative measures shall be undertaken to control dust and other fugitive emissions all along the roads by providing sufficient numbers of water sprinklers. Adequate corrective measures shall be undertaken to control dust emissions as presented before the Committee, which would include mechanized sweeping, water sprinkling/mist spraying on haul roads and loading sites, long range misting/fogging arrangement, wind barrier wall and vertical greenery system, green belt, dust suppression arrangement at railway siding, etc.	<p><b>Partially complied</b></p> <p>For compliance of this condition, a Wind Barrier Wall of 20 ft height has been constructed using GI sheet and brick work covering the entire 750 m length of Railway Siding of Dipka Opencast Coal Mines <i>(Fig-3)</i>. The total expenditure incurred was Rs. 3.06 Crores.</p> <p>Also, the following measures have been undertaken to control dust emissions:</p> <ol style="list-style-type: none"> <li>1. Surface miners has eliminated conventional drilling &amp; blasting in coal and has inbuilt jet spraying system.</li> <li>2. Drill machines are provided with Dust extractor/ equipped with wet drilling arrangements. <i>(Fig-4)</i></li> <li>3. Fugitive dust at haul roads are controlled by mobile water sprinklers (09 no. of 70KL and 06 no. of 28 KL). <i>(Fig-5)</i></li> </ol>

		<ol style="list-style-type: none"> <li>4. Fugitive dust emission at coal transportation roads are controlled with the help of 458 no. of fixed sprinklers (covers 7.5 Km) and 10 no. of rain guns. <i>(Fig-6)</i></li> <li>5. At railway siding 11 rain guns along with 28 fixed sprinklers are installed. <i>(Fig-7)</i></li> <li>6. Long range fog forming water sprinkler system (1 no.) with horizontal throw of 40 m is operated at coal stock and siding areas since April 2019 (Rs. 45.66 Lakhs). <i>(Fig-8)</i></li> <li>7. Mechanical road sweeping machine (01 No) is being operated at Dipka Area since 2019 (Rs. 34.23 Lakhs). <i>(Fig-9)</i></li> <li>8. Extensive plantation along roads, OB Dumps &amp; slopes etc. to develop green belt. Till date 24.87 lakhs plantation completed. <i>(Fig-10 &amp; Fig-11)</i></li> <li>9. RCC road for coal transportation and Black topping of roads in other areas.</li> <li>10. Optimal loading of coal trucks and covered with tarpaulin while leaving the mine premises. <i>(Fig-12)</i></li> </ol>
iv	Efforts shall be made to explore the possibility of providing wind shield/breaker arrangement with creepers and climbers.	<p><b>Partially complied</b></p> <p>A Wind Barrier Wall of 20 ft height has been constructed using GI sheet and brick work covering the entire 750 m length of Railway Siding of Dipka Opencast Coal Mines <i>(Fig-3)</i>. The total expenditure incurred was Rs. 3.06 Crores.</p>
v	Thick green belt of 50 m width at the final boundary in the down wind direction of the project siteshall be developed to mitigate/check the dust pollution.	<p><b>Being Complied</b></p> <ol style="list-style-type: none"> <li>i. A thick green belt with 9375 no. of plants of varied species of width 25 m and length of 1.5 Km has been developed in the down-wind direction along the diverted Hardi Bazaar Road. <i>(Fig-13)</i></li> <li>ii. A total safety zone plantation for 4.91 Km has been developed to mitigate dust pollution. <i>(Fig-14)</i></li> </ol>

		iii. A total of 24.87 lakhs no. of plants have been planted since 1992 on OB dumps, plain areas and in avenues for greenbelt development at Dipka Area.																					
vi	Persons of nearby villages shall be given training for their livelihood and skill development.	<p><b>Being Complied</b></p> <p>i. Dipka Project has started a training center at Sneh Milan, Pragati Nagar for providing stitching classes to women from nearby villages on a weekly basis to enable them for self-employment and have distributed sewing machines to them. <i>(Fig-15)</i></p> <p>ii. Dipka Project has taken up initiative to train nearby villagers for producing Biodegradable plates made of leaves and have distributed the machineries to nearby villages. <i>(Fig-16)</i></p>																					
vii	To ensure health and welfare of nearby villages, regular medical camps shall be organized at least once in six months.	<p><b>Being Complied.</b></p> <p>i. Medical camps are organized regularly for compliance of Mines Act' 1952 provisions. An average of 20% employees are involved for PME every year therefore, covering all employees in 05-year period.</p> <p>ii. In 2023-24 (till 30.09.23), medical camps were conducted in 5 villages with 2313 beneficiaries. <i>(Fig-17).</i></p> <table border="1"> <thead> <tr> <th>Month</th> <th>Location</th> <th>Beneficiaries</th> </tr> </thead> <tbody> <tr> <td>April 2023</td> <td>5 villages</td> <td>393</td> </tr> <tr> <td>May 2023</td> <td>5 villages</td> <td>483</td> </tr> <tr> <td>June 2023</td> <td>5 villages</td> <td>412</td> </tr> <tr> <td>July 2023</td> <td>5 villages</td> <td>418</td> </tr> <tr> <td>Aug 2023</td> <td>5 villages</td> <td>312</td> </tr> <tr> <td>Sep 2023</td> <td>5 villages</td> <td>295</td> </tr> </tbody> </table>	Month	Location	Beneficiaries	April 2023	5 villages	393	May 2023	5 villages	483	June 2023	5 villages	412	July 2023	5 villages	418	Aug 2023	5 villages	312	Sep 2023	5 villages	295
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viii	The predominant Sal species in the forest area shall be protected, and in case of coal mining operations inevitable therein, compensatory afforestation of these species shall be carried out in consultation with State Forest Department.	<p><b>Being Complied</b></p> <p>500 no of Sal species have been planted in the FY 2022-23. <i>(Fig-18)</i></p> <p>3000 no. of Sal species has been planted near Lilagarh river through CGRVVN during FY 2019-20 <i>(Fig-19).</i></p>																					



ix	<p>In view of the mining potential of the area and the pollution concerns, carrying capacity of the eco-system shall be studied through some expert agencies to assess optimal mining operations with minimal impact on ecosystem services.</p>	<p><b>Complied</b></p> <p>The study regarding carrying capacity of eco-system for both Dipka OCP &amp; Gevra OCP was carried out by IIT(BHU) at a cost of Rs.17.7 lakhs. The final report was submitted by IIT (BHU) on 20<sup>th</sup> May 2020. <a href="#">(Annexure-7)</a></p> <ul style="list-style-type: none"> <li>• <b>Recommendations:</b> At the current level of production of 35 MTPA at Dipka, the environmental control measures adopted by the mine is adequate.</li> </ul> <p>As per recommendations of report, Dipka Project has initiated proposals for additional long range fogging machine (01 No), mechanized sweeping machine (01 No) and fixed fogging machine (15 no.) in view of production expansion from 35.00 to 40.00 MTY. <a href="#">(Annexure-8)</a></p>
x	<p>A sustainable mining practice shall be developed in the mine, catering to attributes of ecological, societal, and economical dimensions.</p>	<p><b>Agreed to comply</b></p> <p>Following actions taken by the project helps to fall in line with sustainable mining practices.</p> <ul style="list-style-type: none"> <li>• Surface miners (12 no.) has eliminated conventional drilling &amp; blasting in coal extraction. It has inbuilt jet spray sprinkler system.</li> <li>• CHP with In-pit belt Conveyor System (4.8 Km) <a href="#">(Fig-20)</a> and 02 Silos (Total capacity 3200 te each) is used for coal handling and loading.</li> <li>• Mechanized Railway Siding with Rapid loading system having capacity of 25MTY is under construction at Dipka Expansion Project as a part of First Mile Connectivity Initiative. This will help Dipka Project to achieve 100% dispatch through rail mode.</li> <li>• CAAQMS has been installed at Dipka Project for continuous monitoring and is in operation since January 2014. <a href="#">(Fig-21)</a></li> <li>• Extensive green belt has been developed with plantation along the safety zone with 7.5 m and 15 m thickness.</li> </ul>

		<ul style="list-style-type: none"> <li>• Reduced fugitive dust along coal transportation road through fixed sprinklers, mist spray arrangements, rain guns, mobile sprinklers etc.</li> </ul>
<b>4.1</b>	<b>Generic Conditions:</b>	
<b>4.1(a)</b>	<b>Mining:</b>	
i	Mining shall be carried out under strict adherence to provisions of the Mines Act 1952 and subordinate legislations made there-under as applicable.	<b>Agreed</b>
ii	No change in mining method i.e. OC to UG, calendar programme and scope of work shall be made without obtaining prior approval of the Ministry of Environment, Forest and Climate Change (MoEF & CC).	<b>Agreed</b>
iii	Mining shall be carried out as per the approved mining plan (including Mine Closure Plan) abiding by mining laws related to coal mining and the relevant circulars issued by Directorate General Mines Safety (DGMS).	<b>Agreed</b>
iv	No mining shall be carried out in forest land without obtaining Forestry Clearance as per Forest (Conservation) Act, 1980 and also adhering to The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 read with provisions of Indian Forest Act, 1927.	<b>Agreed</b>
<b>4.1 (b)</b>	<b>Land reclamation and water conservation</b>	
i	Digital Survey of entire leasehold area/ core zone using Satellite Remote Sensing survey shall be carried out at least once in three years for monitoring land use pattern and report in 1:50000 scale shall be submitted to Ministry of Environment, Forest and Climate Change/Regional Office (RO).	<b>Being Complied</b> <ul style="list-style-type: none"> <li>• Land use &amp; land reclamation status of Dipka mine is being monitored every year through CMPDIL using satellite imagery (Cost incurred: Rs.10 lakhs/annum). (<i>Annexure-9</i>)</li> <li>• The report is submitted to Integrated Regional office MoEF&amp;CC, Raipur along with the EC compliance report.</li> <li>• Copy of the same is also available in the Company's website i.e www.secl.gov.in.</li> </ul>

ii	<p>The surface drainage plan including surface water conservation plan for the area of influence affected by the said mining operations, considering the presence of river/rivulet/pond/lake etc, shall be prepared and implemented by the project proponent. The surface drainage plan and/or any diversion of natural water courses shall be as per the approved Mining Plan/EIA/EMP report and with due approval of the concerned State/Gol Authority. The construction of embankment to prevent any danger against inrush of surface water into the mine should be as per the approved Mining Plan and as per the permission of DGMS.</p>	<p><b>Partially Complied</b></p> <ul style="list-style-type: none"> <li>• Comprehensive Surface drainage/ Catchment area treatment plan within 5 KM from ML boundary was prepared through CCoST, Raipur in the year 2020. (Rs. 7.16 Lakh) (<a href="#">Annexure-10</a>)</li> <li>• For Implementation of the Surface Water Conservation Plan a detailed project report having a total project cost of 253.640 Lakhs has been prepared by State Forest Department (<a href="#">Annexure-11</a>).</li> <li>• Also payment of Rs.253.64 lakhs was submitted to DFO Katghora through DD on 20.07.2023. (<a href="#">Annexure-12</a>).</li> </ul>
iii	<p>The final mine void depth should preferably be as per the approved Mine Closure Plan, and in case it exceeds 40 m, adequate engineering interventions shall be provided for sustenance of aquatic life therein. The remaining area shall be backfilled and covered with thick and alive top soil. Post-mining land be rendered usable for agricultural/forestry purposes and shall be handed over to the respective state government as specified in the guidelines for Preparation of Mine Closure Plan issued by the Ministry of Coal dated 27<sup>th</sup> August, 2009 and subsequent amendments.</p>	<p><b>Agreed</b></p> <ul style="list-style-type: none"> <li>• Final Mine Closure Plan will be prepared &amp; implemented as per MCP guidelines.</li> <li>• Progressive MCP is included in the mining plan of Dipka OCP (37.50 MTY) and is approved by SECL Board in 128<sup>th</sup> meeting on 07.07.2022. (<a href="#">Annexure-13</a>).</li> <li>• The void area of 222.053 Ha at the end of the mine life will be converted into a water body with appropriate protection measures.</li> </ul>
iv	<p>The entire excavated area, backfilling, external OB dumping (including top soil) and afforestation plan shall be in conformity with the "during mining / post mining" land-use pattern, which is an integral part of the approved Mining Plan and the EIA/EMP submitted to this Ministry. Progressive compliance status vis-a-vis the post-mining land use pattern shall be submitted to the Ministry of Environment, Forest and Climate Change/Regional Office on six monthly basis.</p>	<p><b>Being complied</b></p> <ul style="list-style-type: none"> <li>• Backfilling, OB dumping, afforestation works are in conformity with the mining plan.</li> <li>• The progressive compliance status is submitted bi-annually to MoEF&amp;CC along with the six-monthly compliance report and to the Coal Controller, Kolkata as a part of our yearly report of mine closure plan.</li> <li>• The reclamation status as on 31.03.2023 is enclosed as (<a href="#">Annexure-14</a>). Present bifurcation</li> </ul>

of land in operation at Dipka OCP (37.5 MTY) is as follows:

Particulars	Land (in Ha)	Remark (Status as on 30.09.2023)
Internal OB Dump	223.000	Backfilled & Technically Reclaimed. (Top soil storage site included)
Active Dumping	362.257	To be backfilled & technically reclaimed.
Void	166.613	Pro-rata area not required to be backfilled
Future Mining	250.183	
External OB Dumps	206.000	204.26Ha Stabilized with Plantation
Infrastructure, Workshop, haul road, Right Bank Canal	633.874	Rail Line, Coal Stock Yard, Workshop, Sidings, Silos, CHP, Haul Roads, Office Buildings, Colony etc.
Colony Area (outside Mine)		NA
R&R Site (outside Mine)		NA
Safety Zone	130.366	Northern, Western & Eastern Boundary (4.91 km)
Others	27.000	Green Belt, Roads
Total Area	1999.293	

v The top soil shall temporarily be stored at earmarked site(s) only and shall not be kept unutilized for long. The top soil shall be used for land reclamation and plantation purposes. Active OB dumps shall be stabilized with native grass species to prevent erosion and surface run off. The other overburden dumps shall be vegetated with native flora species. The excavated area shall be backfilled and afforested in line with the approved Mine Closure Plan. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance

**Being Complied**

- As mining progresses the top 1.5 m (approx.) depth of soil is excavated and temporarily stored at 12.00 Ha earmarked site (Internal Dump-west section) and subsequently spread on the technically reclaimed dump for 30-50 cm thickness before biological reclamation. [\(Fig-22\)](#)
- During the FY 2023-24 (Till 30.09.23), 13000 cum of topsoil was removed, which was spread over OB Dumps for Biological Reclamation.
- The External OB Dumps of Dipka OCP is technically and biologically reclaimed. The

	<p>status shall be submitted to the Ministry of Environment, Forest and Climate Change/ Regional Office on six monthly basis.</p>	<p>excavated area is currently being backfilled and afforested as per the mine closure plan.</p> <ul style="list-style-type: none"> <li>• During FY 2023-24, 30,000 no. of plants &amp; 50,000 no's grass beds have been developed over OB Dumps. Till date a total of 11.35 lakh plants were planted over OB Dumps.</li> <li>• The year-wise details of plantation works carried out at Dipka Project is enclosed as <a href="#">Annexure-15</a>.</li> <li>• <b>Species include:</b> Neem, Karenej, Amla, Siras, Sishu, Bel, Bamboo, Ganga Imli, Bahera, Ashok, Gulmohar, Satwan, CassiaGemec, Teak, Jamun, CassiaGulco, Bogan vallia, Khamar, Sitaphal, Amrood, Kathal, Imli, Mango, Sisham, Jatropha, etc.</li> <li>• <b>Grass Species:</b> Khasi, Deenanath, Stylo Hamata, Khair, Keki.</li> </ul>
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**4.1 (c) Emissions, effluents & waste disposal:**

i	<p>Transportation of coal, to the extent permitted by road, shall be carried out by covered trucks/conveyors. Effective control measures such as regular water/mist sprinkling/ rain gun etc shall be carried out in critical areas prone to air pollution (with higher values of PM<sub>10</sub>/PM<sub>2.5</sub>) such as haul road, loading/unloading and transfer points. Fugitive dust emissions from all sources shall be controlled regularly. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central/State Pollution Control Board.</p>	<p><b>Being complied with</b></p> <p>Coal transportation is being carried out through road, rail and MGR. The following measures are taken to control air pollution:</p> <ul style="list-style-type: none"> <li>• Coal production is being done by Surface Miner, which eliminates the crushing of coal in CHP.</li> <li>• Water guns are installed at coal stock yard &amp; railway sidings to suppress fugitive dust emission.</li> <li>• Mechanized Sweeping Machine is deployed in the project to curb the fugitive dusts along the road at the project.</li> <li>• Long Range Fogging Machine is deployed in the project to tackle the problem of airborne dust particles. The truck mounted fogging machine is being directed at the point sources such as stockpiles, haul road and at high volume dust generating sources such as loading/ unloading</li> </ul>
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		<p>and transfer points to rapidly suppress the emitted dust before it can disperse.</p> <ul style="list-style-type: none"> <li>• Trucks are optimally loaded, and vehicle used for transportation of coal outside the mine area are being covered with Tarpaulins.</li> <li>• In addition to it, conventional perforated pipe method of spraying is installed in 09 no. of feeder breakers .</li> <li>• 172 nos of mist spray systems are provided at CHP, 3 no at feeder breaker and 50 nos. are provided at Silo to arrest the coal dust emission.</li> <li>• 04 no. of rain guns are also installed along coal transportation road and 11 no. along the railway siding for effective dust suppression.</li> <li>• 458 no. of fixed sprinklers for 7.5 Km of coal transportation road and 28 no. of fixed sprinklers. along the railway siding are provided to arrest fugitive dust emission.</li> <li>• Additionally, 09 no. of 70 KL and 06 no. of 28 KL mobile water sprinklers are also deployed for water sprinkling along the haul roads.</li> </ul> <p>Ambient air quality monitoring reports for the period April 2023 to September 2023 is enclosed as <a href="#">Annexure-4</a>. The Ambient Air Quality parameters are in conformity to the norms prescribed by the Central/State Pollution Control Board.</p>
ii	<p>Greenbelt consisting of 3-tier plantation of width not less than 7.5 m shall be developed all along the mine lease area in a phased manner. The green belt comprising a mix of native species shall be developed all along the major approach/ coal transportation roads.</p>	<p><b>Being complied</b></p> <ul style="list-style-type: none"> <li>• As the mine progresses in southwest direction, green belt will be developed in a phased manner as per land acquisition programme. Green belt of 4.91 Km has been developed around the project.</li> <li>• 25 m thick plantation (9375 no. of plants) has been planted along the roadside for a length of</li> </ul>

		<p>1500 m towards Dipka OCP side of diverted Hardi Bazar road near Sarai Singar.</p> <ul style="list-style-type: none"> <li>• Extensive green belt is being developed on both plain and OB dump area through Chhattisgarh Rajya Van Vikas Nigam. As on date a total of 25.37 lakh no. of plants have been planted at Dipka Project since inception, for which a total expenditure of Rs.4.07 crores has been incurred.</li> <li>• Species include: Neem, Karenj, Amla, Siras, Sishu, Bel, Bamboo, Ganga Imli, Bahera, Ashok, Gulmohar, Satwan, CassiaGemec, Teak, Jamun, CassiaGulco, Bogan vallia, Khamar, Sitaphal, Amrood, Kathal, Imli, Mango, Sisham, Jatropa, etc.</li> </ul>
iii	The transportation of coal shall be carried out as per the provisions and route proposed in the approved Mining Plan. Transportation of the coal through the existing road passing through any village shall be avoided. In case, it is proposed to construct a 'bypass' road, it should be so constructed so that the impact of sound, dust and accidents could be appropriately mitigated.	<p><b>Being Complied.</b></p> <p>The dispatch of coal is being carried out as proposed in the mining plan. There is no transportation of coal through villages. The coal is transported through diverted Hardi Bazar bypass road near Sarai Singar.</p>
iv	Vehicular emissions shall be kept under control and regularly monitored. All the vehicles engaged in mining and allied activities shall operate only after obtaining 'PUC' certificate from the authorized pollution testing centers.	<p><b>Being complied.</b></p> <p>i. Vehicle emissions are periodically (Six Monthly) monitored and a PUC certificate to this effect is being issued to each vehicle by the authorized agency of Transport Department Government of Chhattisgarh. Records are being maintained at the auto-section Dept. of Dipka Area. <i>(Annexure-16)</i></p> <p>ii. PUC is not required for HEMM vehicles as these machineries does not fall under the ambit of Motor Vehicle Act, 1989</p>
v	Coal stock pile/crusher/feeder and breaker material transfer points shall invariably be provided with dust suppression system. Belt-	<p><b>Complied</b></p> <ul style="list-style-type: none"> <li>• Closed in pit belt conveyor system has been installed in the mines from TRS to Bunkers to</li> </ul>

	<p>conveyors shall be fully covered to avoid air borne dust. Side cladding all along the conveyor gantry should be made to avoid air borne dust. Drills shall be wet operated or fitted with dust extractors.</p>	<p>Silo. From Silo the coal is dispatched to NTPC through MGR.</p> <ul style="list-style-type: none"> <li>• 172 no. of mist spray systems are provided at CHP and 50 nos. are provided at Silo to arrest the coal dust emission.</li> <li>• Drills are wet operated/provided with dust extractors.</li> <li>• 486 fixed sprinklers and 15 rain guns are installed at Dipka OC Project to curb fugitive dust emissions along coal transportation road and at railway siding.</li> <li>• Surface miners (12 Nos.) have been deployed for Coal extraction which eliminates Conventional drilling &amp; blasting of coal seams.</li> <li>• The surface miner has inbuilt jet spray sprinkler system to suppress dust at the source of dust emission.</li> <li>• 09 no. of conventional perforated pipe method of spraying and 03 no. of mist spray systems has been installed in feeder breakers.</li> <li>• Also truck mounted Long Range Fogging Machine has been deployed in the project to tackle the problem of airborne dust particles generated at the point sources such as stockpiles and at high volume dust generating sources such as loading/ unloading and transfer points to rapidly suppress the emitted dust before it can disperse.</li> </ul>
vi	<p>Coal handling plant shall be operated with effective control measures viz. bag filters/water or mist sprinkling system etc to check fugitive emissions from crushing operations, conveyor system, transfer points, etc.</p>	<p><b>Being complied with</b></p> <ul style="list-style-type: none"> <li>• 172 no. of mist spray systems are provided at CHP at loading, unloading and all transfer points and 50 nos. are provided at Silo to arrest the coal dust emission.</li> <li>• Conventional perforated pipe method of spraying is installed in 9 no. of feeder breakers and mist spray systems of 3 no. in feeder breaker.</li> </ul>
vii	<p>Ground water, excluding mine water, shall not</p>	<p><b>Being complied</b></p>



	<p>be used for mining operations. Rainwater harvesting shall be implemented for conservation and augmentation of ground water resources.</p>	<ul style="list-style-type: none"> <li>• Application for renewal of NOC from CGWA for withdrawal of ground water was submitted on 25.02.2023 and was accepted on 09.03.2023 (Application no: 21-4/673/CT/MIN/2017).</li> <li>• For mining operations, no additional tube-well/ ground water abstraction structures, which deplete ground water will be constructed.</li> <li>• Mine water obtained during extraction of coal &amp; Rainwater accumulated is utilized for industrial purposes.</li> <li>• Rainwater harvesting system (25 no.) has been installed in Pragati House, Dipka House, Recreation club, CGM Office, New C-Type and minors' quarter for ground water recharge. <i>(Fig-23)</i></li> <li>• 16 groundwater recharge ponds have been constructed having a recharge capacity of 55,447 cum. <i>(Fig-24)</i></li> <li>• The extensive plantation inside the mine lease area also helps in effective recharge of ground water.</li> <li>• The backfilled area is also systematically leveled and biologically reclaimed, this helps in reducing surface run off and improve infiltration capacity of soil.</li> </ul>
viii	<p>Catch/garland drains and siltation ponds of appropriate size shall be constructed around the mine working, coal heaps &amp; OB dumps to prevent run off of water and flow of sediments directly into the river and water bodies. Further, dump material shall be properly consolidated/ compacted and accumulation of water over dumps shall be avoided by providing adequate channels for flow of silt into the drains. The drains/ ponds so constructed shall be regularly de silted particularly before onset of monsoon and maintained properly. Sump</p>	<p><b>Being complied</b></p> <ul style="list-style-type: none"> <li>• Catch drains in the form of pucca and kachha drains have been constructed around mines, coal stock and dumps for channeling of runoff water during monsoon season. <i>(Fig-25)</i></li> <li>• Check dams and bunds were constructed at Jingathpur Dump (25,800 cum) and at Renki Dump (8000 cum). (Rs.50.52 lakhs and 15.6 lakhs). <i>(Fig-26)</i></li> <li>• Retaining wall/ gabion wall of dimension 1m x 1m for 1.758 Km was constructed at the toe of</li> </ul>

	<p>capacity should provide adequate retention period to allow proper settling of silt material. The water so collected in the sump shall be utilized for dust suppression measures and green belt development. Dimension of the retaining wall constructed, if any, at the toe of the OB dumps within the mine to check run-off and siltation should be based on the rainfall data. The plantation of native species to be made between toe of the dump and adjacent field/habitation/water bodies.</p>	<p>external Dump No. 03 and 1.628 Km of dimension 1m x 1m at Dump no. 05. <i>(Fig-27)</i></p> <ul style="list-style-type: none"> <li>• De-silting/Deepening of ponds and cleaning of drains are being taken up as stipulated before every monsoon <i>(Fig-28)</i>. The work orders in this regard are enclosed as <i>Annexure-17</i>.</li> <li>• Mine sumps at LK1 &amp; LK2 helps in storage, acts as well as recharge structure. <i>(Fig-29)</i></li> <li>• Extensive plantation carried out at Dipka also helps in controlling surface runoff and soil protection.</li> </ul>
ix	<p>Industrial waste water generated from CHP, workshop and other waste water, shall be properly collected and treated so as to conform to the standards prescribed under the Environment (Protection) Act, 1986 and the Rules made there under, and as amended from time to time. Oil and grease trap shall be installed and maintained fully functional with effluents discharge adhering to the norms. Sewage treatment plant of adequate capacity shall be installed for treatment of domestic waste.</p>	<p><b>Being complied</b></p> <ul style="list-style-type: none"> <li>• For treatment of effluent from workshop etc. ETP (oil &amp; grease trap) of 110 KL capacity was commissioned on 01.05.2005. It is a zero effluent discharge plant, were treated effluents are reused for HEMM washing. <i>(Fig-30)</i></li> <li>• DETP of 3.00 MLD Capacity has been constructed at Gevra project and combinedly used by Dipka Expansion project. Approximately 840 KLD of domestic effluent of Dipka colony goes to the DETP. <i>(Fig-31)</i></li> <li>• Effluent Monitoring Reports for the period April 2023 to September 2023 of workshop effluent, mine effluent after settling, effluent from upstream and downstream of lilagarh nallah are enclosed as <i>Annexure-4</i>.</li> </ul>
x	<p>Adequate groundwater recharge measures shall be taken up for augmentation of ground water. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.</p>	<p><b>Being complied</b></p> <ul style="list-style-type: none"> <li>• 25 no. of Roof Top Rainwater harvesting structures has been installed in Pragati House, Dipka House, Recreation club, CGM Office, New C-Type and minors' quarter for ground water recharge which covers an area of 14,174 sq.m approximately and recharges 13,494 m<sup>3</sup>/annum.</li> </ul>

		<ul style="list-style-type: none"> <li>• Artificial groundwater recharge ponds have been constructed in 11 locations having a recharge capacity of 55,447 cum.</li> <li>• The extensive plantation inside the mine lease area also helps in effective recharge of ground water.</li> <li>• The backfilled area is also systematically levelled and biologically reclaimed, this helps in reducing surface run off and improve infiltration capacity of soil.</li> <li>• Dipka project authorities are supplying water in tankers to meet water requirement of nearby village(s) facing water scarcity.</li> </ul>
<b>4.1 (d)</b>	<b>Illumination, noise &amp; vibration</b>	
i	Adequate illumination shall be ensured in all mine locations (as per DGMS standards) and monitored weekly. The report on the same shall be submitted to this ministry & to its RO on six-monthly basis.	<p><b>Being complied with</b></p> <p>Adequate illumination has been ensured in all mine locations as per DGMS standards and being monitored on monthly basis as per DGMS guidelines. The reports are submitted bi-annually along with EC compliance report. (<a href="#">Annexure-18</a>) (<a href="#">Fig-32</a>)</p>
ii	Adequate measures shall be taken for control of noise levels below 85 dB(A) in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with personal protective equipments (PPE) like ear plugs/muffs in conformity with the prescribed norms and guidelines in this regard. Adequate awareness programme for users to be conducted. Progress in usage of such accessories to be monitored.	<p><b>Being complied with</b></p> <ul style="list-style-type: none"> <li>• Noise proof cabins for All HEMMs are provided.</li> <li>• Extensive plantation work is being carried out on over burden dumps, around residential areas, along colony roads, coal transportation road and around the mine infrastructure.</li> <li>• Workers are adequately trained and informed regularly by experienced Doctors about the safety and health aspect during vocational training / special training at group VTC.</li> <li>• The Noise monitoring report and noise survey report for the period April 2023 to September 2023 is enclosed as <a href="#">Annexure-4</a> and <a href="#">Annexure-5</a> respectively.</li> <li>• Workers engaged in blasting and drilling operations, operation of HEMM, etc. have been</li> </ul>

provided with personal protective equipment (PPE) such as earplug/muffs in conformity with the prescribed norms and guidelines. *(Fig-33)*

PPE issued as on 30.09.23	No.
Gum boot	331
Leather Shoe	1500
Ankle Boot	600
Helmet	1025
Dust mask	6000
Radium Tapes	40
Ear Plug	Nil
Safety belt	20
Fluorescent jacket	1200
Fire suit	Nil
Life jacket	Nil
Welding goggles	Nil
Cotton Hand gloves	300
Rubber Hand gloves	50

iii	Controlled blasting techniques shall be practiced in order to mitigate ground vibrations and fly rocks as per the guidelines prescribed by the DGMS.	<p><b>Being complied.</b></p> <ul style="list-style-type: none"> <li>Controlled blasting is done as per DGMS Stipulated rules and regulations. Surface miners have been deployed for Coal extraction which eliminates Conventional drilling &amp; blasting of coal seams.</li> <li>To remove overburden layer over the coal seam, shock tube initiation system has been adopted in delay blasting, which is an advanced method of blasting operation which controls blast related vibrations and fly rock to a large extent.</li> <li>Blast monitoring is being done on a regular basis. The values of blast measured in ppv for the period April 2023 to September 2023 lies between 0.31 mm/sec to 5.52mm/sec. <i>(Annexure-19)</i></li> </ul>
iv	The noise level survey shall be carried out as per the prescribed guidelines to assess noise exposure of the workmen at vulnerable points	<p><b>Being complied.</b></p> <p>Noise level monitoring is being done through CMPDI on regular basis as per the prescribed</p>

	in the mine premises, and report in this regard shall be submitted to the Ministry/RO on six-monthly basis.	guidelines and noise monitoring reports in this regard is being submitted to the Ministry and CECB on six-monthly basis. The Noise monitoring report and noise survey report for the period April 2023 to September 2023 is enclosed as <a href="#">Annexure-4</a> and <a href="#">Annexure-5</a> respectively.
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**4.1 (e) Occupational health & safety**

i	The project proponent shall undertake occupational health survey for initial and periodical medical examination of the workers engaged in the project and maintain records accordingly as per the provisions of the Mines Rules, 1955 and DGMS circulars. Besides regular periodic health check-up, 20% of the workers identified from workforce engaged in active mining operations shall be subjected to health check-up for occupational diseases and hearing impairment, if any.	<p><b>Being complied.</b></p> <ul style="list-style-type: none"> <li>• In compliance to provisions of Mines Act'1952 and DGMS circular, regular periodic health checkup of workers initially in 5 years (both contractual and departmental) and for workers above 45 years of age are subjected to health checkup 03 years once. The records are properly maintained.</li> <li>• Occupational Health check-ups for workers having some ailments like BP, diabetes, habitual smoking, hearing impairment etc. is being carried out once in six month. PME details are given below: -</li> </ul> <table border="1"> <thead> <tr> <th colspan="5">Periodical Medical Examination (PME)</th> </tr> <tr> <th rowspan="2">Year</th> <th colspan="2">Departmental</th> <th colspan="2">Contractual</th> </tr> <tr> <th>Target</th> <th>Achievement</th> <th>Target</th> <th>Achievement</th> </tr> </thead> <tbody> <tr> <td>2019</td> <td>556</td> <td>556</td> <td>170</td> <td>95</td> </tr> <tr> <td>2020</td> <td>550</td> <td>312</td> <td>52</td> <td>50</td> </tr> <tr> <td>2021</td> <td>533</td> <td>561</td> <td>120</td> <td>85</td> </tr> <tr> <td>2022</td> <td>533</td> <td>551</td> <td>106</td> <td>106</td> </tr> <tr> <td>2023 (till 30.09.23)</td> <td>1522</td> <td>318</td> <td>-</td> <td>-</td> </tr> </tbody> </table>	Periodical Medical Examination (PME)					Year	Departmental		Contractual		Target	Achievement	Target	Achievement	2019	556	556	170	95	2020	550	312	52	50	2021	533	561	120	85	2022	533	551	106	106	2023 (till 30.09.23)	1522	318	-	-
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ii	Personnel (including outsourcing employees) working in dusty areas shall wear protective respiratory devices and shall also be provided with adequate training and information on safety and health aspects.	<p><b>Being Complied</b></p> <ul style="list-style-type: none"> <li>• Vocational training provided to the departmental and outsourcing employees covers both safety and health aspects.</li> <li>• Workers engaged in blasting and drilling operations, operation of HEMM etc. have been provided with earplug, dust mask, and boots.</li> </ul>
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<b>PPE issued as on 30.09.23</b>	<b>No.</b>
Gum boot	331
Leather Shoe	1500
Ankle Boot	600
Helmet	1025
Dust mask	6000
Radium Tapes	40
Ear Plug	Nil
Safety belt	20
Fluorescent jacket	1200
Fire suit	Nil
Life jacket	Nil
Welding goggles	Nil
Cotton Hand gloves	300
Rubber Hand gloves	50

iii Skill training as per safety norms specified by DGMS shall be provided to all workmen including the outsourcing employees to ensure high safety standards in mines.

**Being Complied**  
Regular Skill training as per safety norms specified by DGMS is being provided to all workmen including the outsourcing employees to ensure high safety standards in mines. The detail is given below:

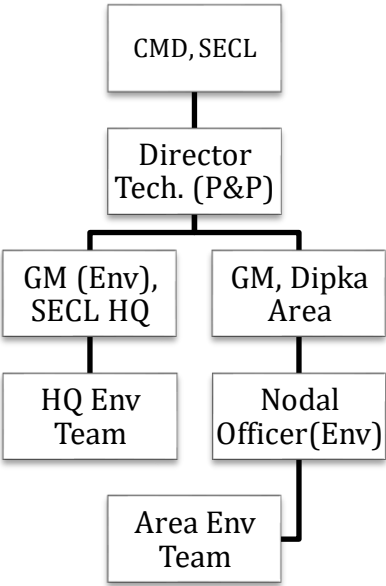
<b>Year</b>	<b>Dept</b>	<b>Cont (including referred)</b>
2020-21	Target: 177	2127
	Ach: 167	
2021-22	Target: 174	1674
	Ach: 176	
2022-23	Target: 217	1158
	Ach: 220	
2023-24 (till 30.09.23)	Target: 190	1498
	Ach: 168	

**4.1 (f) Ecosystem & biodiversity conservation**

i	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered flora/ fauna, if any, spotted/ reported in the study area. The Action plan in this regard, if any, shall be prepared and implemented in consultation with the State Forest and Wildlife Department.	<p><b>Complied</b></p> <ul style="list-style-type: none"> <li>• Wildlife Conservation Plan (WLCP) was prepared by TFRI, Jabalpur in 2020 as per the MoU signed between ICFRE, Dehradun and CIL, Kolkata. (Rs.14.90 lakhs) (<a href="#">Annexure-20</a>).</li> <li>• For implementation of the Wildlife Conservation plan, the budgetary provision was revised by SDO Pali. The scheme was approved by APCCF (Wildlife) vide letter no: 187, dated: 04.11.2022. A Demand Note for Rs.1547 lakhs was raised by DFO Katghora on 08.12.2022 which was paid to CAMPA on 01.03.2023 (<a href="#">Annexure-21</a>). The implementation of WLCP will be done by State Forest Dept.</li> </ul>
<b>4.1 (g)</b>	<b>Public hearing, R&amp;R &amp; CSR</b>	
i	Implementation of the action plan on the issues raised during the public hearing shall be ensured. The project proponent shall undertake all the tasks/measures as per the action plan submitted with budgetary provisions during the public hearing. Land outsees shall be compensated as per the norms laid down in the R&R policy of the company/State Government/Central Government, as applicable.	<p><b>Being complied</b></p> <ul style="list-style-type: none"> <li>• All the issues raised during public hearing conducted on 05.09.2008 have been resolved.</li> <li>• The action taken report on issued raised during public hearing is enclosed as <a href="#">Annexure-22</a>.</li> <li>• Land outsees are compensated as per R&amp;R policy 2012 &amp; Chhattisgarh Rajya Adarsh Punarvas Niti-2007 and employment is provided to project affected persons as per approved policy.</li> <li>• The R&amp;R details are as follows: <ul style="list-style-type: none"> <li>✓ Total PAF (Project Affected Family)- 1864 No.</li> <li>✓ PAF shifted to R&amp;R site- 470 No.</li> <li>✓ Cash Compensation in Lieu of Land- 1148 No.</li> <li>✓ Total landowners/PAP - 2988 No.</li> <li>✓ Employment Provided- 1513 No.</li> <li>✓ Cash Compensation in Lieu of Employment- 41 No.</li> </ul> </li> </ul>

ii	<p>The project proponent shall ensure the expenditure towards socio-economic development in and around the mine, in every financial year in pursuance of the Corporate Social Responsibility Policy as per the provisions under Section 135 of the Companies Act, 2013.</p>	<p><b>Being complied</b></p> <ul style="list-style-type: none"> <li>• CSR Policy has been framed after incorporating the features of the Companies Act 2013 and as per notification issued by Ministry of Corporate Affairs, Govt. of India on 27.02.2014 as well as DPEs guidelines.</li> <li>• The Year wise fund allocated vs expenditure for CSR activities is as below:</li> </ul> <table border="1"> <thead> <tr> <th>Year</th> <th>Allotted (Rs. in lakhs)</th> <th>Expenditure (Rs. in lakhs)</th> </tr> </thead> <tbody> <tr> <td>2019-20</td> <td>507.31</td> <td>0.00</td> </tr> <tr> <td>2020-21</td> <td>1062.76</td> <td>391.78</td> </tr> <tr> <td>2021-22</td> <td>530.00</td> <td>581.35</td> </tr> <tr> <td>2022-23</td> <td>0</td> <td>261.87</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>• The comprehensive details of CSR activities undertaken during last 03 years is enclosed as <a href="#">Annexure-23</a>.</li> </ul>	Year	Allotted (Rs. in lakhs)	Expenditure (Rs. in lakhs)	2019-20	507.31	0.00	2020-21	1062.76	391.78	2021-22	530.00	581.35	2022-23	0	261.87
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2022-23	0	261.87															
iii	<p>The project proponent shall follow the mitigation measures provided in this Ministry's OM No. Z-11013/5712014-IA.II (M) dt. 29.10.2014, titled impact of mining activities on habitations-issues related to the mining projects wherein habitations and villages are the part of mine lease areas or habitations and villages are the part of mine lease areas or habitations and villages are surrounded by the mine lease area.</p>	<p><b>Agreed to comply.</b></p> <p>The compliance to the OM dated:29.10.2014 is enclosed as <a href="#">Annexure-24</a>.</p>															
iv	<p>The project proponent shall make necessary alternative arrangements, if grazing land is involved in core zone, in consultation with the State government to provide alternate areas for livestock grazing, if any. In this context, the project proponent shall implement the directions of Hon'ble Supreme Court with regard to acquiring grazing land.</p>	<p><b>Not Applicable.</b></p> <p>No Grazing land is involved in core zone.</p>															
<b>4.1 (h)</b>	<b>Corporate environment responsibility</b>																



i	<p>The Company shall have a well laid down environment policy duly approved by Board of Directors. The environment policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/ deviation/ violation of the environmental or forest norms/conditions. Also, the company shall have a defined system of reporting of non-compliances/violations of environmental norms to the Board of Directors and/or shareholders/stakeholders.</p>	<p><b>Being complied with</b></p> <ul style="list-style-type: none"> <li>SECL has a well laid down Environment policy as per ISO 14001 duly approved by SECL board on 07.10.2020.</li> <li>Further, System to report non-compliance/violations of the EC to the Board of Directors is in practice and a quarterly report is sent to the Board in accordance with the instructions issued by the Ministry of Coal vide letter no. 23/3/2015-ASO/BA dated 26/04/17.</li> <li>The copy of Environmental Policy is also available on the company's website <a href="http://www.secl.gov.in">www.secl.gov.in</a>.</li> </ul>
ii	<p>The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions should be displayed on website of the Company.</p>	<p><b>Being complied with</b></p> <p>The organization structure is as follows:</p>  <pre> graph TD     A[CMD, SECL] --&gt; B[Director Tech. (P&amp;P)]     B --&gt; C[GM (Env), SECL HQ]     B --&gt; D[GM, Dipka Area]     C --&gt; E[HQ Env Team]     D --&gt; F[Nodal Officer (Env)]     F --&gt; G[Area Env Team]   </pre>
iii	<p>A separate environmental management cell both at the project and company headquarter level, with suitable qualified personnel shall be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.</p>	<p><b>Complied</b></p> <ul style="list-style-type: none"> <li>There is a separate Environmental management cell both at the project and company headquarter level with suitable qualified personnel.</li> <li>At HQ level it is headed by GM (Env.), who is reporting to CMD through Director (Tech./P&amp;P).</li> </ul>

		<ul style="list-style-type: none"> <li>At Dipka Area Environment Department is headed by Nodal Officer (Env.), who is directly reporting to General Manager, Dipka Area. A Dy. Manager (Env) &amp; Asst. Manager (Env) works in Environment Department of Dipka Area.</li> </ul>
iv	Action plan for implementing EMP and environmental conditions shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation of action plan shall be reported to the Ministry/Regional Office along with the Six Monthly Compliance Report.	<p><b>Being complied with</b></p> <ul style="list-style-type: none"> <li>Year-wise expenditure of environment related works is being submitted in the six-monthly reports to MoEF.</li> <li>Expenditure Details of FY 2022-23 are enclosed as <a href="#">Annexure-25</a>.</li> <li>Action Plan for implementation of EMP is enclosed as <a href="#">Annexure-26</a>.</li> </ul>
v	Self- environmental audit shall be conducted annually. Every three years third party environmental audit shall be carried out.	<p><b>Being complied with</b></p> <ul style="list-style-type: none"> <li>Internal Committee has been constituted at Area Level for Self-Environmental Audit. Inter Area Monitoring mechanism has been developed for monitoring of EC compliances.</li> <li>A Third-Party Environmental Audit was carried out by ICFRE, Dehradun during the month of July 2022. The environmental audit report submitted by ICFRE is enclosed as <a href="#">Annexure- 27</a>.</li> <li>Yearly Environmental audit statement is submitted to CECB &amp; MoEF&amp;CC. (<a href="#">Annexure-28</a>)</li> </ul>
<b>4.1 (i)</b>	<b>Statutory Obligations</b>	
i	The environmental clearance shall be subject to orders of Hon'ble Supreme Court of India, Hon'ble High Court, NGT and any other Court of Law from time to time, and as applicable to the project.	<b>Agreed to comply</b>
ii	This environmental clearance shall be subject to obtaining wildlife clearance, if applicable, from the Standing Committee of National Board for Wildlife.	<p><b>Not applicable</b></p> <p>Dipka Expansion Project does not fall under 10 Km radius of any national park or wildlife sanctuary.</p>
iii	The project proponent shall obtain Consent to Establish/Operate under the Air Act, 1981 and	<b>Complied</b>

	the Water Act, 1974 from the concerned State Pollution Control Board.	CTE cum CTO for 37.50 MTY was obtained vide CECB letter no: 8690/TS/CECB/2023, dated:15.03.2023 ( <a href="#">Annexure 29</a> ).
iv	The project proponent shall obtain the necessary permission from the Central Ground Water Authority (CGWA).	<p><b>Being complied</b></p> <ul style="list-style-type: none"> <li>• Application for renewal of NOC from CGWA for withdrawal of ground water was submitted on 25.02.2023 and was accepted on 09.03.2023 (Application no: 21-4/673/CT/MIN/2017)</li> <li>• Regular Monitoring of Ground Water level is carried out through 08 no. of piezometers (deep- 04, shallow- 04) constructed at up and dip side of the mine and well inventory is carried out to monitor the GW level changes around the mine. (<a href="#">Annexure-30</a>) (<a href="#">Fig-34</a>)</li> <li>• The Ground Water Quality is analyzed yearly 04 times through CMPDIL. (<a href="#">Annexure-31</a>)</li> </ul>
<b>4.1 (j)</b>	<b>Monitoring of Project</b>	
i	Adequate ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for monitoring of pollutants, namely PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> and NO <sub>x</sub> . Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Online ambient air quality monitoring stations may also be installed in addition to the regular monitoring stations as per the requirement and/or in consultation with the SPCB. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc to be carried out at least once in six months.	<p><b>Being complied with.</b></p> <ul style="list-style-type: none"> <li>• Eight ambient air quality-monitoring stations have been established (four in buffer zone and four in core zone) based on the meteorological data, topographical features and in consultation with CECB.</li> <li>• 04 ambient air quality monitoring stations at the core and the buffer zone are measured as per coal mines standards. The air quality monitoring reports for the period April 2023 – September 2023 is enclosed as <a href="#">Annexure-4</a>.</li> <li>• Heavy metals in air are being monitored twice a year. The heavy metals in air monitoring report for the year 2023 is enclosed as <a href="#">Annexure-32</a>.</li> <li>• CAAQMS has been installed at Dipka Project. For Online monitoring and real time data acquisition, signal availability add on card '4-20 analog port is installed in the IOT device of analyzer.</li> </ul>
ii	The Ambient Air Quality monitoring in the core zone shall be carried out to ensure the Coal Industry Standards notified vide GSR 742 (E)	<b>Being complied.</b>

	dated 25.9.2000 and as amended from time to time by the Central Pollution Control Board. Data on ambient air quality and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly reported to the Ministry/Regional Office and to the CPCB/SPCB.	<ul style="list-style-type: none"> <li>• Ambient air quality monitoring of core zone area (04 stations) are monitored as per Coal Industry standards.</li> <li>• The AAQ and heavy metals in air data are being submitted regularly at CECB and MoEF&amp;CC.</li> <li>• The ambient air quality monitoring report for the period April 2023 – September 2023 is enclosed as <a href="#">Annexure-4</a>.</li> </ul>
iii	The effluent discharge (mine wastewater, workshop effluent) shall be monitored in terms of the parameters notified under the Coal Industry Standards vide GSR 742 (E) dated 25.9.2000 and as amended from time to time by the Central Pollution Control Board.	<p><b>Being complied.</b></p> <ul style="list-style-type: none"> <li>• The effluent discharge of ETP (O&amp;G trap) and mine water discharge are monitored as per Coalmines standards.</li> <li>• The effluent discharges are monitored fortnightly through CMPDIL. The monitoring report in this regard is enclosed as <a href="#">Annexure-4</a>.</li> </ul>
iv	The monitoring data shall be uploaded on the company's website and displayed at the project site at a suitable location. The circular No. J-20012/1/2006-IA.11 (M) dated 27.05.2009 issued by Ministry of Environment, Forest and Climate Change shall also be referred in this regard for its compliance.	<p><b>Being complied.</b></p> <ul style="list-style-type: none"> <li>• Continuous Ambient Air Quality Monitoring Station has been installed at Dipka Area since 18.01.2014 and readings are regularly being monitored.</li> <li>• The data is displayed at GM Office through digital display board.</li> </ul>
v	Regular monitoring of ground water level and quality shall be carried out in and around the mine lease area by establishing a network of existing wells and constructing new piezometers during the mining operations. The monitoring of ground water levels shall be carried out four times a year i.e. pre-monsoon, monsoon, post-monsoon and winter. The ground water quality shall be monitored once a year, and the data thus collected shall be sent regularly to Ministry of Environment, Forest and Climate Change/Regional Office.	<p><b>Being complied with.</b></p> <ul style="list-style-type: none"> <li>• A total of 08 no. of piezometers have been constructed at the project and have also established a network of existing wells where water levels are being monitored regularly.</li> <li>• Monthly monitoring of piezometer is being done. Monitoring of ground water level in and around the mine lease area using existing wells is being done seasonally. (<a href="#">Annexure-33</a>)</li> <li>• The Ground water quality report for the period April 2023 – September 2023 is enclosed as <a href="#">Annexure-31</a>.</li> </ul>
vi	Monitoring of water quality upstream and downstream of water bodies shall be carried out once in six months and record of	<p><b>Being complied.</b></p> <ul style="list-style-type: none"> <li>• Regular monitoring of water quality of the upstream and downstream of waterbodies</li> </ul>

	monitoring data shall be maintained and submitted to the Ministry of Environment, Forest and Climate Change/Regional Office.	(Lilagarh Nala) is being carried out through CMPDIL and the last report was sent to MoEF&CC along with Six Monthly EC Compliance Report. <ul style="list-style-type: none"> <li>The Water Quality monitoring report of upstream and downstream of Lilagarh nalah for the period April 2023 – September 2023 is enclosed as <i>Annexure-4</i>.</li> </ul>															
vii	The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental conditions to the Ministry of Environment, Forest and Climate Change/Regional Office. For half yearly monitoring reports, the data should be monitored for the period of April to September and October to March of the financial years.	<b>Being complied with.</b> <ul style="list-style-type: none"> <li>Six monthly EC compliance report are being sent to IRO, MoEF &amp; CC, Raipur Office bi-annually.</li> <li>Last compliance report was submitted vide our letter no: 3010, dated- 30.05.2023 for the period October 2022 to March 2023.</li> </ul>															
viii	The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data information/monitoring reports.	<b>Agreed to comply</b>															
<b>4.1(k)</b>	<b>Miscellaneous</b>																
i	Efforts should be made to reduce energy consumption by conservation, efficiency improvements and use of renewable energy.	<b>Being Complied</b> The following action are taken up by mine management to reduce energy consumption: Halogen lamps were replaced by energy efficient LED Lighting system in the mines and in the office buildings. <table border="1"> <thead> <tr> <th>Year</th> <th>No. of LED installed</th> <th>Cost incurred</th> </tr> </thead> <tbody> <tr> <td>2020-21</td> <td>3323</td> <td>Rs. 81.70 lakhs</td> </tr> <tr> <td>2021-22</td> <td>2133</td> <td>Rs. 66.11 lakhs</td> </tr> <tr> <td>2022-23</td> <td>1000</td> <td>Rs 21.23 lakhs</td> </tr> <tr> <td>2023-24 (Till 30.09.23)</td> <td>2576</td> <td>Rs 19.65 lakhs</td> </tr> </tbody> </table>	Year	No. of LED installed	Cost incurred	2020-21	3323	Rs. 81.70 lakhs	2021-22	2133	Rs. 66.11 lakhs	2022-23	1000	Rs 21.23 lakhs	2023-24 (Till 30.09.23)	2576	Rs 19.65 lakhs
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2020-21	3323	Rs. 81.70 lakhs															
2021-22	2133	Rs. 66.11 lakhs															
2022-23	1000	Rs 21.23 lakhs															
2023-24 (Till 30.09.23)	2576	Rs 19.65 lakhs															
ii	The project authorities shall inform to the Regional Office regarding commencement of	<b>Agreed</b>															

	mining operations.	
iii	A copy of the environmental clearance shall be marked to concern Panchayat. A copy of the same shall also be sent to the concerned State Pollution Control Board, Regional Office, District Industry Sector and Collector's Office / Tehsildar Office for information in public domain within 30 days.	<p><b>Complied</b></p> <p>Information of EC accorded by MoEF &amp; CC for 37.50 MTY coal production was submitted to:</p> <ol style="list-style-type: none"> <li>1. CECB.</li> <li>2. Collector Office.</li> <li>3. Tehsildar Office.</li> <li>4. Concerned Panchayat office.</li> </ol> <p><i>(Annexure-34)</i></p>
iv	The EC shall be uploaded on the company's website. The compliance status of the stipulated EC conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in public domain.	<p><b>Complied.</b></p> <p>The EC letter and the EC compliance reports are available in the official SECL website.</p>
v	The project authorities shall advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment, Forest and Climate Change at <a href="http://www.environmentclearance.nic.in">www.environmentclearance.nic.in</a> and a copy of the same shall be forwarded to the Regional Office.	<p><b>Complied.</b></p> <p>The 37.50 MTPA EC was published on 14<sup>th</sup> September 2022 in:</p> <ol style="list-style-type: none"> <li>1. Mithan (Korba).</li> <li>2. Pathrika (Bilaspur)</li> </ol> <p><i>(Annexure-35)</i></p>
vi	The environmental statement for each financial year ending 31 March in Form-V is mandated to be submitted by the project proponent for the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be uploaded on the Company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional	<p><b>Complied.</b></p> <ul style="list-style-type: none"> <li>• Environmental Audit Statement (EAS) for the FY 2022-23 was submitted at CECB on 30.09.2023. <i>(Annexure-28)</i></li> <li>• EAS &amp; EC compliance reports are available in company's website.</li> </ul>

	Offices of the MoEF&CC by e-mail. Concerns rose during public hearing.	
vii	The Ministry may stipulate any further condition for environmental protection, if so required in due course of time.	Agreed
viii	The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and Rules and any other orders passed by the Hon'ble Supreme Court of India/High Courts and any other Court of Law relating to the subject matter.	Agreed

  
 19/12/2017  
**General Manager (M),**  
**Dipka Expansion Project, SECL**

**COMPLIANCE STATUS OF THE CONDITIONS IMPOSED IN THE EC LETTER ISSUED VIDE LETTER  
NO. J 11015/487/2007-IA.II(M)PT, DT: 20.03.2019 FOR EXPANSION OF DIPKA OPENCAST  
COAL MINE for 31 MTPA TO 35 MTPA**

No new conditions were imposed.

*[Handwritten signature]*  
19/12/2023

**General Manager (M),  
Dipka Expansion Project, SECL**

*[Handwritten signature]*



**COMPLIANCE STATUS OF THE CONDITIONS IMPOSED IN THE EC LETTER ISSUED VIDE LETTER  
NO. J 11015/487/2007-IA.II(M)PT, DT: 09.03.2020 FOR EXPANSION OF DIPKA OPENCAST  
COAL MINE FROM 31 MTPA TO 35 MTPA**

<b>No.</b>	<b>EC Conditions</b>	<b>Compliance Status</b>
4 (i)	EAC desired that the MoC may direct CIL subsidiaries to comply the EC/FC/CTO conditions strictly within certain time bound manner so that the mining operations will be environmentally sustainable/viable etc.	<p><b>Complied.</b></p> <ul style="list-style-type: none"> <li>• To monitor the compliance of EC and FC stipulations in coal mines, an Apex Committee has been constituted at MoC level vide OM dated 11.06.2019.</li> <li>• As per directives of MoC, Committees have been made at CIL Level, at Subsidiaries level and at Area level for regular inspection, monitoring &amp; compliance of EC/FC/CTO conditions with time bound action plan.</li> <li>• Internal Committee has been constituted at Area Level for Self-Environmental Audit and Inter-Area Monitoring mechanism is also in place.</li> </ul>
(ii)	Also, EAC asked project proponent to plant 50,000 nos. of native trees (excluding other conditions of plantation given by this Ministry) with broad leaves along the villages and transportation route to prevent the effect of air pollution in three years. After completion of tree plantation, number of trees shall be duly endorsed from District Forest Office.	<p><b>Being complied</b></p> <ul style="list-style-type: none"> <li>• 50,000 native species plantation was carried out in 20.00 Ha of revenue forest land in village Kasaipali of tehsil Pali, district Korba.</li> <li>• A 05-year scheme was prepared through DFO office, Katghora. The cost of the work is Rs. 99.91 Lakhs. The amount for this work was paid on 29.06.21. As demanded a difference amount of Rs.8.25 lakhs were also paid to DFO on 07.04.2022. <a href="#">(Annexure-6)</a>. The work is yet to be endorsed by DFO, Katghora. DFO Katghora was requested in this regard vide our letter dated:18.11.2022 <a href="#">(Annexure-36)</a>. The plantation work was taken up during the monsoon of 2023.</li> </ul>
(iii)	All Partially and non-complied conditions reported by Ministry's Regional Office in its certified compliance report dated 27 <sup>th</sup> November 2019 shall be completed in 2 years from the date of issue of this letter.	<p><b>Complied.</b></p>
(iv)	The project proponent shall comply with all the statutory requirements and judgment of Hon'ble Supreme Court dated the 2 <sup>nd</sup> August 2017 in Writ Petition (Civil) No. 114 of 2014 in	<p><b>Agreed to comply</b></p>

	the matter of Common Cause versus Union of India and Ors. State Government shall ensure that the entire compensation levied, if any, for illegal mining paid by the project proponent through their respective department in strict compliance of judgment of Hon'ble Supreme Court dated the 2 <sup>nd</sup> August 2017 in Writ Petition(Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors. State Government.	
(v)	Project Proponent shall obtain the necessary prior permission from the Central Ground Water Authority (CGWA) in case of intersecting the Ground water table. The intersecting ground water table can only be commence after conducting detailed hydrogeological study and necessary permission from the CGWA. The report on six monthly basis on changes in Ground water level and quality shall be submitted to the Regional Office of the Ministry, CGWA and State Pollution Control Board.	<p><b>Being Complied</b></p> <ul style="list-style-type: none"> <li>• Application for renewal of NOC from CGWA for withdrawal of ground water was submitted on 25.02.2023 and was accepted on 09.03.2023 (Application no: 21-4/673/CT/MIN/2017). A comprehensive hydrogeological study report is prepared through CMPDIL to assess the ground water intersections. The Regular Monitoring of Ground Water level is carried out through 08 no. of piezometers (deep-04, shallow-04) constructed at up and dip side of the mines and well inventory is carried out to monitor the GWL changes around the mine.</li> <li>• The Ground Water Quality is analyzed yearly 04 times through CMPDIL.</li> <li>• The ground water level data is enclosed as <a href="#">Annexure-30</a> and the ground water quality monitoring report for the period April 2023 to September 2023 is enclosed as <a href="#">Annexure-31</a>.</li> </ul>
(vi)	Proponent shall appoint an Occupational Health Specialist for Regular and Periodical medical examination of the workers engaged in the project and maintain records accordingly; also, Occupational health check-ups for workers having some ailments like BP, diabetes, habitual smoking, etc. shall be undertaken once in six months and necessary remedial/preventive measures taken accordingly. The recommendations of National Institute for ensuring good occupational environment for ensuring good occupational environment for mineworkers shall be implemented; The prevention measure for	<p><b>Being Complied</b></p> <ul style="list-style-type: none"> <li>• Occupational Health Specialist has been appointed for Regular and Periodical medical examination of the workers engaged in the Project.</li> <li>• Regular Periodical Medical Examination (PME) of the workers engaged in the project is carried out through NCH Gevra under the supervision of Chief Medical Officer. Various parameters like Blood pressure, Lung tests, X-Rays, cardiac tests, audiometry etc. are being carried out during PME.</li> </ul>

	burns, malaria, and provision of anti-snake venom including all other paramedical safeguards may be ensured before initiating the mining activities.	<table border="1"> <thead> <tr> <th colspan="5">Periodical Medical Examination (PME)</th> </tr> <tr> <th rowspan="2">Year</th> <th colspan="2">Departmental</th> <th colspan="2">Contractual</th> </tr> <tr> <th>Target</th> <th>Achievement</th> <th>Target</th> <th>Achievement</th> </tr> </thead> <tbody> <tr> <td>2019</td> <td>556</td> <td>556</td> <td>170</td> <td>95</td> </tr> <tr> <td>2020</td> <td>550</td> <td>312</td> <td>52</td> <td>50</td> </tr> <tr> <td>2021</td> <td>533</td> <td>561</td> <td>120</td> <td>85</td> </tr> <tr> <td>2022</td> <td>533</td> <td>551</td> <td>106</td> <td>106</td> </tr> <tr> <td>2023 (till 30.09.23)</td> <td>1522</td> <td>318</td> <td>-</td> <td>-</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>The paramedical safeguards including medicines for burns, malaria and anti-snake venom are available at NCH Gevra. (<a href="#">Annexure-37</a>)</li> </ul>	Periodical Medical Examination (PME)					Year	Departmental		Contractual		Target	Achievement	Target	Achievement	2019	556	556	170	95	2020	550	312	52	50	2021	533	561	120	85	2022	533	551	106	106	2023 (till 30.09.23)	1522	318	-	-
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(vii)	Project Proponent shall follow the mitigation measures provided in office memorandum no. Z-11013/57/2014-IA.II(M), dated 29 <sup>th</sup> October, 2014, titled “Impact of mining activities on Habitations-Issues related to the mining projects wherein Habitations and villages are the part of mine lease areas or Habitations and villages are surrounded by the mine lease area”.	<p><b>Agreed to comply</b></p> <p>The compliance of mitigation measures provided in OM no: Z-11013/57/2014-IA.II (M), dated 29<sup>th</sup> October, 2014 is being complied. (<a href="#">Annexure-24</a>)</p>																																							
(viii)	The illumination and sound at night at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may affect the health in the villages located close to mining operations. Habitations have a right for darkness and minimal noise levels at night. PPs must ensure that the biological clock of the villages is not disturbed by orienting the floodlights/ masks away from the villagers and keeping the noise levels well within the prescribed limits for day light/ night hours.	<p><b>Being Complied</b></p> <ul style="list-style-type: none"> <li>Illumination at project sites are maintained as per DGMS guidelines (circular no: 03, dated-06.11.2017).</li> <li>Noise levels are monitored in accordance with <i>The Noise Pollution (Regulation and Control) Rules, 2000</i> and <i>Coal Mine standards</i>. The measured readings are within the prescribed limits. The noise survey report for the period April 2023 to September 2023 is enclosed as <a href="#">Annexure-5</a>.</li> </ul>																																							
(ix)	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna, if any, spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. A copy of action plan shall be submitted to the ministry of Environment, Forest and Climate Change and its Regional Office.	<p><b>Complied</b></p> <ul style="list-style-type: none"> <li>Wildlife Conservation Plan (WLCP) was prepared by TFRI, Jabalpur in 2020 as per the MoU signed between ICFRE, Dehradun and CIL, Kolkata. (Rs.14.90 lakhs)</li> <li>For implementation of the Wildlife Conservation plan, the budgetary provision was revised by SDO Pali. The scheme was approved by APCCF (Wildlife) vide letter no: 187, dated: 04.11.2022. A Demand Note for Rs.1547 lakhs was raised by DFO Katghora on</li> </ul>																																							

08.12.2022 which was paid to CAMPA on 01.03.2023 (Annexure-21).

(x)	<p>Hon'ble Supreme Court in an Writ Petition(s) Civil No. 114/2014, Common Cause vs Union of India &amp; Ors vide its judgment dated 8<sup>th</sup> January, 2020 has directed the Union of India to impose a condition in the mining lease and a similar condition in the environmental clearance and the mining plan to the effect that the mining lease holders shall, after ceasing mining operations undertake regressing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. Compliance of this condition after the mining activity is over at the cost of the mining lease holders/Project proponent". The implementation report of the above said condition shall be sent to Regional Office of the Ministry.</p>	<p><b>Agreed to Comply</b></p> <ul style="list-style-type: none"><li>• Dipka Project has a progressive mine closure plan incorporated within the mining plan to technically and biologically restore the areas disturbed by mining activities to a condition ideal for growth of fodder, flora, fauna etc.</li><li>• Activities such as backfilling, grading and levelling of dumps, toe walling, providing water coursing channels, sedimentation ponds, drains, check dams, topsoil preservation &amp; application, plantation and development of grass beds etc. are undertaken phase wise as per progressive MCP.</li></ul>
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19/12/2023  
General Manager (M),  
Dipka Expansion Project, SECL

**COMPLIANCE STATUS OF THE CONDITIONS IMPOSED IN THE EC LETTER ISSUED VIDE LETTER NO. J 11015/487/2007-IA-II(M), DT: 05.09.2022 FOR EXPANSION OF DIPKA OPENCAST COAL MINE FROM 35 MTPA TO 37.5 MTPA**

No.	EC Conditions	Compliance Status
i.	PP shall submit Certified Compliance Report of the EC vide No. F. No. J-11015/487/2007-IA-II (M)pt dated 20 <sup>th</sup> February, 2018 and 9 <sup>th</sup> March, 2020 granted for total 40% expansion, along with EIA/EMP report.	<b>Complied</b> IRO MoEF&CC, Raipur has inspected the project on 04.06.2022 and submitted his Certified Compliance Report on 22.08.2022( <a href="#">Annexure-38</a> ). Form C was uploaded for reconsideration of EC in Parivesh portal along with IRO report and EIA/EMP on 01.03.2023.
ii.	PP to obtain the amendment of existing TOR issued on 8 <sup>th</sup> June, 2020 for capacity enhancement form 35 MTPA to 40 MTPA.	<b>Complied</b> Amendment in ToR was granted vide MoEF&CC letter no: 09.01.2023 ( <a href="#">Annexure-39</a> ).
iii.	In view of above (i), ministry shall ascertain the adequacy of the proposed environmental safeguards and stipulate necessary conditions, if required, which shall be monitored as a part of the EC compliance monitoring.	<b>Agreed</b>
iv.	PP shall obtain necessary prior consent for enhanced capacity from State Pollution Control Board under Air and Water Act.	<b>Complied</b> CTE cum CTO for 37.50 MTY was obtained vide 8690/TS/CECB/2023,dated:15.03.2023 ( <a href="#">Annexure-29</a> ).
v.	Environmental quality parameters arising out of proposed expansion shall be within the prescribed norms and the same shall be maintained as per prescribed norms.	<b>Being complied</b> The environmental quality parameters monitored are within the prescribed norms and the same shall be maintained. ( <a href="#">Annexure-4</a> ).
vi.	Hon'ble Supreme Court in an Writ Petition(s) Civil No. 114/2014, Common Cause vs Union of India & Ors vide its judgement dated 8 <sup>th</sup> January , 2020 has directed the Union of India to impose a condition in the mining lease and a similar condition in the environmental clearance and the mining plan of the effect that the mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. Compliance of this condition after the	<b>Agreed</b> Dipka Project has a progressive mine closure plan incorporated within the mining plan to technically and biologically restore the areas disturbed by mining activities to a condition ideal for growth of fodder, flora, fauna etc. Activities such as backfilling, grading and levelling of dumps, toe walling, providing water coursing channels, sedimentation ponds, drains, check dams, topsoil preservation & application, plantation and development of grass beds etc. are undertaken phase wise as per progressive MCP.

	mining activity is over at the cost of the mining lease holders/ Project Proponent".	
vii.	All other terms and conditions as prescribed in Ministry's letter dated 03.06.2009, 12.02.2013, 06.02.2015, 20.02.2018 and 9 <sup>th</sup> march, 2020 shall remain the same and need to be complied by PP.	<b>Agreed</b>

  
19/12/2023  
**General Manager (M),  
Dipka Expansion Project, SECL**

# **FIGURES**



**Fig 1: Feeder Breaker with Mist Spray Arrangement System**



**Fig 2: Surface Miner with jet sprinklers for extraction of coal**



**Fig 3: Construction of Wind Barrier Wall with Brick work and GI sheeting on both sides of Railway siding**





**Fig 4: Drill machine with dust extractors**



**Fig 5: Mobile Sprinklers for dust suppression at Haul Roads**



**Fig 6: Fixed Sprinklers & Rain Guns for Dust Suppression at Coal Transportation Roads**



**Fig 7: Fixed Sprinkler System at Railway Siding**



**Fig 8: Long Range Fogging Machine**



**Fig 9: Mechanized Sweeping Machine**



**Fig 10: Plantation on OB dumps**



**Fig 11: Plantation on Plain Area**



**Fig 12: Tarpaulin Covered Coal Trucks**



**Fig 13: Green Belt along Mine Boundary (Hardi bazaar Bypass Road)**



**Fig 14: Safety Zone Plantation along Mine Boundary**



**Fig 15: Stitching Classes for women from nearby villages**



**Fig 16: Distribution of Leaf Plate Making Machine**



**Fig 17: Medical Camps in Nearby Villages**



**Fig 18: Sal Plantation during FY 2022-23**



**Fig 19: Sal Plantation during FY 2019-20**



**Fig 20: Inpit Belt Conveyor System**



**Fig 21: CAAQMS**



**Fig 22: Top Soil Dump**





**Fig 23: Rainwater Harvesting Structures**



**Fig 24: Ground Water Recharge Ponds**



**Fig 25: Pucca & Kutcha Drains**



**Fig 26: Check Dams to Arrest Soil Erosion**



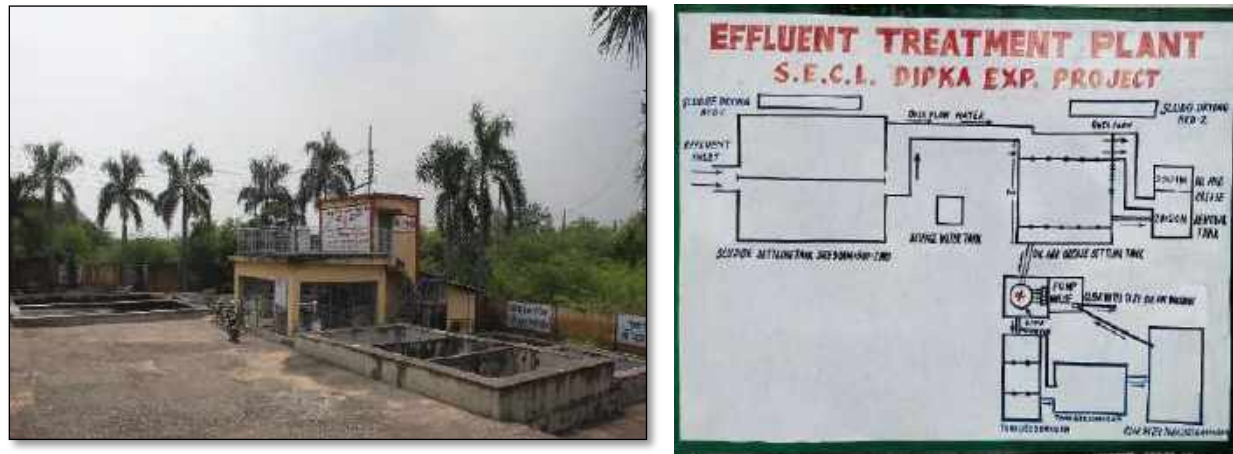
**Fig 27: Retaining/ Gabion Wall**



**Fig 28: De-silting/Deepening and cleaning of ponds and drains**



**Fig 29: Mine Sumps**



**Fig 30: Effluent Treatment Plant (Oil & Grease Trap)**



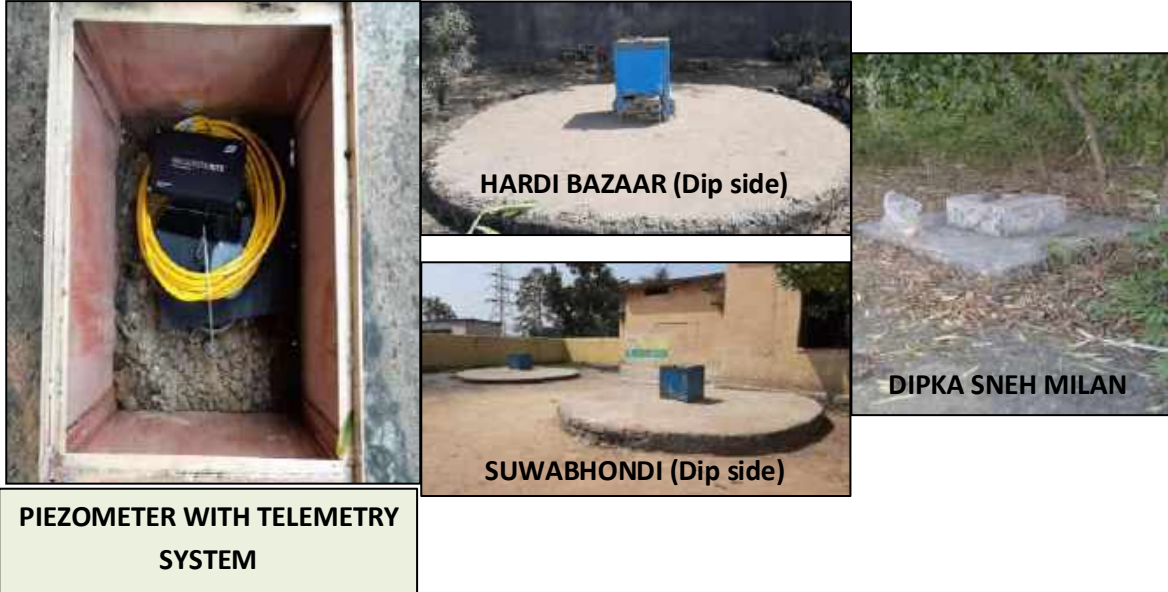
**Fig 31: Domestic Effluent Treatment Plant (Combined with Gevra Project)**



**Fig 32: Mine Illumination as per DGMS Standards**



**Fig 33: Worker in the mines wearing PPE**



**Fig 34: Piezometers installed by the Project**

# **ANNEXURES**



साउथ ईस्टर्न कोलफील्ड्स लिमिटेड  
**South Eastern Coalfields Limited**  
 (कोल इंडिया का एक अंश/A Subsidiary Of Coal India Ltd)  
 कार्यालय:- महाप्रबंधक, दीपिका क्षेत्र  
**OFFICE OF THE GENERAL MANAGER, DIPKA AREA**  
 P.O.: Dipka, Distt.: Korba (CG)-495452  
 Tel: 07815-239011,263300,263301 Fax:07815239002  
 e-mail: gmdpk.secl@coalindia.in



क्रमांक: एस.ई.सी.एल/दी.क्षे./पर्या./2023/ 3010

दिनांक: 30.05.2023

प्रति,

Deputy Director General of Forests (C),  
 Integrated Regional Office,  
 Ministry of Environment, Forest and Climate Change,  
 Aranya Bhawan, North Block, Sector-19,  
 Naya Raipur, Atal Nagar, Chhattisgarh.  
 Email: [iro.raipur-mefcc@gov.in](mailto:iro.raipur-mefcc@gov.in)

**विषय: Submission of half yearly (October 2022 – March 2023) EC compliance report of Dipka Expansion Project, Dipka Area, SECL.**

महोदय,

Please find enclosed herewith the half yearly (October 2022 – March 2023) EC compliance report of monitoring the implementation of various environment safe guards and the compliance status of the conditions imposed in the EC letters issued vide letter no. J 11015/487/2007-IA.II(M)pt, dtd. 20.02.2018, 20.03.2019, 09.03.2020 for expansion of Dipka Opencast Coal Mine from 31 MTPA to 35 MTPA and EC letter dtd. 05.09.2022 for capacity enhancement of Dipka Opencast Coal Mine from 35 MTPA to 37.5 MTPA of Dipka Expansion Project, Dipka Area, SECL. This is for your kind information please.

धन्यवाद,

भवदीय,

महाप्रबंधक(खनन)

दीपका विस्तार परियोजना, एस.ई.सी.एल.।

प्रतिलिपि:

1. सदस्य सचिव, छ.पर्या.सं. मं., रायपुर : कृपया जानकारी हेतु।
2. क्षेत्रीय अधिकारी, छ.पर्या.सं. मं., कोरबा।
3. महाप्रबंधक, दीपका क्षेत्र एस.ई.सी.एल.।
4. महाप्रबंधक(पर्या), एस.ई.सी.एल., बिलासपुर।
5. नोडल अधिकारी, दीपका क्षेत्र, एस.ई.सी.एल.।





## EMERGENCY ORGANIZATION & EVACUATION PLAN

**SOUTH EASTERN COALFIELDS LIMITED**

(A MINI RATNA COMPANY)

**DIPKA EXPANSION PROJECT  
DIPKA AREA**

# EMERGENCY ORGANIZATION AND EVACUATION PLAN

## **01. GENERAL:-**

This plan details the organization required to deal with an emergency caused by fire, inundation, ground movement, etc in the mine and the procedure to deal with it in the best possible manner when such incident occurs. This organization will function under the leadership of the project officer. The Project Officer and the Dy. GM/Manager of the mine shall keep themselves fully aware of the emergency resources like men and material available in the mine, neighboring mines and nearby organization/Industries.

## **02 . FIRST INFORMATION:-**

Any Official or other person realizing that something serious (Fire, Explosion, Inundation etc)has happened shall immediately inform to the telephone operator/MTK. If the telephone is not working, he shall send a message to the surface telephone operator by special Messenger. After sending to message to surface, he shall try to send such information to the nearest supervisor/official of the working districts by telephone or other special message. He shall also send information to the safety officer and colliery manager.

## **03. EMERGENCY ACTION MESSAGE:--**

01.After getting information of emergency, the telephone operator /MTK shall send telephonic message of the emergency to the project officer ,the mine manager safety officer , and other key personnel of the mine ,The rescue room in-charge .

02.He shall send the action message to the vehicle drivers of jeep ,pick-up and ambulance for reporting to the control room in-charge

03. The telephone operator /MTK shall record all the telephone calls in a telephone logbook .The records shall deal mainly the incoming calls which deals with emergency.

The details to be incorporated in the telephone logbook is given below.

### **Telephone Log Book**

1:-Date & Time:-

2:- Call in and Out

3:- Person/Colliery called

4:- Telephone No of Outgoing call:-

5:- Message Details

6:-Telephone Operator:- Name & signature

## **04. PLACE OF ASSEMBLY:--**

On receiving the emergency action message the principal personnel, Rescue trained persons, First Aiders and other key personnel of the mine shall report at the control room.

## **5. STANDING CONSULTATIVE COMMITTEE:-**

This committee consists of the member detailed in **schedule-1**

This committee will meet in the case of a severe incidence and shall help the project officer to deal with the situation.

## **6. ACTION COMMITTEE:-**

The committee consists of the officers of the mine as detailed in **schedule:-II**

The committee works under the guidance and control of the project officer and performs the work of emergency response.

## **7. EMERGENCY RESPONSE SUPERVISOR:-**

The persons named in **schedule -III** are emergency response supervisor (ERS) and will be responsible for giving prompt information of the emergency to the Action Committee member and for taking immediate step to control the situation till the Action committee or other officer take charge of the situation.

## **8. CO-ORDINATION:-**

The Area personnel manager along with Area Safety Officer shall co-ordinate with neighboring mine authority, District authority, state authority.

## **9. KEY PERSONNEL:-**

01:-Safety Officer, Asst Manager, Shift Incharge

02:-Personnel Manager, Welfare Officer

03:-Doctor's, and Medical Staff.

04:-All MTK/Telephone operator, Lineman

05:- Workman Inspector (Mining, Electrical, Mechanical)

06:-All Sr. Overman/Mining sirdar

07:-All substation attendants.

08:-Surveyor, Draftsman, chainman & Mazdoor

09:-Security Incharge

10:-Drivers

## **10. RESCUE TRAINED PERSONS:-**

**Schedule -IV provides** the names, telephone numbers and quarter numbers of all rescue trained persons employed in the mine.

### **11. FIRE FIGHTING PERSONS:-**

The name, telephone number and quarter number of all members in the fire fighting team are given in the **SCHEDULE – V**.

### **12. FIRST AID PERSONNEL:-**

The name, telephone number of all first aid personnel is given in the **SCHEDULE – VI**.

### **13. COMMUNICATION SYSTEM:-**

The sub-station, pit offices, MTK (No -1,2), Workshop have been provided with telephone facility to receive and transmit message relating to emergencies. In addition there is provided wireless system connecting Manager and other key persons. Mobile phones are provided to all officers. The mobile directory of SECL Dipka Area is given in **schedule:-VII**

### **14. WARNING SYSTEM (SIREN):-**

A Siren of 5 Km range shall be provided in the MTK.

Ten blasts of the siren will indicate an emergency in the mine.

### **15. WITHDRAWAL OF WORKERS:-**

It will primarily be the duty of supervisor to withdraw workers from the Area affected or likely to be affected. No person other than those permitted by the control room should remain in or enter in affected area. Normal work should not be resumed in the affected area without the permission of the Project Officer/ Manager (Withdrawal of workers is necessary only from the area affected or likely to be affected and not from the whole mine)

### **16. ALLOCATION OF ROOMS:-**

To avoid confusion and crowding at the time of emergency, the room mentioned in **schedule VIII** should be used for the purposes indicated against each of them. Signboards shall be prominently displayed at each of such room indicating the purpose for which the room has been established.

### **17. ESTABLISHMENT OF CONTROL ROOM:-**

The following item should always be maintained in the control room

- ❖ Mine plan.
- ❖ Emergency response plan.
- ❖ Fire fighting plan.
- ❖ Attendance Register.
- ❖ Emergency badges.
- ❖ Duty cards.
- ❖ Telephone log book.
- ❖ Operation log book, action message form.

- ❖ Roster duty chart of key personnel.
- ❖ Copies of up-to -date **schedules 1 to VII**

#### **18. ASSISTANCE FROM OUTSIDE:-**

Details of the mines/organization in the neighborhood which can give assistance in case of an emergency are given in **schedule IX**.

#### **19. MEDICAL ARRANGEMENT:-**

Pragati Nagar Dispensary ,Dipka, which services the mine , is equipped with one Ambulance for 24 Hrs ,01 Chief Medical Officer ,One Dresser, One Nurse & Two Pharmacists. In case of emergency , additional help is received from N.C Hospital Gevra .

The whole medical operation shall be supervised and controlled by the medical officer of Pragti Nagar Dispensary, Dipka . He shall prepare a list of casualty and submit this as soon possible to the operation control room.

He shall earmark rooms suitable for medical examination necessary for the following purposes:-

01:-Treatment for stretcher cases, 02:- Treatment for walking cases,03:-Mortuary accommodation.

#### **20. DUTIES IN EMERGENCY & DUTY CARDS:-**

The duties of key persons at the time of an emergency are given in schedule IX .Duty cards containing these duties should be prepared and kept in the control room. The duty cards shall be issued to principal personnel, key personnel , rescue trained person, first aiders and all concerned with the emergency organization The relevant abstracts of the duties should also be displayed in the office room of the concerned persons.

The duty cards to be issued to all concerned is given is **schedule X**

#### **21. DISPOSAL OF POLLUTANTS:-**

The pollutants produced in the process of dealing with emergency should be disposed off at the earliest in a way which will be most ecological friendly.

#### **22. PERIODIC INSPECTION AND MAINTENANCE:-**

All emergency equipment should be inspected from time to time.

Deficiency/defect observed during such inspection should be made/ rectified promptly.

The entries in schedules – I to VIII should be reviewed at short intervals and any change should be updated immediately.

The duties laid out in schedule IX be kept always displayed in respective office rooms

### **23.SAFETY EDUCATION & TRAINING:-**

1. V.T.C. :-Vocational Training to all employees of Dipka Open cast mine is provided at CETI i.e. Group VTC Gevra it is well equipped and furnished.
2. Training Programmes: The initial training, Refresher training. Special training. Change of job training, Training after I.O.D. and basic dumper operator course is conducted every month in the C.E.T.I. Gevra Area.
3. Training is also imparted at BETI Korba for different categories of work persons.
4. Training for executives and supervisors are conducted at MDI Bilaspur.
5. Executive and supervisors are also sent for out- company training in India

### **24. FINANCIAL PROVISION :-**

- ❖ Safety budget of every mine ,Area shall be prepared in every year with a view to implementing risk reduction measures in normal safety developmental plan . For disaster management and mitigation activities, Fund is released from corporate level of the company .

### **25.MOCKREHEARSAL:-**

- ❖ Periodic mock rehearsal shall be conducted for different type of disasters as per guidelines provided by DGMS.

Details of mine water utilization at Dipka Expansion Project(22-23)						
Year 2022-23	Domestic	Industrial				pumped out
		CHP & Sprinkler (E&M)	CHP & Fixed Sprinkler (Civil)	Mobile Water Sprinkler & Fire tender	Total Industrial	
April	16830	37908	12906	32040	82854	0
May	15920	41796	11178	33573	86547	0
June	11036	34020	8802	35280	78102	0
July	21466	31104	3132	19685	53921	185652
August	21949	27216	4104	17577	48897	233280
September	23165	25272	5832	18060	49164	272160
October	24061	29160	8424	19654	57238	243000
November	23802	14912	6372	19260	40544	32076
December	19975	36936	6696	20708	64340	0
January	25200	39852	5886	21142	66880	0
February	21872	36936	10044	19656	66636	0
March	25125	38880	9288	23812	71980	0
<b>Total</b>	<b>250401</b>	<b>393992</b>	<b>92664</b>	<b>280447</b>	<b>767103</b>	<b>966168</b>

<b>Total discharge</b>
99684
102467
89138
261039
304126
344489
324299
96422
84315
92080
88508
97105
1983672.26





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# ENVIRONMENTAL MONITORING REPORT

## AIR, NOISE & EFFLUENT

**(DIPKA AREA)**



# *Environmental Monitoring*

**APRIL- 2023**

**SOUTH EASTERN COALFIELDS LIMITED**

*(A Mini Ratna Company)*

**Central Mine Planning & Design Institute Limited  
Regional Institute – V, CMPDI Complex,  
BILASPUR (C.G.)**

# ENVIRONMENTAL MONITORING REPORT

## DIPKA AREA

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	<b>Total</b>	<b>64</b>	

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7	Jhabhar	2	5
8	Ratija	2	5
	<b>Total</b>	<b>16</b>	

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1	Upstream of Lilagarh Nalla before entering mining lease boundary	2	6-7
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	<b>Total</b>	<b>8</b>	

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**AIR QUALITY REPORT**


Month	APRIL	Area	DIPKA	Report No	BSP/2023/04/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	05.05.2023
Name of the Project	DIPKA OC	Sample Reference No.	1-2

Parameter		PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)	A-O	600	300	-	120		120
		A-N	500	250	-	120		120
	Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)	B	200	100	60	80		80
Method of analysis		IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )			±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis					
1-Malgaon Village	B	05.04.2023	06.04.2023	127	67	43	26	33
		08.04.2023	15.04.2023	133	66	50	30	34
		10.04.2023	16.04.2023	142	81	49	33	37
		15.04.2023	17.04.2023	136	62	40	36	32
		17.04.2023	20.04.2023	165	68	44	37	30
		19.04.2023	21.04.2023	177	71	37	34	37
		25.04.2023	28.04.2023	169	70	41	27	29
2-Near Railway Siding	A-O	04.04.2023	07.04.2023	450	233	72	34	37
		06.04.2023	16.04.2023	487	239	67	36	39
		09.04.2023	18.04.2023	448	240	78	33	37
		16.04.2023	19.04.2023	563	239	64	39	42
		18.04.2023	22.04.2023	478	244	70	40	43
		21.04.2023	23.04.2023	470	269	66	34	39
		26.04.2023	29.04.2023	482	260	79	37	41
29.04.2023	03.05.2023	549	265	73	30	35		

  
 Analyzed by

  
 Checked by

  
 Manager -Environment

Note: 1) The results above relate to the samples tested.

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**AIR QUALITY REPORT**

Month	APRIL	Area	DIPKA	Report No	BSP/2023/04/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	05.05.2023
Name of the Project	DIPKA OC	Sample Reference No.	3-4

Parameter		PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)	A-O	600	300	-	120		120
		A-N	500	250	-	120		120
	Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)	B	200	100	60	80		80
Method of analysis		IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )			±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis					
3-Near Excav. Workshop	A-O	05.04.2023	06.04.2023	434	223	70	30	34
		08.04.2023	15.04.2023	449	211	63	33	38
		10.04.2023	16.04.2023	423	263	60	36	40
		15.04.2023	17.04.2023	440	244	77	42	46
		17.04.2023	20.04.2023	434	249	75	34	38
		19.04.2023	21.04.2023	456	237	61	36	40
		25.04.2023	28.04.2023	399	196	83	40	42
		27.04.2023	02.05.2023	476	257	70	34	37
4-Pragati Nagar	B	05.04.2023	06.04.2023	187	77	31	29	35
		08.04.2023	15.04.2023	169	69	39	37	39
		10.04.2023	16.04.2023	146	74	44	22	24
		15.04.2023	17.04.2023	157	69	51	29	35
		17.04.2023	20.04.2023	146	68	37	30	34
		19.04.2023	21.04.2023	157	81	38	26	29
		25.04.2023	28.04.2023	139	59	33	17	21
		27.04.2023	03.05.2023	140	69	42	29	33

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Checked by

Manager - Environment

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**AIR QUALITY REPORT**

Month	APRIL	Area	DIPKA	Report No	BSP/2023/04/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	05.05.2023
Name of the Project	DIPKA OC	Sample Reference No.	5-6

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in µg/m <sup>3</sup> )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in µg/m <sup>3</sup> )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
5-Hardi Bazar	B	05.04.2023	07.04.2023	139	67	33	33	37		
		08.04.2023	16.04.2023	145	72	39	30	32		
		10.04.2023	18.04.2023	139	62	40	29	34		
		15.04.2023	19.04.2023	166	78	51	28	31		
		17.04.2023	22.04.2023	152	67	44	26	29		
		19.04.2023	23.04.2023	149	61	40	30	31		
		25.04.2023	28.04.2023	167	78	39	27	25		
6-Batari	B	04.04.2023	07.04.2023	143	63	43	33	36		
		06.04.2023	16.04.2023	153	59	32	30	34		
		09.04.2023	18.04.2023	147	63	46	29	31		
		16.04.2023	19.04.2023	160	79	49	27	24		
		18.04.2023	22.04.2023	148	36	35	30	35		
		21.04.2023	23.04.2023	151	72	51	26	29		
		26.04.2023	28.04.2023	176	72	39	22	26		
29.04.2023	02.05.2023	153	70	46	29	32				

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**AIR QUALITY REPORT**

Month	APRIL	Area	DIPKA	Report No	BSP/2023/04/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	05.05.2023
Name of the Project	DIPKA OC	Sample Reference No.	7-8

Parameter		PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)	A-O	600	300	-	120		120
		A-N	500	250	-	120		120
	Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)	B	200	100	60	80		80
Method of analysis		IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )			±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis					
7-Jhabar	B	04.04.2023	08.04.2023	138	67	33	27	29
		06.04.2023	09.04.2023	145	62	44	31	33
		09.04.2023	18.04.2023	147	70	39	37	40
		16.04.2023	19.04.2023	139	64	40	34	39
		18.04.2023	22.04.2023	151	66	46	35	40
		21.04.2023	23.04.2023	146	60	39	36	38
		26.04.2023	29.04.2023	129	79	44	24	26
8 -Ratija	B	04.04.2023	08.04.2023	132	70	43	26	32
		06.04.2023	09.04.2023	149	69	40	24	26
		09.04.2023	18.04.2023	169	64	39	22	30
		16.04.2023	19.04.2023	157	79	40	26	23
		18.04.2023	22.04.2023	146	72	39	21	29
		21.04.2023	23.04.2023	158	76	45	28	31
		26.04.2023	29.04.2023	139	59	40	27	30
29.04.2023	03.05.2023	138	63	44	28	34		

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**NOISE QUALITY REPORT**

Month	APRIL	Area	DIPKA	Report No	BSP/2023/04/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	05.05.2023
Name of the Project	DIPKA OC	Sample Reference No.	N39-N46

Parameter			The Noise Pollution (R & C) rules, 2000		Remarks
			Day Time	Night Time	
Limit (in dB(A) Leq	Industrial area	A	75	70	
	Commercial area	B	65	55	
	Residential Area	C	55	45	
	Silence Zone	D	50	40	
Method of analysis	CPCB Protocol For Ambient Level Noise Monitoring				
Station (Code) Station Name	Station category	Date of measurement	Value in dB(A)	Value in dB(A)	
1-Malgaon Village	C	11.04.2023	49.7	39.5	
		26.04.2023	41.9	41.5	
2-Near Railway Siding	A	11.04.2023	61.3	57.2	
		26.04.2023	58.2	57.5	
3-New Excv. Workshop	A	11.04.2023	61.4	56.5	
		26.04.2023	58.5	56.4	
4-Pragati Nagar	C	11.04.2023	54.5	38.6	
		26.04.2023	46.6	46.2	
5-Hardi Bazar	C	11.04.2023	50.6	37.4	
		26.04.2023	51.4	38.5	
6-Batari	C	11.04.2023	48.9	36.9	
		26.04.2023	43.7	37.5	
7-Jhabar	C	11.04.2023	50.2	36.9	
		26.04.2023	45.1	38.0	
8-Ratija	C	11.04.2023	49.4	36.7	
		26.04.2023	41.1	37.7	

Sampled by

Checked by

Manager-Environment

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012329041		<b>Report Issue Date</b>		14-05-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	Ratan Gope	<b>Date of Sampling</b>	01-04-2023	<b>Sample ID</b>	16516		
<b>Sampling Location</b>	U/S of Lilagarh Nala before entering mining lease boundary Dipka (WBP)	<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP		
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	03-04-2023	<b>Date of Analysis</b>	From 10-04-2023 To 18-04-2023		

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	25.44	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	6.85	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	13.00	±0.445 @ 24.429

----- END OF THE REPORT -----

**Reported By**  
D.Dayakar

**Reviewed and Approved**  
Kumaravel.C  
Manager (Env)

Date&Time :14-05-2023 10:13:46

**JSA**

Note:

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  - a. The results relate only to the item sampled and tested.
  - b. This report shall not be reproduced except in full without approval of the laboratory.

### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012331609	<b>Report Issue Date</b>		16-05-2023
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	Nitesh	<b>Date of Sampling</b>	16-04-2023	<b>Sample ID</b>	16800
<b>Sampling Location</b>	U/S of Lilagarh Nala before entering mining lease boundary Dipka (WBP)	<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	17-04-2023	<b>Date of Analysis</b>	From 19-04-2023 To 25-04-2023

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	BDL	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.92	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	23.00	±0.445 @ 24.429

----- END OF THE REPORT -----

**Reported By**  
M.G.Krishna

**Reviewed and Approved**  
**Kumaravel.C**  
**Manager (Env)**  
Date&Time :16-05-2023 11:36:22

**JSA**

Note:

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- \* General Standards for Discharge of Environmental Pollution(Part A:Effluent) as per Schedule VI,Environment (Protection) Rules
  - a. The results relate only to the item sampled and tested.
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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012329039		<b>Report Issue Date</b>		14-05-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	Ratan Gope	<b>Date of Sampling</b>	01-04-2023	<b>Sample ID</b>	16514		
<b>Sampling Location</b>	D/S of Lilagarh Nala after leaving mining lease boundary Dipka (WBP)		<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP	
<b>Sample Condition</b>	APPROPRIATE		<b>Date of Receipt of Sample</b>	03-04-2023	<b>Date of Analysis</b>	From 10-04-2023 To 18-04-2023	

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	16.96	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	6.62	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	48.00	±0.445 @ 24.429

----- END OF THE REPORT -----

**Reported By**  
D.Dayakar

**Reviewed and Approved**  
**Kumaravel.C**  
**Manager (Env)**  
Date&Time :14-05-2023 10:13:46

**JSA**

Note:  
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 \* General Standards for Discharge of Environmental Pollution(Part A:Effluent) as per Schedule VI,Environment (Protection) Rules  
 a. The results relate only to the item sampled and tested.  
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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012331607	<b>Report Issue Date</b>		16-05-2023
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	Nitesh	<b>Date of Sampling</b>	16-04-2023	<b>Sample ID</b>	16798
<b>Sampling Location</b>	D/S of Lilagarh Nala after leaving mining lease boundary Dipka (WBP)	<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	17-04-2023	<b>Date of Analysis</b>	From 19-04-2023 To 25-04-2023

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	BDL	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.95	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	21.00	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
M.G.Krishna

Reviewed and Approved  
Kumaravel.C  
Manager (Env)  
Date&Time :16-05-2023 11:36:22

JSA

Note:

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- \* General Standards for Discharge of Environmental Pollution(Part A:Effluent) as per Schedule VI,Environment (Protection) Rules
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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012329042	<b>Report Issue Date</b>		14-05-2023
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	Ratan Gope	<b>Date of Sampling</b>	01-04-2023	<b>Sample ID</b>	16517
<b>Sampling Location</b>	Workshop Effluent Dipka (WBP)	<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	03-04-2023	<b>Date of Analysis</b>	From 10-04-2023 To 18-04-2023

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	16.96	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	6.79	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	36.00	±0.445 @ 24.429

----- END OF THE REPORT -----

**Reported By**  
D.Dayakar

**Reviewed and Approved**  
**Kumaravel.C**  
**Manager (Env)**  
Date&Time :14-05-2023 10:13:46

**JSA**

Note:

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012331610	<b>Report Issue Date</b>		16-05-2023
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	Nitesh	<b>Date of Sampling</b>	16-04-2023	<b>Sample ID</b>	16801
<b>Sampling Location</b>	Workshop Effluent Dipka (WBP)	<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	17-04-2023	<b>Date of Analysis</b>	From 19-04-2023 To 25-04-2023

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	BDL	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.87	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	14.00	±0.445 @ 24.429

----- END OF THE REPORT -----

**Reported By**  
M.G.Krishna

**Reviewed and Approved**  
Kumaravel.C  
Manager (Env)  
Date&Time :16-05-2023 11:36:22

**JSA**

Note:

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012329040		<b>Report Issue Date</b>		14-05-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	Ratan Gope	<b>Date of Sampling</b>	01-04-2023	<b>Sample ID</b>	16515		
<b>Sampling Location</b>	Mine Effluent after Settling Dipka (WBP)	<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP		
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	03-04-2023	<b>Date of Analysis</b>	From 10-04-2023 To 18-04-2023		

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	BDL	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	6.65	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	BDL	±0.445 @ 24.429

----- END OF THE REPORT -----

**Reported By**  
D.Dayakar

**Reviewed and Approved**  
**Kumaravel.C**  
**Manager (Env)**  
Date&Time :14-05-2023 10:13:46

**JSA**

Note:

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012331608	<b>Report Issue Date</b>		16-05-2023
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	Nitesh	<b>Date of Sampling</b>	16-04-2023	<b>Sample ID</b>	16799
<b>Sampling Location</b>	Mine Effluent after Settling Dipka (WBP)	<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	17-04-2023	<b>Date of Analysis</b>	From 19-04-2023 To 25-04-2023

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	BDL	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.97	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	BDL	±0.445 @ 24.429

----- END OF THE REPORT -----

**Reported By**  
M.G.Krishna

**Reviewed and Approved**  
Kumaravel.C  
Manager (Env)  
Date&Time :16-05-2023 11:36:22

**JSA**

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# **ENVIRONMENTAL MONITORING REPORT**

**AIR, NOISE & EFFLUENT**

**(DIPKA AREA)**



***Environmental  
Monitoring***

**MAY- 2023**

**SOUTH EASTERN COALFIELDS LIMITED**

*(A Mini Ratna Company)*

**Central Mine Planning & Design Institute Limited**

**Regional Institute – V, CMPDI Complex,**

**BILASPUR (C.G.)**

# ENVIRONMENTAL MONITORING REPORT

## DIPKA AREA

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4	Pragati Nagar	9	2
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6	Batari	9	3
7	Jhabhar	9	4
8	Ratija	9	4
	<b>Total</b>	<b>72</b>	

Sl.No.	Name of Noise Sampling Station	No. of samples	Page No.
1	Malgaon Village	2	5
2	Near Railway Siding	2	5
3	New Excv. Workshop	2	5
4	Pragati Nagar	2	5
5	Hardi Bazar	2	5
6	Batari	2	5
7	Jhabhar	2	5
8	Ratija	2	5
	<b>Total</b>	<b>16</b>	

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	<b>Total</b>	<b>8</b>	

**CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED**

Environment Laboratory, Regional Institute-V,  
 Phone: (07815) 271646, email: [rdri5.cmpdi@coalindia.in](mailto:rdri5.cmpdi@coalindia.in),  
 website: [www.cmpdi.co.in](http://www.cmpdi.co.in)

**AIR QUALITY REPORT**

Month	MAY	Area	DIPKA	Report No	BSP/2023/05/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	23.06.2023
Name of the Project	DIPKA OC	Sample Reference No.	1-2

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
1-Malgaon Village	B	02.05.2023	04.05.2023	121	57	44	25	30		
		05.05.2023	07.05.2023	139	69	52	27	34		
		10.05.2023	13.05.2023	145	80	54	34	39		
		12.05.2023	14.05.2023	131	67	43	26	28		
		16.05.2023	19.05.2023	155	59	47	22	25		
		18.05.2023	22.05.2023	167	70	39	28	32		
		23.05.2023	25.05.2023	176	67	44	30	34		
		28.05.2023	02.06.2023	163	59	53	26	31		
		30.05.2023	05.06.2023	170	60	37	22	25		
2-Near Railway Siding	A-O	01.05.2023	05.05.2023	445	230	73	28	30		
		04.05.2023	08.05.2023	481	235	62	37	40		
		09.05.2023	12.05.2023	428	244	71	22	26		
		11.05.2023	14.05.2023	553	243	63	28	34		
		15.05.2023	19.05.2023	438	240	67	29	31		
		17.05.2023	23.05.2023	423	231	69	24	28		
		22.05.2023	01.06.2023	476	276	56	33	37		
		24.05.2023	02.06.2023	458	256	69	36	39		
		29.05.2023	05.06.2023	553	269	74	31	34		

*Wimal*  
Analyzed by

*Deepanjali*  
Checked by

*C.K. Vel*  
Manager -Environment

Note: 1) The results above relate to the samples tested.

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**AIR QUALITY REPORT**

Month	MAY	Area	DIPKA	Report No	BSP/2023/05/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	23.06.2023
Name of the Project	DIPKA OC	Sample Reference No.	3-4

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
3-Near Excv. Workshop	A-O	02.05.2023	05.05.2023	444	222	57	27	30		
		05.05.2023	08.05.2023	454	219	61	29	32		
		10.05.2023	13.05.2023	413	256	65	34	39		
		12.05.2023	14.05.2023	450	264	79	36	30		
		16.05.2023	18.05.2023	465	289	56	29	35		
		18.05.2023	22.05.2023	449	259	77	28	36		
		23.05.2023	01.06.2023	459	257	63	37	40		
		25.05.2023	03.06.2023	402	176	80	32	36		
		30.05.2023	05.06.2023	470	265	77	38	42		
4-Pragati Nagar	B	02.05.2023	04.05.2023	189	87	32	27	29		
		05.05.2023	08.05.2023	176	59	40	22	26		
		10.05.2023	12.05.2023	158	77	41	23	27		
		12.05.2023	14.05.2023	152	69	53	20	24		
		16.05.2023	19.05.2023	156	55	38	29	33		
		18.05.2023	20.05.2023	178	74	42	30	34		
		23.05.2023	02.06.2023	167	80	39	37	39		
		25.05.2023	03.06.2023	159	65	37	30	35		
		30.05.2023	05.06.2023	147	60	44	38	40		

Analyzed by  
*Wimal*

Checked by  
*Deepanshu*

Manager -Environment  
*C. K. Vel*

Note: 1) The results above relate to the samples tested.

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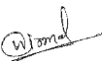
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**AIR QUALITY REPORT**


Month	MAY	Area	DIPKA	Report No	BSP/2023/05/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	23.06.2023
Name of the Project	DIPKA OC	Sample Reference No.	5-6

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
5-Hardi Bazar	B	02.05.2023	05.05.2023	129	76	39	30	33		
		05.05.2023	07.05.2023	155	70	36	25	29		
		10.05.2023	13.05.2023	142	67	44	31	35		
		12.05.2023	15.05.2023	176	76	57	27	31		
		16.05.2023	18.05.2023	186	59	63	26	29		
		18.05.2023	20.05.2023	165	63	47	34	39		
		20.05.2023	25.05.2023	151	59	34	26	30		
		24.05.2023	28.05.2023	171	73	49	28	33		
		29.05.2023	02.06.2023	162	74	43	20	25		
6-Batari	B	01.05.2023	08.05.2023	133	69	40	26	29		
		04.05.2023	08.05.2023	164	65	37	34	38		
		09.05.2023	12.05.2023	153	60	42	36	40		
		11.05.2023	14.05.2023	169	75	51	28	29		
		15.05.2023	18.05.2023	164	67	53	34	38		
		17.05.2023	20.05.2023	151	59	39	30	33		
		22.05.2023	25.05.2023	157	72	57	32	35		
		24.05.2023	27.05.2023	170	79	40	24	27		
		29.05.2023	02.06.2023	159	81	39	28	31		

Analyzed by  


Checked by  


Manager -Environment  


Note: 1) The results above relate to the samples tested.

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**CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED**

Environment Laboratory, Regional Institute-V,  
 Phone: (07815) 271646, email: [rdri5.cmpdi@coalindia.in](mailto:rdri5.cmpdi@coalindia.in),  
 website: [www.cmpdi.co.in](http://www.cmpdi.co.in)

**AIR QUALITY REPORT**

Month	MAY	Area	DIPKA	Report No	BSP/2023/05/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	23.06.2023
Name of the Project	DIPKA OC	Sample Reference No.	7-8

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
7-Jhabar	B	01.05.2023	05.05.2023	143	57	39	26	29		
		04.05.2023	07.05.2023	140	69	40	30	33		
		09.05.2023	12.05.2023	149	73	43	35	39		
		11.05.2023	14.05.2023	127	66	44	37	38		
		15.05.2023	17.05.2023	153	71	43	26	29		
		17.05.2023	20.05.2023	140	65	50	30	33		
		22.05.2023	25.05.2023	148	69	38	27	29		
		24.05.2023	27.05.2023	131	56	43	30	34		
		29.05.2023	01.06.2023	144	59	37	35	39		
8-Ratija	B	01.05.2023	05.05.2023	137	67	40	37	40		
		04.05.2023	05.05.2023	144	71	43	35	39		
		09.05.2023	12.05.2023	167	68	38	37	30		
		11.05.2023	14.05.2023	153	62	36	31	35		
		15.06.2023	18.05.2023	150	71	41	33	37		
		17.05.2023	20.05.2023	149	69	37	29	33		
		22.05.2023	25.05.2023	152	77	46	31	35		
		24.05.2023	27.05.2023	143	58	40	22	26		
		29.05.2023	01.06.2023	139	55	44	28	30		

*Wimal*  
Analyzed by

*Deepanshu*  
Checked by

*C.K. Vel*  
Manager -Environment

Note: 1) The results above relate to the samples tested.

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**website: [www.cmpdi.co.in](http://www.cmpdi.co.in)**

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**NOISE QUALITY REPORT**

Month	MAY	Area	DIPKA	Report No	BSP/2023/05/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	23.06.2023
Name of the Project	DIPKA OC	Sample Reference No.	N39-N46

Parameter			The Noise Pollution (R & C) rules, 2000		Remarks
			Day Time	Night Time	
Limit (in dB(A) Leq	Industrial area	A	75	70	
	Commercial area	B	65	55	
	Residential Area	C	55	45	
	Silence Zone	D	50	40	
Method of analysis	CPCB Protocol For Ambient Level Noise Monitoring				
Station (Code) Station Name	Station category	Date of measurement	Value in dB(A)	Value in dB(A)	
1-Malgaon Village	C	12.05.2023	46.4	39.4	
		25.05.2023	47.0	43.2	
2-Near Railway Siding	A	12.05.2023	59.6	59.4	
		25.05.2023	59.4	56.3	
3-New Excv. Workshop	A	12.05.2023	61.3	57.6	
		25.05.2023	63.5	54.9	
4-Pragati Nagar	C	12.05.2023	47.1	39.3	
		25.05.2023	46.8	51.3	
5-Hardi Bazar	C	12.05.2023	46.8	37.5	
		25.05.2023	45.9	50.5	
6-Batari	C	12.05.2023	45.0	37.0	
		25.05.2023	45.2	41.5	
7-Jhabar	C	12.05.2023	45.3	37.6	
		25.05.2023	47.1	40.8	
8-Ratija	C	12.05.2023	44.5	37.4	
		25.05.2023	46.1	42.3	

*WBM*  
 Sampled by

*Wjornal*  
 Checked by

*C.K. Vel*  
 Manager-Environment

Note: 1) The results above relate to the samples tested.

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012333056		<b>Report Issue Date</b>		02-06-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	A. Raju	<b>Date of Sampling</b>	06-05-2023	<b>Sample ID</b>	17010		
<b>Sampling Location</b>	U/S of Lilagarh Nala before entering mining lease boundary Dipka (WBP)	<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP		
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	10-05-2023	<b>Date of Analysis</b>	From 19-05-2023 To 30-05-2023		

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	34.88	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.82	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	27.00	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
D.Dayakar

Reviewed and Approved  
Kumaravel.C  
Manager (Env)  
Date&Time :02 06-2023 09:54:40

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012333614		<b>Report Issue Date</b>		10-06-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	Nitesh	<b>Date of Sampling</b>	19-05-2023	<b>Sample ID</b>	17162		
<b>Sampling Location</b>	U/S of Lilagarh Nala before entering mining lease boundary Dipka (WBP)	<b>Sampling Plan</b>	FORTNIGHTLY	<b>Sampling Method</b>	CMPDI/BSP/LSOP		
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	24-05-2023	<b>Date of Analysis</b>	From 24-05-2023 To 06-06-2023		

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	23.52	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.58	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	16.00	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
Salim Khan

Reviewed and Approved  
Kumaravel.C  
Manager (Env)  
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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012333048		<b>Report Issue Date</b>		02-06-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	A. Raju	<b>Date of Sampling</b>	06-05-2023	<b>Sample ID</b>	17008		
<b>Sampling Location</b>	D/S of Lilagarh Nala after leaving mining lease boundary Dipka (WBP)		<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP	
<b>Sample Condition</b>	APPROPRIATE		<b>Date of Receipt of Sample</b>	10-05-2023	<b>Date of Analysis</b>	From 19-05-2023 To 30-05-2023	

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	26.16	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.95	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	10.00	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
D.Dayakar

Reviewed and Approved  
Kumaravel.C  
Manager (Env)  
Date&Time :02 06-2023 09:54:40

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012333606		<b>Report Issue Date</b>		10-06-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	Nitesh	<b>Date of Sampling</b>	19-05-2023	<b>Sample ID</b>	17160		
<b>Sampling Location</b>	D/S of Lilagarh Nala after leaving mining lease boundary Dipka (WBP)		<b>Sampling Plan</b>	FORTNIGHTLY	<b>Sampling Method</b>	CMPDI/BSP/LSOP	
<b>Sample Condition</b>	APPROPRIATE		<b>Date of Receipt of Sample</b>	24-05-2023	<b>Date of Analysis</b>	From 24-05-2023 To 06-06-2023	

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	BDL	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.57	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	BDL	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
Salim Khan

Reviewed and Approved  
Kumaravel.C  
Manager (Env)  
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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012333060		<b>Report Issue Date</b>		02-06-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	A. Raju	<b>Date of Sampling</b>	06-05-2023	<b>Sample ID</b>	17011		
<b>Sampling Location</b>	Workshop Effluent Dipka (WBP)	<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP		
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	10-05-2023	<b>Date of Analysis</b>	From 19-05-2023 To 30-05-2023		

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	95.92	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.68	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	14.00	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
D.Dayakar

Reviewed and Approved  
Kumaravel.C  
Manager (Env)  
Date&Time :02 06-2023 09:54:40

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012333618		<b>Report Issue Date</b>		10-06-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	Nitesh	<b>Date of Sampling</b>	19-05-2023	<b>Sample ID</b>	17163		
<b>Sampling Location</b>	Workshop Effluent Dipka (WBP)	<b>Sampling Plan</b>	FORTNIGHTLY	<b>Sampling Method</b>	CMPDI/BSP/LSOP		
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	24-05-2023	<b>Date of Analysis</b>	From 24-05-2023 To 06-06-2023		

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	23.52	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.63	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	12.00	±0.445 @ 24.429

----- END OF THE REPORT -----

**Reported By**  
Salim Khan

**Reviewed and Approved**  
Kumaravel.C  
Manager (Env)  
Date&Time :10 06-2023 10:23:19

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012333052		<b>Report Issue Date</b>		02-06-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	A. Raju	<b>Date of Sampling</b>	06-05-2023	<b>Sample ID</b>	17009		
<b>Sampling Location</b>	Mine Effluent after Settling Dipka (WBP)	<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP		
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	10-05-2023	<b>Date of Analysis</b>	From 19-05-2023 To 30-05-2023		

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	8.72	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.55	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	BDL	±0.445 @ 24.429

----- END OF THE REPORT -----

**Reported By**  
D.Dayakar

**Reviewed and Approved**  
Kumaravel.C  
**Manager (Env)**  
Date&Time :02 06-2023 09:54:40

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012333610		<b>Report Issue Date</b>		10-06-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	Nitesh	<b>Date of Sampling</b>	19-05-2023	<b>Sample ID</b>	17161		
<b>Sampling Location</b>	Mine Effluent after Settling Dipka (WBP)	<b>Sampling Plan</b>	FORTNIGHTLY	<b>Sampling Method</b>	CMPDI/BSP/LSOP		
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	24-05-2023	<b>Date of Analysis</b>	From 24-05-2023 To 06-06-2023		

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	BDL	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.62	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	BDL	±0.445 @ 24.429

----- END OF THE REPORT -----

**Reported By**  
Salim Khan

**Reviewed and Approved**  
Kumaravel.C  
Manager (Env)  
Date&Time :10 06-2023 10:23:19

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# **ENVIRONMENTAL MONITORING REPORT**

**AIR, NOISE & EFFLUENT**

**(DIPKA AREA)**



***Environmental  
Monitoring***

**JUNE- 2023**

**SOUTH EASTERN COALFIELDS LIMITED**

*(A Mini Ratna Company)*

**Central Mine Planning & Design Institute Limited  
Regional Institute – V, CMPDI Complex,  
BILASPUR (C.G.)**

# ENVIRONMENTAL MONITORING REPORT

## DIPKA AREA

### INDEX

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	Name of Air Sampling Station		
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3	New Excv. Workshop	8	2
4	Pragati Nagar	8	2
5	Hardi Bazar	8	3
6	Batari	8	3
7	Jhabhar	8	4
8	Ratija	8	4
	<b>Total</b>	<b>64</b>	

Sl.No.	Name of Noise Sampling Station	No. of samples	Page No.
1	Malgaon Village	2	5
2	Near Railway Siding	2	5
3	New Excv. Workshop	2	5
4	Pragati Nagar	2	5
5	Hardi Bazar	2	5
6	Batari	2	5
7	Jhabhar	2	5
8	Ratija	2	5
	<b>Total</b>	<b>16</b>	

<b>Sl.No.</b>	<b>Name of Effluent Sampling Station</b>	<b>No. of samples</b>	<b>Page No.</b>
<b>1</b>	Upstream of Lilagarh Nalla before entering mining lease boundary	<b>2</b>	<b>6-7</b>
<b>2</b>	Downstream stream of Lilagarh Nalla after leaving mining lease	<b>2</b>	<b>8-9</b>
<b>3</b>	Workshop Effluent	<b>2</b>	<b>10-11</b>
<b>4</b>	Mine Effluent after Settling	<b>2</b>	<b>12-13</b>
	<b>Total</b>	<b>8</b>	

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**AIR QUALITY REPORT**


Month	JUNE	Area	DIPKA	Report No	BSP/2023/06/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	22.07.2023
Name of the Project	DIPKA OC	Sample Reference No.	DIDA1-DIDA2

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
1-Malgaon Village	B	01.06.2023	05.06.2023	134	52	34	24	26		
		06.06.2023	08.06.2023	119	60	45	19	23		
		08.06.2023	12.06.2023	141	78	50	31	33		
		13.06.2023	16.06.2023	111	61	41	24	26		
		15.06.2023	18.06.2023	125	54	40	21	23		
		20.06.2023	25.06.2023	147	67	36	17	19		
		22.06.2023	27.06.2023	136	57	40	20	23		
		26.06.2023	29.06.2023	146	53	33	23	26		
2-Near Railway Siding	A-O	01.06.2023	06.06.2023	415	210	70	28	31		
		07.06.2023	09.06.2023	441	215	52	30	33		
		09.06.2023	13.06.2023	408	224	61	26	30		
		14.06.2023	16.06.2023	533	233	60	27	32		
		16.06.2023	19.06.2023	418	213	65	25	26		
		21.06.2023	26.06.2023	403	213	61	37	39		
		23.06.2023	28.06.2023	436	219	58	26	32		
		27.06.2023	01.07.2023	514	239	71	29	36		

  
 Analyzed by

  
 Checked by

  
 Manager -Environment

Note: 1) The results above relate to the samples tested.

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**AIR QUALITY REPORT**

Month	JUNE	Area	DIPKA	Report No	BSP/2023/06/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	22.07.2023
Name of the Project	DIPKA OC	Sample Reference No.	DIDA3-DIDA4

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
3-Near Excv. Workshop	A-O	01.06.2023	05.06.2023	424	212	53	22	26		
		06.06.2023	08.06.2023	434	209	63	30	32		
		08.06.2023	12.06.2023	403	246	60	27	29		
		13.06.2023	16.06.2023	430	234	71	26	30		
		15.06.2023	18.06.2023	445	249	54	32	34		
		20.06.2023	25.06.2023	419	239	70	36	39		
		22.06.2023	27.06.2023	439	247	67	24	27		
26.06.2023	29.06.2023	440	255	79	28	29				
4-Pragati Nagar	B	02.06.2023	05.06.2023	149	77	30	22	19		
		06.06.2023	08.06.2023	166	61	42	20	23		
		08.06.2023	12.06.2023	148	70	40	27	30		
		13.06.2023	16.06.2023	132	63	54	32	34		
		15.06.2023	18.06.2023	166	50	37	17	19		
		20.06.2023	25.06.2023	148	76	46	20	22		
		22.06.2023	27.06.2023	167	62	30	18	21		
26.06.2023	29.06.2023	139	56	42	28	30				

Analyzed by

Checked by

Manager - Environment

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**AIR QUALITY REPORT**

Month	JUNE	Area	DIPKA	Report No	BSP/2023/06/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	22.07.2023
Name of the Project	DIPKA OC	Sample Reference No.	DIDA5-DIDA6

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
5-Hardi Bazar	B	01.06.2023	05.06.2023	139	74	36	24	26		
		06.06.2023	08.06.2023	145	63	32	19	23		
		08.06.2023	12.06.2023	140	61	41	17	19		
		13.06.2023	16.06.2023	171	79	56	20	22		
		15.06.2023	18.06.2023	156	53	61	24	27		
		20.06.2023	25.06.2023	172	60	49	29	30		
		22.06.2023	27.06.2023	163	67	54	19	22		
		26.06.2023	29.06.2023	156	71	46	24	27		
6-Batari	B	02.06.2023	06.06.2023	140	66	43	30	33		
		07.06.2023	09.06.2023	163	62	39	29	30		
		09.06.2023	13.06.2023	157	67	43	31	33		
		14.06.2023	16.06.2023	176	71	57	19	24		
		16.06.2023	19.06.2023	166	69	56	22	26		
		21.06.2023	26.06.2023	145	61	43	27	23		
		23.06.2023	28.06.2023	146	66	44	20	22		
		27.06.2023	01.07.2023	139	71	43	24	27		

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Manager - Environment

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**AIR QUALITY REPORT**

Month	JUNE	Area	DIPKA	Report No	BSP/2023/06/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	22.07.2023
Name of the Project	DIPKA OC	Sample Reference No.	DIDA7-DIDA8

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
7-Jhabar	B	02.06.2023	06.06.2023	133	59	43	19	22		
		07.06.2023	09.06.2023	144	65	42	26	30		
		09.06.2023	13.06.2023	139	70	44	17	19		
		14.06.2023	16.06.2023	137	67	40	21	23		
		16.06.2023	19.06.2023	143	73	43	26	30		
		21.06.2023	26.06.2023	153	68	51	27	32		
		23.06.2023	28.06.2023	141	58	44	21	26		
		27.06.2023	01.07.2023	144	61	39	25	28		
8 -Ratija	B	02.06.2023	06.06.2023	139	63	49	26	31		
		07.06.2023	09.06.2023	141	70	40	17	23		
		09.06.2023	13.06.2023	156	69	37	19	21		
		14.06.2023	16.06.2023	150	66	39	24	28		
		16.06.2023	19.06.2023	145	59	44	26	30		
		21.06.2023	26.06.2023	157	72	44	19	23		
		23.06.2023	28.06.2023	148	59	43	27	22		
		27.06.2023	01.07.2023	131	65	48	29	32		

  
 Analyzed by

  
 Checked by

  
 Manager - Environment

Note: 1) The results above relate to the samples tested.

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**NOISE QUALITY REPORT**

Month	JUNE	Area	DIPKA	Report No	BSP/2023/06/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	22.07.2023
Name of the Project	DIPKA OC	Sample Reference No.	DIDN1-DIDN8

Parameter			The Noise Pollution (R & C) rules, 2000		Remarks
			Day Time	Night Time	
Limit (in dB(A) Leq	Industrial area	A	75	70	
	Commercial area	B	65	55	
	Residential Area	C	55	45	
	Silence Zone	D	50	40	
Method of analysis	CPCB Protocol For Ambient Level Noise Monitoring				
Station (Code) Station Name	Station category	Date of measurement	Value in dB(A)	Value in dB(A)	
1-Malgaon Village	C	02.06.2023	47.2	39.5	
		16.06.2023	58.4	37.8	
2-Near Railway Siding	A	02.06.2023	58.2	58.4	
		16.06.2023	62.4	56.2	
3-New Excv. Workshop	A	02.06.2023	60.4	56.4	
		16.06.2023	59.3	53.3	
4-Pragati Nagar	C	02.06.2023	47.4	39.3	
		16.06.2023	56.4	50.8	
5-Hardi Bazar	C	02.06.2023	46.4	37.4	
		16.06.2023	59.3	49.8	
6-Batari	C	02.06.2023	45.5	36.8	
		16.06.2023	55.6	41.8	
7-Jhabar	C	02.06.2023	46.6	37.4	
		16.06.2023	55.2	38.8	
8-Ratija	C	02.06.2023	43.7	36.7	
		16.06.2023	53.7	40.6	

  
 Sampled by

  
 Checked by

  
 Manager-Environment

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012333752	<b>Report Issue Date</b>		21-06-2023
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	Devendra Kumar	<b>Date of Sampling</b>	03-06-2023	<b>Sample ID</b>	17265
<b>Sampling Location</b>	U/S of Lilagarh Nala before entering mining lease boundary Dipka (WBP)	<b>Sampling Plan</b>	FORTNIGHTLY	<b>Sampling Method</b>	CMPDI/BSP/LSOP
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	05-06-2023	<b>Date of Analysis</b>	From 08-06-2023 To 20-06-2023

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	24.00	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	11.40	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.26	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	BDL	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
Badvel Sreedhar

Reviewed and Approved  
Kumaravel.C  
Manager (Env)  
Date&Time :21-06-2023 10:41:13

JSA

Note:

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012335997		<b>Report Issue Date</b>		15-07-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	NITESH SAO		<b>Date of Sampling</b>	17-06-2023	<b>Sample ID</b>	17563	
<b>Sampling Location</b>	U/S of Lilagarh Nala before entering mining lease boundary Dipka (WBP)		<b>Sampling Plan</b>	AS PER FORTNIGHTLY PLAN	<b>Sampling Method</b>	CMPDI/BSP/LSOP	
<b>Sample Condition</b>	APPROPRIATE		<b>Date of Receipt of Sample</b>	19-06-2023	<b>Date of Analysis</b>	From 20-06-2023 To 01-07-2023	

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	40.80	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.14	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	BDL	±0.445 @ 24.429

----- END OF THE REPORT -----

**Reported By**  
Manojkumar Baghel

**Reviewed and Approved**  
**Kumaravel.C**  
**Manager (Env)**  
Date&Time :15-07-2023 11:21:59

**JSA**

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012334358		<b>Report Issue Date</b>		12-07-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	Nitesh Sao	<b>Date of Sampling</b>	03-06-2023	<b>Sample ID</b>	17263		
<b>Sampling Location</b>	D/S of Lilagarh Nala after leaving mining lease boundary Dipka (WBP)		<b>Sampling Plan</b>	FORTNIGHTLY	<b>Sampling Method</b>	CMPDI/BSP/LSOP	
<b>Sample Condition</b>	APPROPRIATE		<b>Date of Receipt of Sample</b>	05-06-2023	<b>Date of Analysis</b>	From 06-06-2023 To 04-07-2023	

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	BDL	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	8.28	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	BDL	±0.445 @ 24.429

----- END OF THE REPORT -----

**Reported By**  
D.Dayakar

**Reviewed and Approved**  
**Kumaravel.C**  
**Manager (Env)**  
Date&Time :12-07-2023 11:25:55

**JSA**

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012335989		<b>Report Issue Date</b>		15-07-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	NITESH SAO		<b>Date of Sampling</b>	17-06-2023	<b>Sample ID</b>	17561	
<b>Sampling Location</b>	D/S of Lilagarh Nala after leaving mining lease boundary Dipka (WBP)		<b>Sampling Plan</b>	AS PER FORTNIGHTLY PLAN	<b>Sampling Method</b>	CMPDI/BSP/LSOP	
<b>Sample Condition</b>	APPROPRIATE		<b>Date of Receipt of Sample</b>	19-06-2023	<b>Date of Analysis</b>	From 20-06-2023 To 01-07-2023	

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	81.60	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	6.95	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	33.00	±0.445 @ 24.429

----- END OF THE REPORT -----

**Reported By**  
Manojkumar Baghel

**Reviewed and Approved**  
**Kumaravel.C**  
**Manager (Env)**  
Date&Time :15-07-2023 11:21:59

**JSA**

Note:

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012333754	<b>Report Issue Date</b>		21-06-2023
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	Devendra Kumar	<b>Date of Sampling</b>	03-06-2023	<b>Sample ID</b>	17266
<b>Sampling Location</b>	Workshop Effluent Dipka (WBP)	<b>Sampling Plan</b>	FORTNIGHTLY	<b>Sampling Method</b>	CMPDI/BSP/LSOP
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	05-06-2023	<b>Date of Analysis</b>	From 08-06-2023 To 20-06-2023

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	16.00	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	14.60	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.66	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	16.00	±0.445 @ 24.429

----- END OF THE REPORT -----

**Reported By**  
Badvel Sreedhar

**Reviewed and Approved**  
Kumaravel.C  
Manager (Env)  
Date&Time :21-06-2023 10:41:13

**JSA**

Note:

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012336001		<b>Report Issue Date</b>		15-07-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	NITESH SAO	<b>Date of Sampling</b>	17-06-2023	<b>Sample ID</b>	17564		
<b>Sampling Location</b>	Workshop Effluent Dipka (WBP)	<b>Sampling Plan</b>	AS PER FORTNIGHTLY PLAN	<b>Sampling Method</b>	CMPDI/BSP/LSOP		
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	19-06-2023	<b>Date of Analysis</b>	From 20-06-2023 To 01-07-2023		

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	BDL	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.05	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	16.00	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
Manojkumar Baghel

Reviewed and Approved  
Kumaravel.C  
Manager (Env)  
Date&Time :15-07-2023 11:21:59

JSA

Note:

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012334359	<b>Report Issue Date</b>		12-07-2023
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	Nitesh Sao	<b>Date of Sampling</b>	03-06-2023	<b>Sample ID</b>	17264
<b>Sampling Location</b>	Mine Effluent after Settling Dipka (WBP)	<b>Sampling Plan</b>	FORTNIGHTLY	<b>Sampling Method</b>	CMPDI/BSP/LSOP
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	05-06-2023	<b>Date of Analysis</b>	From 06-06-2023 To 04-07-2023

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	32.64	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.49	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	43.00	±0.445 @ 24.429

----- END OF THE REPORT -----

**Reported By**  
D.Dayakar

**Reviewed and Approved**  
Kumaravel.C  
Manager (Env)  
Date&Time :12-07-2023 11:25:55

**JSA**

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012335993		<b>Report Issue Date</b>		15-07-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	NITESH SAO	<b>Date of Sampling</b>	17-06-2023	<b>Sample ID</b>	17562		
<b>Sampling Location</b>	Mine Effluent after Settling Dipka (WBP)	<b>Sampling Plan</b>	AS PER FORTNIGHTLY PLAN	<b>Sampling Method</b>	CMPDI/BSP/LSOP		
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	19-06-2023	<b>Date of Analysis</b>	From 20-06-2023 To 01-07-2023		

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	BDL	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.11	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	17.00	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
Manojkumar Baghel

Reviewed and Approved  
Kumaravel.C  
Manager (Env)  
Date&Time :15-07-2023 11:21:59

JSA

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# ENVIRONMENTAL MONITORING REPORT

## AIR, NOISE & EFFLUENT

### (DIPKA AREA)



# Environmental Monitoring

**JULY- 2023**

**SOUTH EASTERN COALFIELDS LIMITED**

*(A Mini Ratna Company)*

**Central Mine Planning & Design Institute Limited**  
**Regional Institute – V, CMPDI Complex,**  
**BILASPUR (C.G.)**

# ENVIRONMENTAL MONITORING REPORT

## DIPKA AREA

### INDEX

Sl.No.	CONTENTS	No. of samples	Page No.
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2	Near Railway Siding	9	1
3	New Excv. Workshop	9	2
4	Pragati Nagar	9	2
5	Hardi Bazar	9	3
6	Batari	9	3
7	Jhabhar	9	4
8	Ratija	9	4
	<b>Total</b>	<b>72</b>	

Sl.No.	Name of Noise Sampling Station	No. of samples	Page No.
1	Malgaon Village	2	5
2	Near Railway Siding	2	5
3	New Excv. Workshop	2	5
4	Pragati Nagar	2	5
5	Hardi Bazar	2	5
6	Batari	2	5
7	Jhabhar	2	5
8	Ratija	2	5
	<b>Total</b>	<b>16</b>	

<b>Sl.No.</b>	<b>Name of Effluent Sampling Station</b>	<b>No. of samples</b>	<b>Page No.</b>
<b>1</b>	Upstream of Lilagarh Nalla before entering mining lease boundary	<b>2</b>	<b>6-7</b>
<b>2</b>	Downstream stream of Lilagarh Nalla after leaving mining lease	<b>2</b>	<b>8-9</b>
<b>3</b>	Workshop Effluent	<b>2</b>	<b>10-11</b>
<b>4</b>	Mine Effluent after Settling	<b>2</b>	<b>12-13</b>
	<b>Total</b>	<b>8</b>	

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Environment Laboratory, Regional Institute-V,  
 Phone: (07815) 271646, email: [rdri5.cmpdi@coalindia.in](mailto:rdri5.cmpdi@coalindia.in),  
 website: [www.cmpdi.co.in](http://www.cmpdi.co.in)

**AIR QUALITY REPORT**

Month	JULY	Area	DIPKA	Report No	BSP/2023/07/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	01/09/2023
Name of the Project	DIPKA OC	Sample Reference No.	DIDA1-DIDA2

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
1-Malgaon Village (DIDA1)	B	03.07.2023	05.07.2023	112	52	41	19	23		
		05.07.2023	08.07.2023	129	60	50	22	28		
		07.07.2023	09.07.2023	125	61	51	24	29		
		11.07.2023	13.07.2023	141	62	40	26	28		
		13.07.2023	16.07.2023	135	59	43	22	25		
		18.07.2023	21.07.2023	147	63	35	26	30		
		20.07.2023	30.07.2023	136	57	42	23	24		
		24.07.2023	03.08.2023	153	60	50	24	28		
		26.07.2023	05.08.2023	150	56	33	23	25		
2-Near Railway Siding (DIDA2)	A-O	04.07.2023	06.07.2023	435	213	67	30	32		
		06.07.2023	10.07.2023	441	225	60	29	33		
		10.07.2023	13.07.2023	408	204	67	27	31		
		12.07.2023	15.07.2023	533	246	64	30	34		
		14.07.2023	17.07.2023	428	236	65	34	38		
		19.07.2023	22.07.2023	403	211	63	29	34		
		21.07.2023	05.08.2023	446	246	59	22	26		
		25.07.2023	06.08.2023	418	236	66	34	37		
		27.07.2023	07.08.2023	533	259	73	34	38		

Analyzed by

Checked by

Manager -Environment

Note: 1) The results above relate to the samples tested.

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**AIR QUALITY REPORT**

Month	JULY	Area	DIPKA	Report No	BSP/2023/07/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	01/09/2023
Name of the Project	DIPKA OC	Sample Reference No.	DIDA3- DIDA4

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
3-Near Excv. Workshop (DIDA3)	A-O	03.07.2023	05.07.2023	434	212	55	30	34		
		05.07.2023	08.07.2023	434	209	60	33	36		
		07.07.2023	09.07.2023	423	266	63	29	34		
		11.07.2023	13.07.2023	419	254	72	27	31		
		13.07.2023	16.07.2023	435	269	66	32	34		
		18.07.2023	21.07.2023	439	249	78	36	40		
		20.07.2023	30.07.2023	449	247	65	34	37		
		24.07.2023	03.08.2023	432	186	83	31	35		
4-Pragati Nagar (DIDA4)	B	03.07.2023	05.07.2023	178	81	34	19	21		
		05.07.2023	08.07.2023	136	61	42	22	24		
		07.07.2023	09.07.2023	168	73	43	27	29		
		11.07.2023	13.07.2023	160	64	35	26	30		
		13.07.2023	16.07.2023	166	58	39	27	33		
		18.07.2023	21.07.2023	158	76	45	25	29		
		20.07.2023	30.07.2023	187	89	33	30	34		
		24.07.2023	03.08.2023	139	59	35	28	31		
		26.07.2023	05.08.2023	157	63	45	28	34		

Analyzed by

Checked by

Manager - Environment

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**AIR QUALITY REPORT**

Month	JULY	Area	DIPKA	Report No	BSP/2023/07/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	01/09/2023
Name of the Project	DIPKA OC	Sample Reference No.	DIDA5- DIDA6

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
5-Hardi Bazar (DIDA5)	B	03.07.2023	05.07.2023	132	74	40	30	34		
		05.07.2023	08.07.2023	151	67	43	29	33		
		07.07.2023	09.07.2023	145	71	43	27	29		
		11.07.2023	13.07.2023	170	67	55	24	28		
		13.07.2023	16.07.2023	180	58	46	30	31		
		18.07.2023	21.07.2023	155	66	37	32	34		
		20.07.2023	30.07.2023	156	57	39	29	33		
		24.07.2023	03.08.2023	173	78	44	22	24		
		26.07.2023	05.08.2023	166	73	40	26	29		
6-Batari (DIDA6)	B	04.07.2023	06.07.2023	129	65	43	28	34		
		06.07.2023	10.07.2023	154	64	39	33	36		
		10.07.2023	13.07.2023	159	63	44	30	34		
		12.07.2023	15.07.2023	179	77	39	38	39		
		14.07.2023	17.07.2023	156	68	50	35	37		
		19.07.2023	22.07.2023	158	61	59	23	26		
		21.07.2023	05.08.2023	150	59	56	27	33		
		25.07.2023	06.08.2023	177	77	44	30	34		
		27.07.2023	07.08.2023	156	83	38	28	30		

*Nitmal*  
 Analyzed by

*Deepavita*  
 Checked by

*C.K. Vel*  
 Manager - Environment

Note: 1) The results above relate to the samples tested.

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**AIR QUALITY REPORT**

Month	JULY	Area	DIPKA	Report No	BSP/2023/07/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	01/09/2023
Name of the Project	DIPKA OC	Sample Reference No.	DIDA7- DIDA8

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
7-Jhabar (DIDA7)	B	04.07.2023	06.07.2023	144	56	35	30	33		
		06.07.2023	10.07.2023	134	66	41	28	30		
		10.07.2023	13.07.2023	143	77	44	22	26		
		12.07.2023	15.07.2023	132	61	42	28	30		
		14.07.2023	17.07.2023	154	76	45	34	36		
		19.07.2023	22.07.2023	144	68	51	24	25		
		21.07.2023	05.08.2023	146	59	39	30	33		
		25.07.2023	06.08.2023	130	58	44	26	28		
		27.07.2023	07.08.2023	141	69	39	28	30		
8-Ratija (DIDA8)	B	04.07.2023	06.07.2023	139	69	42	31	34		
		06.07.2023	10.07.2023	147	73	44	26	29		
		10.07.2023	13.07.2023	160	66	39	25	32		
		12.07.2023	15.07.2023	158	60	37	24	26		
		14.07.2023	17.07.2023	151	73	40	22	27		
		19.07.2023	22.07.2023	139	65	39	26	30		
		21.07.2023	05.08.2023	145	78	47	27	31		
		25.07.2023	06.08.2023	154	55	41	28	34		
		27.07.2023	07.08.2023	142	56	43	29	33		

Analyzed by

Checked by

Manager - Environment

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**NOISE QUALITY REPORT**

Month	JULY	Area	DIPKA	Report No	BSP/2023/07/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	01/09/2023
Name of the Project	DIPKA OC	Sample Reference No.	DIDN1-DIDN8

Parameter			The Noise Pollution (R & C) rules, 2000		Remarks
			Day Time	Night Time	
Limit (in dB(A) Leq	Industrial area	A	75	70	
	Commercial area	B	65	55	
	Residential Area	C	55	45	
	Silence Zone	D	50	40	
Method of analysis	CPCB Protocol For Ambient Level Noise Monitoring				
Station (Code) Station Name	Station category	Date of measurement	Value in dB(A)	Value in dB(A)	
1-Malgaon Village (DIDN1)	C	07.07.2023	48.4	39.4	
		21.07.2023	48.5	35.2	
2-Near Railway Siding (DIDN2)	A	07.07.2023	73.6	57.6	
		21.07.2023	74.6	45.4	
3-New Excv. Workshop (DIDN3)	A	07.07.2023	73.4	56.5	
		21.07.2023	73.4	45.4	
4-Pragati Nagar (DIDN4)	C	07.07.2023	48.9	35.9	
		21.07.2023	48.3	35.2	
5-Hardi Bazar (DIDN5)	C	07.07.2023	53.5	41.7	
		21.07.2023	53.5	35.1	
6-Batari (DIDN6)	C	07.07.2023	51.5	35.4	
		21.07.2023	52.6	33.8	
7-Jhabar (DIDN7)	C	07.07.2023	53.6	40.0	
		21.07.2023	53.6	34.6	
8-Ratija (DIDN8)	C	07.07.2023	53.4	37.5	
		21.07.2023	53.5	35.4	

Sampled by

Checked by

Manager-Environment

Note: 1) The results above relate to the samples tested.

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012336066		<b>Report Issue Date</b>		08-08-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	Ajay Singh	<b>Date of Sampling</b>	01-07-2023	<b>Sample ID</b>	17670		
<b>Sampling Location</b>	U/S of Lilagarh Nala before entering mining lease boundary Dipka (WBP)	<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP		
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	03-07-2023	<b>Date of Analysis</b>	From 03-07-2023 To 16-07-2023		

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	BDL	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	8.13	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	14.00	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
Nirmal Kumar

Reviewed and Approved  
Kumaravel.C  
Manager (Env)  
Date&Time :08-08-2023 03:01:00

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Note:

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012337438	<b>Report Issue Date</b>		17-08-2023
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	Indra Kumar	<b>Date of Sampling</b>	17-07-2023	<b>Sample ID</b>	17983
<b>Sampling Location</b>	U/S of Lilagarh Nala before entering mining lease boundary Dipka (WBP)	<b>Sampling Plan</b>	As Per Fortnightly Plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	24-07-2023	<b>Date of Analysis</b>	From 28-07-2023 To 09-08-2023

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	8.00	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	6.86	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	BDL	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
Sanjivkumar Singh

Reviewed and Approved  
Kumaravel.C  
Manager (Env)  
Date&Time :17-08-2023 10:28:35

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012336064		<b>Report Issue Date</b>		08-08-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	Ajay Singh	<b>Date of Sampling</b>	01-07-2023	<b>Sample ID</b>	17668		
<b>Sampling Location</b>	D/S of Lilagarh Nala after leaving mining lease boundary Dipka (WBP)	<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP		
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	03-07-2023	<b>Date of Analysis</b>	From 03-07-2023 To 16-07-2023		

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	BDL	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.48	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	38.00	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
Nirmal Kumar

Reviewed and Approved  
Kumaravel.C  
Manager (Env)  
Date&Time :08-08-2023 03:01:00

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012337430		<b>Report Issue Date</b>		17-08-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	Indra Kumar	<b>Date of Sampling</b>	17-07-2023	<b>Sample ID</b>	17981		
<b>Sampling Location</b>	D/S of Lilagarh Nala after leaving mining lease boundary Dipka (WBP)		<b>Sampling Plan</b>	As Per Fortnightly Plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP	
<b>Sample Condition</b>	APPROPRIATE		<b>Date of Receipt of Sample</b>	24-07-2023	<b>Date of Analysis</b>	From 28-07-2023 To 09-08-2023	

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	16.00	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	6.87	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	134.00	±0.445 @ 24.429

----- END OF THE REPORT -----

**Reported By**  
Sanjivkumar Singh

**Reviewed and Approved**  
Kumaravel.C  
**Manager (Env)**  
Date&Time :17-08-2023 10:28:34

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012336067	<b>Report Issue Date</b>		08-08-2023
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	Ajay Singh	<b>Date of Sampling</b>	01-07-2023	<b>Sample ID</b>	17671
<b>Sampling Location</b>	Workshop Effluent Dipka (WBP)	<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	03-07-2023	<b>Date of Analysis</b>	From 03-07-2023 To 16-07-2023

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	BDL	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	8.31	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	541.00	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
Nirmal Kumar

Reviewed and Approved  
Kumaravel.C  
Manager (Env)  
Date&Time :08-08-2023 03:01:00

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Note:

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012337442	<b>Report Issue Date</b>		17-08-2023
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	Indra Kumar	<b>Date of Sampling</b>	17-07-2023	<b>Sample ID</b>	17984
<b>Sampling Location</b>	Workshop Effluent Dipka (WBP)	<b>Sampling Plan</b>	As Per Fortnightly Plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	24-07-2023	<b>Date of Analysis</b>	From 28-07-2023 To 09-08-2023

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	BDL	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	6.11	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	20.00	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
Sanjivkumar Singh

Reviewed and Approved  
Kumaravel.C  
Manager (Env)  
Date&Time :17-08-2023 10:28:35

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012336065	<b>Report Issue Date</b>		08-08-2023
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	Ajay Singh	<b>Date of Sampling</b>	01-07-2023	<b>Sample ID</b>	17669
<b>Sampling Location</b>	Mine Effluent after Settling Dipka (WBP)	<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	03-07-2023	<b>Date of Analysis</b>	From 03-07-2023 To 16-07-2023

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	BDL	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	8.10	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	84.00	±0.445 @ 24.429

----- END OF THE REPORT -----

**Reported By**  
Nirmal Kumar

**Reviewed and Approved**  
Kumaravel.C  
Manager (Env)

Date&Time :08-08-2023 03:01:00

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012337434	<b>Report Issue Date</b>		17-08-2023
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	Indra Kumar	<b>Date of Sampling</b>	17-07-2023	<b>Sample ID</b>	17982
<b>Sampling Location</b>	Mine Effluent after Settling Dipka (WBP)	<b>Sampling Plan</b>	As Per Fortnightly Plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	24-07-2023	<b>Date of Analysis</b>	From 28-07-2023 To 09-08-2023

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	8.00	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	6.67	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	32.00	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
Sanjivkumar Singh

Reviewed and Approved  
Kumaravel.C  
Manager (Env)  
Date&Time :17-08-2023 10:28:35

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# **ENVIRONMENTAL MONITORING REPORT**

**AIR, NOISE & EFFLUENT**

**(DIPKA AREA)**



***Environmental  
Monitoring***

**AUGUST- 2023**

**SOUTH EASTERN COALFIELDS LIMITED**

*(A Mini Ratna Company)*

**Central Mine Planning & Design Institute Limited  
Regional Institute – V, CMPDI Complex,  
BILASPUR (C.G.)**

# ENVIRONMENTAL MONITORING REPORT

## DIPKA AREA

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6	Batari	9	3
7	Jhabhar	9	4
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	<b>Total</b>	<b>72</b>	

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1	Malgaon Village	2	5
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3	New Excv. Workshop	2	5
4	Pragati Nagar	2	5
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6	Batari	2	5
7	Jhabhar	2	5
8	Ratija	2	5
	<b>Total</b>	<b>16</b>	

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**CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED**

Environment Laboratory, Regional Institute-V,  
Phone: (07815) 271646, email: [rdri5.cmpdi@coalindia.in](mailto:rdri5.cmpdi@coalindia.in),  
website: [www.cmpdi.co.in](http://www.cmpdi.co.in)

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**AIR QUALITY REPORT**

Month	AUGUST	Area	DIPKA	Report No	BSP/2023/08/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	22.09.2023
Name of the Project	DIPKA OC	Sample Reference No.	DIDA1-DIDA2

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
	Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80		80
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
1-Malgaon Village (DIDA1)	B	01.08.2023	04.08.2023	132	62	42	19	23		
		03.08.2023	05.08.2023	139	63	52	24	27		
		08.08.2023	10.08.2023	145	67	50	22	25		
		10.08.2023	13.08.2023	131	60	44	27	30		
		17.08.2023	20.08.2023	145	72	46	23	27		
		22.08.2023	24.08.2023	152	66	39	28	31		
		24.08.2023	26.08.2023	139	58	44	26	30		
		28.08.2023	30.08.2023	151	69	51	28	32		
		30.08.2023	03.09.2023	153	66	39	24	29		
2-Near Railway Siding (DIDA2)	A-O	02.08.2023	06.08.2023	439	218	62	34	39		
		04.08.2023	08.08.2023	444	229	66	27	30		
		08.08.2023	11.08.2023	330	188	69	30	34		
		11.08.2023	14.08.2023	432	211	76	28	32		
		21.08.2023	23.08.2023	429	241	69	34	38		
		23.08.2023	25.08.2023	387	198	68	30	35		
		25.08.2023	27.08.2023	454	254	55	33	37		
		29.08.2023	31.08.2023	349	189	63	36	39		
		31.08.2023	04.09.2023	543	251	74	37	40		

Analyzed by

Checked by

Manager -Environment

Note: 1) The results above relate to the samples tested.

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**AIR QUALITY REPORT**

Month	AUGUST	Area	DIPKA	Report No	BSP/2023/08/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	22.09.2023
Name of the Project	DIPKA OC	Sample Reference No.	DIDA3- DIDA4

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
	Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80		80
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
3-Near Excv. Workshop (DIDA3)	A-O	01.08.2023	04.08.2023	404	213	56	38	40		
		03.08.2023	05.08.2023	403	219	62	34	37		
		08.08.2023	10.08.2023	398	198	65	33	36		
		10.08.2023	13.08.2023	419	214	77	29	31		
		17.08.2023	20.08.2023	439	271	68	24	32		
		22.08.2023	24.08.2023	411	234	71	19	28		
		24.08.2023	26.08.2023	388	207	68	34	38		
		28.08.2023	30.08.2023	418	189	86	30	35		
		30.08.2023	03.09.2023	427	247	80	26	24		
4-Pragati Nagar (DIDA4)	B	01.08.2023	04.08.2023	158	80	37	34	30		
		03.08.2023	05.08.2023	142	67	43	27	31		
		08.08.2023	10.08.2023	176	76	40	24	23		
		10.08.2023	13.08.2023	163	69	38	36	38		
		17.08.2023	20.08.2023	168	61	43	30	32		
		22.08.2023	24.08.2023	151	78	35	24	31		
		24.08.2023	26.08.2023	183	91	39	27	29		
		28.08.2023	30.08.2023	142	79	33	26	30		
		30.08.2023	03.09.2023	159	69	49	25	28		

*Wjomal*

Analyzed by

*Deepanjita Bn*

Checked by

*C. K. Vel*

Manager -Environment

Note: 1) The results above relate to the samples tested.

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**AIR QUALITY REPORT**

Month	AUGUST	Area	DIPKA	Report No	BSP/2023/08/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	22.09.2023
Name of the Project	DIPKA OC	Sample Reference No.	DIDA5- DIDA6

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
5-Hardi Bazar (DIDA5)	B	01.08.2023	04.08.2023	143	67	41	27	30		
		03.08.2023	05.08.2023	171	77	40	31	34		
		08.08.2023	10.08.2023	165	70	44	33	36		
		10.08.2023	13.08.2023	183	63	52	37	40		
		17.08.2023	20.08.2023	187	50	43	20	22		
		22.08.2023	24.08.2023	151	69	39	19	24		
		24.08.2023	26.08.2023	165	50	35	25	27		
		28.08.2023	30.08.2023	178	79	40	22	28		
		30.08.2023	03.09.2023	169	71	43	19	23		
6-Batari (DIDA6)	B	02.08.2023	06.08.2023	139	60	40	29	24		
		04.08.2023	08.08.2023	144	69	43	30	32		
		08.08.2023	11.08.2023	169	61	40	19	22		
		11.08.2023	14.08.2023	170	75	42	27	28		
		21.08.2023	23.08.2023	151	61	53	24	25		
		23.08.2023	25.08.2023	159	60	51	20	23		
		25.08.2023	27.08.2023	153	64	53	27	30		
		29.08.2023	31.08.2023	157	79	46	31	32		
		31.08.2023	04.09.2023	150	81	39	34	36		

*Wimal*

Analyzed by

*Deepanjita*

Checked by

*C. K. Vel*

Manager -Environment

Note: 1) The results above relate to the samples tested.

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**AIR QUALITY REPORT**

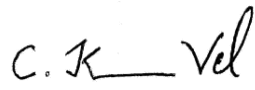
Month	AUGUST	Area	DIPKA	Report No	BSP/2023/08/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	22.09.2023
Name of the Project	DIPKA OC	Sample Reference No.	DIDA7- DIDA8

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
	Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80		80
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
7-Jhabar (DIDA7)	B	02.08.2023	06.08.2023	139	53	39	32	34		
		04.08.2023	08.08.2023	130	67	43	26	30		
		08.08.2023	11.08.2023	147	70	42	27	29		
		11.08.2023	14.08.2023	136	69	49	35	40		
		21.08.2023	23.08.2023	150	78	40	26	29		
		23.08.2023	25.08.2023	149	78	39	31	34		
		25.08.2023	27.08.2023	136	69	51	23	28		
		29.08.2023	31.08.2023	138	78	47	32	34		
		31.08.2023	04.09.2023	140	89	38	27	30		
8-Ratija (DIDA8)	B	02.08.2023	06.08.2023	143	66	43	22	19		
		04.08.2023	08.08.2023	154	78	48	18	21		
		08.08.2023	11.08.2023	136	62	37	20	25		
		11.08.2023	14.08.2023	155	63	39	34	30		
		21.08.2023	23.08.2023	150	72	43	31	33		
		23.08.2023	25.08.2023	133	69	42	29	27		
		25.08.2023	27.08.2023	148	71	37	26	31		
		29.08.2023	31.08.2023	150	59	48	28	34		
		31.08.2023	04.09.2023	148	65	40	30	32		

  
Analyzed by

  
Checked by

  
Manager -Environment

Note: 1) The results above relate to the samples tested.

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**NOISE QUALITY REPORT**

Month	AUGUST	Area	DIPKA	Report No	BSP/2023/08/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	22.09.2023
Name of the Project	DIPKA OC	Sample Reference No.	DIDN1-DIDN8

Parameter			The Noise Pollution (R & C) rules, 2000		Remarks
			Day Time	Night Time	
Limit (in dB(A) Leq	Industrial area	A	75	70	
	Commercial area	B	65	55	
	Residential Area	C	55	45	
	Silence Zone	D	50	40	
Method of analysis		CPCB Protocol For Ambient Level Noise Monitoring			
Station (Code) Station Name	Station category	Date of measurement	Value in dB(A)	Value in dB(A)	
<b>1-Malgaon Village</b> (DIDN1)	C	04.08.2023	45.7	39.5	
		22.08.2023	46.8	39.1	
<b>2-Near Railway Siding</b> (DIDN2)	A	04.08.2023	66.3	53.4	
		22.08.2023	58.2	53.5	
<b>3-New Excv. Workshop</b> (DIDN3)	A	04.08.2023	62.3	54.0	
		22.08.2023	60.9	54.5	
<b>4-Pragati Nagar</b> (DIDN4)	C	04.08.2023	44.6	39.3	
		22.08.2023	49.1	39.5	
<b>5-Hardi Bazar</b> (DIDN5)	C	04.08.2023	45.9	41.0	
		22.08.2023	46.7	40.6	
<b>6-Batari</b> (DIDN6)	C	04.08.2023	41.3	39.6	
		22.08.2023	47.6	39.4	
<b>7-Jhabar</b> (DIDN7)	C	04.08.2023	44.6	40.0	
		22.08.2023	48.6	39.7	
<b>8-Ratija</b> (DIDN8)	C	04.08.2023	41.1	37.8	
		22.08.2023	49.1	37.4	

Sampled by

Checked by

Manager-Environment

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY)

<b>Unique Report No.</b>		TC-74012338249		<b>Report Issue Date</b>		27-08-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	Ajay Singh	<b>Date of Sampling</b>	05-08-2023	<b>Sample ID</b>	18088		
<b>Sampling Location</b>	U/S of Lilagarh Nala before entering mining lease boundary Dipka (WBP)	<b>Sampling Plan</b>	As Per Fortnightly Plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP		
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	08-08-2023	<b>Date of Analysis</b>	From 10-08-2023 To 23-08-2023		

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	32.00	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.25	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	156.00	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
M.G.Krishna

JSA

Reviewed and Approved  
**KUMARAVEL.C**  
Manager (Env)  
Date&Time :27-08-2023 02:41:10

**Note:**

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- \* General Standards for Discharge of Environmental Pollution(Part A:Effluent) as per Schedule VI,Environment (Protection) Rules
- a. The results relate only to the item sampled and tested.
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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY)

<b>Unique Report No.</b>		TC-74012338048		<b>Report Issue Date</b>		21-08-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	Nitesh Sao	<b>Date of Sampling</b>	16-08-2023	<b>Sample ID</b>	18327		
<b>Sampling Location</b>	U/S of Lilagarh Nala before entering mining lease boundary Dipka (WBP)	<b>Sampling Plan</b>	As Per Fortnightly Plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP		
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	16-08-2023	<b>Date of Analysis</b>	From 17-08-2023 To 19-08-2023		

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	24.00	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.45	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	77.00	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
Deepanwita Bin

Reviewed and Approved .  
**KUMARAVEL.C**  
Manager (Env)  
Date&Time :21-08-2023 10:33:33

JSA

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY)

<b>Unique Report No.</b>		TC-74012338241	<b>Report Issue Date</b>		27-08-2023
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	Ajay Singh	<b>Date of Sampling</b>	05-08-2023	<b>Sample ID</b>	18086
<b>Sampling Location</b>	D/S of Lilagarh Nala after leaving mining lease boundary Dipka (WBP)	<b>Sampling Plan</b>	As Per Fortnightly Plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	08-08-2023	<b>Date of Analysis</b>	From 10-08-2023 To 23-08-2023

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	80.00	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.12	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	27.00	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
M.G.Krishna

JSA

Reviewed and Approved  
**KUMARAVEL.C**  
Manager (Env)  
Date&Time :27-08-2023 02:41:10

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY)

<b>Unique Report No.</b>		TC-74012338348		<b>Report Issue Date</b>		06-09-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	Ratan Gope	<b>Date of Sampling</b>	16-08-2023	<b>Sample ID</b>	18325		
<b>Sampling Location</b>	D/S of Lilagarh Nala after leaving mining lease boundary Dipka (WBP)	<b>Sampling Plan</b>	As Per Fortnightly Plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP		
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	16-08-2023	<b>Date of Analysis</b>	From 17-08-2023 To 28-08-2023		

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	BDL	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.60	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	BDL	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
Salim Khan

JSA

Reviewed and Approved  
**KUMARAVEL.C**  
Manager (Env)  
Date&Time :06-09-2023 10:26:24

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY)

<b>Unique Report No.</b>		TC-74012338253		<b>Report Issue Date</b>		27-08-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	Ajay Singh	<b>Date of Sampling</b>	05-08-2023	<b>Sample ID</b>	18089		
<b>Sampling Location</b>	Workshop Effluent Dipka (WBP)	<b>Sampling Plan</b>	As Per Fortnightly Plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP		
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	08-08-2023	<b>Date of Analysis</b>	From 10-08-2023 To 23-08-2023		

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	16.00	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.93	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	28.00	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
M.G.Krishna

JSA

Reviewed and Approved  
**KUMARAVEL.C**  
Manager (Env)  
Date&Time :27-08-2023 02:41:10

**Note:**

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012338050		<b>Report Issue Date</b>		21-08-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	Nitesh Sao	<b>Date of Sampling</b>	16-08-2023	<b>Sample ID</b>	18328		
<b>Sampling Location</b>	Workshop Effluent Dipka (WBP)	<b>Sampling Plan</b>	As Per Fortnightly Plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP		
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	16-08-2023	<b>Date of Analysis</b>	From 17-08-2023 To 19-08-2023		

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	BDL	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.63	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	28.00	±0.445 @ 24.429

----- END OF THE REPORT -----

**Reported By**  
Deepanwita Bin

**Reviewed and Approved**  
**KUMARAVEL.C**  
Manager (Env)  
Date&Time :21-08-2023 10:33:33

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**Note:**

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012338245		<b>Report Issue Date</b>		27-08-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	Ajay Singh	<b>Date of Sampling</b>	05-08-2023	<b>Sample ID</b>	18087		
<b>Sampling Location</b>	Mine Effluent after Settling Dipka (WBP)	<b>Sampling Plan</b>	As Per Fortnightly Plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP		
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	08-08-2023	<b>Date of Analysis</b>	From 10-08-2023 To 23-08-2023		

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	BDL	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.88	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	14.00	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
M.G.Krishna

JSA

Reviewed and Approved  
**KUMARAVEL.C**  
Manager (Env)  
Date&Time :27-08-2023 02:41:10

**Note:**

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012338351		<b>Report Issue Date</b>		06-09-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	Ratan Gope	<b>Date of Sampling</b>	16-08-2023	<b>Sample ID</b>	18326		
<b>Sampling Location</b>	Mine Effluent after Settling Dipka (WBP)	<b>Sampling Plan</b>	As Per Fortnightly Plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP		
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	16-08-2023	<b>Date of Analysis</b>	From 17-08-2023 To 28-08-2023		

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	8.00	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	6.80	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	12.00	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
Salim Khan

Reviewed and Approved  
**KUMARAVEL.C**  
Manager (Env)  
Date&Time :06-09-2023 10:26:24

JSA

**Note:**

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# ENVIRONMENTAL MONITORING REPORT

**AIR, NOISE & EFFLUENT**

**(DIPKA AREA)**



**Environmental  
Monitoring**

**SEPTEMBER- 2023**

**SOUTH EASTERN COALFIELDS LIMITED**

*(A Mini Ratna Company)*

**Central Mine Planning & Design Institute Limited  
Regional Institute – V, CMPDI Complex,  
BILASPUR (C.G.)**

# ENVIRONMENTAL MONITORING REPORT

## DIPKA AREA

### INDEX

Sl.No.	CONTENTS	No. of samples	Page No.
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2	Near Railway Siding	8	1
3	New Excv. Workshop	8	2
4	Pragati Nagar	8	2
5	Hardi Bazar	8	3
6	Batari	8	3
7	Jhabhar	8	4
8	Ratija	8	4
	<b>Total</b>	<b>64</b>	

Sl.No.	Name of Noise Sampling Station	No. of samples	Page No.
1	Malgaon Village	2	5
2	Near Railway Siding	2	5
3	New Excv. Workshop	2	5
4	Pragati Nagar	2	5
5	Hardi Bazar	2	5
6	Batari	2	5
7	Jhabhar	2	5
8	Ratija	2	5
	<b>Total</b>	<b>16</b>	

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<b>3</b>	Workshop Effluent	<b>2</b>	<b>10-11</b>
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	<b>Total</b>	<b>8</b>	

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Environment Laboratory, Regional Institute-V,  
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website: [www.cmpdi.co.in](http://www.cmpdi.co.in)

**AIR QUALITY REPORT**

Month	SEPTEMBER	Area	DIPKA	Report No	BSP/2023/09/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	31.10.2023
Name of the Project	DIPKA OC	Sample Reference No.	DIDA1-DIDA2

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
1-Malgaon Village (DIDA1)	B	04.09.2023	09.09.2023	153	63	42	30	32		
		07.09.2023	11.09.2023	175	77	50	29	36		
		11.09.2023	14.09.2023	163	58	42	34	32		
		14.09.2023	18.09.2023	131	54	39	25	29		
		19.09.2023	22.09.2023	175	73	52	30	33		
		22.09.2023	25.09.2023	163	69	55	26	31		
		25.09.2023	28.09.2023	148	68	50	33	35		
		28.09.2023	01.10.2023	152	59	53	32	36		
2-Near Railway Siding (DIDA2)	A-O	05.09.2023	08.09.2023	432	213	78	34	38		
		08.09.2023	10.09.2023	465	238	63	37	40		
		12.09.2023	15.09.2023	438	219	69	32	29		
		15.09.2023	18.09.2023	495	248	73	34	37		
		19.09.2023	23.09.2023	395	202	71	36	34		
		22.09.2023	26.09.2023	485	238	63	37	40		
		26.09.2023	29.09.2023	392	209	59	32	35		
		29.09.2023	02.10.2023	458	249	68	37	39		

Analyzed by

Checked by

Manager -Environment

Note: 1) The results above relate to the samples tested.

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 website: [www.cmpdi.co.in](http://www.cmpdi.co.in)

**AIR QUALITY REPORT**

Month	SEPTEMBER	Area	DIPKA	Report No	BSP/2023/09/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	31.10.2023
Name of the Project	DIPKA OC	Sample Reference No.	DIDA3- DIDA4

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
3-Near Excv. Workshop (DIDA3)	A-O	04.09.2023	09.09.2023	453	263	67	33	39		
		07.09.2023	11.09.2023	435	208	71	32	34		
		11.09.2023	14.09.2023	418	221	69	30	36		
		14.09.2023	18.09.2023	475	236	77	29	34		
		19.09.2023	22.09.2023	365	212	69	28	30		
		22.09.2023	25.09.2023	488	228	72	31	34		
		25.09.2023	28.09.2023	390	219	66	37	32		
		28.09.2023	01.10.2023	449	239	73	32	36		
4-Pragati Nagar (DIDA4)	B	04.09.2023	09.09.2023	137	53	44	32	34		
		07.09.2023	11.09.2023	165	61	46	25	27		
		11.09.2023	14.09.2023	185	73	51	19	21		
		14.09.2023	18.09.2023	136	51	37	26	29		
		18.09.2023	22.09.2023	157	62	49	30	34		
		21.09.2023	25.09.2023	149	59	44	17	19		
		25.09.2023	28.09.2023	138	52	53	21	24		
		28.09.2023	01.10.2023	167	63	47	29	22		

Analyzed by

Checked by

Manager - Environment

Note: 1) The results above relate to the samples tested.

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**AIR QUALITY REPORT**

Month	SEPTEMBER	Area	DIPKA	Report No	BSP/2023/09/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	31.10.2023
Name of the Project	DIPKA OC	Sample Reference No.	DIDA5- DIDA6

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in µg/m <sup>3</sup> )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in µg/m <sup>3</sup> )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
5-Hardi Bazar (DIDA5)	B	04.09.2023	09.09.2023	137	57	46	26	30		
		07.09.2023	11.09.2023	159	63	37	22	24		
		11.09.2023	14.09.2023	167	55	51	30	33		
		14.09.2023	18.09.2023	173	71	47	37	40		
		19.09.2023	22.09.2023	163	62	39	30	29		
		22.09.2023	25.09.2023	148	57	53	27	31		
		25.09.2023	28.09.2023	167	68	33	32	36		
		28.09.2023	01.10.2023	182	73	39	34	37		
6-Batari (DIDA6)	B	05.09.2023	08.09.2023	134	62	43	30	35		
		08.09.2023	10.09.2023	157	74	38	33	36		
		12.09.2023	15.09.2023	165	69	46	28	30		
		15.09.2023	18.09.2023	132	58	51	24	26		
		18.09.2023	23.09.2023	142	62	39	28	31		
		21.09.2023	26.09.2023	164	67	46	29	33		
		26.09.2023	29.09.2023	137	57	35	27	31		
		29.09.2023	02.10.2023	168	72	52	30	34		

*Anil*  
Analyzed by

*Deepanjana*  
Checked by

*C.K. Vel*  
Manager - Environment

Note: 1) The results above relate to the samples tested.

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 website: [www.cmpdi.co.in](http://www.cmpdi.co.in)

**AIR QUALITY REPORT**

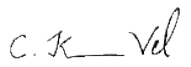
Month	SEPTEMBER	Area	DIPKA	Report No	BSP/2023/09/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	31.10.2023
Name of the Project	DIPKA OC	Sample Reference No.	DIDA7- DIDA8

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
7-Jhabar (DIDA7)	B	05.09.2023	08.09.2023	142	59	44	30	33		
		08.09.2023	10.09.2023	137	51	43	26	28		
		12.09.2023	15.09.2023	159	62	38	27	30		
		15.09.2023	18.09.2023	165	68	46	32	34		
		18.09.2023	23.09.2023	176	72	39	25	28		
		21.09.2023	26.09.2023	123	56	52	26	30		
		26.09.2023	29.09.2023	120	53	45	28	32		
		29.09.2023	02.10.2023	111	50	39	26	30		
8-Ratija (DIDA8)	B	05.09.2023	08.09.2023	134	57	41	34	38		
		08.09.2023	10.09.2023	154	61	46	30	32		
		12.09.2023	15.09.2023	136	55	37	24	27		
		15.09.2023	18.09.2023	175	67	51	31	34		
		18.09.2023	23.09.2023	163	63	34	26	28		
		21.09.2023	26.09.2023	142	62	42	33	35		
		26.09.2023	29.09.2023	138	58	36	25	29		
		29.09.2023	02.10.2023	152	61	52	32	36		

  
 Analyzed by

  
 Checked by

  
 Manager - Environment

Note: 1) The results above relate to the samples tested.

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**NOISE QUALITY REPORT**

Month	SEPTEMBER	Area	DIPKA	Report No	BSP/2023/09/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	31.10.2023
Name of the Project	DIPKA OC	Sample Reference No.	DIDN1-DIDN8

Parameter			The Noise Pollution (R & C) rules, 2000		Remarks
			Day Time	Night Time	
Limit (in dB(A) Leq	Industrial area	A	75	70	
	Commercial area	B	65	55	
	Residential Area	C	55	45	
	Silence Zone	D	50	40	
Method of analysis		CPCB Protocol For Ambient Level Noise Monitoring			
Station (Code) Station Name	Station category	Date of measurement	Value in dB(A)	Value in dB(A)	
<b>1-Malgaon Village</b> (DIDN1)	C	12.09.2023	50.5	39.3	
		22.09.2023	46.9	38.8	
<b>2-Near Railway Siding</b> (DIDN2)	A	12.09.2023	60.9	53.4	
		22.09.2023	42.2	53.3	
<b>3-New Excv. Workshop</b> (DIDN3)	A	12.09.2023	61.9	54.3	
		22.09.2023	61.2	55.3	
<b>4-Pragati Nagar</b> (DIDN4)	C	12.09.2023	52.7	38.6	
		22.09.2023	47.3	38.4	
<b>5-Hardi Bazar</b> (DIDN5)	C	12.09.2023	49.4	41.1	
		22.09.2023	46.3	38.5	
<b>6-Batari</b> (DIDN6)	C	12.09.2023	50.0	39.5	
		22.09.2023	45.9	40.3	
<b>7-Jhabar</b> (DIDN7)	C	12.09.2023	48.2	40.3	
		22.09.2023	46.8	39.3	
<b>8-Ratija</b> (DIDN8)	C	12.09.2023	49.5	37.4	
		22.09.2023	46.0	38.2	

*Nimal*  
 Sampled by

*Deepanjana*  
 Checked by

*C.K. Vel*  
 Manager-Environment

Note: 1) The results above relate to the samples tested.

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012340327		<b>Report Issue Date</b>		10-10-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	Nitesh sao	<b>Date of Sampling</b>	01-09-2023	<b>Sample ID</b>	18439		
<b>Sampling Location</b>	U/S of Lilagarh Nala before entering mining lease boundary Dipka (WBP)	<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP		
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	04-09-2023	<b>Date of Analysis</b>	From 04-09-2023 To 11-09-2023		

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	BDL	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.70	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	33.00	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
Nirmal Kumar

Reviewed and Approved  
Kumaravel.C  
Manager (Env)  
Date&Time :10-10-2023 03:16:26

JSA

Note:

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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012340961		<b>Report Issue Date</b>		10-10-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	ajay	<b>Date of Sampling</b>	16-09-2023	<b>Sample ID</b>	18658		
<b>Sampling Location</b>	U/S of Lilagarh Nala before entering mining lease boundary Dipka (WBP)	<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP		
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	18-09-2023	<b>Date of Analysis</b>	From 18-09-2023 To 07-10-2023		

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	16.00	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.60	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	230.00	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
Nirmal Kumar

Reviewed and Approved  
Kumaravel.C  
Manager (Env)  
Date&Time :10-10-2023 03:16:29

JSA

Note:

- \* This is computer generated report and does not require signature
- \* General Standards for Discharge of Environmental Pollution(Part A:Effluent) as per Schedule VI,Environment (Protection) Rules
  - a. The results relate only to the item sampled and tested.
  - b. This report shall not be reproduced except in full without approval of the laboratory.

### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012340311		<b>Report Issue Date</b>		10-10-2023	
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	Nitesh sao	<b>Date of Sampling</b>	01-09-2023	<b>Sample ID</b>	18437		
<b>Sampling Location</b>	D/S of Lilagarh Nala after leaving mining lease boundary Dipka (WBP)		<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP	
<b>Sample Condition</b>	APPROPRIATE		<b>Date of Receipt of Sample</b>	04-09-2023	<b>Date of Analysis</b>	From 04-09-2023 To 11-09-2023	

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	BDL	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.30	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	30.00	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
Nirmal Kumar

Reviewed and Approved  
Kumaravel.C  
Manager (Env)  
Date&Time :10-10-2023 03:16:26

JSA

Note:

- \* This is computer generated report and does not require signature
- \* General Standards for Discharge of Environmental Pollution(Part A:Effluent) as per Schedule VI,Environment (Protection) Rules
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  - b. This report shall not be reproduced except in full without approval of the laboratory.

### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012340945	<b>Report Issue Date</b>		10-10-2023
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	ajay	<b>Date of Sampling</b>	16-09-2023	<b>Sample ID</b>	18656
<b>Sampling Location</b>	D/S of Lilagarh Nala after leaving mining lease boundary Dipka (WBP)	<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	18-09-2023	<b>Date of Analysis</b>	From 18-09-2023 To 07-10-2023

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	BDL	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	8.03	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	239.00	±0.445 @ 24.429

----- END OF THE REPORT -----

Reported By  
Nirmal Kumar

Reviewed and Approved  
Kumaravel.C  
Manager (Env)  
Date&Time :10-10-2023 03:16:29

JSA

Note:

- \* This is computer generated report and does not require signature
- \* General Standards for Discharge of Environmental Pollution(Part A:Effluent) as per Schedule VI,Environment (Protection) Rules
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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012340335	<b>Report Issue Date</b>		10-10-2023
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	Nitesh sao	<b>Date of Sampling</b>	01-09-2023	<b>Sample ID</b>	18440
<b>Sampling Location</b>	Workshop Effluent Dipka (WBP)	<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	04-09-2023	<b>Date of Analysis</b>	From 04-09-2023 To 11-09-2023

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	8.00	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.00	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	BDL	±0.445 @ 24.429

----- END OF THE REPORT -----

**Reported By**  
Nirmal Kumar

**Reviewed and Approved**  
Kumaravel.C  
Manager (Env)  
Date&Time :10-10-2023 03:16:26

**JSA**

Note:

- \* This is computer generated report and does not require signature
- \* General Standards for Discharge of Environmental Pollution(Part A:Effluent) as per Schedule VI,Environment (Protection) Rules
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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012340969	<b>Report Issue Date</b>		10-10-2023
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	ajay	<b>Date of Sampling</b>	16-09-2023	<b>Sample ID</b>	18659
<b>Sampling Location</b>	Workshop Effluent Dipka (WBP)	<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	18-09-2023	<b>Date of Analysis</b>	From 18-09-2023 To 07-10-2023

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	8.00	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.46	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	239.00	±0.445 @ 24.429

----- END OF THE REPORT -----

**Reported By**  
Nirmal Kumar

**Reviewed and Approved**  
Kumaravel.C  
Manager (Env)

Date&Time :10-10-2023 03:16:29

**JSA**

Note:

- \* This is computer generated report and does not require signature
- \* General Standards for Discharge of Environmental Pollution(Part A:Effluent) as per Schedule VI,Environment (Protection) Rules
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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012340319	<b>Report Issue Date</b>		10-10-2023
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	Nitesh sao	<b>Date of Sampling</b>	01-09-2023	<b>Sample ID</b>	18438
<b>Sampling Location</b>	Mine Effluent after Settling Dipka (WBP)	<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	04-09-2023	<b>Date of Analysis</b>	From 04-09-2023 To 11-09-2023

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	8.00	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.78	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	BDL	±0.445 @ 24.429

----- END OF THE REPORT -----

**Reported By**  
Nirmal Kumar

**Reviewed and Approved**  
Kumaravel.C  
Manager (Env)

Date&Time :10-10-2023 03:16:26

**JSA**

Note:

- \* This is computer generated report and does not require signature
- \* General Standards for Discharge of Environmental Pollution(Part A:Effluent) as per Schedule VI,Environment (Protection) Rules
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### TEST & SAMPLING REPORT OF (EFFLUENT WATER FORTNIGHTLY )

<b>Unique Report No.</b>		TC-74012340953	<b>Report Issue Date</b>		10-10-2023
<b>Customer Name</b>		South Eastern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	ajay	<b>Date of Sampling</b>	16-09-2023	<b>Sample ID</b>	18657
<b>Sampling Location</b>	Mine Effluent after Settling Dipka (WBP)	<b>Sampling Plan</b>	As per fortnightly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	18-09-2023	<b>Date of Analysis</b>	From 18-09-2023 To 07-10-2023

Sr. No	Parameter	Test At	Method of Analysis	Range	Permissible Limit*	Observed Value	UOM (at 95% C.L&k=1.96)
1	C.O.D mg/l	Main	APHA, 23rd Edition, 2017, 5220C	8.0 - 500.0	250	8.00	±6.209 at 247.427
2	Oil & Grease mg/l	Main	IS 3025 (Part 39):1991,(RA : 2003)	4.0 - 100.0	10	BDL	±1.8109 @ 9.95
3	pH Value Unitless	Main	IS 3025 (Part 11):1983, R : 2012	1.00 - 14.00	5.5-9.0	7.94	±0.1272 at 7.0074
4	Total suspended Solids mg/l	Main	IS 3025 (Part 17):1984, (RA: 1996)	10.0 - 5000.0	100	235.00	±0.445 @ 24.429

----- END OF THE REPORT -----

**Reported By**  
Nirmal Kumar

**Reviewed and Approved**  
Kumaravel.C  
Manager (Env)

Date&Time :10-10-2023 03:16:29

**JSA**

Note:

- \* This is computer generated report and does not require signature
- \* General Standards for Discharge of Environmental Pollution(Part A:Effluent) as per Schedule VI,Environment (Protection) Rules
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  - b. This report shall not be reproduced except in full without approval of the laboratory.



April - 2023

Genius	Page: _____
	Date: / /

S.N.	Date	LOCATION	Db.
1	01/4/23	शाकेल 229 चालू समथ 20 मीटर दूर	81
2	03/4/23	शाकेल 314 चालू समथ 20 मीटर दूर	82
3	06/4/23	002 चालू समथ डेविन मे.	73
4	08/4/23	003 चालू समथ डेविन मे.	72
5	11/4/23	महामाया ट्रिपल चालू समथ डेविन मे.	67
6	13/4/23	P. R. R. शेड डे अंदर	81
7	16/4/23	डंपर 1588 चालू समथ डेविन मे.	81
8	18/4/23	डिल 141 चालू समथ डेविन मे.	76
9	20/4/23	डोजर नं 206 चालू समथ डेविन मे.	77
10	22/4/23	डोजर नं 819 चालू समथ डेविन मे.	74
11	24/4/23	वायर ट्रेजर 006 चालू समथ डेविन मे.	79
12	25/4/23	PC नं 180 चालू समथ डेविन मे.	81
13	26/4/23	PC. नं 250 चालू समथ डेविन मे.	82

Inspector  
Chk. - (M)

W/P (Exec)

W/P (E/M).

30/04/2023

A.R. M.  
30/4/23

W/P

खान सुरका अधिकारी

एच.ई.सी.एल.दीपका परियोजना

Teacher's Signature.....

May - 2023

S.NO.	Date.	LOCATION.	Ob.
1.	02/5/23	शावेल 229 चालू समय 20 मिनट दूर	82
2.	04/5/23	शावेल 314 चालू समय 20 मिनट दूर	81
3.	5/5/23	डोजर 206 चालू समय डेविन में	76
4.	6/5/23	वायर टेंडर 086 चालू समय डेविन में	81
5.	7/5/23	PC 180 चालू समय डेविन में	80
6.	8/5/23	PC 249 चालू समय डेविन में	81
7.	25/5/23	PC 250 चालू समय डेविन में	82
8.	26/5/23	002 चालू समय डेविन में	75
9.	27/5/23	003 चालू समय डेविन में	74
10.	28/5/23	P. Q. R. 20 डे अंदर स्विक्रिपास	82
11.	29/5/23	डूपर 1138 चालू समय डेविन में	82

*[Signature]*  
 31/5/23

Yogabhadan  
 W.I (M) 31/5/23

*[Signature]*

*[Signature]*

W.I (EXCV)

W.I (E4M)

Teacher's Signature.....

29/5/23

June-2023

S.N.	Date	LOCATION.	Db.
1	01/6/23	314 चालू समय 20 मं. दूर	81
2	02/6/23	वायर टेंकर 006 चालू समय डेबिन में	80.
3	03/6/23	PC. 180 चालू समय डेबिन में.	81
4	4/6/23	002 शाकेल चालू समय डेबिन में.	74
5	05/6/23	003 शाकेल चालू समय डेबिन में.	76
6	06/6/23	P, Q, R, शेड के अंदर	81
7	08/6/23	PC. 249 के डेबिन में.	80.
8	10/6/23	PC. 250 के डेबिन में.	82
9	11/6/23	240 T. डंपर 1868 के डेबिन में.	81
10	12/6/23	240 T. डंपर 1865 के डेबिन में.	80.
11	15/6/23	240 T. डंपर 1866 के डेबिन में.	82
12	16/6/23	रेज्जर 790 के डेबिन में.	78
13	17/6/23	टेंकर नं 45 के डेबिन में.	81

*[Signature]*  
S.O.M.

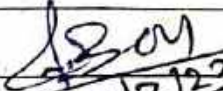
*[Signature]*  
w/I (m)


*[Signature]*  
w/I (ExcV)


*[Signature]*  
w/I (E/m).

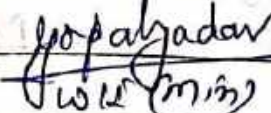
July - 2023.

S.N.	DATE	LOCATION.	Db.
1	08/7/23	शाकेल नं० 229 चालू समथ 20 म. दूर	81.0
2	09/7/23	शाकेल नं० 314 चालू समथ 20 म. दूर	82.0
3	10/7/23	ड्रिल नं० 80125 चालू समथ डेविन मे	80
4	11/7/23	ड्रिल नं० 203 चालू समथ डेविन मे	78.8
5	13/7/23	P.Q.R, शेड डे इंपर	82
6	15/7/23	PC शाकेल नं० 002 चालू समथ डेविन मे	74
7	16/7/23	PC शाकेल नं० 003 चालू समथ डेविन मे	72
8	18/7/23	ड्रिल नं० 503 चालू समथ डेविन मे	81
9	20/7/23	इंपर नं० 1558 चालू समथ डेविन मे	80
10	21/7/23	PC शाकेल नं० 250 चालू समथ डेविन मे	80
11	24/7/23	इंपर नं० 1129 चालू समथ डेविन मे	81
12	26/7/23	इंपर नं० 874 चालू समथ डेविन मे	82

  
31/7/23

  
13/8/2023  
W.I. (E/CU)

  
31/7/23  
W.I. (E/M)

  
W.I. (M)



Aug. 2023.

S.N.	Date	LOCATION.	Db.
1	01/8/23	Pi & R1 Shed	83
2	03/8/23	PC शाकेल डेल 002 डेडेविन मे	74
3	05/8/23	डिल 503 डे डेविन मे	82
4	07/8/23	PC शाकेल 250 डे डेविन मे	80.
5	09/8/23	मलमाथा. डिल के डेविन मे	66
6	12/8/23	ईयर (240T.) 1135 डे डेविन मे.	80
7	14/8/23	ईयर (240T.) 1874 डे डेविन मे.	81
8	16/8/23	ईयर (240T) 1129 डे डेविन मे.	82
9	19/8/23	शाकेल 229 चालू समय 20 मिन. दूर	81
10	21/8/23	PC शाकेल 003 डे डेविन मे	76.
11	22/8/23	ईयर (240T.) 1138 डे डेविन मे.	82
12	24/8/23	PC शाकेल 249 डे डेविन मे.	81
13	25/8/23	PC शाकेल 250 डे डेविन मे.	82

31/8/23

31/8/23  
w/i (m)

31/8/23

w/i (ExcV)

31/08/23

w/i (E/m)

खान सुरवात शिब Teacher's Signature.....  
एस.ई.सी.एल.टीपका परियोजना

Sep. 2023

S.N.	Date	LOCATION.	DB
1	11/9/23	229 शाकेल-चाळूसमथ 20m दूर	81.00
2	21/9/23	314 चाळूसमथ 20 m दूर	82.00
3	31/9/23	ड्रिल 80125 चाळूसमथ डेव्हिन मे.	68.00
4	4/9/23	P, B, R, शेड मे.	81.00
5	5/9/23	शाकेल 002 डेव्हिन मे.	76.00
6	9/9/23	शाकेल 003 डेव्हिन मे.	74.00
7	10/9/23	डंपर 1559 डेव्हिन मे.	80.00
8	11/9/23	डंपर 0091 डेव्हिन मे.	81.00
9	14/9/23	शेड नर. हाडन B1 B2 B3 मे.	82.00
10	16/9/23	ड्रिल RLP 650 डेव्हिन मे.	83.00
11	20/9/23	ड्रिल 790 डेव्हिन मे.	79.00
12	21/9/23	डंपर 1181 डेव्हिन मे.	81.00
13	22/9/23	डंपर 586 डेव्हिन मे.	80.00

*[Signature]*  
20/9/23

*[Signature]*

*[Signature]*  
20/9/23

*[Signature]*  
20/9/23

*[Signature]*  
20/9/23

*[Signature]*

Sr: 0/0

W/ I (M)

W/ I (Exec)

W/ I (E/M)

ज्ञान सुरवा अधिकारी  
सकाईनी एन सीका परिवार



साउथ ईस्टर्न कोलफिल्ड्स लिमिटेड  
 South Eastern Coalfields Limited  
 (कोल इंडिया का एक अंश/A Subsidiary Of Coal India Ltd)  
 कार्यालय:- महाप्रबंधक, दीपका क्षेत्र  
 OFFICE OF THE GENERAL MANAGER, DIPKA AREA  
 P.O.: Dipka, Dist.: Korba (CG)-495452  
 Tel: 07815-239011,263300,263301 Fax:07815239002  
 e-mail: gmdpk.secl@coalindia.in

क्रमांक: एस.ई.सी.एल/दी.क्षे./पर्या./2022/2582

दिनांक: 07.04.2022

प्रति,  
 वनमंडलाधिकारी,  
 कटघोरा वनमंडल, कटघोरा

विषय: Submission of DD of Rs.8,25,356/- towards difference amount for plantation of 50,000 nos. of native trees at Kasaipali Village (OA778) -Reg.

संदर्भ: आपका पत्र क्र: तक.अधि./2021/72, दिनांक:04.01.2022

महोदया

Kindly refer to your above demand letter dated: 04.01.2022, wherein it was asked to pay a difference amount of Rs.8,25,356/- through DD issued in favour of DFO Katghora for carrying out the plantation of 50,000 nos of native trees at Kasaipali Village (OA778).

In this regard, we are hereby submitting DD of Rs.8,25,356/- (Rupees Eight Lakhs Twenty Five Thousand Three Hundred and Fifty Six Only), DD No: 215970, dated: 06.04.2022 drawn in favour of Divisional Forest Officer, Katghora.

This is for your kind information and further necessary action please.

धन्यवाद,

भवदीय,

महाप्रबंधक,

दीपका क्षेत्र, एस.ई.सी.एल.।

प्रतिलिपि,

1. महाप्रबंधक (पर्यावरण), एस.ई.सी.एल. मुख्यालय, बिलासपुर।
2. महाप्रबंधक (खनन), दीपका विस्तार परियोजना।
3. नोडल अधिकारी (पर्यावरण), दीपका क्षेत्र।

Issuing Branch: GEVRA (S&G)  
CODE No: 09343  
State Bank of India  
Tel No: 07815-275205

मांगद्राफ्ट  
DEMAND DRAFT

Key: VOJKUT  
Sr. No: 229626

0 6 0 4 2 0 2 2  
D D M M Y Y Y Y

मांगे जानेपर DIVISIONAL FOREST OFFICER KATG HORA\*\*\*\*\*

ON DEMAND PAY

या उनके आदेश पर

Eight Lakh Twenty Five Thousand Three Hundred and Fifty Six Only

OR ORDER

रुपये RUPEES

अदा करें

₹

825356.00

IOI 000545215970

Key: VOJKUT Sr. No: 229626

Name of Applicant

S E C L DIPKA AREA

AMOUNT BELOW 825357(0/6)

मूल्य प्राप्त / VALUE RECEIVED

भारतीय स्टेट बैंक

STATE BANK OF INDIA

अदाकर्ता शाखा / DRAWEE BRANCH: KATGHORA

कोड क्र. / CODE No: 02861

प्रतिष्ठापक / AUTHORIZED SIGNATOR

CS No: 67455

BRANCH MANAGER

कंप्यूटर द्वारा मुद्रित होने पर ही वैध  
VALID ONLY IF COMPUTER PRINTED

केवल 3 महीने के लिए वैध  
VALID FOR 3 MONTHS ONLY

INSTRUMENTS FOR ₹ 50,000 & ABOVE ARE NOT VALID UNLESS SIGNED BY THE OFFICERS

⑈ 215970⑈ 000002000⑈ 000545⑈ 16





साउथ ईस्टर्न कोलफिल्ड्स लिमिटेड  
South Eastern Coalfields Limited  
(कोल इंडिया का एक अंश/A Subsidiary Of Coal India Ltd)  
कार्यालय:- महाप्रबंधक, दीपका क्षेत्र  
OFFICE OF THE GENERAL MANAGER, DIPKA AREA  
P.O.: Dipka, Distt.: Korba (CG)-495452  
Tel: 07815-239011,263300,263301 Fax:07815239002  
e-mail: gmdpk.secl@coalindia.in

क्रमांक: एस.ई.सी.एल/दी.क्षे./पर्या./2021/ 2294

दिनांक: 29.06.2021

प्रति,

वन मंडलाधिकारी,  
कटघोरा वन मण्डल, कटघोरा,  
छत्तीसगढ़।

**विषय:** Submission of Demand Draft of Rs.99,91,638.00/- for 50,000 Nos of tree plantation at Kasaipali Village (OA 778).

**संदर्भ:** आपका पत्र क्र:तक.अधि./2021/1669, कटघोरा, दिनांक: 05.08.2021


महोदया,

In line to your above referrenced demand letter, Dipka Expansion Project is hereby submitting a DD for Rs. 99,91,638.00/- (Rupees Ninety nine lakhs ninety one thousand six hundred and thirty eight only) drawn in favour of Divisional Forest Officer, Kathora for plantation of 50,000 no. of native trees with broad leaves at Kasaipali village (OA 778).

You are kindly requested to carry out the plantation work at Kasaipali Village as per the scheme prepared your office and provide us with an endorsement letter upon completion of the plantation works.

धन्यवाद,

भवदीय,

  
महाप्रबंधक  
29/06/21  
दीपका क्षेत्र, एस.ई.सी.एल.।

प्रतिलिपि,

1. महाप्रबंधक(पर्यावरण), एस.ई.सी.एल. मुख्यालय, बिलासपुरा : कृपया जानकारी हेतु।
2. नोडल अधिकारी (पर्यावरण), दीपका क्षेत्र

भारतीय स्टेट बैंक  
 Issuing Branch: State Bank of India  
 शाखा क्र./CODE No: 08343  
 Tel No. 07815-275205

मांगद्वारपत्र  
**DEMAND DRAFT**

Key: QOMCIY  
 Sr. No: 428158  
 1 9 0 6 2 0 2 1  
 D D M Y Y Y Y

मांगे जायेपर DIVISIONAL FOREST OFFICER \*\*\*\*\*  
 ON-DEMAND-PAY  
 Ninety Nine Lakh Ninety One Thousand Six Hundred and Thirty Eight Only

रुपये RUPEES

8 7 6 5 4 3 2 1  
 या जम्के आदेश पर  
 OR ORDER

अदा करें ₹ 9991638.00

IOI 000522312801 Key: QOMCIY Sr. No: 428158 AMOUNT BELOW 9991638(0/7)  
 Name of Applicant S E C L DIPKA AREA

*Srinivas Kumar*  
 शाखा प्रबन्धक  
 AUTHORIZED SIGNATORY  
 BRANCH MANAGER

भारतीय स्टेट बैंक  
 STATE BANK OF INDIA  
 अदादेश शाखा / DRAWEE BRANCH: KATGHORA  
 शाखा क्र. / BRIDGE TWO, U28801

कंप्यूटर द्वारा मुद्रित होने पर भी वैध  
 VALID ONLY IF COMPUTER PRINTED  
 वैधता 3 माहों के लिए है।  
 VALID FOR 3 MONTHS ONLY

₹ 1,99,000-75 रुपये के अंशों में प्रमाणित होने पर ही वैध है।  
 NOT VALID UNLESS ENDORSED BY TWO OFFICERS  
 S.S. NO. - 85992

⑈ 3 2 6 ⑈ 00000 2000⑈ 000522⑈ 1 6

कार्यालय वनपरिक्षेत्र अधिकारी कटघोरा जिला-कोरबा (छ.ग.)

rangekatghora@gmail.com

क्रमांक/2021/.....116

कटघोरा, दिनांक/.....08.02.2021

प्रति,

वनमण्डलाधिकारी  
कटघोरा वनमण्डल कटघोरा

द्वारा :- उप वनमण्डलाधिकारी पाली

विषय:- परियोजना प्रतिवेदन प्रस्तुत करने बाबत।

—:000:—

उपरोक्त विषयांतर्गत निवेदन है कि वनपरिक्षेत्र कटघोरा के अंतर्गत पर्यावरण स्वीकृति के शर्तों के परिपालन में एस.ई.सी.एल. दीपका के द्वारा 50000 पौधों का वृक्षारोपण का परियोजना प्रतिवेदन तीन प्रति में तैयार कर आवश्यक कार्यवाही हेतु आपकी ओर सादर प्रस्तुत है।

क्रमांक	योजना का नाम	स्थल का नाम	कक्ष क्रमांक/ख.नं.	रकबा (हे.में.)	राशि
1	2	3	4	5	6
1.	पर्यावरण स्वीकृति के शर्तों के परिपालन में एस.ई.सी.एल. दीपका के द्वारा 50000 पौधों का वृक्षारोपण	कसईपाली दीपका	OA-778	20.000 हे.	9991638.00
योग -					9991638.00

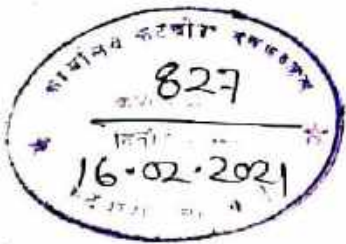
संलग्न :- उपरोक्तानुसार परियोजना प्रतिवेदन तीन प्रति में।

वनपरिक्षेत्राधिकारी  
कटघोरा

वनपरिक्षेत्राधिकारी कटघोरा

160

दिनांक 11.02.21



प्रति,

वनमण्डल कटघोरा

मुख्य परियोजना प्रतिवेदन अनुशंसा सहित

अत्रिक्त कार्यवाही हेतु सादर सम्प्रेषित है।

Latter Doc-2021-22

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उप वनमण्डलाधिकारी  
पाली, जिला-कोरबा (छ.ग.)



# छत्तीसगढ़ शासन वन विभाग

परियोजना प्रतिवेदन

वित्तीय वर्ष – 2021–2022 से 2025–26

पर्यावरण स्वीकृति के शर्तों के परिपालन में एस.ई.सी.एल दीपका के द्वारा 50000 पौधों का वृक्षारोपण

## सागौन वृक्षारोपण

स्थल का नाम	:- कसईपाली
कक्ष क्रमांक	:- OA-778
प्रस्तावित रकबा	:- 20.000 हे.
परिक्षेत्र का नाम	:- कटघोरा
प.स.वृत्त का नाम	दीपका
परिसर का नाम	:- दीपका
नगर पालिका परिषद	:- दीपका
विकास खंड	:- कटघोरा
विधान सभा	:- कटघोरा
जिला	:- कोरबा
लागत	:- 9991638.00
जी.पी.एस.को आर्डिनेट	1 N 22°23'09.55"E 82°33'27.46"
	2 N 22°23'00.43"E 82°33'28.18"
	3 N 22°22'59.75"E 82°33'46.65"
	4 N 22°22'51.47"E 82°33'56.60"
	5 N 22°23'07.02"E 82°34'04.93"

वन परिक्षेत्र : कटघोरा

वनमंडल : कटघोरा

तकनीकी प्रतिवेदन

पर्यावरण स्वीकृति के शर्तों के परिपालन में एरा.ई.सी.एल दीपका के द्वारा 50000 पौधों का वृक्षारोपण सागौन वृक्षारोपण

- 1 कार्य का नाम :- सागौन वृक्षारोपण
- 2 परियोजना की लागत :- 9991638.00
- 3 परियोजना की अवधि :- वर्ष 2021-22 से 2025-26
- 4 परियोजना स्थल का विवरण
  - (i) स्थल का नाम :- कक्ष क्रमांक OA-778 कसईपाली
  - (ii) वनमंडल :- कटघोरा
  - (iii) उप वनमण्डल :- पाली
  - (iv) विधानसभा क्षेत्र :- कटघोरा
  - (v) वनपरिक्षेत्र :- कटघोरा
  - (vi) प.स. वृत्त :- दीपका
  - (vii) परिसर :- दीपका
- 5 परियोजना का उद्देश्य
  - :- (1) भू-क्षरण को रोकना।
  - :- (2) वन क्षेत्र का विकास

  
वनपरिक्षेत्राधिकारी  
कटघोरा

## परिक्षेत्र अधिकारी का प्रमाण पत्र

मैं मृत्युजंय शर्मा वन परिक्षेत्र अधिकारी कटघोरा वनमण्डल कटघोरा प्रमाणित करता हूँ कि दीपका परिसर कक्ष क्रमांक OA-778 कसईपाली रकबा 33.91 हे में से रकबा 20.000 हे. चयन किया गया है। परियोजना प्रतिवेदन में दर्शाए गये समस्त तथ्यों का परीक्षण मेरे द्वारा किया गया है। परियोजना प्रतिवेदन के दर्शाए गए उपचारण कार्यों का विवरण एवं मात्रा मौके की आवश्यकता के अनुरूप है। इससे मैं तकनीकी/ वानिकी के दृष्टिकोण से सहमत हूँ।

हस्ताक्षर

नाम : मृत्युजंय शर्मा  
परिक्षेत्र अधिकारी कटघोरा

## उप वनमंडलाधिकारी का प्रमाण पत्र

मैं वाय.पी.डनसेना उप वनमंडलाधिकारी पाली वनमंडल कटघोरा प्रमाणित करता हूँ दीपका परिसर कक्ष क्रमांक OA-778 कसईपाली रकबा 33.91 हे में से रकबा 20.000 हे. चयन किया गया परियोजना प्रतिवेदन में दर्शाए गये समस्त तथ्यों का परीक्षण मेरे द्वारा किया गया है। तथा परियोजना प्रतिवेदन में दर्शाए गए उपचारण के कार्यों का विवरण एवं मात्रा का मेरे द्वारा मौके पर अवलोकन कर इसे क्षेत्र की आवश्यकता के अनुरूप होना पाया। मैं इस परियोजना प्रतिवेदन से सहमत हूँ तथा कार्य कराए जाने की अनुशंसा करता हूँ।

हस्ताक्षर

नाम : वाय.पी. डनसेना  
उप वनमंडलाधिकारी, पाली

**प्राक्कलन**  
पर्यावरण स्वीकृति के शर्तों के परिपालन में एस.ई.सी.एल दीपका के द्वारा 50000 पौधों का वृक्षारोपण  
सागौन वृक्षारोपण

शर्तों का नाम - फसईपाली  
क्रमांक - OA-778

प्रस्तावित रकबा - 20.000 हे.  
मजदूरी दर - 299.00 रु/प्रति मा.दि.

**प्रथम वर्ष - 2021 - 22**

कार्य का विवरण	कार्य की मात्रा/संख्या		ईकाई	दर	कुल मा.दि.	राशि	जान दर आइटम नं.
2	3		4	5	6	7	8
सीमांकन :- सर्वेक्षण (15 सेकंड के अंतराल में जी.पी.एस. के माध्यम से 0.1 हे. सेमल प्लॉट डालकर उपचार मानचित्र एवं प्रोजेक्ट रिपोर्ट तैयार करना (पुनरोत्पादन का वेसलाईन सर्वे)	20.00	हे.	मा.दि./हे.	2.00	40.00	11800.00	कैम्पा नार्मस अनुसार
1. फेंसिंग कार्य :- लोहे का एंगल आयसन कय (2.5 मी. ऊंचाई - 1.5 मी अंतराल में गड़ना 10 प्रतिशत अतिरिक्त सहित। CSIDC आइटम कोड नं. (700001222) Angle Iron Fencing Pole Straight Type	2040	नग	प्रति नग	355		724200.00	CSIDC Rate
2. चैनलिक कय करना :- चैनलिक "2x2" साईज (1.0 मी. ऊंचाई ) में 8 गेज स्पेसिफिकेशन @ 4.78 kg per rmt. 102 र.मी. लंबाई हेतु CSIDC आइटम कोड नं. (700000107) Galvanized Steel Chain Link Fence Fabric with both ends of the Fabric twisted Size in mm, Mesh/Mesh wire /line Wire/No. of wire up to 2 m width/50/4.5/5/2/3 Repectively	3660	कि.ग्रा.	प्रति कि.ग्रा.	66.54		243536.00	CSIDC Rate
3. चैनलिक की बंधाई कार्य बाईडिंग वायर से 102 र.मी. लंबाई x 1.8 र.मी. ऊंचाई में तथा 183.60 र.मी. में कांटेदार तार लगाना।	3672	वर्ग मी.	प्रति वर्ग मी.	50		183600.00	कैम्पा नार्मस अनुसार
1:24 सीसी 20 एम.एम के साथ गड्डों में जाग कर गड्डाई कार्य करना 0.45x0.45x0.60 = 0.122 cmt for 102 ppls = 1245 cmt	248.88	घ.मी.	प्रति घ.मी.	3000		746640.00	कैम्पा नार्मस अनुसार
5. आयसन पोल्स में जग रोघक पेंट लगाना सामग्री परिवहन अन्य व्यय	20.000	हे.	प्रति हे.	2000		40000.00	कैम्पा नार्मस अनुसार
ट्रेक्टर से गहरी जुताई कार्य- एम.बी.प्लाऊ से 2 बार गहरी जुताई	20.000	हे.	रु/हे.	12000		240000.00	
6 क्षेत्र सफाई कार्य एवं सी.बी.ओ कार्य	10.000	हे.	मा.दि./हे.	5.00	50.00	14750.00	PCCF 1:2:2
7 स्टेकिंग कार्य - 2x2 मी. अंतराल में (4.5 मा.दि.प्रति हजार)	50000	नग	मा.दि./हजार.	4.5	225.00	66375.00	कैम्पा नार्मस अनुसार
8 पौधा रोपण हेतु गड्डों की खुदाई कार्य 0.30x0.30x0.30 से.मी. साईज	50000	गड्डे	मा.दि./100	6.00	3000.00	885000.00	PCCF 1:5:1:2
9 गड्डों में मिट्टी एवं खाद का मिश्रण भरना।	50000	गड्डे	रु/गड्डा	2.75		137500.00	कैम्पा नार्मस अनुसार
10 रोपणी व्यय :- 10% अधिक पौधा तैयारी साईज 15x25 से.मी.	55000	पौधे	प्रति नग	13.00		715000.00	कैम्पा नार्मस अनुसार
11 उपजाऊ मिट्टी क्रय 1/4 रायल्टी एवं परिवहन सहित	337.5	घ.मी.	प्रति घ.मी.	350.00		118125.00	
12 जैविक/रासायनिक खाद का क्रय							
(i) गोबर खाद का क्रय गड्डों में 1/4 (0.30x0.30x0.30 = 0.027m <sup>3</sup> /4 = 0.00675m <sup>3</sup> x50000= 337.50 घ.मी. परिवहन सहित	337.50	घ.मी.	रु/घ.मी.	880.00		297000.00	
(ii) बर्मी कम्पोस्ट 500 ग्रा. प्रति पौधा	25000	कि.ग्रा.	रु/कि.ग्रा.	8.00		66000.00	कैम्पा नार्मस अनुसार
(iii) नीमखली 50 ग्रा. प्रति पौधा	2500	कि.ग्रा.	रु/कि.ग्रा.	8.00		20000.00	कैम्पा नार्मस अनुसार
(iv) बोनमिल 50 ग्रा. प्रति पौधा	2500	कि.ग्रा.	रु/कि.ग्रा.	8.00		20000.00	कैम्पा नार्मस अनुसार
14 अन्य आकस्मिक व्यय - बोर +रोलर पम्प, पाईप, पानी सिगनेटक्स टंकी स्टैंड सहित एवं झोपडी निर्माण अदि	20	हे.		L.S.		400000.00	कैम्पा नार्मस अनुसार
<b>योग -</b>						<b>4929526.00</b>	
<b>प्रति हे. व्यय</b>						<b>246476.00</b>	

द्वितीय वर्ष 2022-23

कार्य का विवरण	कार्य की मात्रा/संख्या	ईकाई	दर	कुल मा.दि.	राशि	जाब दर आइटम नं.	
2	3	4	5	6	7	8	
पौधा व्यय :- 10% अधिक पौधा सहित	55000	पौधे	प्रति नग	7.00		385000.00	
कैजुअल्टी रोपण हेतु 10% पौधा तैयारी	5000	पौधे	प्रति नग	17.00		85000.00	कैम्पा नार्मस अनुसार
रोपणी से पौधों का परिवहन							कैम्पा नार्मस अनुसार
(i) रोपणी से ट्रैकेबल स्थल तक वाहन से	50000	पौधे	रु./सै	272.00		136000.00	कैम्पा नार्मस अनुसार
(ii) ट्रैकेबल स्थल से रोपण स्थल तक मजदूरी के माध्यम से	50000	पौधे	मा.दि./कि.मी.	0.50	250.00	74750.00	कैम्पा नार्मस अनुसार
पौधा रोपण :- साईज 0.30x0.30x0.30 से.मी.	50000	पौधे	मा.दि./100	2.25	1125.00	336375.00	PCCF 4:10:2:2
रासायनिक खाद क्रय							कैम्पा नार्मस अनुसार
(i) सुपरफॉस्फेट 50 ग्रा. प्रति पौधा	2500	कि.ग्रा.	रु./कि.ग्रा.	8.00		20000.00	कैम्पा नार्मस अनुसार
(ii) NPK 150 ग्रा. प्रति पौधा 50 ग्रा. प्रति निंदाई	7500	कि.ग्रा.	रु./कि.ग्रा.	8.00		60000.00	कैम्पा नार्मस अनुसार
(iii) फॉरेट 50 ग्रा. प्रति पौधा 50 ग्रा. प्रति निंदाई	2500	कि.ग्रा.	रु./कि.ग्रा.	8.00		20000.00	कैम्पा नार्मस अनुसार
(iv) क्लोरोफॉस्फोड कीटनाशक	24	ली.		L.S.		10000.00	
निंदाई कार्य - (1) प्रथम निंदाई - प्रथम निंदाई रोपण के 15 दिन पश्चात 01 मी. व्यास में की जायेगी (1.10 मा.दि. प्रति सैकड़ा)	50000	पौधे	मा.दि./100	1.10	550.00	164450.00	PCCF 2:1:1
(2) द्वितीय निंदाई - 1 मी. चौड़ी पट्टी में एक माह बाद की जायेगी (1.20 मा.दि. प्रति सैकड़ा)	50000	पौधे	मा.दि./100	1.20	600.00	179400.00	PCCF 1:2:1
(3) तृतीय निंदाई - 01 मी. व्यास में की जायेगी। थाला बनवाया जायेगा (1.10 मा.दि. प्रति सैकड़ा)	50000	पौधे	मा.दि./100	1.10	550.00	164450.00	PCCF 1:3:1
रासायनिक खाद एवं कीटनाशक छिड़काव 3 बार	50000	पौधे	प्रति सै.	0.50	250.00	74750.00	
सिंचाई व्यवस्था माह सितम्बर से मई तक सप्ताह में एक बार सिंचाई कुल सिंचाई की संख्या 36 सिंचाई (प्रति सिंचाई 01 श्रमिक एवं 1 टैकर पानी के मान से ) 01 श्रमिक/1116.00 प्रति श्रमिक = 1116.00 1. टैकर पानी/2700.00 प्रति ट्रैक्टर = 2700.00 = 3816 प्रति पौधा लीटर 350 पौधा के लिये 17.24 रुपये प्रति पौधा एवं अन्य आकस्मिक व्यय	50000	पौधा	पौधा	17.24		862000.00	
रोपण क्षेत्र की सुरक्षा 12 माह 1 श्रमिक	20	हे.			312	93288.00	
अन्य आकस्मिक व्यय -	20	हे.				200000.00	
योग -						2865463.00	
प्रति हे. व्यय						143273.00	

तृतीय वर्ष 2023-24

कार्य का विवरण	कार्य की मात्रा/संख्या	ईकाई	दर	कुल मा.दि.	राशि	जाब दर आइटम नं.	
2	3	4	5	6	7	8	
पौधा व्यय :- 10% अधिक पौधा तैयारी	55000	पौधे	प्रति नग	7.00		385000.00	
कैजुअल्टी रोपण हेतु 10 प्रतिशत पौधा क्रय	5000	पौधे	प्रति नग	17.00		85000.00	कैम्पा नार्मस अनुसार
पूव पौधों को बदलने हेतु गड़ड़ा खुदाई कार्य	5000	पौधे	प्रति नग	5.00		8250.00	
रोपण कार्य	5000	पौधे	प्रति नग	2.60		4290.00	
निंदाई कार्य - (1) प्रथम निंदाई - प्रथम निंदाई रोपण के 15 दिन पश्चात 01 मी. व्यास में की जायेगी (1.10 मा.दि. प्रति सैकड़ा)	50000	पौधे	मा.दि./100	1.10	550.00	164450.00	PCCF 2:1:1
(2) द्वितीय निंदाई - 1 मी. चौड़ी पट्टी में एक माह बाद की जायेगी (1.20 मा.दि. प्रति सैकड़ा)	50000	पौधे	मा.दि./100	1.20	600.00	179400.00	PCCF 1:2:1
रासायनिक खाद एवं कीटनाशक क्रय	50000	पौधे			L.S.	93155.00	कैम्पा नार्मस अनुसार
सिंचाई व्यवस्था माह सितम्बर से मई तक सप्ताह में एक बार सिंचाई कुल सिंचाई की संख्या 36 सिंचाई (प्रति सिंचाई 01 श्रमिक एवं 1 टैकर पानी के मान से ) 01 श्रमिक/1116.00 प्रति श्रमिक = 1116.00 1. टैकर पानी/2700.00 प्रति ट्रैक्टर = 2700.00 = 3816 प्रति पौधा लीटर 350 पौधा के लिये 17.24 रुपये प्रति पौधा एवं अन्य आकस्मिक व्यय	5000	पौधा	पौधा	17.24		86200.00	
रासायनिक खाद एवं कीटनाशक छिड़काव 2 बार	50000	पौधे	प्रति सै.	0.50	250.00	73750.00	कैम्पा नार्मस अनुसार
रोपण क्षेत्र की सुरक्षा 12 माह 1 श्रमिक	20.000	हे.			312	93288.00	
अन्य आकस्मिक व्यय	20.000	हे.			L.S.	175000.00	
योग -						1347783.00	
प्रति हे. व्यय						67389.00	



कार्य का विवरण	चतु	ईकाई	दर	कुल मा.दि.	राशि	जाब दर आइटम नं.	
2	3	4	5	6	7	8	
निर्देश कार्य - (1) प्रथम निदाई - प्रथम निदाई रोपण के 15 दिन पश्चात 01 मी. व्यास में की जावेगी (1.10 मा.दि. प्रति सैकड़ा)	50000	पौधे	मा.दि./100	1.10	550.00	164450.00	PCCF 2:1:1
(2) द्वितीय निदाई - 1 मी चौड़ी पट्टी में एक माह बाद की जावेगी (1.20 मा.दि. प्रति सैकड़ा)	50000	पौधे	मा.दि./100	1.20	600.00	179400.00	PCCF 1:2:1
सामायिक खाद एवं कीटनाशक क्रय	50000	पौधे			L.S.	93155.00	कैम्पा नार्मस अनुसार
सामायिक खाद एवं कीटनाशक छिड़काव 2 बार	50000	पौधे	प्रति सै.	0.50	250.00	73750.00	कैम्पा नार्मस अनुसार
रोपण क्षेत्र की सुरक्षा 12 माह 1 श्रमिक	20.000	हे.			312	93288.00	
अन्य आकस्मिक व्यय - अग्नि सुरक्षा आदि	20.000	हे.			L.S.	135840.00	
योग -						739883.00	
प्रति हे. व्यय						36994.00	

पंचम वर्ष 2025-26

कार्य का विवरण	कार्य की मात्रा/संख्या	ईकाई	दर	कुल मा.दि.	राशि	जाब दर आइटम नं.	
2	3	4	5	6	7	8	
रोपण क्षेत्र की सुरक्षा 12 माह 1 श्रमिक	20.000	हे.			312	93288.00	कैम्पा नार्मस अनुसार
अन्य आकस्मिक व्यय अग्नि सुरक्षा आदि	20.000	हे.			L.S.	15355.00	कैम्पा नार्मस अनुसार
उपचारित क्षेत्र का रिजनरेशन सर्वेक्षण 16 हे. क्षेत्र में पूर्व में डाले गये ग्रिड पर अध्ययन प्रति ग्रिड 1 मा.दि. = 299.00/17हे. = 17.00 रु प्रति हे.	20.000	हे.			L.S.	340.00	
योग -						108983.00	
प्रति हे. व्यय						5449.00	

गोशवारा

वर्ष	रकबा	कुल व्यय	प्रति हे. व्यय
2	3	4	5
प्रथम वर्ष ( तैचासी 2021 -22 )	20.000 हे.	4929526.00	246476.00
द्वितीय वर्ष ( 2022 - 23 )	20.000 हे.	2865463.00	143273.00
तृतीय वर्ष ( 2023 - 24 )	20.000 हे.	1347783.00	67389.00
चतुर्थ वर्ष ( 2024 - 25 )	20.000 हे.	739883.00	36994.00
पंचम वर्ष ( 2025 - 26 )	20.000 हे.	108983.00	5449.00
योग -		9991638.00	499581.00

उप वनमण्डलाधिकारी  
पाली

वनमण्डलाधिकारी  
कटघोरा

वनमण्डलाधिकारी  
कटघोरा वनमण्डल कटघोरा

(4) कसई पाणी 01778

जिला - कोरवा  
 तहसील - कटघोरा  
 रा० नि० म० - कटघोरा

वनमण्डल - कोरवा  
 परिक्षेत्र - कटघोरा  
 वनखण्ड - कसई पाणी  
 क्षेत्रफल - 103.200 हे०

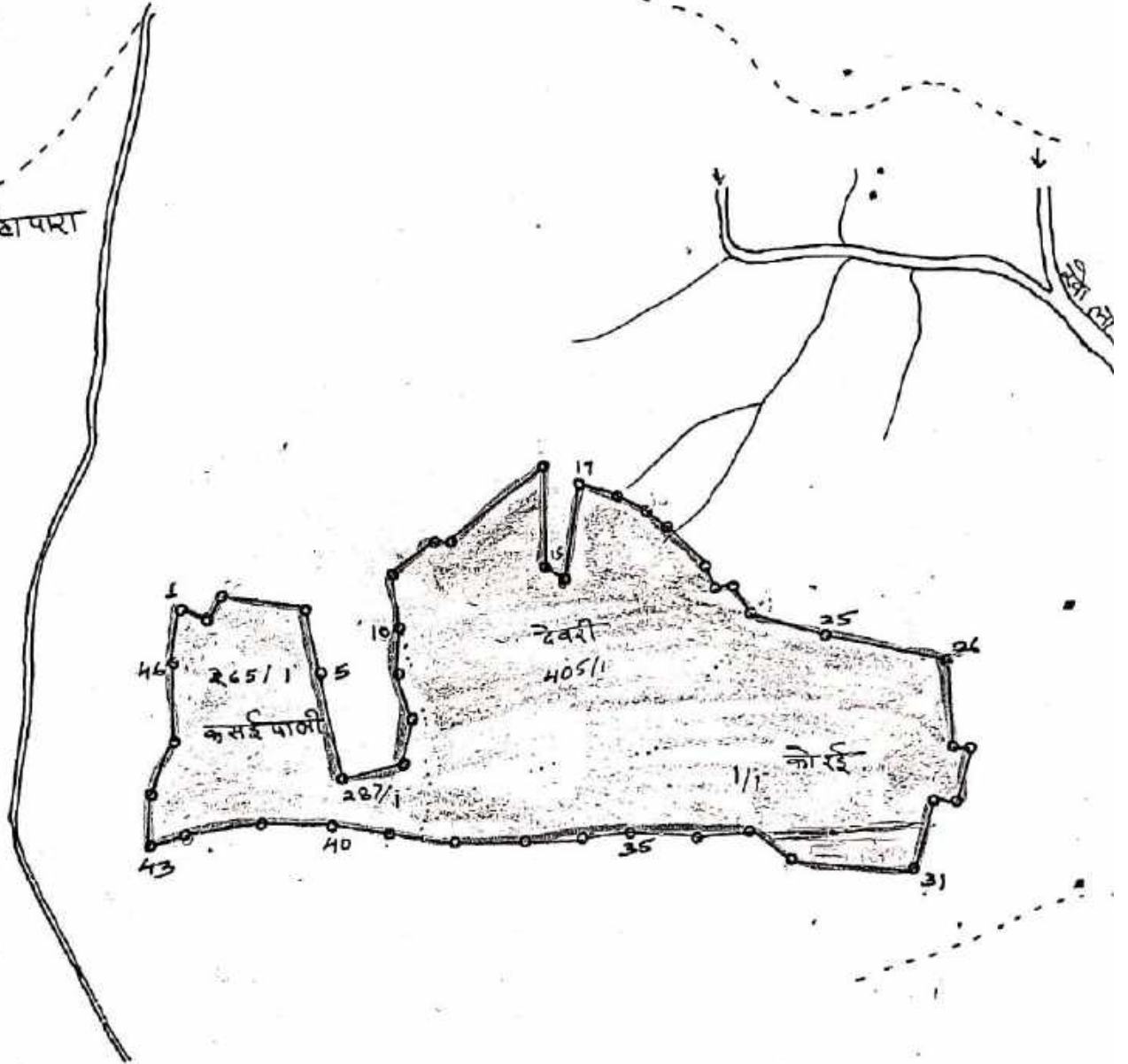
मापमान 1:15000 तारीख - 11/11/25

J/11-2,5

देवरी

कसई पाणी

सहस्रवापरा



अनु.	वनखण्ड का नाम	सम्बन्धित ग्राम	प्लॉट नं०	खसरा नं०	क्षेत्रफल हे०
1	कसई पाणी	कसई पाणी	31	265/1	18.000
		देवरी	31	287/1	4.500
		कोरई	31	405/1	39.500
				1/1	41.200
कुल योग - एक वनखण्ड - तीन ग्राम - एक प्लॉट - 4					103.200

नारंगी क्षेत्र सी  
 ग्राम सीमा  
 सड़क  
 बास्ता  
 नदी, नाला



**FINAL REPORT**  
**ON**  
**COMPREHENSIVE STUDY FOR DIPKA & GEVRA OCPs**  
**REGARDING CARRYING CAPACITY OF THE ECO-SYSTEM**  
**TO ASSESS OPTIMAL MINING OPERATIONS WITH**  
**MINIMAL IMPACT ON ECO-SYSTEM SERVICES**



**FINAL REPORT**

**ON**

**COMPREHENSIVE STUDY FOR DIPKA & GEVRA OCPs REGARDING CARRYING  
CAPACITY OF THE ECO-SYSTEM TO ASSESS OPTIMAL MINING OPERATIONS  
WITH MINIMAL IMPACT ON ECO-SYSTEM SERVICES**

**Submitted To**

**The General Manager  
SECL, Bilaspur**



**By**

**Professor Aarif Jamal**

**Principal consultant**

**Department of Mining Engineering  
Indian Institute of Technology (BHU)**

**Varanasi – 221005**

**December 2019**

## **Title of Consultancy Project**

**COMPREHENSIVE STUDY FOR DIPKA & GEVRA OCPs REGARDING CARRYING CAPACITY OF THE ECO-SYSTEM TO ASSESS OPTIMAL MINING OPERATIONS WITH MINIMAL IMPACT ON ECO-SYSTEM SERVICES.**

## **Name of Consultants**

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**2. External Expert/ Consultants**

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*Retired Professor & Former Head  
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Indian Institute of Technology (B.H.U)*

***Prof. R. Kumar***  
*Former Director (Tech) & Visiting Faculty  
Department of Mining Engineering  
Indian Institute of Technology (B.H.U)*

## **PREFACE**

Large scale mining activities are allowing urbanization and industrialization near coalfield has an impact on the natural ecosystem. Opencast coal mines generally result in significant visual and ecological effects. It drastically damages flora and fauna, thereby reducing biodiversity and disrupting fundamental environmental relationships. It also deteriorates soil characteristics and modifies the topography and alters soil properties. The signs of stress on the essential natural assets like air and water are evident from the deteriorating air quality, soil degradation, polluted groundwater, rivers and streams, and the general status of the environment in mining areas. The envisaged economic benefits from such large coal mining projects cannot be fully realized unless they are environmentally and socially sound and sustainable. It is now well recognized that, for sustainable development and optimal use of natural resources, environmental considerations are required to be integrated into the planning, designing, and implementation of mining and industrial development projects. The air, water, noise, and soil are the significant components of ecosystem services, and impact on them to be within the acceptable limits determines the carrying capacity of a particular mining area. Field studies and preliminary laboratory investigations have revealed that the effects of mining activities in the study area are higher on air quality in comparison to water and soil. There is no severe deterioration of water quality in the study area and can be controlled easily with the application of conventional control processes. The soil is the least affected parameter. Since air is the most affected parameter by opencast coal mining activities, hence in this report, detailed investigations have been carried out on this significant parameter along with gaseous pollutants like SO<sub>2</sub> and NO<sub>x</sub>. The other parameters related to water and soil has also been included in the report.

The services and advice of external consultants/ experts – Professor Shambhu Ratan, Professor, and Former Head, Department of Mining Engineering, IIT BHU and Dr. Ramesh Kumar, Former Director (Technical) of Central Coalfields Limited, provided during the completion of the work and preparation of the Final Report is gratefully acknowledged. Finally, I would like to acknowledge the support and help provided by SECL Management to our research team working in this project.

**(AARIF JAMAL)**

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## CHAPTER-I: INTRODUCTION

A balance is to be achieved by bringing the environmental impact to a level that is acceptable to living beings and does not have any adverse effect of flora and fauna due to mining and associated industrial activity. Coal mining is generally associated with a cluster of different industrial activities in the surrounding area, and their impacts on the environment get compounded to the associated mining activity such as drilling and blasting, overburden handling, coal transportation, coal beneficiation, maintenance and movement of heavy earthmoving machinery in the workshop, coal preparation plant, etc. The mining activities are mainly responsible for air pollution in the surrounding areas by increasing the concentration of particulate matter in the environment and the water pollution due to the discharge of effluent from the mines and the pollution of groundwater. It also causes noise pollution due to the operation of heavy earthmoving machinery. Coal production has been progressively increasing at Dipka and Gevra mines of SECL. In view of this, the current environmental scenario was reviewed to evaluate a relationship between the composite excavation (coal and overburden) from these mines and their corresponding impact on the environment.

The concept of carrying capacity is essential for developmental planning and mine operation. Carrying capacity in broad terms is an indicator of the potential for future growth, keeping in view the resources such as air, water, land. Air environment is more important as all fine particles (particulate matters and gases released during mining are easily suspended and dispersed for 1 to 2 km distances. The pollutants released from coal mining operations, coal preparation plants, and coal-based power plants cause an increasing concentration of pollutants affecting carrying capacity, mainly related to air, water, and land. The bulk material (overburden and coal) handling and transportation of coal in core and surrounding areas (within 10 km) is a major source of pollution for the environment. As the excavation volume (coal production and overburden removal and handling) increases year after year, the surrounding environment is bound to be affected. The pollutants emitted as a result of coal mining and allied activities are transported in and around the mine depending upon meteorology and topography of the area. Thus, the resulting actual concentration and level of degradation pattern have to be estimated to save the environment in general and carrying capacity of ecosystem services in particular.

**The objective of this study is, therefore, to conduct a comprehensive study of Dipka & Gevra OCPs on Carrying Capacity of the eco-system to assess optimal mining operations with minimal impact on eco-system services. Finally, in the proposed study, an attempt will be made to suggest appropriate control measures likely to be adopted in the Gevra and Dipka mines to achieve optimal production level, which could be sustained by the ecosystem.**

# **CHAPTER- II: BRIEF DESCRIPTION OF PROJECTS**

## **2.1 GEVRA OPENCAST PROJECT**

### **2.1.1 BACKGROUND OF THE PROJECT**

Gevra Opencast Project is an operating mine under the Gevra area of South Eastern Coalfields Limited. Initially, Project Report was prepared for an annual capacity of 6.0 MT of coal by CMPDI in March 1979, but it was approved in December 1979 for an annual capacity of 5 MT. Later, for expansion of the Gevra Opencast Project report was prepared in March 1982 for an annual production of 10.0 MT. and was approved by the Government of India on 18th September 1985. In the year 1992-93, a scheme for Gevra Opencast Project was prepared for augmentation of production by another 2.0 MTPA and was sanctioned on 19th September 1992 by CIL Board and was declared completed on 31st March 1995. A capacity augmentation scheme for Gevra CHP (from 10 MTPA to 12 MTPA) was also prepared and sanctioned on 31st July 1992. To enhance the production further, the project report for Gevra O/C Expansion (25 MTPA) was prepared by CMPDI and approved by GOI on 12th July 2005. The mining Plan of the project for 35 MTPA was approved by the Ministry of Coal on 20.12.2006. Further, EC was granted vide letter no. J-11015/484/2007-IA.II(M) dated 3rd June 2009 for capacity expansion from 25 MTPA to 35 MTPA in an area of 4184.486 Ha. Environmental Clearance for Gevra Opencast Expansion Project was obtained from MoEF&CC for a production capacity of 35.00MTPA & within 4184.486Ha of lease-area. Under Clause 7(ii) of EIA Notification 2006 & MoEF&CC OM no. J-11015/30/2004-IA.II dated 19.10.2012, Environment Clearance has been obtained for a production capacity of 40.00MTPA for an area of 4058.146 Ha of land vide MoEF&CC letter No. J-11015/85/2010-IA-II (M) Dtd. 31.01.2014. Further under Clause 7(ii) of EIA Notification 2006 & MoEF&CC OM no. J-11015/30/2004-IA.II dated 02.09.2014, Environment Clearance has been obtained for a production capacity of 41.00MTPA vide MoEF&CC letter No. J-11015/85/2010-IA-II(M) Dtd. 06-02-2015 Recently, the Project Report for Gevra Expansion Opencast Project (35.0 to 70.0 MTY) was approved by CIL Board on dated 5th March 2016.

TABLE 2.1 - Salient Features of the Approved PR (35.0MTY-70.0MTY)

Sl. No.	Particulars	Unit	Option- (Coal Contractual OB Deptt.)
1	Total Mineable Reserves	M Te.	1337.68
2	GCV/Band	Kcal/kg	4338.00/G-10
3	Volume of OB(including inseam band)	M.Cum	2166.61
4	Stripping Ratio (Av.)	Cum/t	1.62
5	Target Output	Mt/Yr.	70.00
6	Peak OBR	Mcum/yr.	122.00
7	Peak OBR( including inseam band)	Mcum/yr.	125.54
8	Project life	Year	22
9	a) Total add.capital investment b) Capital outlay /te of annual output	Rs. crores Rs./t	9943.55 1562.02
10	a) Capital requirement of P&M b) Per tonne of annual output	Rs. crores Rs./t	7535.78 1076.54
11	Selling price (95% of notified selling price) of processed ROM Coal.(G-10)	Rs./ t	922.00
12	Estimated cost of production a) at 100% level b) at 85% level	Rs./t Rs./t	566.02 634.00
13	Profit per tonne a) at 100% level b) at 85% level	Rs./t Rs./t	355.98 289.64
14	Break-even-point (%) (MTY)		51.36 35.95
15	No. of personnel		4391
16	OMS	Te	55.57
17	EMS	Rs.	3185.30
18	Anticipated year of achieving target	Year	7 <sup>th</sup>
19	IRR at 100% level of production	%	42.16
20	IRR at 85% level of production	%	28.45
21	Completion capital	Rs. crores	12109.27
22	NPV @ 12% at 100% level of production	Rs. crores	9837.23
23	NPV @ 12% at 85% level of production	Rs. crores	5644.97

## 2.1.2 KORBA COALFIELD

The Korba Coalfield, constituting the south-central part of the vast stretch of Gondwana sediments of Son-Mahanadi Valley, is located between the North Latitudes 22<sup>0</sup>15' & 22<sup>0</sup>30' and East Longitudes 82<sup>0</sup>15' & 82<sup>0</sup>55'. It has a total aerial extent of about 520 sq.km. It is elongated in an east-west direction and 64 km long and 4.8 km to 16 km wide. The southerly flowing Hasdeo river divides the coalfield into two parts, the western part being larger than

the eastern part. The Dipka Block lies in the western part of the coalfield. The physiography of the project area is detailed in table 2.2.

Table 2.2: Detailed physiography of project area

Particulars	Details	Values if any
General topography	Gently undulating	288-328 m above mean sea level
General slope	Towards East	
Drainage	Hasdeo River, a major tributary of Mahanadi River flowing along the eastern side in a north-south direction, controls the drainage of the area. The mining block is drained by Laxman nalla flowing in a west-east direction and joins Aharan nadi, a tributary of Hasdeo River, at about 4.5km in NE from the mine. The other stream Kholar nala also a tributary of Hasdeo River, controls the drainage in the northern part and whereas, Lilagar Nadi and Gangdel nala control the south-west and south-east respectively. These streams, mostly perennial, behave as constant recharge sources. The pattern of drainage in the area is mostly dendritic in nature	

## 2.1.3 LOCATION

Gevra Opencast Block is located in the South-Central part of Korba Coalfield in Korba District of Chhattisgarh. The Gevra Mining Block was having an area of about 19.03 sq.km. is located in the Central part of Korba Coalfield. It is included in the Survey of India Topo-sheet No. 64 J/11 and is bounded by latitudes 22°18'00" and 22°21'42" and longitudes 82°32'00" to 82°39'30".

## 2.1.4 COMMUNICATION

The block is well connected by rail and road. Gevra Road and Korba Railway Stations on Champa-Gevra Road branch line of S.E. Railway are at a distance of 10 km and 16 km, respectively. Important distance by Rail to Gevra Road Station from Bilaspur (Company HQ) is 93 km.

## 2.1.5 GENERAL GEOLOGY

The east-west trending crescent-shaped Korba Coalfield, which derives its name from the Korba town, is spread over an area of about 520 sq.km. in the Korba district of Chhattisgarh State. The coalfield is about 64km long, and its width varies from 4.8km to 16km and is bounded by latitudes 22°15' - 22°30'N & longitudes 82°15' - 82°55' E. It is covered in the Survey of India Toposheet Nos. 64 J/7, J/11, and J/15. The southerly flowing Hasdeo River

divides the coalfield into two unequal parts, the western part being larger than the eastern part. The combined Block is located in Korba Coalfield- The western side of the Hasdeo River. The combined block is capped with thick soil cover. There is scanty rock exposure in the block. The boreholes drilled in the combined Block were closed after the Lower Kusmunda seam, and thus the entire geological column of the block could not be established. The geological succession presented in the following table is, therefore, based on the borehole data drilled within the block. The stratigraphic sequence established from surface & sub-surface data is given below:

**Table 2.3: Stratigraphic Succession in the Gevra, Dipka, Hardi, Ponri, Naraibodh-I & Naraibodh-II combined block, Korba CF.**

Age	Formation	Thickness(m)	Lithology
Recent	Soil & Alluvium	2 to 20m	Soil & sandy soil
Lower Permian	Upper Barakar	>500m	Sandstones of varying grain sizes, shale, alternate shale and sandstone, carbonaceous shale, sandy shale, and coal seams - LK, UK, F, E, DB, DT & C

### 2.1.6 COAL BEARING FORMATION

The Barakar Formation covers the major part of the Gondwana Basin. It comprises essentially medium to coarse-grained sandstones, a few pebble beds, conglomerates, shales, and coal seams. The sandstones are usually feldspathic, and the feldspar is generally kaolinized to a high degree and does not form a good binding matter for the quartz grains. Based on the vertical variation of gross lithofacies, the Barakar Formation can, arbitrarily, be subdivided into lower, middle, and upper members. The Upper Barakar comprises fine-grained sediments including flaggy, fine to medium-grained sandstones, grey shales, and several thick coal seams. Of the upper Barakarseams, the Kusmunda group is well exposed in the Hasdeo River near Korba. The total thickness of the upper member is as high as 500m in the south-central part of the basin recorded in KB002 borehole drilled by GSI.

## 2.1.7 SUCCESSION OF COAL SEAMS

Table 2.4 : Succession of coal seams within the boundary of the project.

Coal Seam / Parting	Nos. of Bhs intersection (Full section)	Thickness Range (m)		Generalized thickness Range (m)	
		Min.	Max.	Min.	Max.
C	08	0.90 (CMKN028)	4.34 (CMKN032)	2.5	3.5
Parting	08	9.96 (CMKN032)	20.46 (CMKN027)	-	
DT	35	0.70 (CMKN046)	7.97 (CKPR054)	3	5
Parting	42	2.07 (CMKN049)	12.55 (CMKN041)	-	
DB	53	5.31 (CMKL038)	25.02 (CMGE015)	10	15
Parting	41	60.12 (CMKN003)	90.05 (CKPR026)	-	
EF	119	2.95 (CKDP067)	19.95 (CKDP089)	10	15
Parting with DB	32	63.64 (CMKN042)	78.69 (CMKN069)	-	
E	60	0.90 (MKD017)	13.60 (CKDP095)	5	10
Parting	60	2.42 (CMKN056)	7.08 (CKPR002)	-	
F	61	1.53 (CMKN044)	6.30 (MKD017)	1.5	3
Parting with EF	73	24.98 (CMGE015)	83.81 (CMKN019)	-	
Parting with F	48	55.35 (CMKL036)	93.70 (CMKL100)	-	
UK	171	23.33 (CKPR023)	36.65 (CKDP100)	26	30
Parting with EF	8	24.75 (CKHD022)	59.10 (CKDP088)	-	
UTM	9	11.60 (CMGE012)	17.95 (CKDP088)	10	16
Parting with EF	36	8.11 (CMGE014)	37.70 (CMGE017)	-	
Parting with F	7	15.20 (CKDP125)	23.10 (CKDP095)	-	
UT	47	0.69 (CMKK013)	5.85 (CMGE017)	3	4
Parting	27	3.15 (CKDP066)	29.84 (CMGE011)	-	
UMB	27	19.00 (CKPR050)	31.76 (CKDP165)	20	22

Parting with UT	19	5.81 (CKPR013)	32.29 (CKPR028)	-	
UM1	19	1.85 (CKDP168)	3.75 (CKDP125)	2	3
Parting	19	3.10 (CKDP112)	21.60 (CKDP125)	-	
UM2	19	1.17 (CMKK013)	4.55 (CKDP125)	3	4
Parting with UM2	19	2.90 (CMGE004)	17.85 (CKDP168)	-	
Parting with UTM	8	3.43 (CMGE010)	13.10 (CKDP088)	-	
UB	27	7.27 (CKPR028)	17.25 (CKDP088)	8	12
Parting with UK	81	39.80 (CMKN054)	87.25 (CMKN007)	-	
LK	101	43.78 (CMKK021)	70.34 (CMKN033)	50	60
Parting with UK	35	45.14 (CMKK017)	94.00 (CMGE028)	-	
Parting with UMB	10	39.70 (CMGE024)	53.40 (CKPR016)	-	
Parting with UB	2	36.05 (CKPR028)	70.25 (CKDP117)	-	
LKT	51	27.85 (CMGE014)	43.73 (CMKN058)	33	40
Parting with UK	13	23.31 (CMGE002)	60.19 (CMGE006)	-	
Parting with UMB	12	15.18 (CKPR005)	53.55 (CKPR049)	-	
Parting with UB	16	10.18 (CKDP125)	55.64 (CMGE012)	-	
LT1	41	12.78 (CKPR032)	29.08 (CKHD002)	18	22
Parting with LT1	39	3.30 (CMGE012)	22.73 (CKPR005)	-	
LT2	39	6.49 (CMGE004)	17.86 (CMGE012)	10	15
Parting with LKT	42	3.27 (CMKK036)	38.00 (CKPR028)	-	
Parting with LT2	21	10.93 (CMGE006)	40.25 (CKPR029)	-	
LKB	63	3.28 (CMGE005)	23.19 (CMKN058)	3.5	7

## 2.1.8 STRUCTURAL SETTING

The combined block consists of massive rolling topography and a thick soil cover and has completely masked the surface manifestation of the structural elements. The entire structural set-up of the area, therefore, has been worked out on subsurface data obtained through



boreholes. Structurally the area is having ten faults of varying magnitude, which have been interpreted through borehole data.

## 2.1.9 DIP & STRIKE

The block exhibits a rolling strike throughout the area. The strata, including coal seams, show a broad E-W trend. The strata, in general, show a southerly dip. The general dip of the strata is almost gentle and varies from 2°-4° in central & north-eastern part. The dip of the strata varies from 6°-8° in the south-east and western part. The dip of the strata increases further in the south-west corner of the block.

## 2.1.10 FAULTS

The combined block has been affected by 10 Nos. of faults of varying magnitude and direction. The faults generally have N-S and E-W trend. The details of the faults are given in table 2.5.

**Table-2.5: Details of faults encountered in Gevra, Dipka, Hardi, Ponri, Naraibodh-I & Naraibodh-II combined block, Korba CF.**

SI	FAULT	DIP	THROW	SIGNATURE
1	F1	60° towards South	0 m to 105m to 40m East to West Length ~ 3Km	UK completely faulted in CMKN009, KB004 UK floor faulted in CMKN029 UK roof faulted in MKD017 LK completely faulted in CMKN007, CMKN020 LK floor faulted in CMKN018 LK roof faulted in CMKN009 UK/LK parting faulted in KB016 Floor differences
2	F2	60° towards North	0 m to 50m East to West Length ~1.4Km	UK completely faulted in CMKN024, CMKN056 UK floor faulted in CMKN043, CMKN053 EF completely faulted in CMKL038 Floor differences
3	F3	60° towards South	20 m to 40m to 0m East to West Length ~ 4Km	UK floor faulted in CMKN061 LK roof faulted in CMKN063 EF floor faulted in CMKL038 UK/LK parting faulted in CMGE026 Floor differences
4	F4	60° towards East	0 m to 80m North to South Length ~1.2Km	LKB completely faulted in CMGE011, CKPR049 Floor differences
5	F5	60° towards South	0 m to 50m to 10m East to West Length ~ 6Km	LK floor faulted in CMKK054, 57, 96 & CKDP046 UK/LK parting faulted in CMKK035, 155, CKPR050 & GPM002

				Floor differences
6	F6	60° East	towards North to South Length ~1.8Km	UK completely faulted in CKDP063 UK floor faulted in CKDP078 & CKHD028 UK/LK parting faulted in CKDP021 Floor differences
7	F7	60° South	towards East to West Length ~ 0.8Km	Floor differences only Needs to prove further in dipside.
8	F8	70° East	towards North to South Length ~0.4Km	Floor differences only Needs to prove further in dipside.
9	F9 **	70° East	towards North to South Length ~ 3Km (West of the western boundary of the combined block)	LKT roof faulted in CKDP137 The western boundary of the blocks A major fault was causing crop out of the seams in the upthrow side. ** This fault falls west of the combined block. This is considered for model preparation only.
10	F10	60° South	towards East to West Length ~ 7Km	A major fault was causing crop out of the seams in the upthrow side and preservation of thick coal seams in the downthrown side.

### 2.1.11 BLOCKS BOUNDARIES AND MINE BOUNDARIES

Mine boundary has been delineated on the basis of Revised Geological Report of Combined Block, namely Gevra, Dipka, Ponri, Hardi, Naraibodh I, and Naraibodh II on Minex model, comprising an area of 38.87 sq. Km. with a borehole density of 14.0 boreholes per sq. Km.

The quarry boundary for the complete mine has been fixed in the following manner:-

**West** - Based on the existing boundaries between Gevra Mine and Dipka Mine.

**North** - Based on the out-crop of LK Seam and boundary Fault F10-F10.

**East** - Based on 50 m barrier distance from the Western geological block boundary of Resdi and Amgaon.

**South** - Based on the combined southernmost geological block boundary of Ponri and Naraibodh II.

## 2.2 DIPKA OPENCAST PROJECT

### 2.2.1 BACKGROUND OF THE PROJECT

Dipka OCP is an existing mega opencast project in the thick seam zone of the SECL command area. It is under the administrative control of the Dipka Area. The Project Report for Dipka Expansion Opencast Project (20 to 25 MTPA) was approved by CIL Board on dated 22.12.2009. Presently, Dipka OCP has Environment Clearance for coal production of 35.0

MTPA. The mine has achieved the coal production of 35.0 MTPA in the years 2018-19. Based on the approved mining plan of Dipka OC - 35 MTPA, Environment Clearance for 35.0 MTPA has been obtained vide letter No. J-11015/487/2007-IA-II (M)pt dated 20.02.2018.

Since this is a running mine, the current status of the reserve has been changed/reduced, the balance reserves of the mine come to 258.84 MT, and the balance life of the mine is also reduced to 7 years as on 01/04/2019.

## 2.2.2 LOCATION

Dipka OCP Expansion, a part of Dipka and Hardi Blocks, is located in the south-central part of Korba Coalfield in Korba district of Chhattisgarh. Details are given in the table below-

Particulars	Details
Area of Geological Block (excluding the area required for road, colony & infrastructure)	12.42 sq. km
Latitudes	22°18'59" and 22°19'43" North
Longitudes	82°30'47" to 82°33'34" East
Reference Survey of India Topo-sheet No.	64 /11

## 2.2.3 COMMUNICATION

Nearest roadway		Nearest railway	
Connected by	Distance from Blocks	Connected by	Distance from blocks
Well connected by nearest town 'Korba.'	26 km	Gevra Road Railway Stations' on Champa- Gevra Road branch Line of S.E.C Railway	12 km

At present, Coal from Dipka OCP is being dispatched through the existing Railway Sidings at Junadih and Gevra Road. SECL headquarters, Bilaspur, is at a distance of about 90 km by road.

## 2.2.4 PHYSIOGRAPHY

Particulars	Details	Values if any
General topography	Gently undulating	298-326 m above mean sea level
General slope	Towards South	
Drainage	Mainly by Lilagarh river which marks the south-western the boundary of the block.	

## 2.2.5 HIGH FLOOD LEVEL

Near quarry Boundary	Period	Downstream side level	Upstream side level
HFL of Lilagarh river	September,1998	301.10 m	309.54

## 2.2.6 KORBA COALFIELD

The Korba Coalfield, constituting the south-central part of the vast stretch of Gondwana sediments of Son-Mahanadi Valley, is located between the North Latitudes 22°15' & 22°30' and East Longitudes 82°15' & 82°55'. It has a total aerial extent of about 520 sq.km. It is elongated in an east-west direction and 64 km long and 4.8 km to 16 km wide. The southerly flowing Hasdeoriver divides the coalfield into two parts, the western part being larger than the eastern part. The Dipka Block lies in the western part of the coalfield.

## 2.2.7 STRIKE & DIP

The strike and dip of the coal seams in different parts of the block is given below:-

Part of the block	Strike	Dip
Western part	E-W with local swings	4°-7° towards south
Eastern part	NE - SW to ENE-WSW	2°-6° towards SE to SSE
Central part	E-W with swings	3°-4° towards south
Northern part	NE-SW with local swings	3°-7° towards south-east

## 2.2.8 FAULTS

Altogether 10nos. faults have been deciphered in the block. Details of these faults are as follows:-

**Fault F1:** This is an N-S trending fault which defines the western boundary of the block. The throw of this fault is more than 175m towards east. The fault runs along the western boundary of the mine block. The evidence of this fault is the occurrence of the seams below Lower Kusmunda Seam in a borehole no. CKDP-12, 26, 44 and 136. The other evidence is the omission of strata between Lower Kusmunda Seam and 11 to 24 m thick coal seam occurring below Lower Kusmunda Seam, in borehole CKDP-136.

**Fault F2:** This fault lies in the western part of the block having an N-S trend. The amount of westerly throw varies between 0 to 58m from south to north and gradually dies out near borehole CKDP-133. The evidence of fault F2 is the difference of floor level in Lower Kusmunda Seam in borehole CKDP-28, 15 in the up-thrown side and CKDP-153, 33 in the downthrown side.

**Fault F3:** The trend of fault F3 is also N-S. The amount of throw is between 0 - 15 m, and the direction of the throw is towards the west. The fault gradually dies out towards the south. The evidence of this fault is the difference in the floor reduced levels of Lower Kusmunda Seam in boreholes CKDP-28,13 and 15 in the downthrown side and CKDP-5,17 and 160 in the upthrown side.

**Fault F4 (Malgaon Sector):** This fault has a NE-SW trend with a throw direction of NW. The amount of throw varies between 10 to 20 m. This fault has been interpreted on the basis of difference in floor reduced levels of Lower Kustumda Seam in borehole CKDP-155 in up thrown side and CKDP-145, 144 in the downthrown side.

**Fault F4 (Hardi):** This fault has a NE-SW strike, and the direction and amount of throw are SE and 0-20 m, respectively. The fault has an Aerial extent of 0.3 km. This fault is interpreted on the basis of difference in floor reduced levels of seams on both the sides of fault and floor of UK seam is faulted along with 20 m parting reduction in between UK and LK Top Seams in CKHD-28.

**Fault F5 (Malgaon):** This fault has a NE-SW trend extending upto 0.56 km in the block. The direction of throw of fault is towards NW, and the amount of throw is 5 m and dies out in the west. This fault is interpreted on the basis of difference in the floor reduced levels of Lower Kustumda Seam in borehole CKDP-152, 28 in the upthrown side, and CKDP-155 in the downthrown side.

**Fault F5 (Hardi):** Fault F5 has a strike ENE-WSW extending upto 2.8 km strike length. The amount of throw varies between 0-40 m. The direction of the throw is SSE. The evidence of the fault is the part thickness of Lower Kustumda Seam in CKHD-28, and the parting between Lower Kustumda Top and Upper Kustumda Seams are thin in CKDP-34 due to faulting.

**Fault F6 (Hardi):** The fault has a strike NE trending towards the east. The amount of throw varies between 120m to 20m, and it dies out towards the southwest. The fault has a strike length of 1.85km. On the basis of difference in the floor, reduced levels of seams on both sides of faults.

**Fault F7:** The trend of the fault is NE-SW to E-W, and the direction of the throw is NW to N. The amount of the throw varies between 0-15. The fault merges with fault F8 between the boreholes CKDP-47 and 23. The fault has a curvilinear shape and is evidenced by the difference in floor reduced level of the Lower Kustumda Seam in boreholes CKDP-49, CMKK-61 in up thrown side, and CMKK-55, 56 in the downthrown side.

**Fault F8:** The fault has a NE-SW trend in the central part and becomes E-W towards east. The direction of the throw is NW to the north. The fault has a maximum throw of 15 m in the central part, and it dies out towards the southwest. The fault has a strike length of 4.3 km and is interpreted on the basis of difference in floor reduced level of Upper Kustumda and Lower Kustumda Seams in boreholes MKD-21, CKDP-22, 50, CKHD-25 in the upthrown side and boreholes CKHD-32, CKHD-31, CKDP-140, 70 and CMKK-44 in the downthrown side. The parting between Upper and Lower Kustumda Seam is also reduced in CKHD-28 due to fault F8.

**Fault F9:** The fault has a NE-SW to ENE-WSW trend with the throw direction of NW to NNW. The fault has a maximum throw of 60 m in the central part and gradually reduces

towards NW and SW and gradually dies out. This fault is interpreted on the basis of reduction of seam thickness of Lower Kusmunda Top and parting between Upper Kusmunda and Lower Kusmunda Top Seams in CKDP-21 and difference in floor reduced level of Lower Kusmunda Top and Upper Kusmunda Seams in boreholes CKDP-69, 110, 25 in the upthrown side and boreholes CKDP- 24, CKHD-32, 24 and CKDP-81 on the downthrown side.

**Fault F10:** The trend of fault F10 is E-W in the western part, and it swings to NW-SE in the eastern part. This fault defines the northern and eastern boundary of the block. It has a strike length of 4.4 km and further extends south-eastwards. The fault is interpreted on the basis of reduction of the thickness of Lower Kusmunda Top in boreholes CMKK-54, 56 and 155, and CMKK-46.

### 2.2.9 GEOLOGICAL BLOCK BOUNDARY

The area of Dipka and Hardi (Dip side of Dipka) geological block is 12.42 sq.km, excluding the area required for road, colony & infrastructure. Its boundaries are given below.

Boundary Direction	Details
North	Floor In-crop of Lower Kusmunda Seam.
South	An arbitrary line passing near boreholes CKDP-134, 121, 118, 134, 141, CKHD-10, 8, and 3.
East	A north-south arbitrary line passing near boreholes CMKK-45, 44, CKDP-102, 111, 114, 88 and CKHD-2.
West	Fault F <sub>1</sub> F1.

### 2.2.10 MINING BLOCK BOUNDARY

Mine boundary for excavation covers an area of 10.02 sq.km, excluding the area required for road, colony & infrastructure, etc. The boundaries of the quarry are as given below:-

**Northern boundary:** The Northern floor boundary has been fixed along in-crop of Lower Kusmunda(Combined) Seam. The in-crop has been quarried out in the northwest part of the quarry.

**Western boundary:** The Western floor boundary on the raised side is fixed along fault F1- F1; at the middle along fault F2-F2, in the dip side, the surface edge has been fixed, leaving a surface barrier of 60 m from Lilagarh River.

**Eastern boundary:** The eastern surface boundary has been fixed, leaving a surface barrier of 50m from the proposed western surface limit of Gevra OC Expansion. The barrier will be used for the diversion of existing Hardi-Bazar Road.

**Southern boundary:** The southern boundary in the west has been fixed, leaving a surface barrier of 60m from the Lilagarh River, and on the east, the floor limit has been fixed along the fault F6-F6 having a throw of maximum 120m.

## 2.2.11 SUCCESSION OF COAL SEAMS

The succession of coal seams and partings in the block is summarized in the table given below.

Seam Nomenclature	Thickness Range (m)		No. of BH intersection	Area (sq. km)	Seam wise BH Density	No. of samples actually tested for proximate & ultimate analysis
	Seam	Parting				
E&F*	12.70- 19.05 (CKDP-78) (CKDP-139)		9	0.51	17.65	2
		30.14-62.12 (CKDP-81) (CKDP-34)				
Upper Kusmunda	24.69-35.82 (MPHD-69) (CKDP-32)		41	3.87	10.59	33
		12.17-78.63 (CKDP-68) (CKDP-73)				
Lower Kusmunda (Combined)	56.70 - 70.15 (CKHD-25) (CKDP-102)		52	8.04	6.47	15
Lower Kusmunda (Top Section)	34.70 - 44.85 (CKHD-32) (CKDP-72)		34	3.63	9.37	20
		3.00 - 36.56 (CKDP-34)				
Lower Kusmunda (Bottom Section)	2.19 - 24.50 (CKHD-29) (CKDP-32)		29	3.63	7.99	14

## 2.2.12 DESCRIPTION OF COAL SEAMS

Occurrences of 3 nos. of coal seams have been proved in the block. These seams in descending orders are 'E' & 'F,' Upper Kusmunda, and Lower Kusmunda. Lower Kusmunda Seam occurs as a composite seam in the northern part of the block. However, it splits up in two sections, namely, Lower Kusmunda (Top Section) and Lower Kusmunda (Bottom Section) in the southern part of the block. The average grade of the coal is 'E.'

## 2.2.13 METHOD OF MINING

Considering the geo-mining parameters of the quarry, the shovel-dumper mining system has been adopted to excavate OB, while extraction of coal will be done through Surface Miner. The coal benches would be formed parallel to the coal seams and would be mined by inclined slicing method. The O.B. benches would be formed horizontally along particular horizons of 15 m thick and would be mined by horizontal slicing method. However, the O.B. benches immediately above the roof of the seams would be formed parallel to the coal seam roof to avoid the formation of the triangular rib of O.B., which is likely to mix up with the coal after blasting. The maximum OB bench height would be maintained at 15m and coal bench height at 20-25m for Surface Miner.

Some major system parameters are given below:-

1. Maximum Bench Height  
Over Burden. - 15m  
Coal - 20-25 m (by Surface Miner)
2. Width of the permanent haul road - 40 m
3. Width of the temporary transport ramp - 20 m
4. Usual height of the spoil dump bench - 30 m
5. The width of the active dump bench - 60 m
6. Bench Slope (working):  
Over Burden bench -  $70^{\circ}$   
Coal bench -  $50^{\circ}$ -  $60^{\circ}$ (Surface Miner)  
Dump bench -  $37^{\circ}$
7. Overall Dump slope (for 250m- height) -  $28^{\circ}$





**Fig.2.1:** View of the Gevra OCP



**Fig.2.2:** View of the Gevra OCP



**Fig.2.3:** Overview of the Gevra OCP



**Fig.2.4:** View of the Dipka OCP



**Fig.2.5:** Overview of the Dipka OCP



**Fig.2.6:** Overview of the Dipka OCP

## 2.3 ENVIRONMENTAL POLLUTION AND CONTROL MEASURES

The various Environmental control measures for improving the Carrying Capacity of eco-system services in mining areas are being adopted. The following photographs are self-explanatory.



**Fig. 2.7:** Afforestation for arresting dispersion of air pollutants around the mine.



**Fig. 2.8:** Dense Green Belt (plantation) along the residential area.



**Fig.2.9:** Separate roads for transportation of coal & movement of light vehicles



**Fig. 2.10:** Water spraying through water tank on hall road in mine



**Fig. 2.11:** Water sprinkling system along the road for control of dust during coal transportation



**Fig. 2.12:** Transportation of coal through a covered conveyor belt.



**Fig.2.13:** Transportation of coal by properly covered truck.

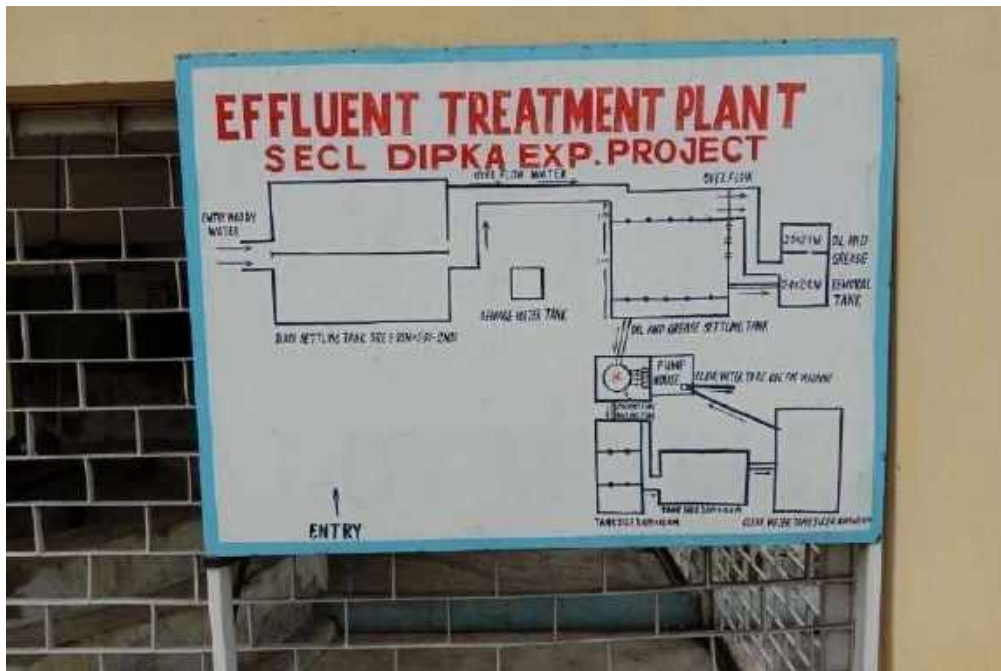
As a result of mining, there is an accumulation of water in the sump, as shown below in photograph 2.14. It may be noted that there is no discharge of sump water into natural watercourses (Nala, River, and Reservoir). Sump water is being used within the mine for various purposes (dust separation, Equipment washing, and storage of water in a small pond for use in the dry season). Hence, there is an insignificant impact of water effluent of mine on natural water quality.

However, for the treatment of work-shop effluent, there is an independent effluent treatment plant for Dipka and Gevra mines. These effluent treatment plants remove oil & grease and suspended solids from work-shop effluents. As shown in Photographs 2.18(A)& 2.18(B). The treated water again reused in the mine for a different purpose to maintain a zero discharge system.



**Fig.2.14:-**Sump Water in Mine.





**Fig.2.15.(A):-**Flow sheet of effluent Treatment Plant for mine water



**Fig.2.15.(B):-**Effluent Treatment Plant for mine water.



**Fig.2.15.(C):-** Effluent Treatment Plant for mine water treatment.



**Fig.2.16. (A):-**Water disposal system at the mine site.



**Fig.2.16 (B):-**Water disposal system at the mine site.



**Fig.2.17 (A):-**Mine water pond in the Mine premises.



**Fig.2.17 (B):-**Mine water pond in the Mine premises.

## **CHAPTER-III: METHODOLOGY - ECO-SYSTEM SERVICES AND CARRYING CAPACITY ASSESSMENT**

Ecosystem services are the benefits that people freely get from the natural environment and from properly-functioning ecosystems. Such services include agro ecosystems, forest ecosystems, grassland ecosystems, and aquatic ecosystems. When ecosystems function properly, provide agricultural produce, timber, and aquatic organisms such as fishes and crabs. Collectively, these benefits are known as Ecosystem Services and are often integral to the other plants. Ecosystem Services are commonly categorized into *Provisioning Services* (e.g., water, food, raw materials, and medicinal resources), *Regulating Services* (e.g., the control of climate, air quality, carbon sequestration and storage, and diseases), *Cultural Services* (e.g., aesthetic values, recreational opportunities, spiritual and tourism), and the underpinning *Supporting Services* (e.g., crop pollination). They often arise from actions and interventions by people; therefore, it is useful to think of ecosystem services as co-produced by ecosystems and society.

### **3.1 ECOLOGICAL FOOTPRINT**

Through increasing the consumption of resources by man increasingly causes environmental problems, such as climate change, depletion in the ozone layer, loss of biodiversity, erosion, and desertification, as well as pollution of soil, water, and air. The most-known indicator of consumption of natural resources is the so-called ecological footprint. It quantifies the question, how many renewable resources there are required by human consumption of products and services. This means that the consumption of material, land, and energy is calculated in terms of space. The consumption of fossil energy sources is calculated in terms of the required CO<sub>2</sub> absorption area, i.e., of the space of forest and ocean required. Other indicators for measuring the consumption of resources are, for instance, the water backpack, which indicates in relation to products how much water has been consumed in their production or the material backpack, also called ecological backpack, which calculates consumption of renewable and non-renewable raw materials for products or even for states.

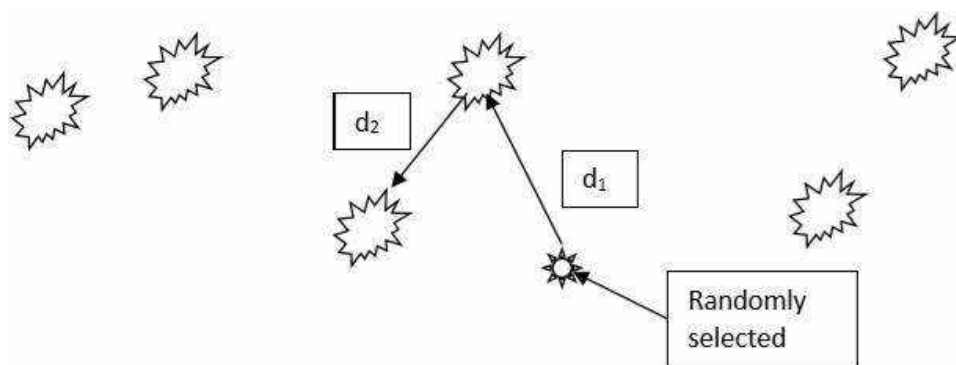
Ecological footprint analysis (EFA) is used as a measure of carrying capacity. EFA is a resource and emissions accounting tool designed to track the demand on the biosphere's regenerative capacity. Ecological footprints are increasingly used as indicators of organizational and corporate environmental performance and product sustainability. To determine the size of a mine's ecological footprint, land requirements for all categories of consumption and waste discharge must be summed up. This land is only made up of the ecologically productive land and water in various classes (cropland, pasture, forests, etc.) required on an on-going basis to provide all energy and material resources consumed and absorb wastes. A challenge in conducting an EFA for a mine is the shortage of accessible

data. Undertaking an EFA for a corporation or individual site entails compiling consumption and emissions data (which can be used for other reporting applications). The footprint results themselves highlight the most critical aspects of an organization's impact on the environment and provide a platform for focusing actions and for educating the workforce to improve their contribution to best-practice operations. The components of EFA are **the Air Footprint** – This is a tool for assessing the prevalent air quality in the air shed of the coal mining area. This is an indicator of the ambient air quality, which is crucial for coal mining. **The water Footprint-** This is a tool for assessing water use along supply chains and is a comprehensive indicator of the appropriation of freshwater resources. **Carbon Footprint-** a method of assessing the magnitude of the emissions from activities. Emissions to the atmosphere are converted to carbon dioxide equivalents (CO<sub>2</sub>e) to assess the total impact of the organization's activities. **Biodiversity Footprint-** is a modified form of the ecological footprint that takes specific biodiversity impacts of direct land use and combines them with the specific biodiversity impact of CO<sub>2</sub>emissions. **Life-Cycle Assessment (LCA)-** is a tool for assessing environmental aspects and potential impacts associated with a product by compiling an inventory of inputs and outputs throughout a product's life cycle and evaluating the possible resulting impacts. **Materials Flow Analysis (MFA)**—a quantitative tool for assessing the flow of materials and energy through an economy. MFA assesses whether the flow of materials is sustainable in terms of the environmental impacts that result from it. Ecological Footprint Analysis (EFA) is a resource and emissions accounting tool designed to track the demand placed on the biosphere's regenerative capacity by a defined entity. An EFA contrasts the biologically productive area appropriated by the company with the capacity of the planet to provide ecosystem services, originally developed as an indicator of environmental impacts of nations, individuals, or the human population. EFAs have been undertaken to produce a baseline of consumption and emissions for mining companies, to assess possible measures to reduce the companies' footprint areas and determine steps required to implement such measures.

### 3.2 ECOLOGICAL SAMPLING

One of the first things a field ecologist will want to know about an animal or plant species is: how dense is the population per unit area or volume. Another important issue is: how are the organisms dispersed within the habitat? In most cases, it is impossible to count every individual or plot their location on a map [This would be a **census**] because of the time, effort, or money involved. So it would be useful if there were some way that we could get an accurate representation of some spatial characteristics of the population without having to map every organism. Sampling must be done properly if we want our representation to be valid. To ensure adequate representation, some guidelines must be followed. To obtain an unbiased estimate of the population, sampling should be done at **random**, or more specifically; the sampling should be conducted in such a way that the probability of each individual being selected in the sample is the same. There are three general types of sampling methods used to select individuals from a population situated in space: **quadrats**,

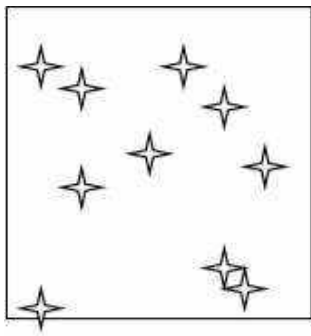
**transect lines**, and **plotless techniques**. A quadrat is a frame (usually a square or a circle) of the known area used to isolate a subset of the population. This subset will comprise one sample. The use of a quadrat is very simple: It is placed randomly in the sampling area (the habitat of the species of interest), and all the individuals within the quadrat are counted and/or measured. Quadrats are most useful when the area is fairly uniform, and movement within the area is easy. The **transect method** is useful when the area to be sampled is zoned in some way or has some sort of gradients running through it. Think of the intertidal habitat on a small scale or the vegetation running up the side of a mountain on a larger scale. If someone wants to study the zonation itself, the transect lines will usually be run normal to the margins of the zones, while if the between zone differences are to be minimized, the transect lines are laid within zones parallel to the boundaries. Once the line has been randomly laid, points along the line are selected (or quadrats could be used too). The points might be randomly or uniformly placed, depending on the question being asked. In this way, the distribution of a species across (or within) the environmental gradient can be determined. The **plotless technique** is the nearest-neighbour method. It is particularly useful in areas where carrying large quadrats would be difficult to manage, such as a dense forest. It is also most suited to habitats that are relatively uniform. Plotless methods do not use a defined area (like a quadrat), nor are they arranged linearly as in transect methods, rather, they use distances between a point and an individual, or between two individuals.



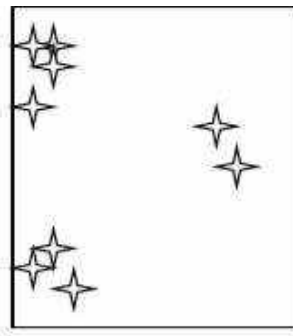
$D_1$  = the distance from the randomly selected point to the closest individual of interest.  $D_2$  = the distance to the nearest neighbour in this technique, each sample consists of a pair of measurements,  $d_1$  and  $d_2$ . To obtain the next sample, a new random point is chosen, and another pair of measurements is made. While nearest neighbour methods are especially useful in certain field situations like dense forests etc. you will see that unlike quadrat methods, they are not that useful for determining density. They are, however, quite useful for determining the dispersion pattern of the organisms.

### 3.3 DENSITY AND DISPERSION PATTERNS

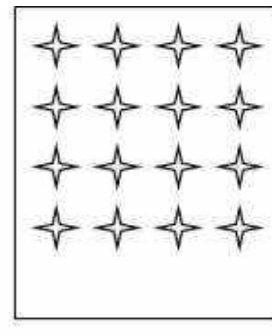
As noted earlier, the number of individuals per unit area is termed the density, and the units are things like; trees acre<sup>-1</sup>, moose km<sup>-2</sup>, zooplankton m<sup>-3</sup>, parasites fish<sup>-1</sup>, etc. Dispersion is the pattern of the distribution of organisms in space. There are three basic dispersion patterns (and their combinations - depending a lot on the scale): random, regular, and clumped (or contagious).



Random



Contagious



Regular

A random dispersion pattern means that there is an equal probability of an individual occurring at any point in the habitat and that the presence of an individual does not influence the probability of occurrence of another individual. Contagious dispersion patterns are those where the presence of an individual increases the probability of finding another one nearby. Regular dispersion, indicated by more even spacing that would be predicted by a random dispersion, may suggest territoriality or some limiting resource.

### 3.4 CARRYING CAPACITY OF ECOSYSTEM

The Carrying Capacity (CC) of the ecosystems is defined as the population of humans and animals that can be sustained, based on the primary productivity of plants, with the available resources and services without damaging the resource base—soil, water, and environment. Others identify CC as the maximum number of individuals of a given species that can be supported on a sustainable basis. A more detailed definition is the maximum rate of resource consumption and waste discharge that can be sustained indefinitely in a defined region without progressively impairing productivity and ecological integrity. It is not a static number as land productivity can be enhanced with inputs of water, energy, plant nutrients, crop genotypes, and using advanced technologies/products from these. Carrying capacity provides the physical limits for the maximum rate of resource consumption and waste discharges. The concept further implies that improvement in the quality of life is possible only when the patterns and levels of production and consumption do not have more than the acceptable adverse ecological impact. Further, CC, following the law of limiting factors, is determined by the single vital resource in the least supply, such as water in the rain-fed agriculture. Global



food production has increased several folds with the inputs of chemical fertilizers, that provided crop nutrients, and inputs of energy derived from fossil fuels. Estimations of human CC are not easy due to a large number of variables involved, including variation in the consumption of food and the use of resources in different societies. The maximum human population that can be sustained biophysically in an area is referred to as biophysical CC, while social CC is the maximum population that can be sustained under different social systems. However, in considering the CC of Indian agriculture, the question of sustainable food production or sustainable CC based on food production is required. **The carrying capacity based planning** process involves the integration of societal expectations and ecological capabilities by minimizing the difference between demand and supply. It uses various modelling and computation techniques to estimate changes in CC indicators. It identifies the socially acceptable tradeoffs, and the use of improved technologies.

### 3.5 METHODOLOGY FOR CARRYING CAPACITY ASSESSMENT

The carrying capacity consists of the supportive and assimilative capacity of the study area around both Gevra and Dipka OCP's. The entire study area around 10 km from the periphery of the mines has been taken into consideration for assessment of the supportive and assimilative capacity of the eco-system.

#### 3.5.1 CARRYING CAPACITY OF AIR QUALITY

The assimilative potential of the atmosphere entails the capacity of the atmosphere to accept and dissipate the pollutant discharge without exceeding the standard limits. This can be an important tool for suggesting the safe limits of disposal of pollutants for industrial operations as well as for the area-based management of air pollution like that of opencast mines and to mitigate the pollution levels. The assimilative capacity of the atmosphere may be examined either using a ventilation coefficient or by estimating pollution potential using air pollution dispersion models. The ventilation coefficient is defined as the rate at which the air is transported within the Convective Boundary Layer (CBL). It is directly proportional to the assimilation potential of the atmosphere. It is a crucial factor in the dispersion of air pollutants and determines the dispersal potential of pollutants over a region of interest. The ventilation coefficient is the product of two meteorological parameters; mixing height and average wind speed through the mixing layers.

Ventilation coefficient =  $Z_i \cdot U$

Where,  $Z_i$  is the atmospheric boundary layer height (mixing height), in m, and  $U$  the average wind velocity in the mixed layer,  $\text{ms}^{-1}$ .

In the second approach, the assimilative capacity can be estimated in terms of permissible emission load that is the difference between the permissible and the

existing pollutant concentration levels. The current concentration levels can either be monitored or predicted using an appropriate dispersion model. This approach has some advantages over the previous one because the ventilation coefficient can only represent the dispersion potential of the region in terms of low, medium, or high. This representation does not give any idea about the amount of emission load that can be assimilated in the region without exceeding the standard limits. The assimilative capacity has been determined based on the baseline ambient air quality, environmental monitoring report of the past four years of the surrounding mines and air quality impact prediction for both Gevra and Dipka OCP's. The Air Quality Index has also been determined, based on CPCB methodology, for carrying capacity assessment.

### **3.5.2 CARRYING CAPACITY OF WATER**

The water balance study of the study area has been carried keeping in view of the water availability, competing user requirements, including that of both Gevra and Dipka OCP's. The status of the water regime has been worked out to understand the supporting capacity of the study area. Based on the surface, drinking, and effluent water quality of the nearby mines, the assimilative potential of the water has worked out. Water quality monitoring was conducted for surface water bodies existing in and around the Gevra and Dipka opencast mines. The water samples were collected from the sump & other locations from 21 May 2019 to 20 November 2019. The rivers in the nearby area are Ahiran and Lilagarh. The up-stream & down-stream water samples were also collected to assess the impact of mining on water bodies. Water samples were collected in 1-liter plastic canes directly from the surface of the water body from each station. Analysis of some of the Physico-chemical parameters such as pH, dissolved oxygen, and TDS was carried out immediately at the time of sampling in the field itself. Water samples for other Physico-chemical parameters were stored and carried to the laboratory for further analysis. The Physico-chemical parameters were analyzed by the following methods, as given in Adoni (1985), Trivedi and Goel (1986), APHA (1998), and *NEERI manual*, (1991).

### **3.5.3 CARRYING CAPACITY OF NOISE LEVELS**

The carrying capacity (assimilative capacity) of the area in terms of noise level has been worked out based on the baseline noise level.

### **3.5.4 CARRYING CAPACITY OF LAND**

The present and post-mining land use pattern envisaged for the project have been considered for assessment of the carrying capacity of the land resource in the study area. The provisions of mine closure, mine closure cost, Net Present Value (NPV), forests, and compensatory afforestation (CA) has also been considered.

## CHAPTER- IV: FIELD OBSERVATION AND INVESTIGATION

### 4.1.1 SELECTION OF AIR QUALITY MONITORING SITES

Considering that the sampling station must be free from all sides and there shall not be any obstacle around the sampler, and the height must be more than 1m. The details of air quality sites in Gevra and Dipka Opencast Mines are given below:

AAQM Locations in Gevra Mine					
Code	Name of Location	Latitude	Longitude	As per Wind Direction	Distance
L1	Gevra Filter Plant	22.345524°N	82.560463°E	Core-zone	0 km
L2	Korai Village	22.3872°N	82.5776°E	Crosswind	3.0 km
L3	Dadarpara Village	22.357864°N	82.610405°E	Crosswind	0.5 km
L4	Purena Village	22.38057985°N	82.586696°E	Crosswind	3.0 km
L5	Salora Village	22.307055°N	82.633969°E	Downwind	1.5 km
L6	Chhindpur Village	22.30159°N	82.59725°E	Downwind	1.25 km
L7	Rampur Village	22.291149°N	82.47951°E	Crosswind	7.5 km
L8	Birda Village	22.280487°N	82.645812°E	Downwind	5.0 km
L9	Gevra Workshop	22.348345°N	82.564127°E	Core-zone	0 km
L10	Saraisingar Village	22.3033527°N	82.5545003°	Downwind	0.5 km
L11	Binjhri Village	22.36496608°N	82.53733746	Upwind	1.75 km
Met Data Station					
Code	Name of Location	Latitude	Longitude	As per Wind Direction	Distance
M1	<b>Gevra Workshop</b>	<b>22.348345°N</b>	<b>82.564127°</b>	--	0 km

AAQM Locations in Dipka Mine					
Cod	Name of Location	Latitude	Longitude	As per Wind Direction	Distance
L1	Dipka CGM Office	22.338095°N	82.51863°E	Core Zone	0 km
L2	Binjhri Village	22.36496608°	82.53733746°E	Crosswind	2.75 km
L3	Tiwarta Village	22.356447°N	82.48486°E	Upwind	3.25 km
L4	Urta Village	22.309219°N	82.436327°E	Crosswind	7.0 km
L5	Gobarghora Village	22.3788327°N	82.5704547°E	Crosswind	4.5 km
L6	Saraisingar Village	22.3033527°N	82.5545003°E	Downwind	2.25 km
L7	Dhatura Village	22.26317°N	82.55386°E	Downwind	5.0 km
L8	Katkidabri Village	22.31013°N	82.55257°E	Downwind	1.75 km
L9	SILO Switching Station	22.3419°N	82.51398°E	Core Zone	0 km
L10	Chhindpur Village	22.30159°N	82.59725°E	Downwind	6.0 km
Met Data Station					
Code	Name of Location	Latitude	Longitude	As per Wind Direction	Distance
M1	<b>Dipka CGM Office</b>	<b>22.338095°N</b>	<b>82.51863°E</b>	--	0 km

#### **4.1.2 SELECTION OF WATER QUALITY MONITORING SITES**

The collection of water samples has been done as per IS: 2488 (part I and V) and IS: 3025. The water samples were collected in pre-treated sampling bottles. Plastic bottles were used as a container because they can be easily landed, inorganically inactive, and durable. Manual sampling has been done during a water quality survey. Representative sampling has been carried out with people's care. The water samples hence were collected to ensure that it must be both homogeneous and representative, and the Physico-chemical properties of the water must not be changed during collection and analysis. Due care was taken during sampling and transportation of these samples. The sample collection technique adopted was in accordance with the nature of water bodies. Both grab and composite samples were collected.

The time of sampling of mine water is also an important factor because the nature of water samples in mine varies due to the washing schedule of mine machinery, change in shift, etc. However, in this investigation, water samples were collected between 10 a.m. to 1 p.m. during the day. The frequency of sampling at each site was a minimum five times in case of effluent discharge from the mine and a minimum three times in case of the sump. However, it may be noted that in the areas under investigation, sumps were very shallow at many places, and the depth of water was not more than 1 meter; hence, at some sites, only one sample was collected just below the surface of the water.

The Water Quality monitoring sites have been selected in order to assess the impact of mining on water quality of nearby surface and groundwater bodies.

The surface water bodies in the area are as follows:

1. Man-made Reservoir
2. Lilagarh river
3. Hasdeo River

The make of water in the Gevra and Dipka mine is direct rainfall in the excavated area and in mine, the inflow of water into the mine from the backfilled area due to rainfall, an inflow of water from the adjoining area beyond excavation, base area during the rainy season and seepage of water from strata as surface and groundwater.

There was no water in the Lilagarh River in pre-monsoon. However, water flow was there in post-monsoon. Accordingly, upstream, downstream water samples have been collected, and analysis is going on.



**Fig.4.1:-**Water sampling from the pond of mine water.



**Fig.4.2:-**Water sampling from Savage Treatment plant, Gevra.



**Fig.4.3:-**Water sampling from MLD Water Treatment Plant, Gevra



**Fig.4.4:-**Water sampling from Ground Water (Hand-Pump)



**Fig.4.5:-**Water sampling from the area around the mine.



**Fig.4.6:-**Water sampling from ETP, Dipka



**Fig.4.7:-**Water sampling from mine water discharge in Lilagarh Nala.



### 4.1.3 SELECTION OF SITES FOR SOIL QUALITY ASSESSMENT

Soil carrying capacity has been assessed to measure whether the local land resources are effectively used to support activities and are the human population. The soil quality has been evaluated by collecting soil samples at a different distance in KM from the coal mining area. Important parameters have been analyzed and compared with the standard permissible limit to assess the impact caused by mining on soil quality.



**Fig.4.8:-**Collection of soil from agricultural land to assess the impact caused by the Gevra mine.



**Fig.4.9:-**Collection of soil from agricultural land of the Gevra area.



**Fig.4.10:-**Collection of soil from agricultural land to assess the impact caused by the Dipka mine.

## 4.2 SAMPLING EQUIPMENTS FOR ENVIRONMENTAL QUALITY MONITORING

**AMBIENT FINE DUST SAMPLER:** AMBIENT FINE DUST SAMPLER, Model No. IPM-FDS-2.5 $\mu$ /10 $\mu$  is shown in figure-4.11. It is used for measurement of mass concentration of fine particulate matter having aerodynamic diameter less than or equal to a nominal 2.5 micrometre (PM<sub>2.5</sub>). The instrument has been specially designed to meet or exceed the operational requirements EPS designated reference method for the determination of the fine particulate matter.

**AEROCET:** The AEROCET is shown in figure-4.12. It is a small, lightweight, battery-operated, handheld mass profiler. The instrument simultaneously monitors PM<sub>1</sub>, PM<sub>2.5</sub>, PM<sub>4</sub>, PM<sub>7</sub>, and PM<sub>10</sub> levels. The multifunctional rotary dial provides simple and efficient operation. The internal battery pack provides 8 hours of continuous operation. The AEROCET stores up to 2,500 sample events, which can be viewed on the display or exported to a computer via the USB port.

**HIGH-VOLUME SAMPLER:** The High-Volume sampler is shown in figure-4.13. It is the basic instrument used to monitor ambient air quality. They have widely used all over the world to measure air pollution in the industrial area, urban area, on the shop floor, near monuments, and other sensitive areas.

**ANEMOMETER:** Anemometer is shown in figure-4.14. It was used to measure the wind speed and wind direction with the help of a Prismatic compass. This data was used to check the dispersion and concentration of particulate matter in the core zone, buffer zone and beyond core zone villages.

**UNIPHOS SAMPLER FOR ATMOSPHERIC POLLUTANTS:** The uniphos sampler for atmospheric pollutants is shown in figure-4.15. The Uniphos Envirotrack is a portable non-dispersive spectrophotometer that can measure absorbance corresponding to air pollutants like SO<sub>2</sub>, NO<sub>2</sub>, NH<sub>3</sub>, HCl, Cl<sub>2</sub> and O<sub>3</sub> with the help of a potable Uniphos sampler.

**THERMOMETER& HUMIDITY METER:** Thermometer& Humidity Meters shown in figure-4.16. It can display current temperature, relative humidity, and current time on a large numeral LCD display screen at the same time. The item also offers the current Date and Day at the push of a button, along with Max and Min temperature readings.

**MULTI-PARAMETER WATER QUALITY PORTABLE METER:** The Multi-parameter is shown in figure-4.17. It is Waterproof, resistant, and easy to use; it is the ideal solution for field measurements of lakes and rivers.

**NOISE LEVEL METER:** The Noise Level Meter is shown in figure-4.18. It carries out measurements quickly to gain control of a situation, but also scheduled control measurements are possible. It has internal memory.



**Fig.4.11:** Ambient Fine Dust Sampler



**Fig. 4.12:** Aerocet



**Fig.4.13:** High Volume Sampler



**Fig. 4.14:** The Uniphos sampler for atmospheric pollutants



**Fig. 4.15:** Thermometer & Humidity Meter



**Fig. 4.16:** Anemometer



**Fig.4.17:**Multi-Parameter Water Quality Portable Meter



**Fig.4.18:** - Noise Level Meter

## 4.3 METHODOLOGY USED FOR AIR QUALITY MONITORING

The human respiratory system is capable of arresting particle size of more than 10 $\mu$ m. So in recent times, the importance of monitoring a particular matter shifted to the range of PM<sub>10</sub> and PM<sub>2.5</sub> as per NAAQS (NAAQS 2009). In this study area, particulate matters (SPM, PM<sub>10</sub>, and PM<sub>2.5</sub>) along with NO<sub>2</sub> and SO<sub>2</sub> have been monitored

Different types of filter papers such as cellulose acetate, glass fiber, polystyrene, membrane, and poly-tetra-fluoro-ethylene (PTFE) are commercially available. However, the glass fiber filter paper is used for PM<sub>10</sub>, and SPM sampling and PTFE filter paper is used for PM<sub>2.5</sub>, sampling as its collection efficiencies are high. Ambient Fine Dust Sampler (Instrumex IPM-FDS 2.5 $\mu$ /10 $\mu$ ; respirable dust sampler (APM 460 NL) and fine particulate sampler (APM550)) for PM<sub>10</sub> and PM<sub>2.5</sub> (Instrumex, Mumbai, India; Envirotech Instruments Private Limited, New Delhi, India) and high volume sampler (ENVIROTECH APM 43-411) for suspended particulate matter (Envirotech Instruments Private Limited, New Delhi, India), and the flow rates of which are 16.67 $\times 10^{-3}$  for Instrumex IPM-FDS 2.5 $\mu$ /10 $\mu$  and fine particulate sampler and 1 m<sup>3</sup> min<sup>-1</sup> for APM 460 NL and APM 43-411, respectively. The NO<sub>2</sub> and SO<sub>2</sub> were collected through UNIPHOS SAMPLER (Uniphos Envirotronic Private Limited, Mumbai, India). The sampling was carried out for 24 hours, simultaneously for SPM, PM<sub>10</sub>, and PM<sub>2.5</sub> along with NO<sub>2</sub> and SO<sub>2</sub>.

The sampling substrate used was 25.4 $\times$ 20.3 cm<sup>-2</sup> glass fiber filters (Whatman EPM2000, Sigma-Aldrich, Bangalore, India), and circle diameter 47 mm glass microfiber filter (Whatman GF/A, Sigma-Aldrich, Bangalore, India), due to its high efficiency for SPM and PM<sub>10</sub>, respectively. The circle diameter 47 mm of poly-tetra-fluoro-ethylene filter paper was used (Whatman PTFE, Sigma-Aldrich, Bangalore, India), due to its high efficiency for PM<sub>2.5</sub>. The weighed filter papers were desiccated for moisture removal at controlled temperatures (20  $\pm$  1 $^{\circ}$ C) for at least 24 h, and it was taken away to the field for sampling in closed envelopes to avoid contamination. After sampling, the filter papers were again desiccated, then weighed with Sartorius CP225D microbalance (Sartorius CP225D microbalance, Data Weighing Systems, Inc. Elk Grove, IL) with a resolution of 10<sup>-5</sup> g for SPM and MYA 5.3Y microbalance (MYA 5.3Y microbalance, LCGC-RADWAG Weighing Solutions Private Limited, Hyderabad) with a resolution of 10<sup>-6</sup> g for PM<sub>10</sub>. Concentrations of SPM and PM<sub>10</sub> have calculated using the mass of particulates collected on the filter paper and the volume of air sampled in glass impinges filled with high volume air sampler.

Display the screen at the same time. The item also offers the current Date and Day at the push of a button, along with Max and Min temperature readings, perfect for home or office. Shell material: durable hard plastic. Good quality temperature & humidity meter. It can show temperature, humidity & time at the same time on the large LCD display for easy to read the memory of MAX & MIN measuring value 12-hour and 24-hour displaying system selectable.



In the present study, the following are the standard methods used for collection, analysis & interpretation of data:

AAQM Sampling & analysis: “Indian Standards (IS 5182)”, “Guidelines for the measurement of Ambient Air Pollutants, Vol-I, CPCB,” & “USEPA” methods were used for Ambient Air sampling and analysis to study the present pollution load around the Proposed Project location.

Parameters of AAQM	Standard Methods	Analytical Instruments
PM <sub>10</sub>	IS 5182 (P23):2006	Semi micro Balance
PM <sub>2.5</sub>	GGMPL/SOP/AA/60	Semi micro Balance
SPM	IS 5182 (P4):1999	Semi micro Balance
Oxides of Nitrogen(NO <sub>x</sub> )	IS 5182 (P6):2006	Spectrophotometer
Oxides of Sulphur (SO <sub>2</sub> )	IS 5182 (P2):2001	Spectrophotometer

## 4.4 METHODOLOGY USED FOR CALCULATION OF WATER QUALITY INDEX

The surface water samples (i.e., reservoir Water samples & industrial water samples) quality was calculated by using CCME WOI formula developed by the British Columbia Ministry of Environment, Lands, Parks & modified by Alberta Environment. In this method, the final index value ranges between 0-100 in which the higher value indicates depletion in quality of water while the lower value of WQI represents an inc. in quality of water according to the CCME WOI ranked:-

**Excellent:** (CCME WQI Value 95-100) - water quality is protected with a visual absence of threat or impairment, conditions very close to natural or pristine levels.

**Good:** (CCME WQI Value 80-94) – water quality is protected with only a minor degree of threat or impairment; conditions rarely depart from natural or desirable levels.

**Fair:** (CCME WOI Value 65-79) - water quality is usually protected but occasionally threatened or impaired; conditions sometimes depart from natural or desirable levels.

**Marginal:** (CCME WOI Value 45-64)- water quality is usually protected but occasionally threatened or impaired, conditions sometimes depart from natural or desirable levels.

**Poor:** (CCME WOI Value 0-44)- water quality is usually protected but occasionally threatened or impaired, conditions sometimes depart from natural or desirable levels.

After the bodies of water, the period office, and the variables and objectives have been defined, each of the three factors that make up the index must be called the calculated. The calculation of  $F_1$  and  $F_2$  is relatively straightforward;  $F_3$  requires some additional steps.

$F_1$ (Scope) represents the percentage of variables that do not meet their objectives at least once during the time period under consideration ("failed variables"), relative to the total number of variables measured:

$$F_1 = \frac{(\text{Number of Failed Variables})}{(\text{Total number of Variables})} \times 100$$

$F_2$  (Frequency) represents the percentage of individual tests that do not meet objectives ("failed tests"):

$$F_1 = \frac{(\text{Number of Failed Variables})}{(\text{Total number of tests})} \times 100$$

$F_3$  (Amplitude) represents the amount by which failed test values do not meet their objectives.

$F_3$  is calculated in three steps.

- 1) The number of times by which individual concentration is greater than (or less than, when the objective is a minimum) the objective is termed an "excursion" and is expressed as follows. When the test value must not exceed the objective:

$$\text{excursion}_i = \frac{\text{Failed Test Value } i}{\text{Objective } j} - 1$$

For the cases in which the test value must not fall below the objective:

$$\text{excursion}_i = \frac{\text{Objective } j}{\text{Failed Test Value } i} - 1$$

- 2) The collective amount by which individual tests are out of compliance is calculated by summing the excursions of individual tests from their objectives and dividing by the total number of tests (both those meeting objectives and those not meeting objectives). This variable referred to as the normalized sum of excursions, or nse, is calculated as:

$$nse = \frac{\sum \text{excursion}}{\# \text{ of tests}}$$

- 3)  $F_3$  is then calculated by an asymptotic function that scales the normalized sum of the excursions from objectives (nse) to yield a range between 0 and 100.

$$F_3 = \frac{nse}{0.01nse + 0.01}$$

Once the factors have been obtained, the index itself can be calculated by summing the three factors as if they were vectors. The sum of the squares of each factor is, therefore, equal to the square of the index. This approach treats the index as a three-dimensional

space defined by each factor along one axis. With this model, the index changes in direct proportion to changes in all three factors.

The CCME Water Quality Index (CCME WQI):

The divisor 1.732 normalizes the resultant values to a range between 0 and 100, where 0 represents the "worst" water quality and 100 represents the "best" water quality.

$$CCMEWQI = 100 - \frac{\sqrt{F1^2 + F2^2 + F3^2}}{1.732}$$

The divisor 1.732 normalizes the resultant values to a range between 0 and 100, where 0 represents the "worst" water quality, and 100 represents the "best" water quality.

## 4.5 AIR AND WATER QUALITY ASSESSMENT INDEX

### AIR QUALITY INDEX:

Air quality index is one of the popular methods for assessing the quality of the air of a particular area. Category and the associated health impact on human beings of AQI is given in the following table:

#### AQI INDEXES, CATEGORIES, AND ASSOCIATED HEALTH IMPACTS

Air Quality Index Values	AirQuality Index Categories	Associated Health Impacts
0-50	Good	Minimal Impact
51-100	Satisfactory	May cause minor breathing discomfort to sensitive people
101-200	Moderately Polluted	May cause breathing discomfort to the people with lung disease such as asthma and discomfort to people with heart disease, children and older adults
201-300	Poor	May cause breathing discomfort to people on prolonged exposure and discomfort to people with heart disease
301-400	Very Poor	May cause respiratory illness to the people on prolonged exposure. Effect may be more pronounced in people with lung and heart diseases
401-500	Severe	May cause respiratory effects even on healthy people and serious health impacts on people with lung/heart diseases. The health impacts may be experienced even during light physical activity

### Water Quality Index (WQI)

The Water Quality Index (WQI) analysis provides a comprehensive picture of the quality of surface and groundwater for most domestic uses. WQI is defined as a rating that reflects the composite influence of different water quality parameters. It is an important parameter for assessing groundwater quality and its suitability for drinking purposes. Types of water quality are shown in the following table:

<b>WQI Range</b>	<b>Type of water</b>
<50	Excellent water
50-100	Good water
100-200	Poor water
200-300	Very poor water
>300	Unsuitable

## 4.6 CHANGES IN LAND USED PATTERN

Land used pattern in the study area has been shown in satellite photograph

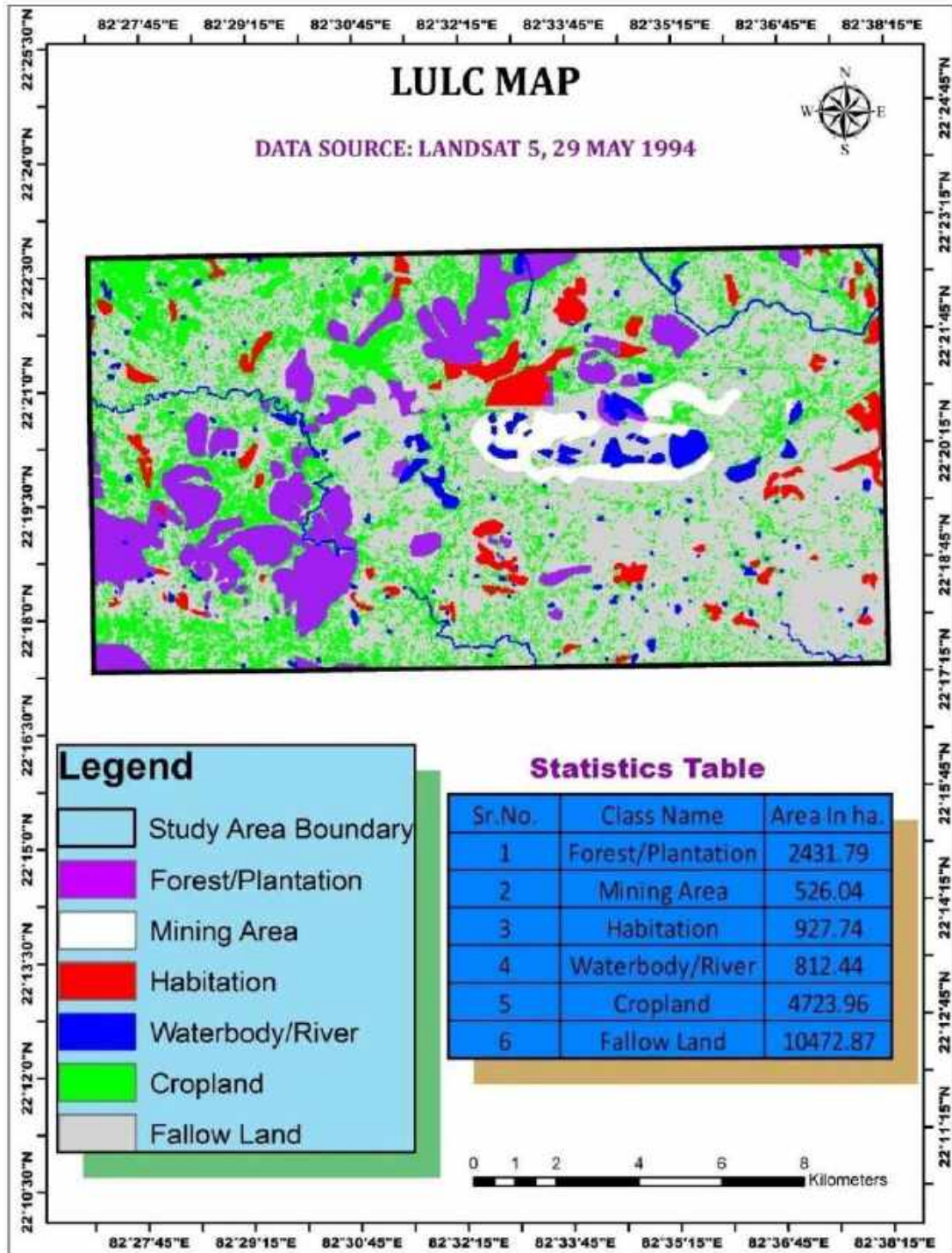


Figure- 4.19 Land used pattern shown satellite photograph 1994

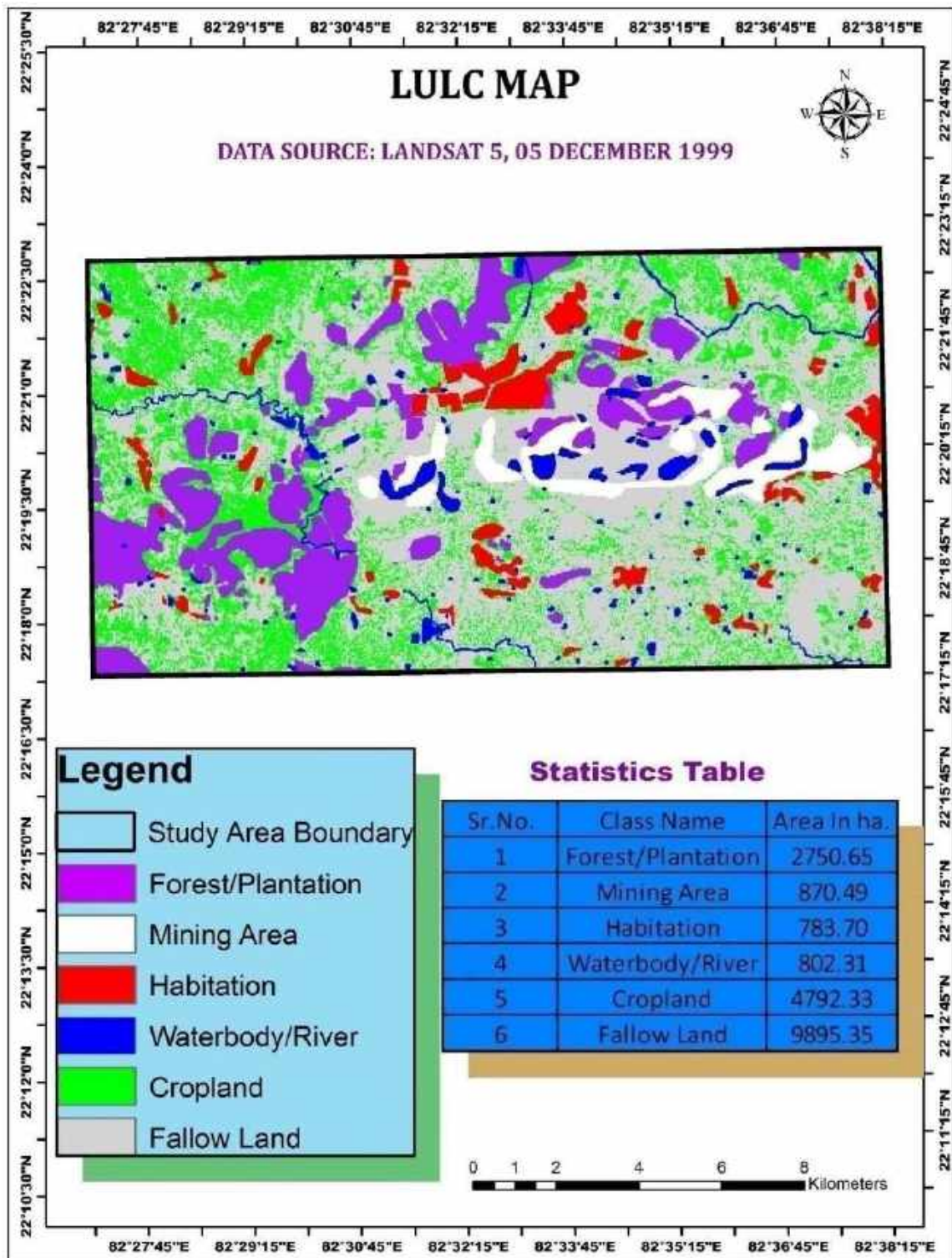


Figure- 4.20 Land used pattern shown satellite photograph 1999

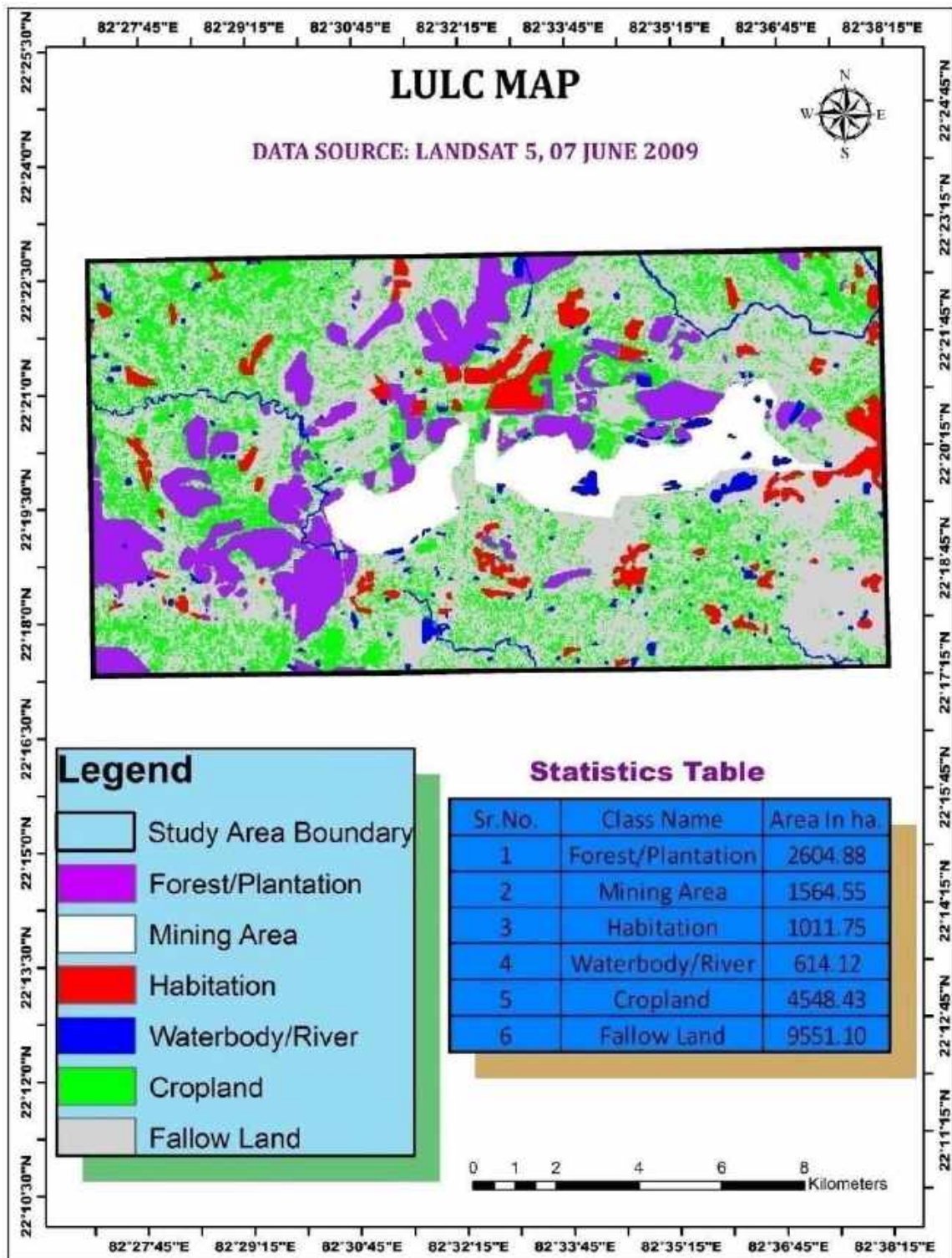


Figure- 4.21 Land used pattern shown satellite photograph 2009

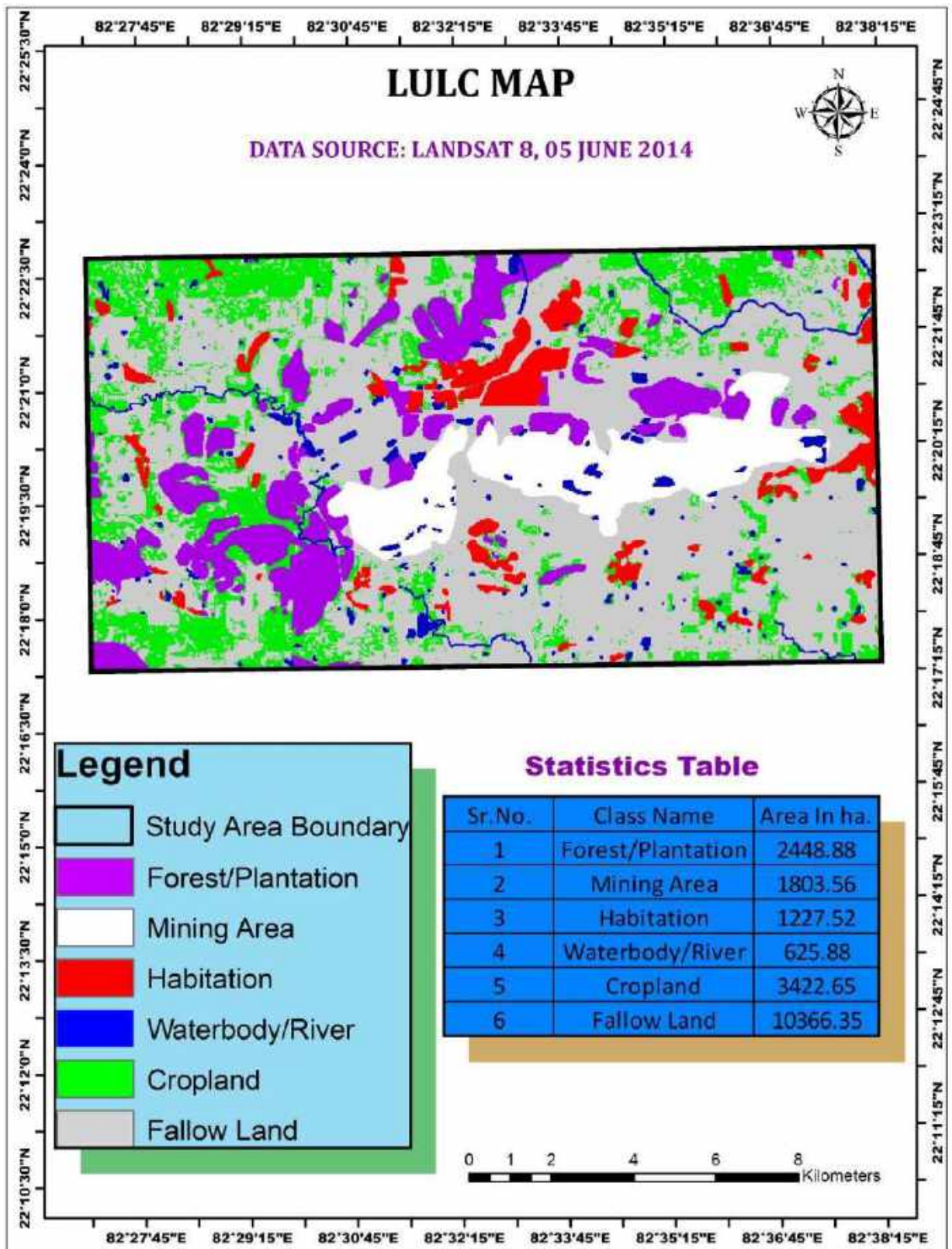


Figure- 4.22 Land used pattern shown satellite photograph 2014



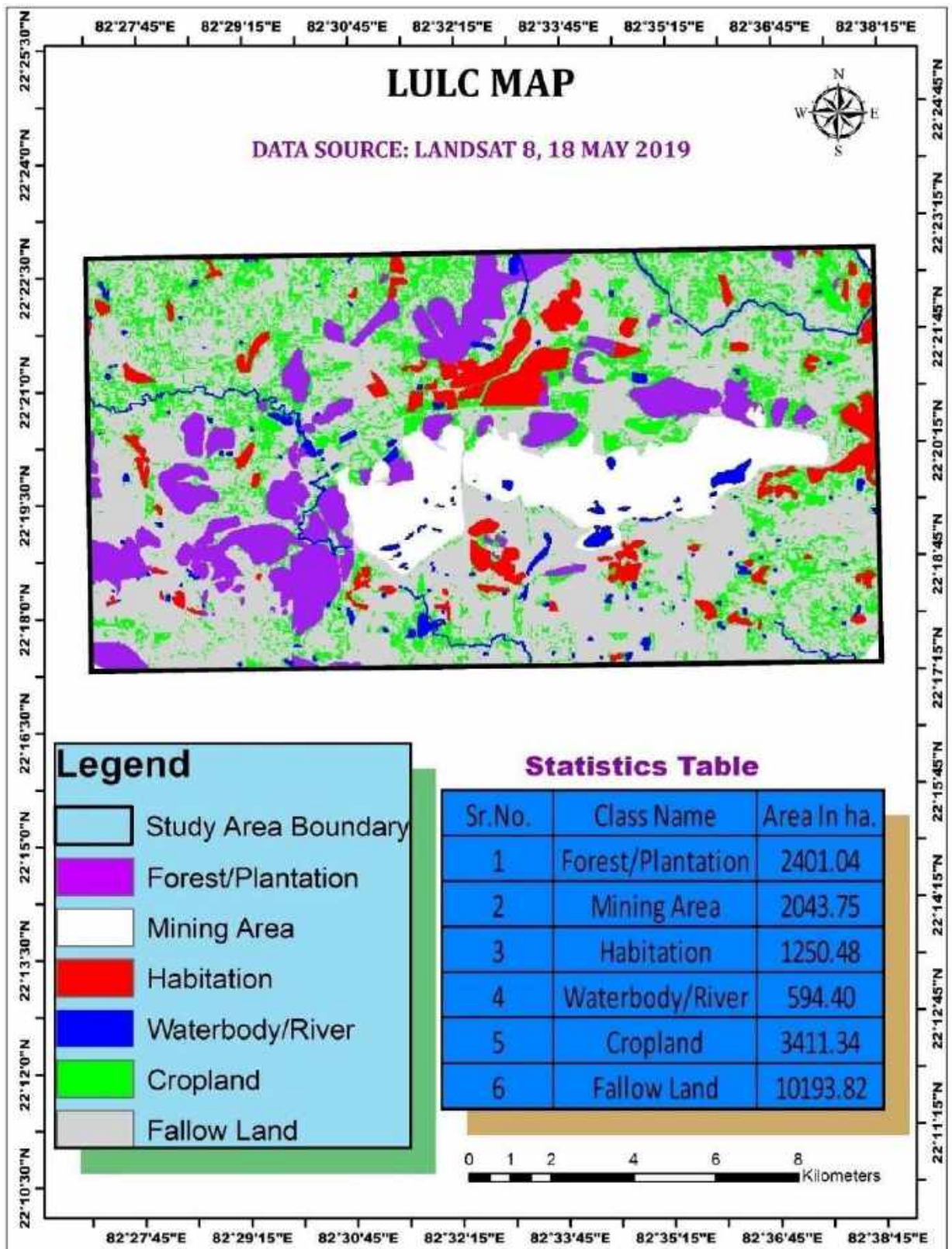
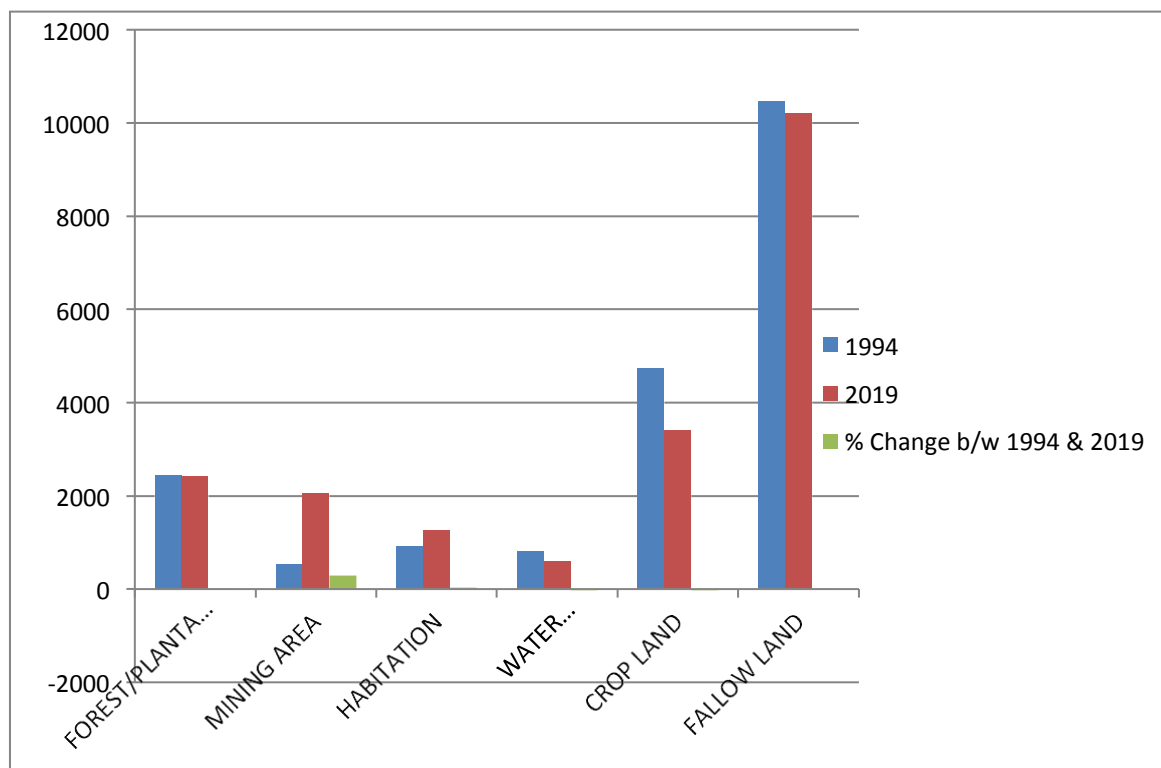


Figure- 4.23 Land used pattern shown satellite photograph 2019

**TABLE 4.1 CHANGING IN LAND USED PATTERN DUE TO MINING ACTIVITY**

ITEM S	LAND USED PATTERN ( In hectare*)					% Change b/w 1994 & 2019
	1994	1999	2009	2014	2019	
<b>FOREST/PLANTATION</b>	2431.79	2750.65	2604.88	2448.88	2401.04	- 1.26
<b>MINING AREA</b>	526.04	870.49	1564.55	1803.56	2043.75	+ 288.51
<b>HABITATION</b>	927.47	783.70	1011.75	1227.52	1250.48	+ 34.82
<b>WATER BODY/RIVER</b>	812.44	802.31	614.12	625.88	594.40	- 26.83
<b>CROP LAND</b>	4723.96	4792.33	4548.43	3422.65	3411.34	- 27.78
<b>FALLOW LAND</b>	10472.87	9895.35	9551.10	10366.35	10193.82	- 2.66

\*One Hectare is equal to Ten Thousand square meters. (1 Ha. = 10,000 m<sup>2</sup>)



**Figure- 4.24 % CHANGE IN LAND USED PATTERN BETWEEN 1994 & 2019 DUE TO MINING ACTIVITY**

Besides ground-level fieldwork, Satellite photograph (Imaginary) has also been used to assess the carrying capacity of eco-system services of Gevra and Dipka open cast coal mining complexes. 5 Satellite images starting from 1994 to 2019 has been thoroughly observed.

Following parameters have been studied to see the % of changes in the past 25 years due to mining activity:

1. Forest/Plantation
2. Mining Area
3. Habitation
4. Water bodies/River
5. Cropland
6. Fallow land

The results are given in Table 4.1 and shown in Figure 4.24 It may be observed from Table 4.1 & Figure 4.19-4.23 That in 1994, the Forest/Plantation cover was 2431.79 hectares, and it was increased to 2750.65 in 1999. Further, there is a marginal decrease in Forest/Plantation cover from 2009 (2604.88 Hectare) to 2019 (2401.04). However, there is a marginal negative % change between the last 25 years. This is due to the expansion of the open cast mining area during this period, as observed from the table 4.1 This negative % change in Forest/Plantation may become positive after Reclamation/Afforestation of overburden dumped area.

It may also be being observed from Table 4.1 & Figure 4.24 that there is a negative % change in the following items considered for determining the impact of mining on ecosystem services of the area.

1. Water bodies/River
2. Cropland
3. Fallow land

Another important impact of coal mining on carrying capacity of eco-system services – Water (Water body/River) has also been investigated in detail. The results from 1994 to 2019 are given in table numbers 4.1 for 25 years. Figure numbers from 4.19 To 4.23 also depict visual changes. The water bodies (Sump, Pond, Reservoir River) in the area has been decreased significantly, as observed from figure and table in the last 25 years. This may be due to coverage of land for habitation, construction of road and mining activity in the area under investigation. The loss of water bodies due to various reasons should be reduced.

As per Pre-monsoon and post-monsoon water level data, it seems that there is a marginal fluctuation of water level in the area. This may be due to various factors such as rainfall patterns, consumption of water due to an increase in population, which was more than 30% in the area.

However, the water (Rainfall and groundwater) collected in the mined out and filled area is acting as a major source of recharge of groundwater in the area. Through this area in figure is measured as the mined-out area, which is connected as a groundwater recharge area.

The habitation (Build-up area) is an important parameter to assess the impact of open cast coal mining on ecosystem services.

The positive % change in habitation in the area indicate that all eco-system services of favourable for habitation for the population. There is a significant positive % increase, as shown in Table 4.1

### WATER LEVEL TREND:

The pre-monsoon and post-monsoon water level trends of the above hydrograph stations are shown in Fig. below

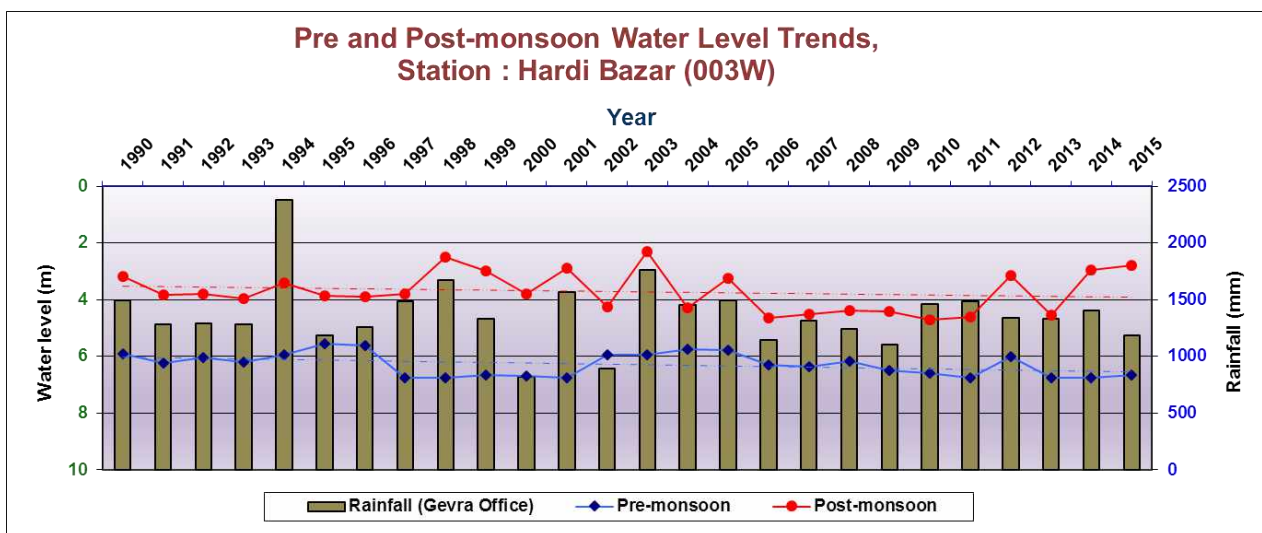


Figure –4.25 Water level trend in Hardi bazar.

At Hardi Bazar (003W) station, both pre and post-monsoon water levels reveal a declining marginal trend. This may be attributed to variation in rainfall patterns, increase in the population due to expansion of Hardi Bazar Township, and enhance of groundwater draft for various utilizations. It was thus leading to an increase in groundwater draft in the area by local people.

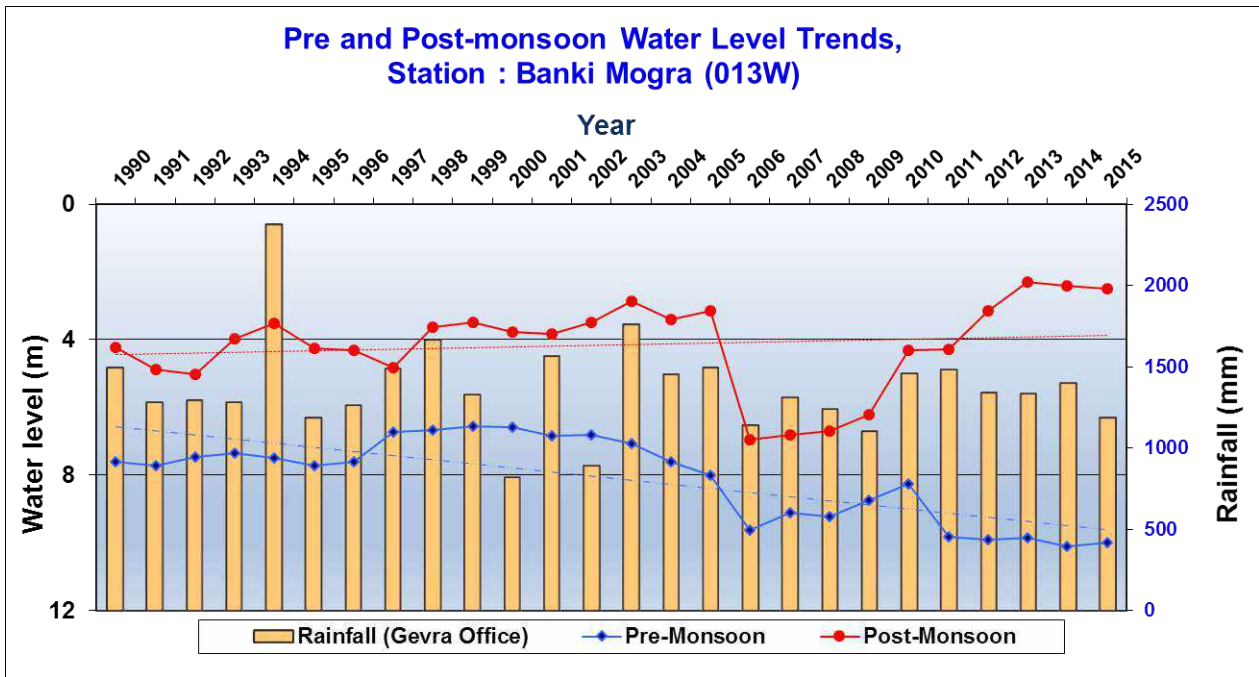


Figure –4.26 Water level trend in Banki Mogra.

At Banki Mogra station, post-monsoon water levels reveal an increasing marginal trend and attributed to the position of a well in the recharge area. Contrastingly, the appreciable declining trends of water level at this station for pre-monsoon season is ascribed to, location of well immediately above underground mine working sand large mine water pumping as well as an increase in groundwater draft in the area by local people.

## CHAPTER-V: CARRYING CAPACITY ASSESSMENT OF STUDY AREA

For undertaking the ecological footprint analysis of both the Gevra and Dipka OCP's and its surrounding area, the environmental quality and ecological data were collected and presented below:

### 5.1 ENVIRONMENTAL QUALITY MONITORING IN GEVRA MINE

#### Micro Meteorological Condition

A micrometeorological station has been installed for the study period from May 2019 to Nov 2019. The predominant wind direction has been observed from S to E. The average wind speed was 3.91 m/s, and for 36.15 %, calm conditions have prevailed in the study area.

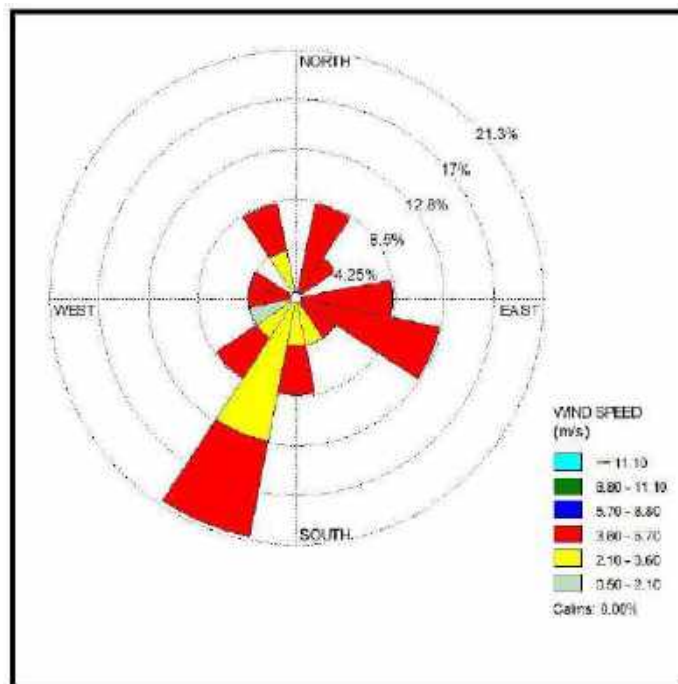


FIGURE 5.1: WIND-ROSE DIAGRAM SHOWING PREDOMINANT WIND DIRECTION

The locations for air sampling were selected on the basis of “joint site survey”, “examination of topo sheet of the project area”, “secondary micrometeorological data analysis”, “historical wind direction pattern” and “availability of resources” for ambient air quality monitoring and noise level monitoring.

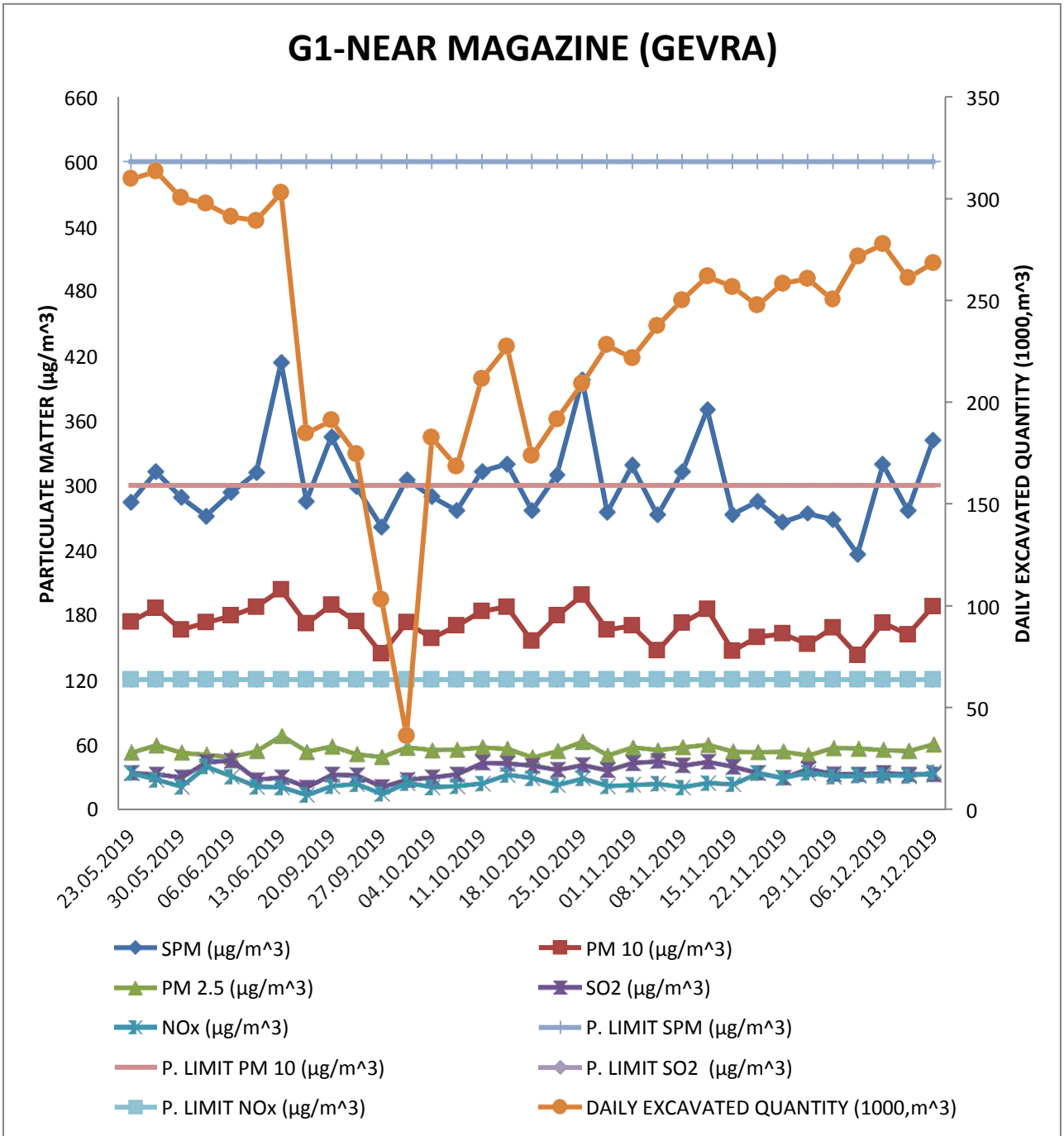
## 5.1.1 ASSESSMENT OF AIR QUALITY

AAQM Locations					
Code	Name of Location	Latitude	Longitude	As per Wind Direction	Distanc
G1	Near Magazine	22°20'55''	82°33'38''	Core-zone	0 km
G2	Near Excavation Workshop	22°21'35.01''	82°35'20.22''	Core-zone	0 km
G3	Dadarpara Village	22.357864°N	82.610405°E	Crosswind	0.5 km
G4	Purena Village	22.38057985°N	82.586696°E	Crosswind	3.0 km
G5	Korai Village	22.3872°N	82.5776°E	Crosswind	3.0 km
G6	Rampur Village	22.291149°N	82.47951°E	Crosswind	7.5 km
GD7	Chhindpur Village	22.30159°N	82.59725°E	Downwind	1.25 km
G8	Birda Village	22.280487°N	82.645812°E	Downwind	5.0 km
G9	Salora Village	22.307055°N	82.633969°E	Downwind	1.5 km
GD10	Saraisingar Village	22.3033527°N	82.5545003°E	Downwind	0.5 km
GD11	Binjhri Village	22.36496608°N	82.53733746°	Upwind	1.75 km

Name of Location (G1)	G1-NEAR MAGAZINE (GEVRA)						
Sr. No.	Date of Sampling	SPM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	DAILY EXCAVATED QUANTITY
Unit		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	(1000,m <sup>^3</sup> )
<b>GSR 742 (E)</b>		600	300	-	120	120	-
1.	23.05.2019	284.3	173.6	51.3	32.5	32.7	309.532
2.	27.05.2019	312.5	186.4	57.8	31.4	26.5	313.343
3.	30.05.2019	289.1	166.3	51.3	28.6	20.1	300.351
4.	03.06.2019	271.6	172.9	49.3	42.5	38.4	297.555
5.	06.06.2019	293.4	179.3	47.3	44.1	29.5	290.996
6.	10.06.2019	311.7	187.3	52.8	26.5	20.1	289.174
7.	13.06.2019	413.8	203.4	66.7	28.6	19.5	302.805
8.	16.09.2019	285.4	171.8	51.9	19.7	12.5	184.727
9.	20.09.2019	345.3	189.3	56.8	31.2	20.6	190.965
10.	23.09.2019	298.6	173.8	49.8	30.7	22.6	174.602
11.	27.09.2019	261.3	143.8	47.2	19.8	13.5	102.881
12.	30.09.2019	305.6	172.9	55.8	26.5	23.6	36.06
13.	04.10.2019	289.6	158.3	53.4	28.8	19.5	182.362
14.	07.10.2019	276.8	169.8	53.9	31.4	20.5	168.348
15.	11.10.2019	312.8	183.4	56.1	42	23	211.578
16.	14.10.2019	319.7	187.3	54.6	41.2	30.8	227.176
17.	18.10.2019	276.8	155.8	46.8	39.2	28	173.604
18.	21.10.2019	309.8	179.3	52.7	35.5	21.5	191.668
19.	25.10.2019	397.8	198.3	61.3	39.9	27.6	209.099
20.	28.10.2019	274.8	166.3	48.6	35	20.6	227.858
21.	01.11.2019	318.6	169.8	55.8	41.8	21.9	221.696
22.	04.11.2019	272.5	146.9	53.4	43.3	22.9	237.558
23.	08.11.2019	312.5	172.3	56.1	39.5	19.5	250.175
24.	11.11.2019	370.1	185.3	58.3	42.9	23.5	261.782
25.	15.11.2019	273.1	146.7	52.1	38.2	22.4	256.71
26.	18.11.2019	284.9	159.4	51.7	32.5	32.5	247.385
27.	22.11.2019	266.1	162.5	52.3	28.1	28.2	258.212
28.	25.11.2019	273.8	152.9	48.9	36.3	32.8	260.522
29.	29.11.2019	268.3	167.9	55.4	31.7	29.5	250.252
30.	02.12.2019	236.4	142.6	54.9	31.5	30.1	271.477
31.	06.12.2019	319.4	172.6	53.8	32.6	30.5	277.632
32.	09.12.2019	276.8	161.8	52.7	31.4	29.8	260.945
33.	13.12.2019	341.8	187.9	58.9	31.5	33.1	268.351

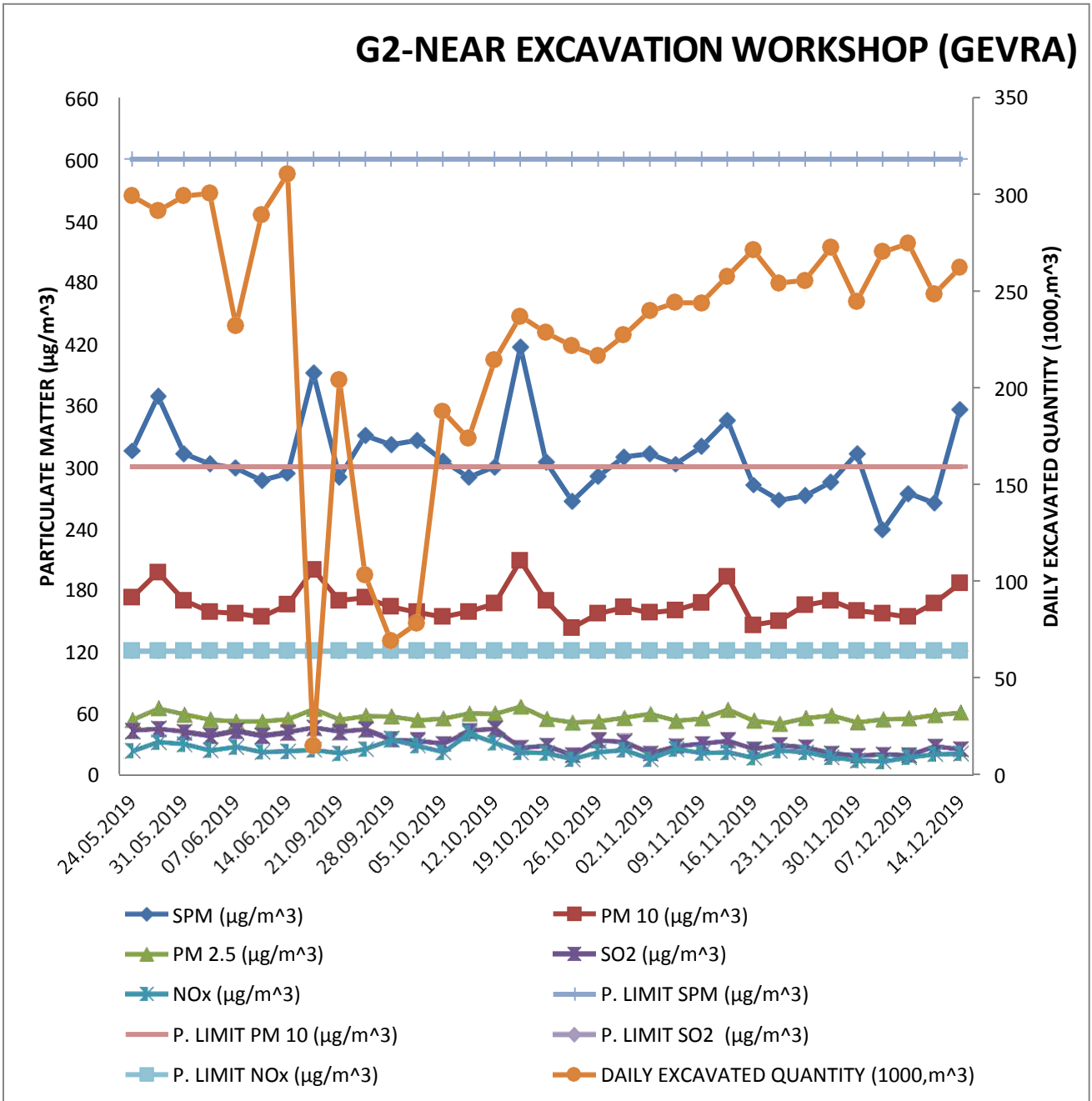


RESULT INTERPRETATION					
No. of Observations	33	33	33	33	33
Min Concentration	236.4	142.6	46.8	19.7	12.5
Max Concentration	413.8	203.4	66.7	44.1	38.4
98 <sup>th</sup> Percentile	397.8	198.3	61.3	43.3	32.7
Arithmetic Mean	301.36364	171.14848	53.6272727	33.830303	25.084848
Std. Deviation	38.282591	15.301003	4.21101775	6.4614958	5.9588234



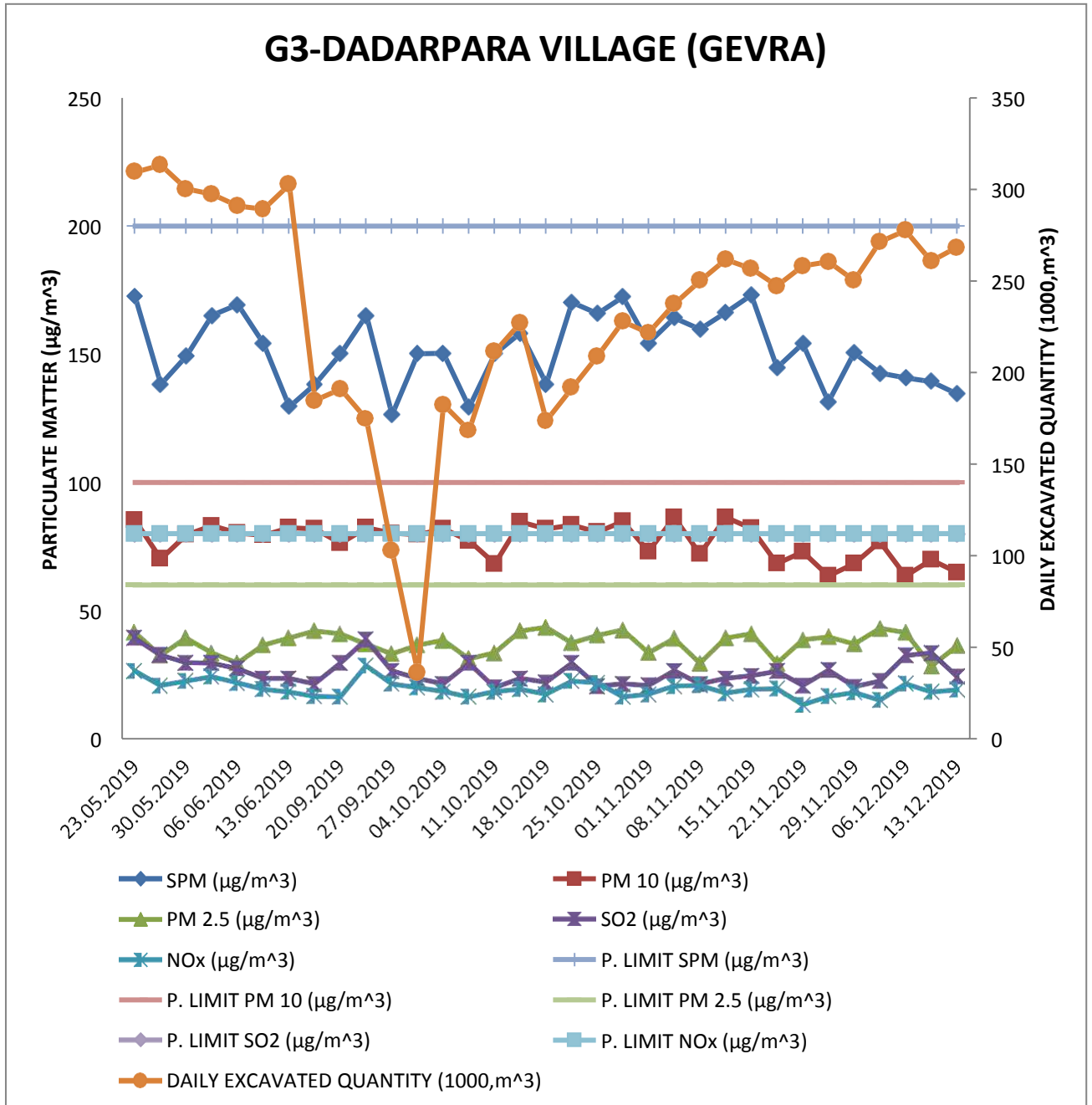
Name of Location (G2)	G2-NEAR EXCAVATION WORKSHOP (GEVRA)						
Sr. No.	Date of Sampling	SPM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	DAILY EXCAVATED QUANTITY
Unit		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	(1000,m <sup>^3</sup> )
<b>GSR 742 (E)</b>		600	300	-	120	120	-
1.	24.05.2019	315.6	172.3	52.3	41.9	22.8	299.048
2.	28.05.2019	368.9	196.8	63.4	43.7	31.4	291.342
3.	31.05.2019	312.4	169.2	57.3	40.8	29.2	299.102
4.	04.06.2019	302.8	158.4	52.4	37.2	23.4	300.539
5.	07.06.2019	298.7	156.9	50.7	41.9	26.7	231.952
6.	11.06.2019	286.4	153.4	50.7	37	21.8	289.316
7.	14.06.2019	293.4	165.4	52.8	40.3	22.4	310.481
8.	17.09.2019	391.2	199.4	62.8	44.8	23.7	14.588
9.	21.09.2019	289.7	169.4	52.3	40.8	20.4	203.994
10.	24.09.2019	330.4	172.1	56.1	43.2	24.6	103.004
11.	28.09.2019	321.6	163.4	55.7	33.7	33.8	68.663
12.	01.10.2019	325.6	158.2	51.9	32.6	27.9	78.065
13.	05.10.2019	305.6	153.4	53.4	29.7	21.5	187.638
14.	08.10.2019	289.7	158.3	58.5	41.9	39.7	173.587
15.	12.10.2019	299.8	166.3	58.2	43.6	30.6	214.246
16.	15.10.2019	416.9	208.3	65.2	25.8	21.4	236.826
17.	19.10.2019	304.6	169.2	53.1	27.9	20.8	228.458
18.	22.10.2019	266.1	142.8	49.6	18.6	14.6	221.419
19.	26.10.2019	290.4	156.5	50.7	32.9	21.8	216.29
20.	29.10.2019	309.4	162.8	54.3	31.7	23.8	227.084
21.	02.11.2019	312.6	157.6	57.9	20.4	14.6	239.548
22.	05.11.2019	302.4	159.8	51.2	27.6	24.7	243.854
23.	09.11.2019	319.5	167.3	53.6	29.7	20.6	243.786
24.	12.11.2019	345.3	192.6	62.1	32.8	21.4	257.581
26.	16.11.2019	282.3	145.3	51.3	24.5	15.9	271.289
27.	19.11.2019	267.3	149.6	48.3	28.5	23.1	254.04
28.	23.11.2019	271.6	164.8	53.9	26.3	21.5	255.321
29.	26.11.2019	285.1	169.2	56.4	20.5	16.5	272.301
30.	30.11.2019	312.4	159.3	49.8	18.2	13.8	244.442
31.	03.12.2019	238.2	156.9	52.7	19.5	12.5	270.078
32.	07.12.2019	273.8	153.4	53.4	18.7	16.5	274.472
33.	10.12.2019	264.9	166.7	56.8	27.3	19.7	248.211
34.	14.12.2019	356.2	186.3	59.2	24.3	20.1	262.178

RESULT INTERPRETATION					
No. of Observations	33	33	33	33	33
Min Concentration	238.2	142.8	48.3	18.2	12.5
Max Concentration	416.9	208.3	65.2	44.8	39.7
98 <sup>th</sup> Percentile	391.2	199.4	63.4	43.7	33.8
Arithmetic Mean	307.6	166.1	54.7878788	31.766667	22.521212
Std. Deviation	36.724396	15.219929	4.26927669	8.6079058	5.9151689



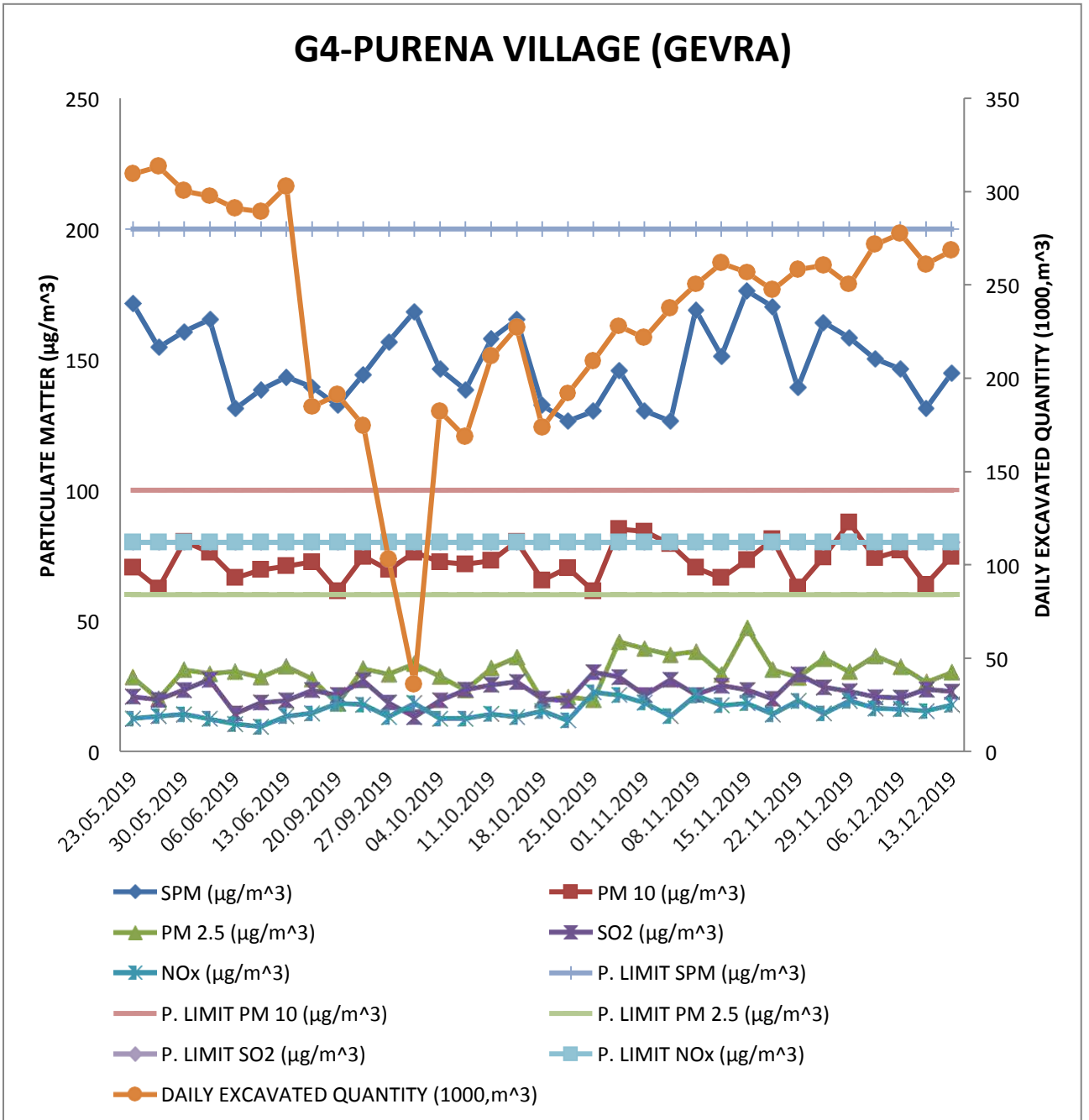
Name of Location (G3)		G3-DADARPARA VILLAGE (GEVRA)					
Sr. No.	Date of Sampling	SPM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	DAILY EXCAVATED QUANTITY
Unit		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	(1000,m <sup>^3</sup> )
<b>GSR 826 (E)</b>		-	100	60	80	80	-
1.	23.05.2019	172.6	85.3	41.3	39.1	26.5	309.532
2.	27.05.2019	138.2	70.2	32.4	32.6	20.8	313.343
3.	30.05.2019	149.3	79.6	39.1	29.6	22.6	300.351
4.	03.06.2019	165.2	83.1	33.4	29.5	24.3	297.555
5.	06.06.2019	169.4	80.3	29.5	27.4	21.9	290.996
6.	10.06.2019	154.2	79.4	36.4	23.5	19.5	289.174
7.	13.06.2019	129.6	82.4	39.1	23.5	18.4	302.805
8.	16.09.2019	138.2	81.9	41.8	21.5	16.8	184.727
9.	20.09.2019	150.2	76.3	40.7	29.5	16.5	190.965
10.	23.09.2019	165.2	82.4	36.8	38.5	28.5	174.602
11.	27.09.2019	126.4	80.2	33.1	26.5	21.6	102.881
12.	30.09.2019	150.3	79.6	36.4	23.6	20.1	36.06
13.	04.10.2019	150.4	81.9	38.2	21.5	18.5	182.362
14.	07.10.2019	129.4	77.2	31.2	29.5	16.5	168.348
15.	11.10.2019	150.2	68.2	33.4	20.1	18.5	211.578
16.	14.10.2019	158.3	84.7	41.8	23.5	19.5	227.176
17.	18.10.2019	138.4	81.9	43.2	22.1	17.5	173.604
18.	21.10.2019	170.2	83.4	37.2	29.5	22.6	191.668
19.	25.10.2019	165.9	80.7	40.2	20.6	21.9	209.099
20.	28.10.2019	172.4	84.9	42.1	21.5	16.5	227.858
21.	01.11.2019	154.3	73.1	33.5	20.9	17.5	221.696
22.	04.11.2019	164.2	86.4	38.9	26.5	20.6	237.558
23.	08.11.2019	159.8	72.1	29.4	21.5	20.9	250.175
24.	11.11.2019	166.2	86.4	39.1	23.5	17.9	261.782
25.	15.11.2019	173.1	82.1	40.7	24.6	19.4	256.71
26.	18.11.2019	144.8	68.4	29.4	26.4	19.7	247.385
27.	22.11.2019	154.2	72.9	38.4	20.8	13.5	258.212
28.	25.11.2019	131.5	63.5	39.5	26.8	16.8	260.522
29.	29.11.2019	150.7	68.4	36.8	20.4	18.2	250.252
30.	02.12.2019	142.6	76.9	42.8	22.6	15.3	271.477
31.	06.12.2019	140.9	63.5	41.2	32.4	21.6	277.632
32.	09.12.2019	139.4	69.8	28.3	33.4	18.4	260.945
33.	13.12.2019	134.6	64.9	36.2	24.3	19.3	268.351

RESULT INTERPRETATION					
No. of Observations	33	33	33	33	33
Min Concentration	126.4	63.5	28.3	20.1	13.5
Max Concentration	173.1	86.4	43.2	39.1	28.5
98 <sup>th</sup> Percentile	172.6	85.3	42.1	38.5	26.5
Arithmetic Mean	151.52424	77.333333	37.0151515	25.975758	19.639394
Std. Deviation	14.053181	6.9444072	4.33561711	5.0747556	3.108249



Name of Location (G4)		G4-PURENA VILLAGE (GEVRA)					
Sr. No.	Date of Sampling	SPM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	DAILY EXCAVATED QUANTITY
Unit		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	(1000,m <sup>3</sup> )
<b>GSR 826 (E)</b>		-	100	60	80	80	-
1.	23.05.2019	171.3	70.3	28.3	20.9	12.6	309.532
2.	27.05.2019	154.6	62.4	20.1	19.8	13.5	313.343
3.	30.05.2019	160.7	80.3	31.2	23.5	14.2	300.351
4.	03.06.2019	165.3	76.1	29.6	27.4	12.5	297.555
5.	06.06.2019	131.2	66.4	30.5	14.5	10.5	290.996
6.	10.06.2019	138.4	69.4	28.3	18.6	9.5	289.174
7.	13.06.2019	143.2	70.9	32.4	19.5	13.5	302.805
8.	16.09.2019	139.4	72.4	27.6	23.4	14.6	184.727
9.	20.09.2019	132.4	61.3	18.2	21.5	18.4	190.965
10.	23.09.2019	144.2	74.5	31.6	27.1	17.9	174.602
11.	27.09.2019	156.8	69.4	29.4	18.6	13.2	102.881
12.	30.09.2019	168.3	76.1	33.4	13.2	18.4	36.06
13.	04.10.2019	146.3	72.4	28.6	19.5	12.6	182.362
14.	07.10.2019	138.4	71.6	23.4	23.6	12.6	168.348
15.	11.10.2019	157.9	72.9	31.8	25.4	14.3	211.578
16.	14.10.2019	165.3	80.3	35.9	26.5	13.2	227.176
17.	18.10.2019	132.4	65.4	19.4	20.1	15.4	173.604
18.	21.10.2019	126.4	70.2	20.8	19.3	11.8	191.668
19.	25.10.2019	130.2	61.3	19.7	30.2	22.6	209.099
20.	28.10.2019	145.9	85.1	41.8	28.4	21.5	227.858
21.	01.11.2019	130.4	84.2	39.2	21.5	18.6	221.696
22.	04.11.2019	126.4	79.3	36.8	27.4	13.5	237.558
23.	08.11.2019	168.9	70.3	38.1	21.6	21.4	250.175
24.	11.11.2019	151.2	66.4	29.4	25.1	17.6	261.782
25.	15.11.2019	176.3	73.2	47.1	23.5	18.4	256.71
26.	18.11.2019	170.2	81.2	31.2	20.1	14.2	247.385
27.	22.11.2019	139.2	62.8	28.2	29.4	19.3	258.212
28.	25.11.2019	164.2	74.3	35.4	24.5	14.5	260.522
29.	29.11.2019	158.2	87.6	30.4	22.9	19.3	250.252
30.	02.12.2019	150.2	74	36.4	20.8	16.5	271.477
31.	06.12.2019	146.3	76.9	32.3	20.5	16.2	277.632
32.	09.12.2019	131.2	63.8	26.4	23.7	15.4	260.945
33.	13.12.2019	144.8	74.5	30.2	22.8	17.8	268.351

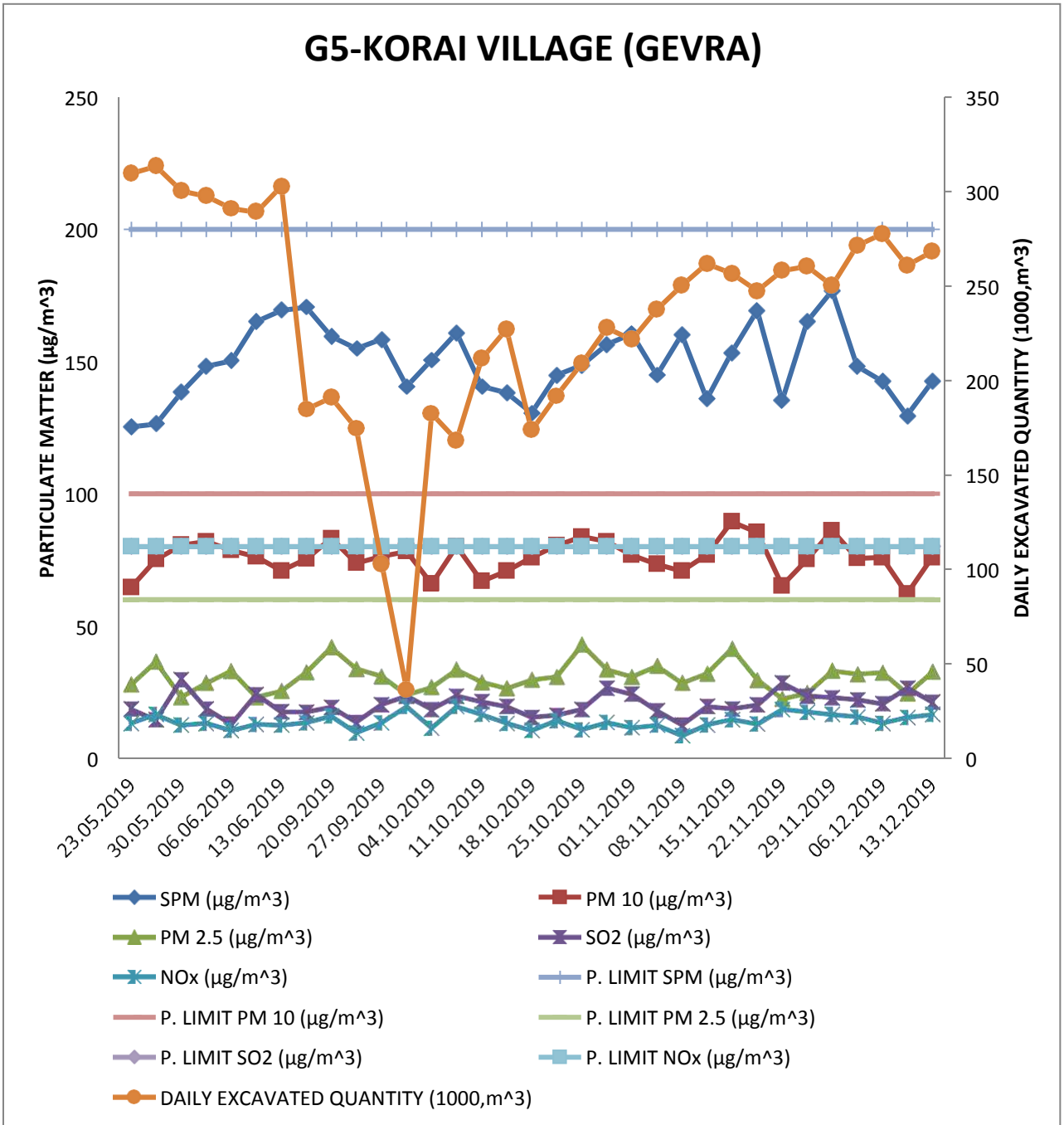
RESULT INTERPRETATION					
No. of Observations	33	33	33	33	33
Min Concentration	126.4	61.3	18.2	13.2	9.5
Max Concentration	176.3	87.6	47.1	30.2	22.6
98 <sup>th</sup> Percentile	171.3	85.1	41.8	29.4	21.5
Arithmetic Mean	148.6697	72.642424	30.3969697	22.569697	15.621212
Std. Deviation	14.827877	6.8718188	6.55288509	3.9204181	3.2574681



Name of Location (G5)	G5-KORAI VILLAGE (GEVRA)						
Sr. No.	Date of Sampling	SPM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	DAILY EXCAVATED QUANTITY
Unit		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	(1000,m <sup>3</sup> )
<b>GSR 826 (E)</b>		-	100	60	80	80	-
1.	23.05.2019	125.3	64.6	27.8	18.5	13.2	309.532
2.	27.05.2019	126.4	75.2	36.4	14.5	16.5	313.343
3.	30.05.2019	138.4	80.6	23.1	29.6	12.5	300.351
4.	03.06.2019	148.3	81.9	28.4	18.6	13.2	297.555
5.	06.06.2019	150.3	78.6	32.9	12.9	10.5	290.996
6.	10.06.2019	165.2	76.2	23.1	24.1	12.8	289.174
7.	13.06.2019	169.4	70.9	25.4	17.5	12.5	302.805
8.	16.09.2019	170.6	75.4	32.4	17.4	13.4	184.727
9.	20.09.2019	159.4	83.1	41.8	19.2	15.9	190.965
10.	23.09.2019	154.9	73.8	33.7	13.6	9.6	174.602
11.	27.09.2019	158.4	76.4	30.9	20.2	13.4	102.881
12.	30.09.2019	140.6	78.2	23.9	23.5	19.5	36.06
13.	04.10.2019	150.6	65.9	26.8	18.4	11.4	182.362
14.	07.10.2019	160.8	80.1	33.4	23.5	19.5	168.348
15.	11.10.2019	140.6	66.9	28.7	21.4	16.5	211.578
16.	14.10.2019	138.2	70.8	26.4	19.5	13.2	227.176
17.	18.10.2019	130.5	75.9	29.6	15.4	10.5	173.604
18.	21.10.2019	144.8	80.4	30.7	16.2	14.2	191.668
19.	25.10.2019	148.6	83.7	42.8	18.4	10.8	209.099
20.	28.10.2019	156.4	81.9	33.4	26.5	13.5	227.858
21.	01.11.2019	160.5	76.8	30.7	24.2	11.5	221.696
22.	04.11.2019	144.9	73.4	34.8	17.9	12.5	237.558
23.	08.11.2019	160.2	70.8	28.4	12.6	8.5	250.175
24.	11.11.2019	135.8	76.9	31.9	19.5	12.6	261.782
25.	15.11.2019	153.4	89.4	41.3	18.6	14.6	256.71
26.	18.11.2019	169.3	85.4	29.5	20.1	12.9	247.385
27.	22.11.2019	135.2	65.2	22.4	28.4	18.4	258.212
28.	25.11.2019	165.2	75.2	24.6	23.5	17.4	260.522
29.	29.11.2019	176.8	86.1	33	22.9	16.5	250.252
30.	02.12.2019	148.2	75.6	31.7	22.1	15.6	271.477
31.	06.12.2019	142.7	75.9	32.3	20.5	13.2	277.632
32.	09.12.2019	129.5	62.1	24.4	26.5	15.4	260.945
33.	13.12.2019	142.5	75.9	32.6	21.2	16.5	268.351

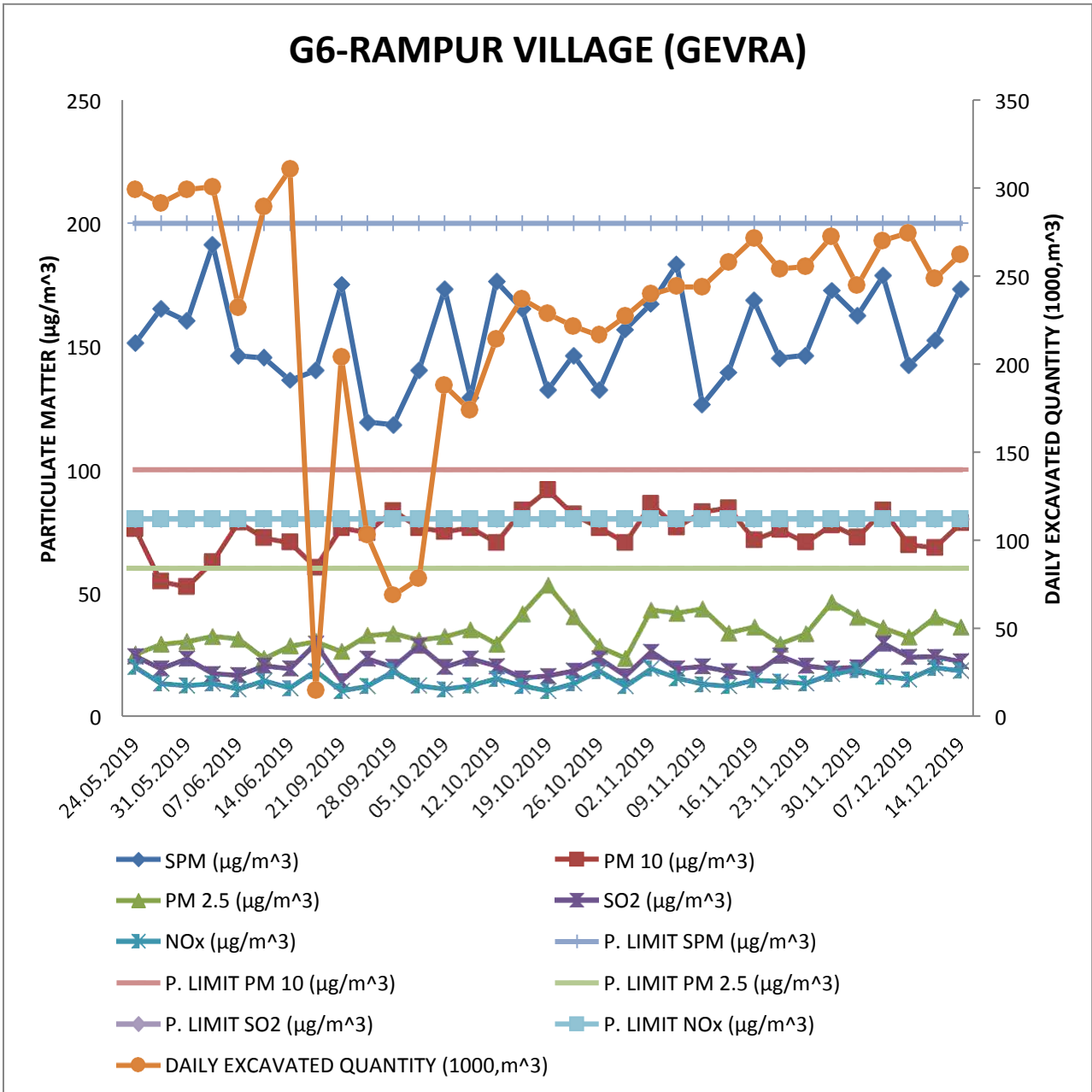


RESULT INTERPRETATION					
No. of Observations	33	33	33	33	33
Min Concentration	125.3	62.1	22.4	12.6	8.5
Max Concentration	176.8	89.4	42.8	29.6	19.5
98 <sup>th</sup> Percentile	170.6	86.1	41.8	28.4	18.4
Arithmetic Mean	149.75455	76.036364	30.5818182	20.209091	13.884848
Std. Deviation	13.61043	6.4661048	5.21730621	4.2401624	2.7200783



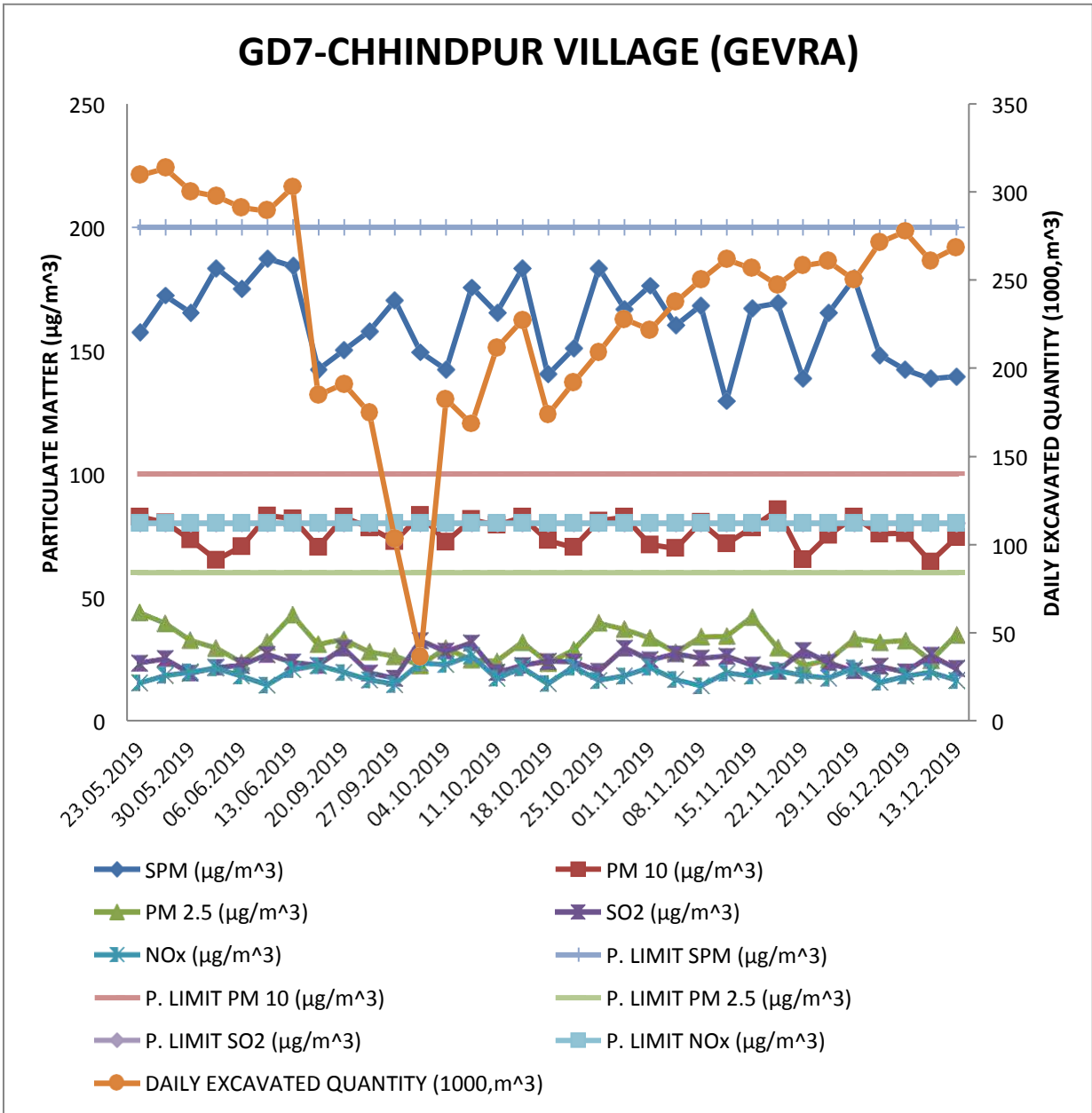
Name of Location (G6)	G6-RAMPUR VILLAGE (GEVRA)						
Sr. No.	Date of Sampling	SPM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	DAILY EXCAVATED QUANTITY
Unit		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	(1000,m <sup>3</sup> )
<b>GSR 826 (E)</b>		-	100	60	80	80	-
1.	24.05.2019	151.3	75.8	25.3	24.5	20.1	299.048
2.	28.05.2019	165.2	54.6	29.3	19.5	13.5	291.342
3.	31.05.2019	160.2	52.4	30.4	23.5	12.6	299.102
4.	04.06.2019	191.3	62.4	32.5	17.4	13.5	300.539
5.	07.06.2019	146.2	78.4	31.4	16.8	11.2	231.952
6.	11.06.2019	145.3	72.1	23.5	20.6	14.5	289.316
7.	14.06.2019	136.2	70.3	28.6	19.5	11.6	310.481
8.	17.09.2019	140.2	60.2	30.4	29.5	18.5	14.588
9.	21.09.2019	175.2	76.2	26.4	14.5	10.5	203.994
10.	24.09.2019	119.3	74.2	32.8	23.5	12.4	103.004
11.	28.09.2019	118.2	83.1	33.6	20.1	18.4	68.663
12.	01.10.2019	140.3	76.2	30.9	28.7	12.6	78.065
13.	05.10.2019	173.2	74.6	32.4	20.1	11.2	187.638
14.	08.10.2019	129.2	76.2	35.1	23.5	12.6	173.587
15.	12.10.2019	176.3	70.2	29.4	20.5	15.4	214.246
16.	15.10.2019	165.2	83.2	41.6	15.6	12.5	236.826
17.	19.10.2019	132.2	91.4	53.1	16.5	10.5	228.458
18.	22.10.2019	146.3	81.6	40.5	18.6	13.5	221.419
19.	26.10.2019	132.2	76.2	28.4	23.6	18.5	216.29
20.	29.10.2019	156.8	70.2	23.6	16.5	12.4	227.084
21.	02.11.2019	167.2	85.9	43.1	26.3	19.5	239.548
22.	05.11.2019	183.2	76.4	41.8	19.5	15.6	243.854
23.	09.11.2019	126.4	82.6	43.6	20.4	13.2	243.786
24.	12.11.2019	139.4	84.2	33.8	18.4	12.4	257.581
26.	16.11.2019	168.7	71.3	36.2	17.3	14.8	271.289
27.	19.11.2019	145.2	75.4	29.4	24.6	14.3	254.04
28.	23.11.2019	146.3	70.3	33.5	20.6	13.5	255.321
29.	26.11.2019	172.6	77.3	46.2	19.5	17.3	272.301
30.	30.11.2019	162.4	72.4	40.2	20	18.9	244.442
31.	03.12.2019	178.6	83.2	35.9	29.6	16.3	270.078
32.	07.12.2019	142.3	69.3	32.1	24.1	15.2	274.472
33.	10.12.2019	152.4	68.2	40.1	24.3	19.8	248.211
34.	14.12.2019	173.2	78.1	36.2	22.4	18.6	262.178

RESULT INTERPRETATION					
No. of Observations	34	34	34	34	34
Min Concentration	118.2	52.4	23.5	14.5	10.5
Max Concentration	191.3	91.4	53.1	29.6	20.1
98 <sup>th</sup> Percentile	183.2	85.9	46.2	29.6	19.8
Arithmetic Mean	153.27879	74.366667	34.2818182	21.212121	14.709091
Std. Deviation	19.219436	8.4759464	6.76939134	3.8993395	2.9370865



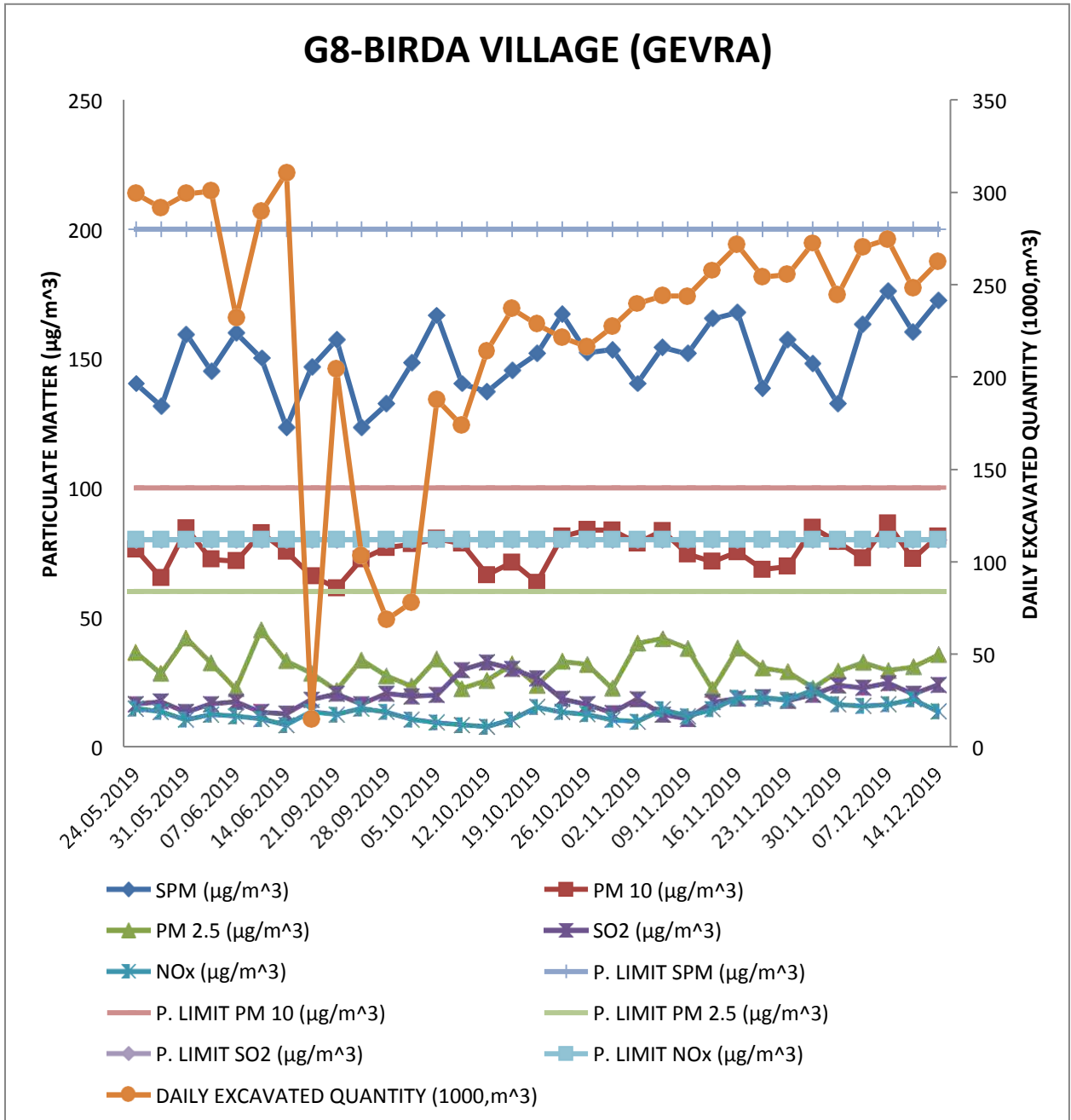
Name of Location (GD-7)	GD7-CHHINDPUR VILLAGE (GEVRA)						
Sr. No.	Date of Sampling	SPM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	DAILY EXCAVATED QUANTITY
Unit		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	(1000,m <sup>3</sup> )
<b>GSR 826 (E)</b>		-	100	60	80	80	-
1.	23.05.2019	157.3	82.6	43.5	23.4	15.4	309.532
2.	27.05.2019	172.3	80.3	39.2	25.1	18.4	313.343
3.	30.05.2019	165.2	73.2	32.5	19.3	19.8	300.351
4.	03.06.2019	183.4	65.1	29.4	21.6	21.4	297.555
5.	06.06.2019	175.2	70.6	23.6	22.4	18.2	290.996
6.	10.06.2019	187.3	83	31.8	26.8	14.6	289.174
7.	13.06.2019	184.3	81.9	42.6	23.7	20.7	302.805
8.	16.09.2019	142.3	70.3	30.8	22.4	22.5	184.727
9.	20.09.2019	150.2	82.4	32.8	29.4	19.7	190.965
10.	23.09.2019	157.9	78.2	27.9	19.5	16.7	174.602
11.	27.09.2019	170.3	72.6	26.1	17.3	14.8	102.881
12.	30.09.2019	149.3	83.2	22.5	32.4	23.4	36.06
13.	04.10.2019	142.3	72.4	29.4	28.1	22.8	182.362
14.	07.10.2019	175.6	81.5	24.6	31.4	26.4	168.348
15.	11.10.2019	165.3	79.2	24	19.6	17.3	211.578
16.	14.10.2019	183.2	82.4	31.6	22.4	21.5	227.176
17.	18.10.2019	140.2	73	23.4	24.1	15.2	173.604
18.	21.10.2019	150.8	70.2	28.6	23.8	21.8	191.668
19.	25.10.2019	183.4	80.9	39.4	20.1	16.4	209.099
20.	28.10.2019	166.9	82.4	36.8	29.4	18.3	227.858
21.	01.11.2019	176.3	71.3	33.4	24.6	21.6	221.696
22.	04.11.2019	160.2	69.8	27.6	27.1	16.8	237.558
23.	08.11.2019	168.2	80.4	33.9	25.3	14.3	250.175
24.	11.11.2019	129.5	71.6	34.1	26.1	19.4	261.782
25.	15.11.2019	167.3	78.2	41.8	22.6	18.2	256.71
26.	18.11.2019	169.3	85.4	29.5	20.1	20.5	247.385
27.	22.11.2019	138.6	65.2	22.4	28.4	18.4	258.212
28.	25.11.2019	165.2	75.2	24.6	23.5	17.4	260.522
29.	29.11.2019	179.4	82.4	33	20.3	21.5	250.252
30.	02.12.2019	148.2	75.6	31.7	22.1	15.6	271.477
31.	06.12.2019	142.3	75.9	32.3	19.8	18.2	277.632
32.	09.12.2019	138.6	64.3	24.4	26.5	19.8	260.945
33.	13.12.2019	139.5	74.2	34.6	21.2	16.5	268.351

RESULT INTERPRETATION					
No. of Observations	33	33	33	33	33
Min Concentration	129.5	64.3	22.4	17.3	14.3
Max Concentration	187.3	85.4	43.5	32.4	26.4
98 <sup>th</sup> Percentile	184.3	83	42.6	31.4	23.4
Arithmetic Mean	161.37273	76.209091	31.0242424	23.9333333	18.893939
Std. Deviation	16.452646	5.9553738	5.91565879	3.7373676	2.905484



Name of Location (G8)	G8-BIRDA VILLAGE (GEVRA)						
Sr. No.	Date of Sampling	SPM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	DAILY EXCAVATED QUANTITY
Unit		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	(1000,m <sup>^3</sup> )
<b>GSR 826 (E)</b>		-	100	60	80	80	-
1.	24.05.2019	140.2	76.1	36.4	16.5	14.9	299.048
2.	28.05.2019	131.6	65.2	28.2	17.5	13.6	291.342
3.	31.05.2019	159.3	84.3	41.8	13.5	10.5	299.102
4.	04.06.2019	145.2	72.3	32.4	16.5	12.5	300.539
5.	07.06.2019	159.8	71.7	22.3	17.4	11.9	231.952
6.	11.06.2019	150.1	82.6	44.9	13.5	10.8	289.316
7.	14.06.2019	123.4	75.3	33.1	12.9	8.5	310.481
8.	17.09.2019	146.8	65.9	28.4	18.2	13.6	14.588
9.	21.09.2019	157.3	61.3	21.8	20.4	12.5	203.994
10.	24.09.2019	123.5	72.4	33.4	16.5	14.9	103.004
11.	28.09.2019	132.4	76.9	27.3	20.6	13.5	68.663
12.	01.10.2019	148.3	78.2	23.4	19.5	10.6	78.065
13.	05.10.2019	166.7	80.3	33.8	20	9.5	187.638
14.	08.10.2019	140.2	78.4	22.4	29.6	8.5	173.587
15.	12.10.2019	137.3	66.3	25.6	32.5	7.9	214.246
16.	15.10.2019	145.3	71.2	31.8	30	10.6	236.826
17.	19.10.2019	151.8	63.4	23.7	26.5	15.4	228.458
18.	22.10.2019	167.2	81.2	32.9	18.5	13.5	221.419
19.	26.10.2019	152.3	83.7	31.7	16.4	12.6	216.29
20.	29.10.2019	153.4	85.9	22.6	13.2	10.5	227.084
21.	02.11.2019	140.3	78.5	39.8	18.4	9.8	239.548
22.	05.11.2019	154.3	83.4	41.6	12.5	14.5	243.854
23.	09.11.2019	151.8	74.3	37.8	10.9	11.9	243.786
24.	12.11.2019	165.3	71.5	22.1	17.3	14.5	257.581
26.	16.11.2019	167.9	75.2	37.9	18.6	19.1	271.289
27.	19.11.2019	138.4	68.4	30.4	19.2	18.7	254.04
28.	23.11.2019	157.3	69.6	28.9	17.8	18.2	255.321
29.	26.11.2019	148.1	84.6	22.7	20.1	21.9	272.301
30.	30.11.2019	132.4	79.1	29.1	23.7	16.4	244.442
31.	03.12.2019	163.2	72.9	32.5	22.8	15.8	270.078
32.	07.12.2019	176.2	86.4	29.4	24.6	16.4	274.472
33.	10.12.2019	160.4	72.5	30.8	20.4	18.3	248.211
34.	14.12.2019	172.3	81.3	35.4	23.9	13.7	262.178

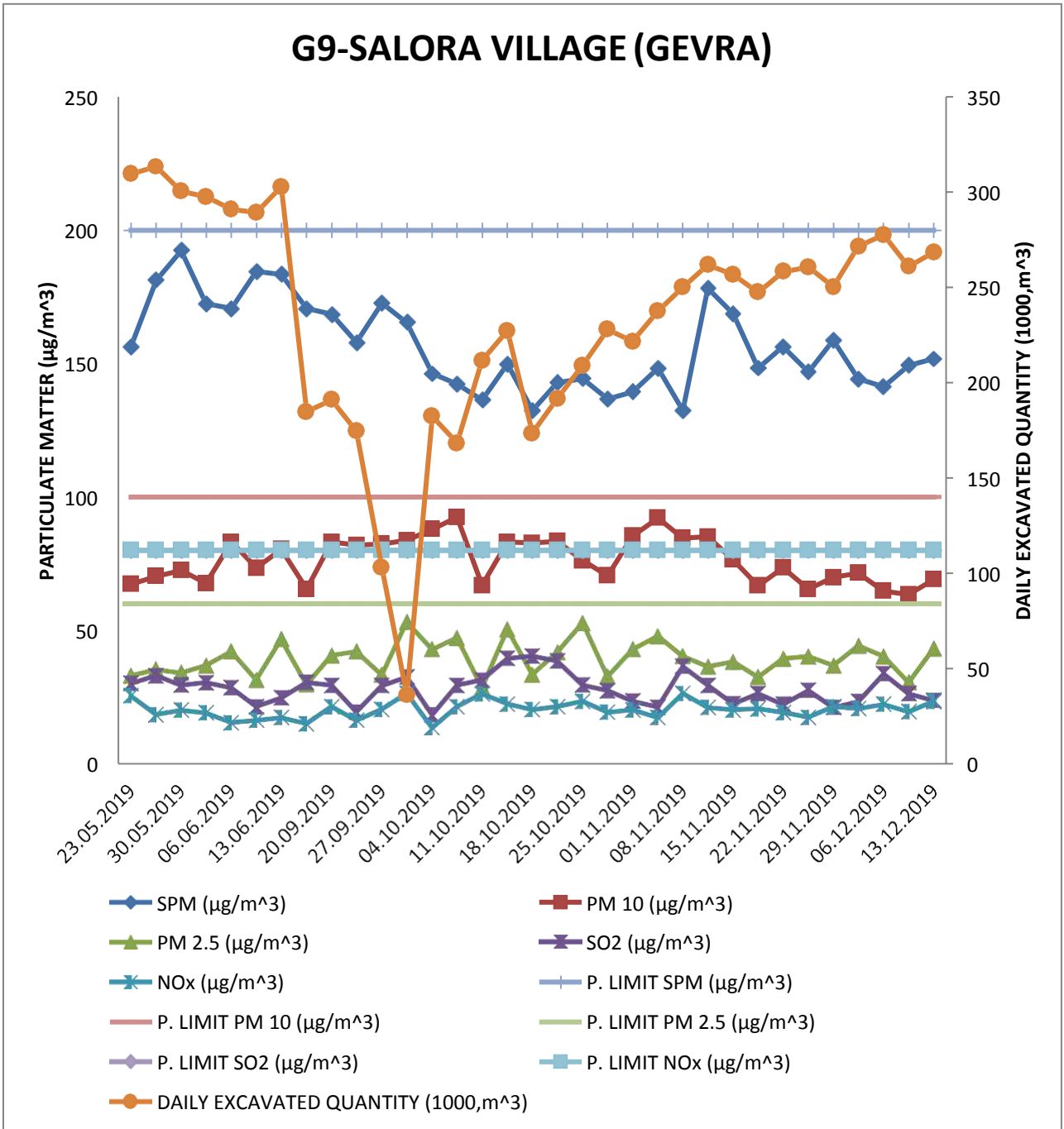
RESULT INTERPRETATION					
No. of Observations	34	34	34	34	34
Min Concentration	123.4	61.3	21.8	10.9	7.9
Max Concentration	176.2	86.4	44.9	32.5	21.9
98 <sup>th</sup> Percentile	172.3	84.6	41.8	30	19.1
Arithmetic Mean	150.30303	75.393939	30.7969697	19.390909	13.5
Std. Deviation	13.618748	6.7448563	6.37389622	5.1325167	3.3860006



Name of Location (G9)		G9-SALORA VILLAGE (GEVRA)					
Sr. No.	Date of Sampling	SPM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	DAILY EXCAVATED QUANTITY
Unit		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	(1000,m <sup>3</sup> )
<b>GSR 826 (E)</b>		-	100	60	80	80	-
1.	23.05.2019	156.3	67.3	33.1	30.2	25.6	309.532
2.	27.05.2019	181.2	70.3	35.4	33.1	18.6	313.343
3.	30.05.2019	192.3	72.5	34.2	29.6	20.3	300.351
4.	03.06.2019	172.4	67.6	36.8	30.5	19.3	297.555
5.	06.06.2019	170.6	83.1	42.1	28.6	15.6	290.996
6.	10.06.2019	184.5	73.4	31.5	21.6	16.5	289.174
7.	13.06.2019	183.4	80.4	46.7	24.8	17.5	302.805
8.	16.09.2019	170.6	65.4	29.8	30.6	15.2	184.727
9.	20.09.2019	168.4	83.1	40.6	29.5	21.6	190.965
10.	23.09.2019	157.9	81.9	42.1	19.6	16.5	174.602
11.	27.09.2019	172.6	82.4	33.4	29.4	20.6	102.881
12.	30.09.2019	165.4	83.7	53.1	32.6	26.5	36.06
13.	04.10.2019	146.2	87.9	42.9	18.5	13.7	182.362
14.	07.10.2019	142.3	92.4	47.2	29.5	21.6	168.348
15.	11.10.2019	136.4	66.8	28.6	31.5	26.3	211.578
16.	14.10.2019	149.8	83.1	50.3	39.5	22.5	227.176
17.	18.10.2019	132.4	82.7	33.5	40.4	20.5	173.604
18.	21.10.2019	142.8	83.4	41.8	38.5	21.6	191.668
19.	25.10.2019	144.3	76.1	52.7	29.6	23.5	209.099
20.	28.10.2019	136.7	70.5	32.8	27.5	19.5	227.858
21.	01.11.2019	139.4	85.4	42.9	23.6	20.4	221.696
22.	04.11.2019	148.2	92.1	47.8	21.4	17.5	237.558
23.	08.11.2019	132.4	84.6	40.3	36.5	26.5	250.175
24.	11.11.2019	178.3	85.1	36.4	29.5	21.3	261.782
25.	15.11.2019	168.6	76.4	38.2	22.6	20.4	256.71
26.	18.11.2019	148.3	66.7	32.6	26.4	20.8	247.385
27.	22.11.2019	156.3	73.5	39.4	22.4	19.4	258.212
28.	25.11.2019	146.9	65.4	40.2	27.6	17.6	260.522
29.	29.11.2019	158.7	69.8	36.8	21.3	21.6	250.252
30.	02.12.2019	144.2	71.5	44.2	23.4	20.9	271.477
31.	06.12.2019	141.3	64.7	40.2	33.8	22.4	277.632
32.	09.12.2019	149.3	63.4	30.6	26.4	19.7	260.945
33.	13.12.2019	151.8	69.1	43.2	23.8	23.5	268.351

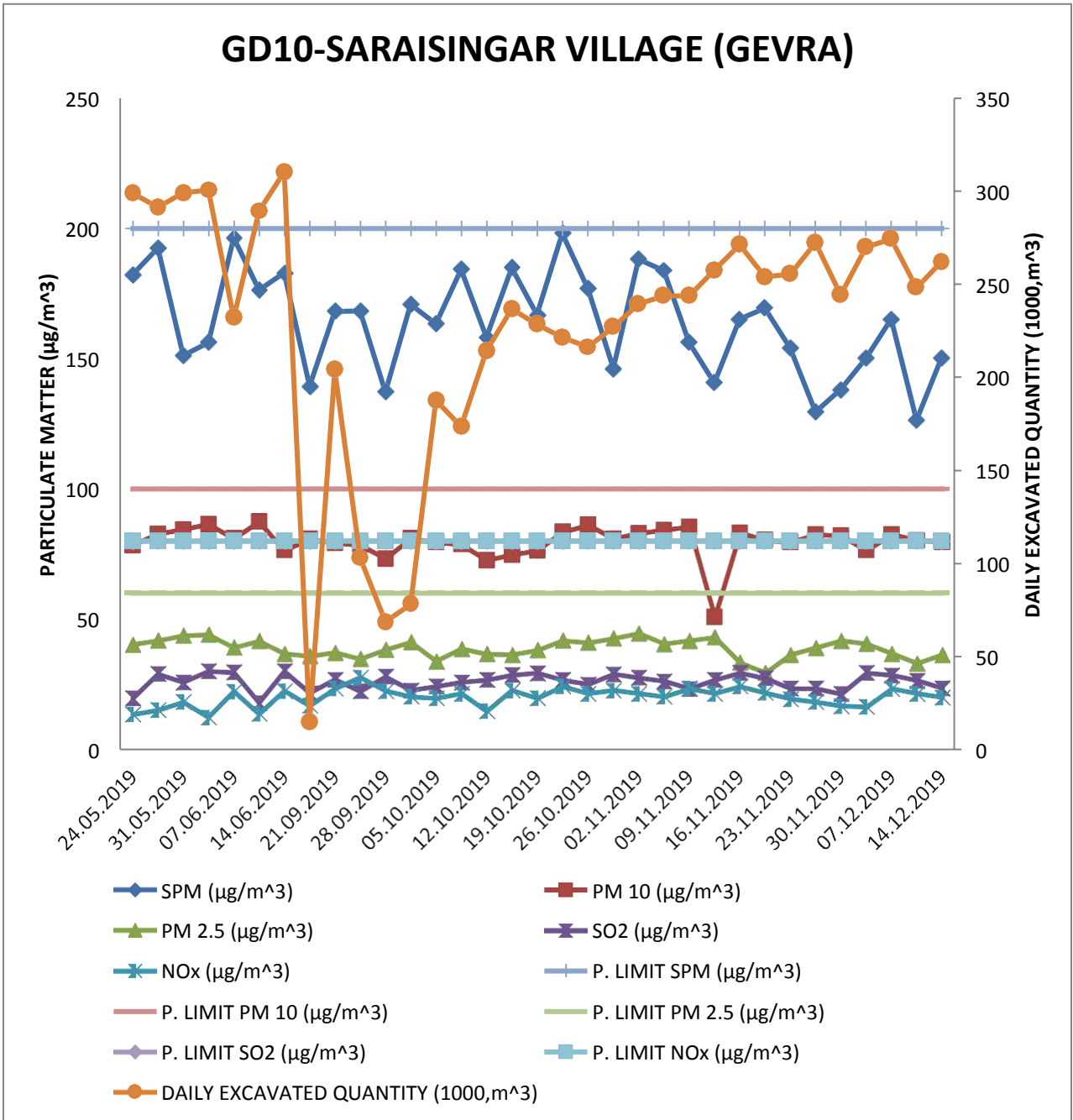


RESULT INTERPRETATION					
No. of Observations	33	33	33	33	33
Min Concentration	132.4	63.4	28.6	18.5	13.7
Max Concentration	192.3	92.4	53.1	40.4	26.5
98 <sup>th</sup> Percentile	184.5	92.1	52.7	39.5	26.3
Arithmetic Mean	156.67273	76.415152	39.4363636	28.29697	20.454545
Std. Deviation	16.56533	8.546824	6.54273539	5.6329657	3.1998136



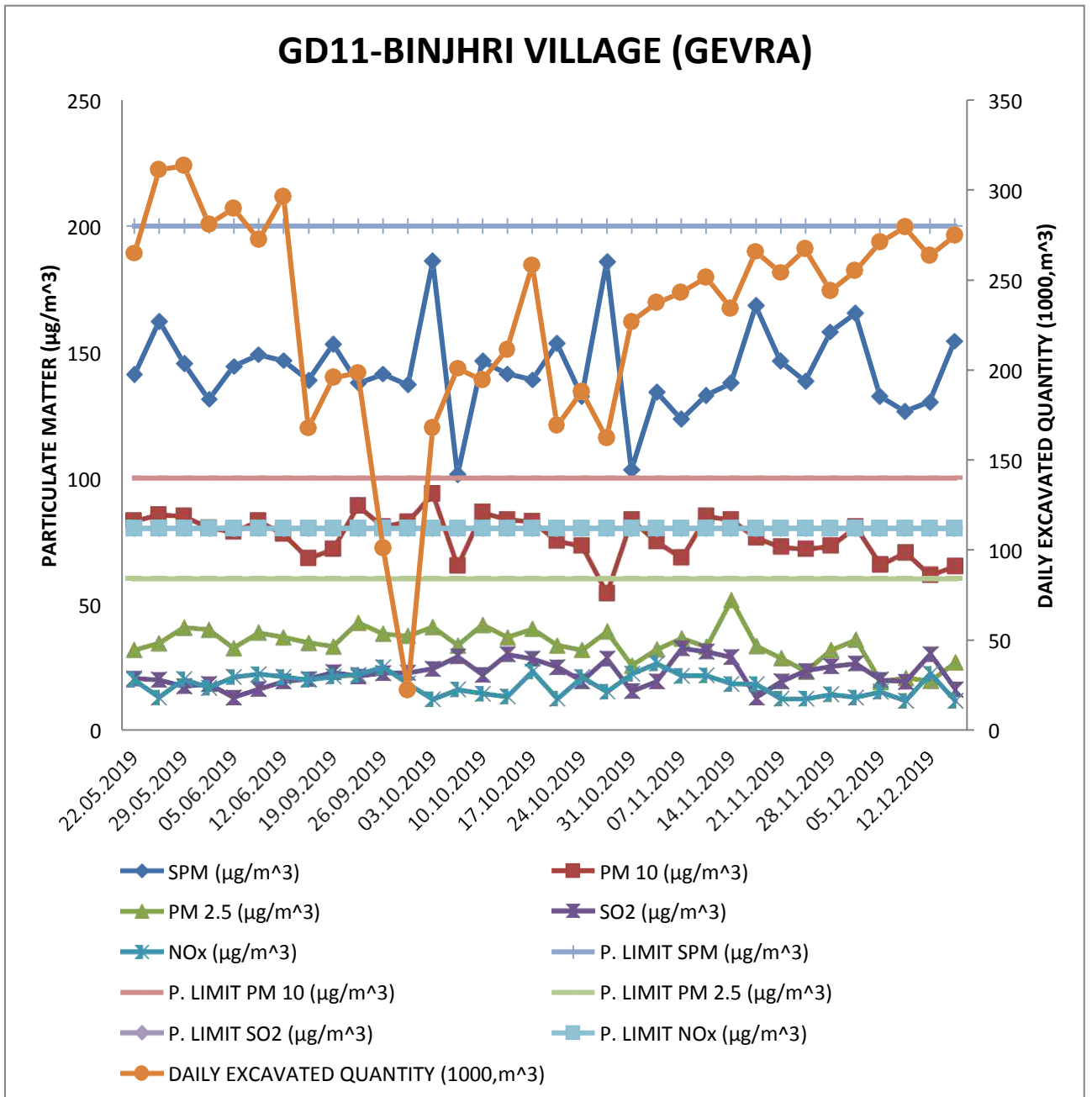
Name of Location (GD-10)	GD10-SARASINGAR VILLAGE (GEVRA)						
Sr. No.	Date of Sampling	SPM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	DAILY EXCAVATED QUANTITY
Unit		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	(1000,m <sup>^3</sup> )
<b>GSR 826 (E)</b>		-	100	60	80	80	-
1.	24.05.2019	182.3	78.3	40.3	19.8	13.6	299.048
2.	28.05.2019	192.4	82.6	41.9	29.1	15.3	291.342
3.	31.05.2019	151.3	84.3	43.7	25.9	18.4	299.102
4.	04.06.2019	156.2	86.4	44.2	30.1	12.5	300.539
5.	07.06.2019	196.4	80.9	39.2	29.7	22.4	231.952
6.	11.06.2019	176.3	87.3	41.7	18.1	13.8	289.316
7.	14.06.2019	182.9	76.3	36.8	30.1	22.6	310.481
8.	17.09.2019	139.4	80.7	35.9	21.8	16.9	14.588
9.	21.09.2019	168.2	79.1	37.2	26.9	23.5	203.994
10.	24.09.2019	168.3	78.4	34.9	22.5	27.8	103.004
11.	28.09.2019	137.2	73.2	38.4	28.1	22.6	68.663
12.	01.10.2019	170.9	80.9	41.3	22.8	20.4	78.065
13.	05.10.2019	163.4	79.4	33.9	24.3	19.8	187.638
14.	08.10.2019	184.3	78.6	38.7	25.9	21.6	173.587
15.	12.10.2019	158.2	72.5	36.7	26.8	14.9	214.246
16.	15.10.2019	184.9	74.6	36.4	28.7	22.8	236.826
17.	19.10.2019	166.8	76.2	38.2	29.4	19.8	228.458
18.	22.10.2019	198.1	83.4	41.9	26.8	24.3	221.419
19.	26.10.2019	176.9	86.1	41.1	25.1	21.6	216.29
20.	29.10.2019	146.2	80.8	42.7	29	22.8	227.084
21.	02.11.2019	188.2	82.9	44.6	27.6	21.6	239.548
22.	05.11.2019	183.9	84.1	40.5	26.3	20.4	243.854
23.	09.11.2019	156.2	85.3	41.8	23.4	23.5	243.786
24.	12.11.2019	140.7	50.8	43.1	26.8	21.6	257.581
26.	16.11.2019	165.2	83.1	33.4	29.5	24.3	271.289
27.	19.11.2019	169.4	80.3	29.5	27.4	21.9	254.04
28.	23.11.2019	154.2	79.4	36.4	23.5	19.5	255.321
29.	26.11.2019	129.6	82.4	39.1	23.5	18.4	272.301
30.	30.11.2019	138.2	81.9	41.8	21.5	16.8	244.442
31.	03.12.2019	150.2	76.3	40.7	29.5	16.5	270.078
32.	07.12.2019	165.2	82.4	36.8	28.6	23.4	274.472
33.	10.12.2019	126.4	80.2	33.1	26.5	21.6	248.211
34.	14.12.2019	150.3	79.6	36.4	23.6	20.1	262.178

RESULT INTERPRETATION					
No. of Observations	34	34	34	34	34
Min Concentration	126.4	50.8	29.5	18.1	12.5
Max Concentration	198.1	87.3	44.6	30.1	27.8
98 <sup>th</sup> Percentile	196.4	86.4	44.2	29.7	24.3
Arithmetic Mean	164.19091	79.657576	38.8575758	26.018182	20.212121
Std. Deviation	19.540765	6.3258908	3.60173832	3.152326	3.5592975

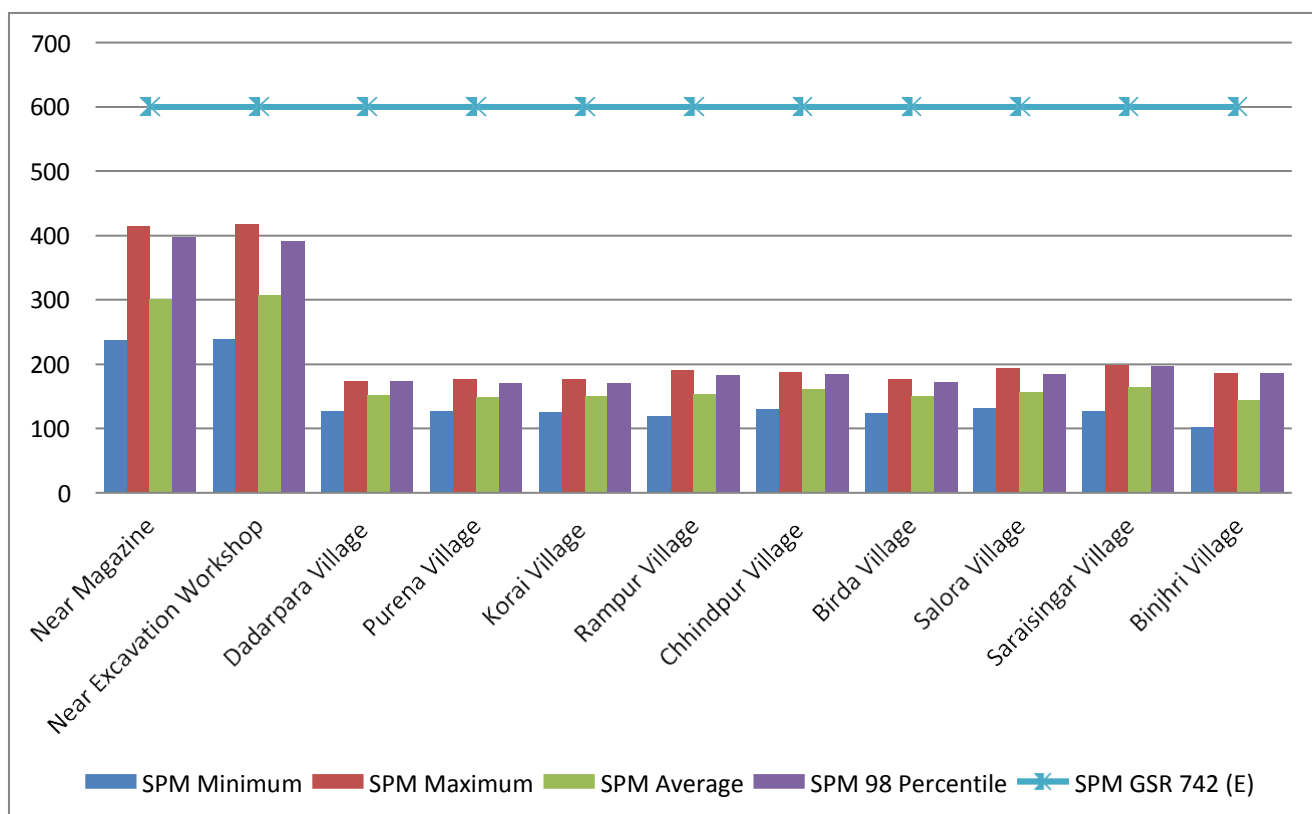


Name of Location (GD-11)	GD11-BINJHRI VILLAGE (GEVRA)						
Sr. No.	Date of Sampling	SPM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	DAILY EXCAVATED QUANTITY
Unit		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	(1000,m <sup>^3</sup> )
<b>GSR 826 (E)</b>		-	100	60	80	80	-
1.	22.05.2019	141	82.7	31.8	20.6	20.1	264.601
2.	26.05.2019	162.2	85.1	34.5	20.1	13.2	311.335
3.	29.05.2019	145.3	84.6	40.7	17.5	20.3	313.404
4.	02.06.2019	131.2	80	39.8	18.5	17.0	280.975
5.	05.06.2019	144.3	78.4	32.6	13.2	21.2	289.818
6.	09.06.2019	148.9	82.7	38.7	16.5	22.3	272.434
7.	12.06.2019	146.5	77.5	36.9	19.5	21.3	296.457
8.	15.09.2019	138.7	67.9	34.7	20.4	20.1	167.625
9.	19.09.2019	153.2	71.6	33.2	23.1	21.4	195.623
10.	22.09.2019	137.6	88.7	42.6	21.5	22.1	198.448
11.	26.09.2019	141.2	80.4	38.2	22.8	25.1	100.844
12.	29.09.2019	136.9	82.4	37.4	22.9	18.6	22.13
13.	03.10.2019	186	93.4	40.9	24.5	12.4	167.824
14.	06.10.2019	101.2	64.9	33.7	29.3	16.3	200.789
15.	10.10.2019	146.3	86.1	41.8	22.1	14.7	194.438
16.	13.10.2019	141.3	83.2	36.9	30.1	13.5	211.211
17.	17.10.2019	138.9	82.5	40.2	28.4	23.4	258.212
18.	20.10.2019	153.4	74.8	33.7	25.1	12.6	168.916
19.	24.10.2019	132.4	72.9	31.8	19.6	21.2	187.913
20.	27.10.2019	185.6	54.2	39.1	28.4	15.4	162.068
21.	31.10.2019	103.2	83.1	25.8	15.6	22.5	226.845
22.	03.11.2019	134.2	74.6	32.1	19.5	26.5	237.056
23.	07.11.2019	123.2	68.1	36.4	32.5	21.7	242.902
24.	10.11.2019	132.8	84.6	33.1	31.2	21.8	251.499
25.	14.11.2019	137.6	83.1	51.6	29.1	18.5	234.343
26.	17.11.2019	168.3	76.1	33.4	13.2	18.4	265.651
27.	21.11.2019	146.3	72.4	28.6	19.5	12.6	253.981
28.	24.11.2019	138.4	71.6	23.4	23.6	12.6	267.076
29.	28.11.2019	157.9	72.9	31.8	25.4	14.3	244.001
30.	01.12.2019	165.3	80.3	35.9	26.5	13.2	255.073
31.	05.12.2019	132.4	65.4	19.4	20.1	15.4	270.939
32.	08.12.2019	126.4	70.2	20.8	19.3	11.8	279.352
33.	12.12.2019	130.2	61.3	19.7	30.2	22.6	263.513
34.	15.12.2019	154.3	64.8	26.9	16.4	11.8	274.522

RESULT INTERPRETATION					
No. of Observations	34	34	34	34	34
Min Concentration	101.2	54.2	19.4	13.2	11.8
Max Concentration	186	93.4	51.6	32.5	26.5
98 <sup>th</sup> Percentile	185.6	88.7	42.6	31.2	25.1
Arithmetic Mean	143.01765	76.544118	34.0617647	22.535294	18.114706
Std. Deviation	17.988017	8.6384339	6.93340682	5.1939873	4.3277212

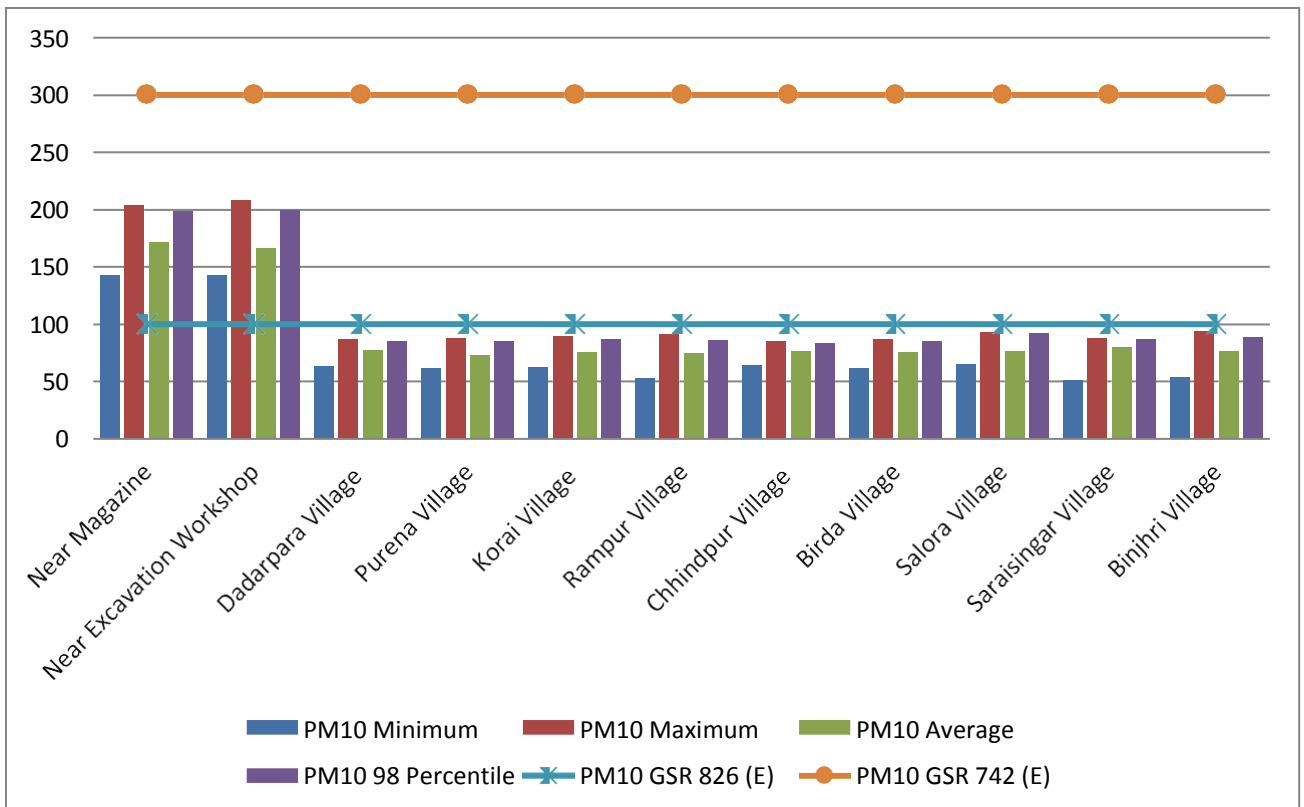


Suspended Particulate Matter					
Site	Minimum	Maximum	Average	98 Percentile	GSR 742 (E)
Near Magazine	236.4	413.8	301.4	397.8	600
Near Excavation	238.2	416.9	307.6	391.2	600
Dadarpara Village	126.4	173.1	151.5	172.6	600
Purena Village	126.4	176.3	148.7	171.3	600
Korai Village	125.3	176.8	149.8	170.6	600
Rampur Village	118.2	191.3	153.3	183.2	600
Chhindpur Village	129.5	187.3	161.4	184.3	600
Birda Village	123.4	176.2	150.3	172.3	600
Salora Village	132.4	192.3	156.7	184.5	600
Saraisingar Village	126.4	198.1	164.2	196.4	600
Binhri Village	101.2	186	143	185.6	600



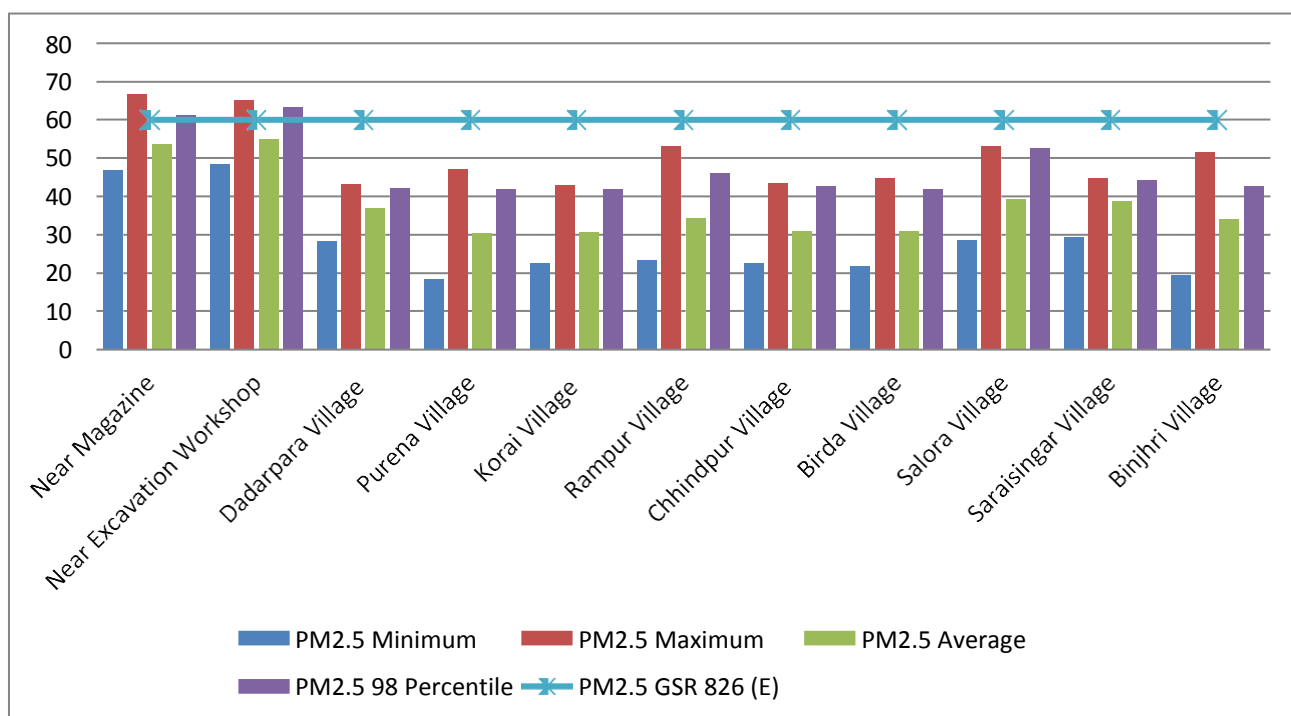
**Graph 1: Suspended Particulate Matter (SPM)**

Particulate Matter (PM <sub>10</sub> )						
Site	Minimum	Maximum	Average	98 Percentile	GSR 826 (E)	GSR 742 (E)
Near Magazine	142.6	203.4	171.1	198.3	NA	300
Near Excavation Workshop	142.8	208.3	166.1	199.4	NA	300
Dadarpara Village	63.5	86.4	77.3	85.3	100	NA
Purena Village	61.3	87.6	72.6	85.1	100	NA
Korai Village	62.1	89.4	76	86.1	100	NA
Rampur Village	52.4	91.4	74.4	85.9	100	NA
Chhindpur Village	64.3	85.4	76.2	83	100	NA
Birda Village	61.3	86.4	75.4	84.6	100	NA
Salora Village	65.4	92.4	76.4	92.1	100	NA
Saraisingar Village	50.8	87.3	79.7	86.4	100	NA
Binjhri Village	54.2	93.4	76.5	88.7	100	NA



**Graph 2: Particulate Matter (PM<sub>10</sub>)**

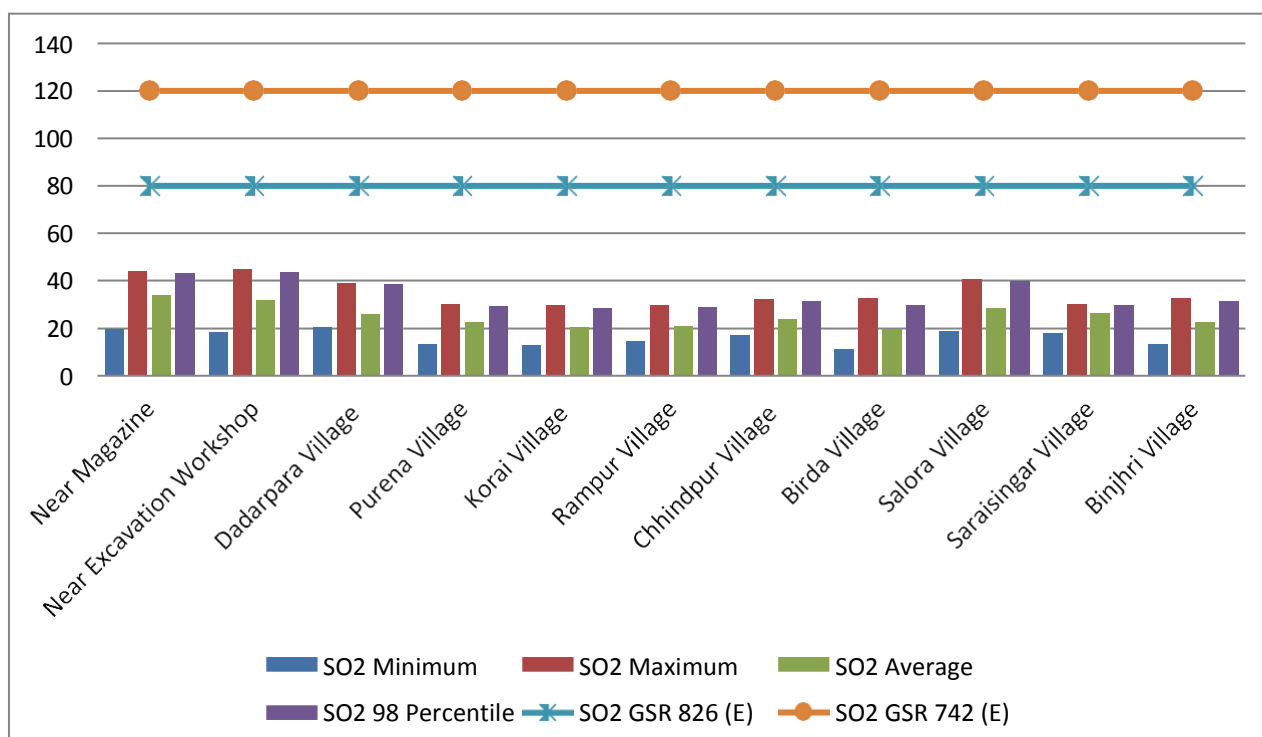
Particulate Matter (PM <sub>2.5</sub> )					
Site	Minimum	Maximum	Average	98 Percentile	GSR 826 (E)
Near Magazine	46.8	66.7	53.6	61.3	NA
Near Excavation Workshop	48.3	65.2	54.8	63.4	NA
Dadarpara Village	28.3	43.2	37	42.1	60
Purena Village	18.2	47.1	30.4	41.8	60
Korai Village	22.4	42.8	30.6	41.8	60
Rampur Village	23.5	53.1	34.3	46.2	60
Chhindpur Village	22.4	43.5	31	42.6	60
Birda Village	21.8	44.9	30.8	41.8	60
Salora Village	28.6	53.1	39.4	52.7	60
Saraisingar Village	29.5	44.6	38.9	44.2	60
Binjhri Village	19.4	51.6	34	42.6	60



**Graph 3: Particulate Matter (PM<sub>2.5</sub>)**

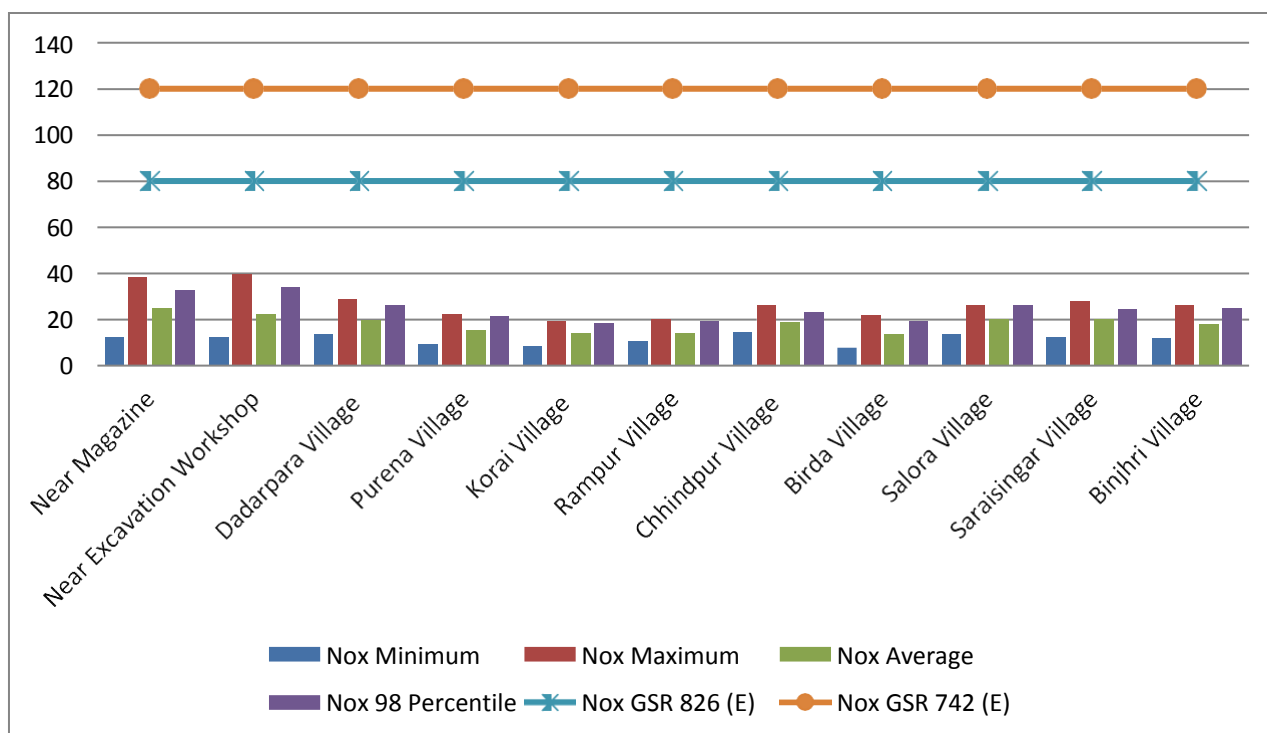


Sulphur Dioxide (SO <sub>2</sub> )						
Site	Minimum	Maximum	Average	98 Percentile	GSR 826 (E)	GSR 742 (E)
Near Magazine	19.7	44.1	33.8	43.3	NA	120
Near Excavation Workshop	18.2	44.8	31.8	43.7	NA	120
Dadarpara Village	20.1	39.1	25.9	38.5	80	NA
Purena Village	13.2	30.2	22.6	29.4	80	NA
Korai Village	12.6	29.6	20.2	28.4	80	NA
Rampur Village	14.5	29.5	20.7	28.7	80	NA
Chhindpur Village	17.3	32.4	23.9	31.4	80	NA
Birda Village	10.9	32.5	19.4	30	80	NA
Salora Village	18.5	40.4	28.3	39.5	80	NA
Saraisingar Village	18.1	30.1	26	29.7	80	NA
Binjhri Village	13.2	32.5	22.5	31.2	80	NA



**Graph 4: Sulphur Dioxide (SO<sub>2</sub>)**

Oxides of Nitrogen (NO <sub>x</sub> )						
Site	Minimum	Maximum	Average	98 Percentile	GSR 826 (E)	GSR 742 (E)
Near Magazine	12.5	38.4	25.1	32.7	NA	120
Near Excavation Workshop	12.5	39.7	22.5	33.8	NA	120
Dadarpara Village	13.5	28.5	19.6	26.5	80	NA
Purena Village	9.5	22.6	15.6	21.5	80	NA
Korai Village	8.5	19.5	13.9	18.4	80	NA
Rampur Village	10.5	20.1	14	19.5	80	NA
Chhindpur Village	14.3	26.4	18.9	23.4	80	NA
Birda Village	7.9	21.9	13.5	19.1	80	NA
Salora Village	13.7	26.5	20.4	26.3	80	NA
Saraisingar Village	12.5	27.8	20.2	24.3	80	NA
Binjhri Village	11.8	26.5	18.1	25.1	80	NA



**Graph 5: Oxides of Nitrogen (NO<sub>x</sub>)**

Air Quality Index(AQI)				
	Site	Minimum	Maximum	Average
G1	Near Magazine	128	169	147
G2	Near Excavation Workshop	129	172	144
G3	Dadarpara Village	64	86	77
G4	Purena Village	61	88	73
G5	Korai Village	62	89	76
G6	Rampur Village	52	91	74
GD7	Chhindpur Village	64	85	76
G8	Birda Village	61	86	75
G9	Salora Village	63	92	76
GD10	Saraisingar Village	51	87	80
GD11	Binjhri Village	54	93	77

The air quality index, its categories and associated health impacts are under:

#### AQI INDEXES, CATEGORIES AND ASSOCIATED HEALTH IMPACTS

Air Quality Index Values	AirQuality Index Categories	Associated Health Impacts
0-50	Good	Minimal Impact
51-100	Satisfactory	May cause minor breathing discomfort to sensitive people
101-200	Moderately Polluted	May cause breathing discomfort to the people with lung disease such as asthma and discomfort to people with heart disease, children and older adults
201-300	Poor	May cause breathing discomfort to people on prolonged exposure and discomfort to people with heart disease
301-400	Very Poor	May cause respiratory illness to the people on prolonged exposure. Effect may be more pronounced in people with lung and heart diseases
401-500	Severe	May cause respiratory effects even on healthy people and serious health impacts on people with lung/heart diseases. The health impacts may be experienced even during light physical activity

## ASSESSMENT OF WATER QUALITY

The locations of the water quality monitoring stations have been provided below. The project area contains seasonal nallah which ultimately joins river lilagarh.

### WATER SAMPLING LOCATIONS

S. No.	Name of the sites
G1	BATARI VILLAGE NEAR SASAKIYA HIGH SCHOOL, BADRINAGAR
G2	AMGAON NEAR BASAHAT
G3	AMGAON NEAR HARDIBAZAR
G4	RALIYA BASTI
G5	DOMESTIC EFFLUENT TREATMENT PLANT
G6	MINE WATER DISCHARGE TO TREATMENT PLANT
G7	MAIN SUMP WATER STORAGE POND NEAR JONAHDIH SIDING
G8	TREATMENT PLANT OF JONADIH SIDING POND
G9	BIJHRA VILLAGE SUPPLY WATER
G10	INTERNAL POND FOR WATER STORAGE IN MINE
G11	E&F SEAM OF EAST SECTION SEEPAGE WATER
G12	ETP, RAW WATER
G13	ETP, AFTER TREATMENT
G14	GANGANAGAR PUNARWAS NEAR SEAL POND
G15	ROHINA BASTI (ONLY FOR DOMESTIC PURPOSE)
G16	MANGLAN VILLAGE
G17	NARAIBODH VILLAGE
G18	BHATHORA VILLAGE NEAR RAMJANKI MANDIR
G19	SALORA VILLAGE AT SARPANCH HOUSE
G20	BUDHWARI BAJAR NEAR GURUDWARA
G21	SHIVMANDIR, URJANAGAR
G22	DHURAINA BASTI
G23	KATKI DABRI VILLAGE
G24	NAWAPARA VILLAGE
G25	CHINDPUR VILLAGE NEAR DURGA MANDIR

The water quality of the study area has been surveyed and status is as under:

## Drinking Water Quality

### STATUS OF DRINKING WATER QUALITY

Sl. No.	Parameters	Value		Permissible Level*
		Minimum	Maximum	
1	pH	6.0	7.9	6.5-8.5
2	Turbidity (NTU)	<1	<1	1
3	Total Dissolved Solids (mg/L)	30	450	500
4	Total Hardness (as CaCO <sub>3</sub> ), mg/L	41	196	200
5	Nitrate as NO <sub>3</sub> , mg/L	BDL	2.93	45

\*As per IS 10500:2012, as amended on 1<sup>st</sup> June, 2015

## Surface Water Quality

### STATUS OF SURFACE WATER QUALITY

Sl. No.	Parameters	Value		Permissible Level*
		Minimum	Maximum	
1	pH	5.9	7.99	6.5-8.5
2	Total Suspended Solids, mg/L	20	200	--
3	Total Dissolved Solids (mg/L)	40	500	1500
4	Oil & Grease, mg/L	BDL	BDL	--
5	Dissolved Oxygen, mg/L	4.0	5.9	4.0

\*As per CPCB Classification for designated best use (A to E)

## Mine Water Quality

### STATUS OF MINE WATER QUALITY

Sl. No.	Parameters	Value	Permissible Level
1	pH	6.59	6.5-8.5
2	Nitrate Nitrogen, mg/L	2.3	10.0
3	Biochemical Oxygen Demand, (mg/L)	7.8	30.0
4	Nitrate Nitrogen, mg/L	2.01	10.0
5	Iron, mg/L	<0.06	3.0
6	Manganese, mg/L	1.49	2.0

\*as per Schd VI, Part A under EP Act, 1986

**MONTHLY VARIATION IN PHYSICO-CHEMICAL CHARACTERISTICS OF SURFACE WATER  
COLLECTED FROM DIFFERENT LOCATION OF THE STUDY AREA (GEVRA OCP)**

Parameters	Stretch-I													
	G1							G2						
	JUNE	JUL	AUG	SEP	OCT	NOV	DEC	JUNE	JUL	AUG	SEP	OCT	NOV	DEC
pH (Units)	6.5	6.2	6.8	6.9	6.81	7.1	6.7	6.39	6.5	6.4	6.3	6.9	6.8	6.7
Dissolved Oxygen (mg/l)	5.1	5.2	5.0	5.3	5.1	4.9	4.7	4.8	4.5	4.2	4.2	4.3	4.1	4.1
TDS (ppm)	72	98	97	69	80	81	98	100	102	99	98	93	104	96
Total Solids (ppm)	23	21	24	26	25	21	22	25	26	28	29	28	24	25
Total Alkalinity (mg/l)	32	36	39	42	41	40	40	56	52	53	54	55	54	51
Total Hardness (mg/l)	68	71	60	53	69	71	63	86	84	82	81	84	87	83
Calcium Hardness (mg/l)	36	32	33	35	34	40	37	48	45	43	42	46	51	41
Chloride (mg/l)	41	43	42	45	46	45	44	50	52	51	53	56	49	48
Nitrate (mg/l)	0.96	0.93	0.92	0.91	0.94	0.93	0.92	1.02	1.23	1.20	1.12	1.01	1.21	1.08

**MONTHLY VARIATION IN PHYSICO-CHEMICAL CHARACTERISTICS OF SURFACE WATER  
COLLECTED FROM DIFFERENT LOCATION OF THE STUDY AREA (GEVRA OCP)**

Parameters	Stretch-II													
	G3							G4						
	JUNE	JUL	AUG	SEP	OCT	NOV	DEC	JUNE	JUL	AUG	SEP	OCT	NOV	DEC
pH (Units)	6.9	6.5	6.8	6.7	7.1	6.8	6.5	6.9	6.5	6.4	6.8	6.7	7.0	6.8
Dissolved Oxygen (mg/l)	4.1	4.3	4.5	4.6	5.0	4.9	4.3	4.0	4.1	4.2	4.3	4.5	4.6	4.5
TDS (ppm)	82	86	74	78	89	87	76	97	95	96	94	92	91	90
Total Solids (ppm)	25	26	28	27	28	32	29	42	41	43	45	46	41	42
Total Alkalinity (mg/l)	38	37	36	35	34	37	35	26	25	24	28	30	31	29
Total Hardness (mg/l)	60	62	65	64	63	67	64	68	68	65	67	64	63	64
Calcium Hardness (mg/l)	25	26	24	28	32	31	26	32	35	36	34	33	34	32
Chloride (mg/l)	38	37	36	35	34	38	36	41	42	45	46	47	45	44
Nitrate (mg/l)	0.92	0.92	0.91	0.83	0.87	0.94	0.89	1.02	1.03	1.04	1.33	1.34	1.35	1.2

**MONTHLY VARIATION IN PHYSICO-CHEMICAL CHARACTERISTICS OF SURFACE WATER  
COLLECTED FROM DIFFERENT LOCATION OF THE STUDY AREA (GEVRA OCP)**

Parameters	Stretch-III													
	G5							G6						
	JUNE	JUL	AUG	SEP	OCT	NOV	DEC	JUNE	JUL	AUG	SEP	OCT	NOV	DEC
pH (Units)	6.3	6.5	6.4	6.7	6.8	6.9	6.8	6.5	6.2	6.8	6.9	6.81	7.1	6.7
Dissolved Oxygen (mg/l)	4.0	4.1	4.2	4.5	4.6	4.5	4.4	5.1	5.2	5.0	5.3	5.1	4.9	5.2
TDS (ppm)	108	115	124	102	99	114	112	102	98	87	79	80	81	88
Total Solids (ppm)	26	25	24	28	27	24	25	23	21	24	26	25	21	23
Total Alkalinity (mg/l)	35	36	34	38	39	37	36	32	36	39	42	41	40	41
Total Hardness (mg/l)	96	95	98	97	94	92	94	68	71	60	53	69	71	68
Calcium Hardness (mg/l)	40	45	46	48	49	47	48	36	32	33	35	34	40	38
Chloride (mg/l)	35	34	36	33	37	36	35	41	43	42	45	46	45	42
Nitrate (mg/l)	0.25	0.24	0.26	0.40	0.24	0.24	0.22	0.96	0.93	0.92	0.91	0.94	0.93	0.9



**MONTHLY VARIATION IN PHYSICO-CHEMICAL CHARACTERISTICS OF SURFACE WATER  
COLLECTED FROM DIFFERENT LOCATION OF THE STUDY AREA (GEVRA OCP)**

Parameters	Stretch-IV													
	G7							G8						
	JUNE	JUL	AUG	SEP	OCT	NOV	DEC	JUNE	JUL	AUG	SEP	OCT	NOV	DEC
pH (Units)	6.2	6.4	6.5	6.6	6.7	6.6	6.5	6.4	6.4	6.5	6.8	6.7	6.9	6.6
Dissolved Oxygen (mg/l)	4.1	4.3	4.0	4.6	4.4	4.3	4.2	4.9	5.0	4.8	5.1	5.2	4.7	5.3
TDS (ppm)	97	93	96	98	95	94	94	70	73	59	71	68	73	69
Total Solids (ppm)	27	28	26	24	26	25	25	21	20	22	23	24	23	24
Total Alkalinity (mg/l)	34	37	32	36	37	38	37	33	35	39	40	42	41	40
Total Hardness (mg/l)	76	83	71	70	74	71	72	53	56	55	58	61	59	62
Calcium Hardness (mg/l)	41	43	47	46	48	49	47	38	34	31	33	32	42	38
Chloride (mg/l)	36	32	37	35	39	35	36	44	45	43	43	44	47	44
Nitrate (mg/l)	0.31	0.36	0.28	0.39	0.27	0.34	0.23	0.85	0.89	0.90	0.93	0.91	0.89	0.6

**MONTHLY VARIATION IN PHYSICO-CHEMICAL CHARACTERISTICS OF SURFACE WATER  
COLLECTED FROM DIFFERENT LOCATION OF THE STUDY AREA (GEVRA OCP)**

Parameters	Stretch-V													
	G9							G10						
	JUNE	JUL	AUG	SEP	OCT	NOV	DEC	JUNE	JUL	AUG	SEP	OCT	NOV	DEC
pH (Units)	6.6	6.8	6.3	6.9	6.4	6.2	6.3	6.6	6.1	6.7	6.4	6.9	6.7	6.5
Dissolved Oxygen (mg/l)	4.3	4.6	4.2	4.5	4.2	4.6	4.5	4.5	5.1	4.9	5.3	5.0	4.6	4.3
TDS (ppm)	87	89	94	91	98	96	96	75	79	61	57	70	77	68
Total Solids (ppm)	23	25	29	24	21	27	28	23	21	24	27	28	22	26
Total Alkalinity (mg/l)	37	39	35	40	41	34	38	38	31	42	43	39	40	37
Total Hardness (mg/l)	79	86	88	75	71	76	75	58	52	57	54	66	63	56
Calcium Hardness (mg/l)	39	45	42	46	44	47	42	41	38	35	38	33	46	26
Chloride (mg/l)	34	36	34	38	42	33	38	41	48	39	46	45	43	37
Nitrate (mg/l)	0.42	0.43	0.31	0.40	0.34	0.39	0.42	0.75	0.91	0.89	0.86	0.93	0.86	0.92

**MONTHLY VARIATION IN PHYSICO-CHEMICAL CHARACTERISTICS OF SURFACE WATER  
COLLECTED FROM DIFFERENT LOCATION OF THE STUDY AREA (GEVRA OCP)**

Parameters	Stretch-VI													
	G11							G12						
	JUNE	JUL	AUG	SEP	OCT	NOV	DEC	JUNE	JUL	AUG	SEP	OCT	NOV	DEC
pH (Units)	6.2	6.7	6.4	6.6	6.8	6.5	6.9	6.8	6.3	6.9	6.5	6.3	6.8	7.0
Dissolved Oxygen (mg/l)	4.8	4.4	4.7	4.9	4.5	4.7	4.5	4.2	4.1	5.0	5.1	4.9	4.3	5.4
TDS (ppm)	93	91	89	87	99	93	92	80	77	71	69	68	71	75
Total Solids (ppm)	29	27	24	22	23	25	24	21	20	22	26	23	25	27
Total Alkalinity (mg/l)	40	38	37	42	35	31	37	33	36	44	47	42	44	31
Total Hardness (mg/l)	81	83	79	65	69	73	74	61	56	59	66	54	59	33
Calcium Hardness (mg/l)	44	43	39	32	41	48	47	35	32	44	41	37	40	43
Chloride (mg/l)	40	39	34	46	41	38	36	32	44	32	35	46	43	34
Nitrate (mg/l)	0.22	0.26	0.34	0.48	0.29	0.42	0.24	0.63	0.56	0.67	0.73	0.84	0.92	0.79

**MONTHLY VARIATION IN PHYSICO-CHEMICAL CHARACTERISTICS OF SURFACE WATER  
COLLECTED FROM DIFFERENT LOCATION OF THE STUDY AREA (GEVRA OCP)**

Parameters	Stretch-VII													
	G13							G14						
	JUNE	JUL	AUG	SEP	OCT	NOV	DEC	JUNE	JUL	AUG	SEP	OCT	NOV	DEC
pH (Units)	6.4	6.9	6.8	6.3	6.5	6.9	6.4	6.6	6.4	6.7	6.2	6.5	6.3	6.7
Dissolved Oxygen (mg/l)	5.2	5.1	4.5	4.8	4.2	4.9	4.3	4.3	4.9	5.2	4.7	4.4	4.8	5.2
TDS (ppm)	92	94	86	98	83	92	93	110	102	96	71	95	88	68
Total Solids (ppm)	24	23	29	28	25	26	28	26	22	29	22	27	28	24
Total Alkalinity (mg/l)	44	37	41	46	31	42	37	37	39	48	43	41	46	42
Total Hardness (mg/l)	72	79	69	77	57	75	83	83	73	64	61	58	49	61
Calcium Hardness (mg/l)	41	46	40	36	39	42	43	41	48	42	47	38	44	32
Chloride (mg/l)	33	42	40	31	47	44	32	37	39	46	41	34	36	44
Nitrate (mg/l)	0.32	0.41	0.24	0.52	0.45	0.36	0.36	0.42	0.61	0.72	0.69	0.72	0.88	0.91

**MONTHLY VARIATION IN PHYSICO-CHEMICAL CHARACTERISTICS OF SURFACE WATER  
COLLECTED FROM DIFFERENT LOCATION OF THE STUDY AREA (GEVRA OCP)**

Parameters	Stretch-VIII													
	G15							G16						
	JUNE	JUL	AUG	SEP	OCT	NOV	DEC	JUNE	JUL	AUG	SEP	OCT	NOV	DEC
pH (Units)	6.1	6.6	6.2	6.7	7.0	6.8	6.4	6.3	6.5	6.9	6.1	6.7	6.4	6.7
Dissolved Oxygen (mg/l)	5.1	5.3	4.8	4.0	5.1	4.3	4.2	4.5	4.4	4.9	5.0	4.1	4.6	4.9
TDS (ppm)	103	92	104	98	86	85	98	84	87	99	68	109	106	61
Total Solids (ppm)	26	23	25	24	21	27	24	29	23	22	25	29	28	24
Total Alkalinity (mg/l)	36	48	41	46	49	43	34	44	42	45	47	31	32	42
Total Hardness (mg/l)	81	75	82	79	61	79	74	93	72	63	79	94	93	57
Calcium Hardness (mg/l)	47	42	47	32	37	39	46	43	45	38	41	46	36	35
Chloride (mg/l)	42	44	36	49	32	39	36	47	41	48	37	43	34	39
Nitrate (mg/l)	0.29	0.63	0.37	0.42	0.39	0.28	0.26	0.26	0.69	0.75	0.83	0.79	0.81	0.89

**MONTHLY VARIATION IN PHYSICO-CHEMICAL CHARACTERISTICS OF SURFACE WATER  
COLLECTED FROM DIFFERENT LOCATION OF THE STUDY AREA (GEVRA OCP)**

Parameters	Stretch-IX													
	G17							G18						
	JUNE	JUL	AUG	SEP	OCT	NOV	DEC	JUNE	JUL	AUG	SEP	OCT	NOV	DEC
pH (Units)	6.3	6.4	6.5	6.3	6.8	6.1	6.7	6.3	6.9	6.2	7.0	6.4	6.2	6.5
Dissolved Oxygen (mg/l)	4.0	4.6	4.9	4.3	4.7	4.2	4.4	5.2	5.6	4.7	5.4	5.6	4.9	4.2
TDS (ppm)	101	99	110	88	84	115	91	96	92	85	75	72	84	83
Total Solids (ppm)	26	27	28	25	27	22	27	23	29	21	27	29	21	25
Total Alkalinity (mg/l)	42	40	37	38	48	32	38	49	41	48	31	37	36	31
Total Hardness (mg/l)	43	44	36	39	48	41	83	36	47	31	33	39	45	57
Calcium Hardness (mg/l)	41	44	46	33	38	43	43	47	49	39	43	42	35	39
Chloride (mg/l)	45	42	39	46	35	36	39	49	38	51	34	46	31	47
Nitrate (mg/l)	0.42	0.56	0.32	0.82	0.75	0.66	0.46	0.29	0.31	0.5	0.79	0.71	0.44	0.45

**MONTHLY VARIATION IN PHYSICO-CHEMICAL CHARACTERISTICS OF SURFACE WATER  
COLLECTED FROM DIFFERENT LOCATION OF THE STUDY AREA (GEVRA OCP)**

Parameters	Stretch-X													
	G19							G20						
	JUNE	JUL	AUG	SEP	OCT	NOV	DEC	JUNE	JUL	AUG	SEP	OCT	NOV	DEC
pH (Units)	6.2	6.6	6.8	6.7	6.3	6.7	6.2	7.1	6.5	7.2	6.4	6.8	6.6	6.3
Dissolved Oxygen (mg/l)	4.4	4.3	5.2	4.0	5.0	4.8	4.5	5.5	5.3	5.1	5.6	5.4	4.6	4.1
TDS (ppm)	102	98	115	83	89	92	93	106	81	77	88	101	97	77
Total Solids (ppm)	22	30	26	29	23	26	24	21	28	22	25	24	28	20
Total Alkalinity (mg/l)	40	43	38	39	49	36	53	44	49	38	33	38	44	36
Total Hardness (mg/l)	49	41	46	42	44	38	80	33	32	46	41	37	33	56
Calcium Hardness (mg/l)	46	35	42	48	45	44	41	39	35	32	47	48	32	32
Chloride (mg/l)	46	41	44	42	39	40	52	45	42	35	37	48	47	44
Nitrate (mg/l)	0.37	0.46	0.73	0.56	0.28	0.45	0.46	0.81	0.71	0.88	0.68	0.77	0.48	0.56

**MONTHLY VARIATION IN PHYSICO-CHEMICAL CHARACTERISTICS OF SURFACE WATER  
COLLECTED FROM DIFFERENT LOCATION OF THE STUDY AREA (GEVRA OCP)**

Parameters	Stretch-XI													
	G21							G22						
	JUNE	JUL	AUG	SEP	OCT	NOV	DEC	JUNE	JUL	AUG	SEP	OCT	NOV	DEC
pH (Units)	6.4	6.1	6.7	6.8	6.7	7.0	6.6	6.2	6.4	6.3	6.2	6.8	6.9	6.6
Dissolved Oxygen (mg/l)	5.0	5.1	4.9	5.2	5.0	4.8	4.5	4.4	4.6	4.1	4.5	4.8	4.3	4.9
TDS (ppm)	67	70	69	72	68	70	75	99	101	98	93	88	107	65
Total Solids (ppm)	22	26	23	25	24	27	23	29	27	27	24	22	25	22
Total Alkalinity (mg/l)	31	35	38	41	40	39	38	55	51	52	53	54	53	42
Total Hardness (mg/l)	51	57	56	58	59	60	58	85	83	81	80	83	86	87
Calcium Hardness (mg/l)	35	31	32	34	33	39	41	47	44	42	41	45	50	32
Chloride (mg/l)	40	42	41	44	45	44	41	49	51	50	52	55	48	46
Nitrate (mg/l)	0.86	0.83	0.82	0.73	0.66	0.45	0.75	0.38	1.26	0.93	1.12	1.01	1.25	0.48



**MONTHLY VARIATION IN PHYSICO-CHEMICAL CHARACTERISTICS OF SURFACE WATER  
COLLECTED FROM DIFFERENT LOCATION OF THE STUDY AREA (GEVRA OCP)**

Parameters	Stretch-XII													
	G23							G24						
	JUNE	JUL	AUG	SEP	OCT	NOV	DEC	JUNE	JUL	AUG	SEP	OCT	NOV	DEC
pH (Units)	6.6	6.3	6.9	7.0	7.1	6.3	6.4	7.2	6.2	6.6	6.8	6.2	6.9	6.8
Dissolved Oxygen (mg/l)	5.2	5.3	5.1	5.4	5.2	5.0	5.1	4.6	4.8	4.3	4.7	5.0	4.5	4.6
TDS (ppm)	69	72	71	60	74	70	72	101	108	100	92	90	96	95
Total Solids (ppm)	24	28	25	27	26	29	30	27	23	22	27	21	26	28
Total Alkalinity (mg/l)	33	37	39	44	45	41	42	58	53	55	56	57	59	59
Total Hardness (mg/l)	53	59	58	55	61	63	64	87	86	83	82	85	88	86
Calcium Hardness (mg/l)	37	33	35	36	35	41	38	49	46	44	43	47	49	48
Chloride (mg/l)	42	44	43	46	47	46	46	52	53	54	55	56	51	52
Nitrate (mg/l)	0.76	0.56	0.72	0.61	0.46	0.36	0.51	0.81	1.22	1.01	0.99	1.06	1.22	1.02

**(WATER QUALITY INDEX AT DIFFERENT MONITORING SITES)**

STATION	MONTH	WQI	STATION	MONTH	WQI
G1	JUNE	32.63	G6	JUNE	32.63
	JUL	32.39		JUL	32.39
	AUG	32.88		AUG	32.88
	SEP	33.94		SEP	33.94
	OCT	33.85		OCT	33.85
	NOV	34.42		NOV	34.42
	DEC	34.28		DEC	
G2	JUNE	36.35	G7	JUNE	32.05
	JUL	35.73		JUL	33.07
	AUG	34.64		AUG	32.65
	SEP	34.42		SEP	34.02
	OCT	36.06		OCT	34.21

	NOV	36.05		NOV	33.66
	DEC			DEC	
G3	JUNE	30.21	G8	JUNE	32.39
	JUL	30.14		JUL	32.53
	AUG	30.91		AUG	31.65
	SEP	31.26		SEP	33.00
	OCT	33.09		OCT	33.59
	NOV	32.73		NOV	33.99
	DEC			DEC	
G4	JUNE	32.61	G9	JUNE	32.70
	JUL	32.29		JUL	34.70
	AUG	32.48		AUG	32.82
	SEP	33.54		SEP	34.54
	OCT	33.65		OCT	33.06
	NOV	34.22		NOV	33.46
G5	JUNE	31.92	G10	JUNE	32.61
	JUL	33.08		JUL	32.64
	AUG	32.92		AUG	32.68
	SEP	34.30		SEP	33.37
	OCT	34.81		OCT	33.92
	NOV	34.39		NOV	33.83
	DEC			DEC	
G11	JUNE	34.13	G11	OCT	33.87
	JUL	33.98		NOV	34.14
	AUG	33.21		DEC	
	SEP	33.45		...	...

## Observations

- **Ground Water (Tube well water and Dug well water)**  
 The analysis show that various physical and chemical parameters are within the permissible limits of Drinking Water Standards (IS:10500-2012).
- **Surface Water**  
 The analysis shows that various parameters are within the limits of IS: 2296-1982 (Surface water, Class "C": Tolerance limits for surface waters used for drinking water source with conventional treatment followed by disinfection).
- **Waste Water**  
 Samples, EW-1 were collected from the effluent water of Gevra OCP. The analysis shows that various parameters are within the limits of General Standards for the discharge of Effluents into inland Surface-water GSR422€.

### 5.1.3 ASSESMENT OF NOISE QUALITY

The status of noise level measured in and around the mining area of Gevra Mine are as under:

**Table Details of noise level measurement stations [inDB(A)]**

Sl.No	Location	Category	Shift	Min.	Max.	Average	CPCB Noise Standard	Assimilative Capacity		
								Min	Max.	Average
1	GEVRA FILTER PLANT	Industrial	Day	62.532	74.105	68.319	75	0.895	12.47	6.682
			Night	55.306	62.995	59.151	65	2.005	9.694	5.849
2	GEVRA WORKSHOP	Industrial	Day	63.763	73.511	68.637	75	1.489	11.24	6.363
			Night	55.37	63.963	59.667	65	1.037	9.63	5.334
3	KOHARI VILLAGE	Residential	Day	47.119	52.942	50.031	55	2.058	7.881	4.969
			Night	37.99	44.147	41.069	45	0.853	7.01	3.932
4	DADARPARA VILLAGE	Residential	Day	46.556	53.486	50.021	55	1.514	8.444	4.979
			Night	35.645	42.204	38.924	45	2.796	9.355	6.076
5	PURENA VILLAGE	Residential	Day	44.717	54.03	49.374	55	0.97	10.28	5.626
			Night	37.972	42.758	40.365	45	2.242	7.028	4.635
6	SALORA VILLAGE	Residential	Day	44.225	52.825	48.525	55	2.175	10.78	6.475
			Night	35.881	43.469	39.675	45	1.531	9.119	5.352
7	CHHINPUR VILLAGE	Residential	Day	47.511	53.105	50.308	55	1.895	7.489	4.692
			Night	37.977	43.248	40.612	45	1.752	7.023	4.388
8	RAMPUR VILLAGE	Residential	Day	46.23	52.651	49.441	55	2.349	8.77	5.56
			Night	37.644	43.083	40.364	45	1.917	7.356	4.637
9	BIRDA VILLAGE	Residential	Day	46.558	53.828	50.193	55	1.172	8.442	4.807
			Night	37.278	42.954	40.116	45	2.046	7.722	4.884
10	SARASINGAR VILLAGE	Residential	Day	46.628	53.108	49.868	55	1.892	8.372	5.132
			Night	36.918	43.777	40.348	45	1.223	8.082	4.653
11	BINJHRI VILLAGE	Residential	Day	45.202	52.81	49.006	55	2.19	9.798	5.994
			Night	38.58	42.875	40.728	45	2.125	6.42	4.272

	Shift	Average Noise level	CPCB NOISE STANDARD	Assimilative Capacity
Average of Industrial Area	Day	68.478	75	6.522
	Night	59.409	65	5.591

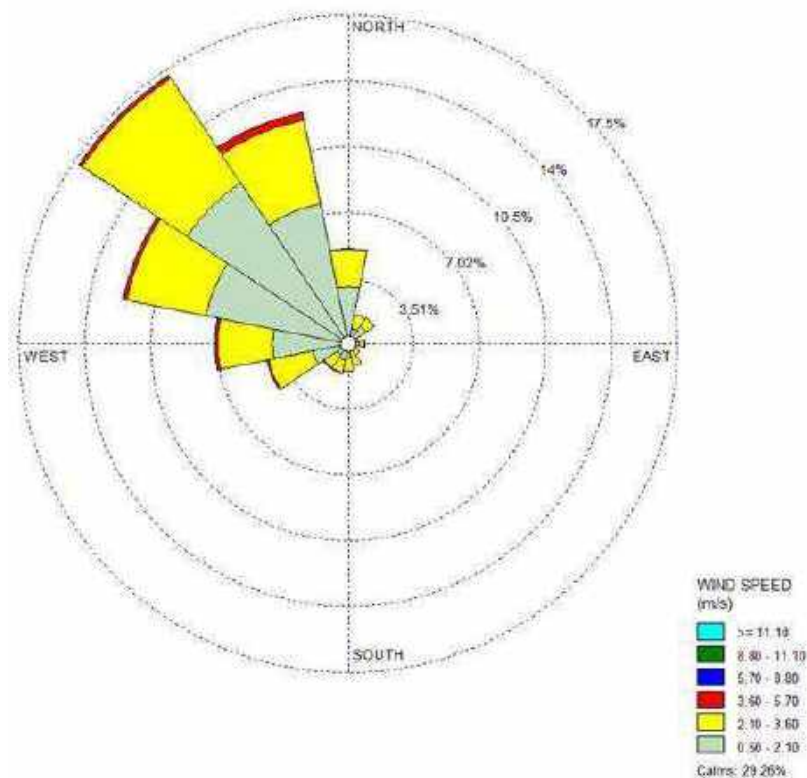
	Shift	Average Noise level	CPCB NOISE STANDARD	Assimilative Capacity
Average of Residential Area	Day	46.083	55	8.917
	Night	40.245	45	4.755

Noise level measurements from various stations, as mentioned above, and it is found that noise level at all villages are within permissible limits of the prescribed standards for both day-time and night-time.

## 5.2 ENVIRONMENTAL QUALITY MONITORING IN DIPKA OCP

### Micro Meteorological Condition

A micrometeorological station has been installed for the study period from May 2019 to Nov 2019. The predominant wind direction has been observed from NW to N. The average wind speed was 1.30 m/s, and 29.26% calm conditions prevailed in the study area.



**FIGURE: WIND-ROSE DIAGRAM SHOWING PREDOMINANT WIND DIRECTION**

The locations for air sampling were selected on the basis of “joint site survey”, “examination of topo sheet of the project area”, “secondary micrometeorological data analysis”, “historical wind direction pattern” and “availability of resources” for ambient air quality monitoring and noise level monitoring.

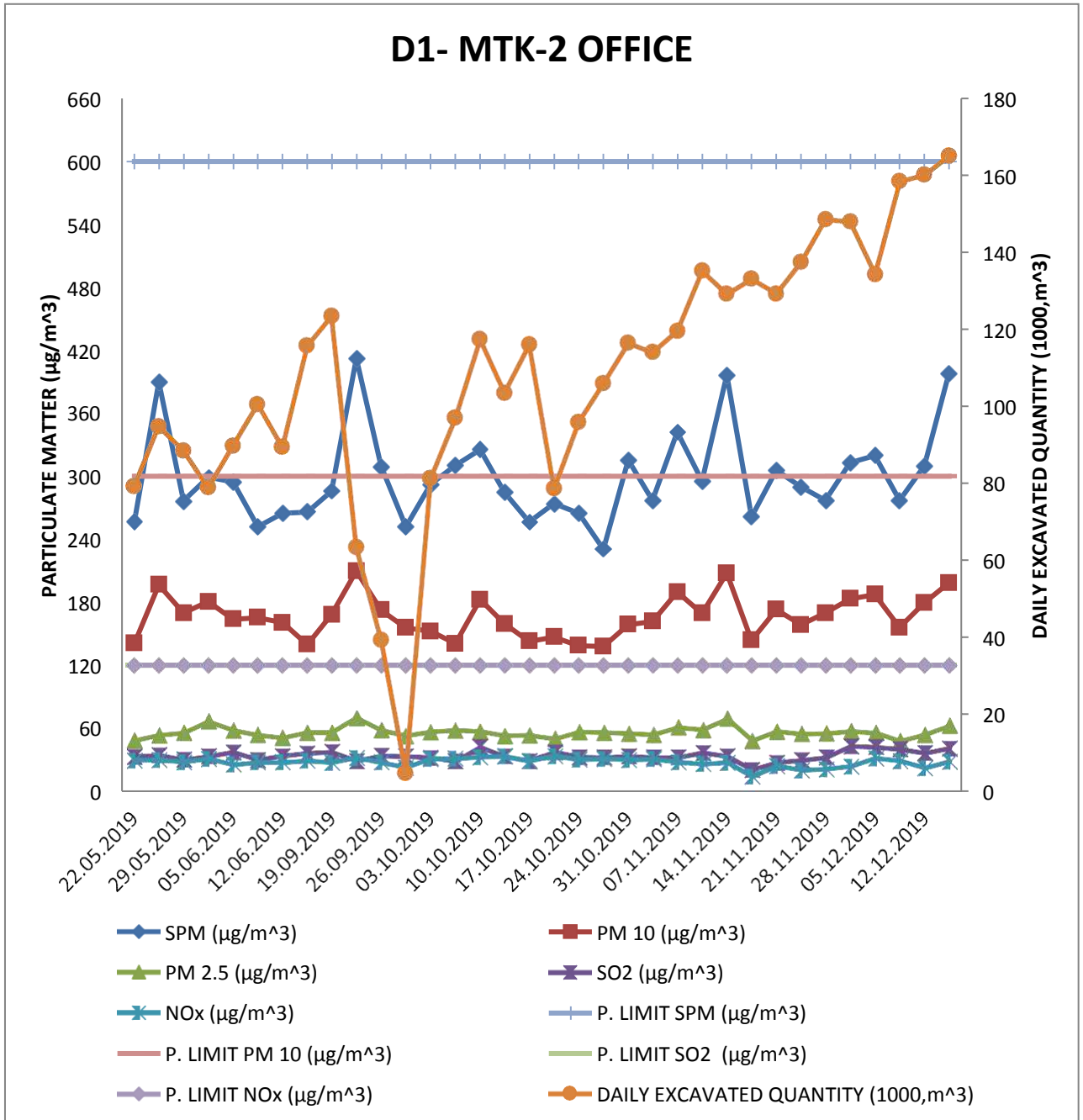
**AAQM Locations**

<b>Code</b>	<b>Name of Location</b>	<b>Latitude</b>	<b>Longitude</b>	<b>As per Wind Direction</b>	<b>Distance</b>
D1	MTK-2 Office	22°19'43.48°N	82°31'0.29°E	Core Zone	0 km
D2	Dipka Substaion	22°20'11.65°N	82°31'8.65°E	Core Zone	0 km
DG3	Binjhri Village	22.36496608°N	82.53733746°E	Crosswind	2.75 km
D4	Urta Village	22.309219°N	82.436327°E	Crosswind	7.0 km
D5	Gobarghora Village	22.3788327°N	82.5704547°E	Crosswind	4.5 km
DG6	Saraisingar Village	22.3033527°N	82.5545003°E	Downwind	2.25 km
D7	Dhatura Village	22.26317°N	82.55386°E	Downwind	5.0 km
D8	Katkidabri Village	22.31013°N	82.55257°E	Downwind	1.75 km
DG9	Chhindpur Village	22.30159°N	82.59725°E	Downwind	6.0 km
D10	Tiwarta Village	22.356447°N	82.48486°E	Upwind	3.25 km

## 5.2.1 ASSESSMENT OF AIR QUALITY

Name of Location (D1)	D1- MTK-2 OFFICE						
Sr. No.	Date of Sampling	SPM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	DAILY EXCAVATED QUANTITY
Unit		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	(1000,m <sup>3</sup> )
<b>GSR 742 (E)</b>		600	300	-	120	120	-
1.	22.05.2019	256.7	140.6	47.3	32.1	28.7	79.117
2.	26.05.2019	389.7	196.7	52.3	33.4	29.2	94.669
3.	29.05.2019	276.3	169.8	54.6	29.3	27.1	88.407
4.	02.06.2019	299	180.4	65.4	32.6	30.1	78.79
5.	05.06.2019	294.3	163.7	56.8	36.4	24.8	89.613
6.	09.06.2019	251.9	165.3	52.4	29.1	26.8	100.392
7.	12.06.2019	264.8	160.4	49.8	32.8	26.9	89.316
8.	15.09.2019	265.9	139.8	54.9	35.4	28.3	115.582
9.	19.09.2019	285.9	168.2	54.8	36.7	26.7	123.259
10.	22.09.2019	412.4	209.7	68.7	28.2	31.3	63.301
11.	26.09.2019	309.1	172.4	57.1	33.1	26.8	39.282
12.	29.09.2019	251.8	155.7	51.6	32.5	21.9	4.723
13.	03.10.2019	292.3	152.3	55.2	31.3	30.3	81.187
14.	06.10.2019	310.4	140.4	56.8	27.8	30.4	96.829
15.	10.10.2019	325.4	182.4	55.9	41.3	31.6	117.264
16.	13.10.2019	284.9	159.4	51.7	32.5	32.5	103.339
17.	17.10.2019	256.4	142.8	52.3	28.1	28.2	115.878
18.	20.10.2019	273.8	146.8	48.9	36.3	32.8	78.522
19.	24.10.2019	264.7	138.6	55.4	31.7	29.5	95.79
20.	27.10.2019	230.4	137.8	54.9	31.5	30.1	105.834
21.	31.10.2019	315.4	158.6	53.8	32.6	29.2	116.276
22.	03.11.2019	276.8	161.8	52.7	31.4	29.8	113.916
23.	07.11.2019	342.1	189.7	59.7	31.5	27.1	119.409
24.	10.11.2019	295.3	169.4	57.3	35.9	25.2	135.052
25.	14.11.2019	396.3	207.6	67.8	32.5	26.7	129.016
26.	17.11.2019	261.3	143.8	47.2	19.8	13.5	132.91
27.	21.11.2019	305.6	172.9	55.8	26.5	23.6	129.111
28.	24.11.2019	289.6	158.3	53.4	28.8	19.5	137.316
29.	28.11.2019	276.8	169.8	53.9	31.4	20.5	148.375
30.	01.12.2019	312.8	183.4	56.1	42	23	147.776
31.	05.12.2019	319.7	187.3	54.6	41.2	30.8	134.137
32.	08.12.2019	276.8	155.8	46.8	39.2	28	158.236
33.	12.12.2019	309.8	179.3	52.7	35.5	21.5	159.924
34.	15.12.2019	397.8	198.3	61.3	39.9	27.6	164.885

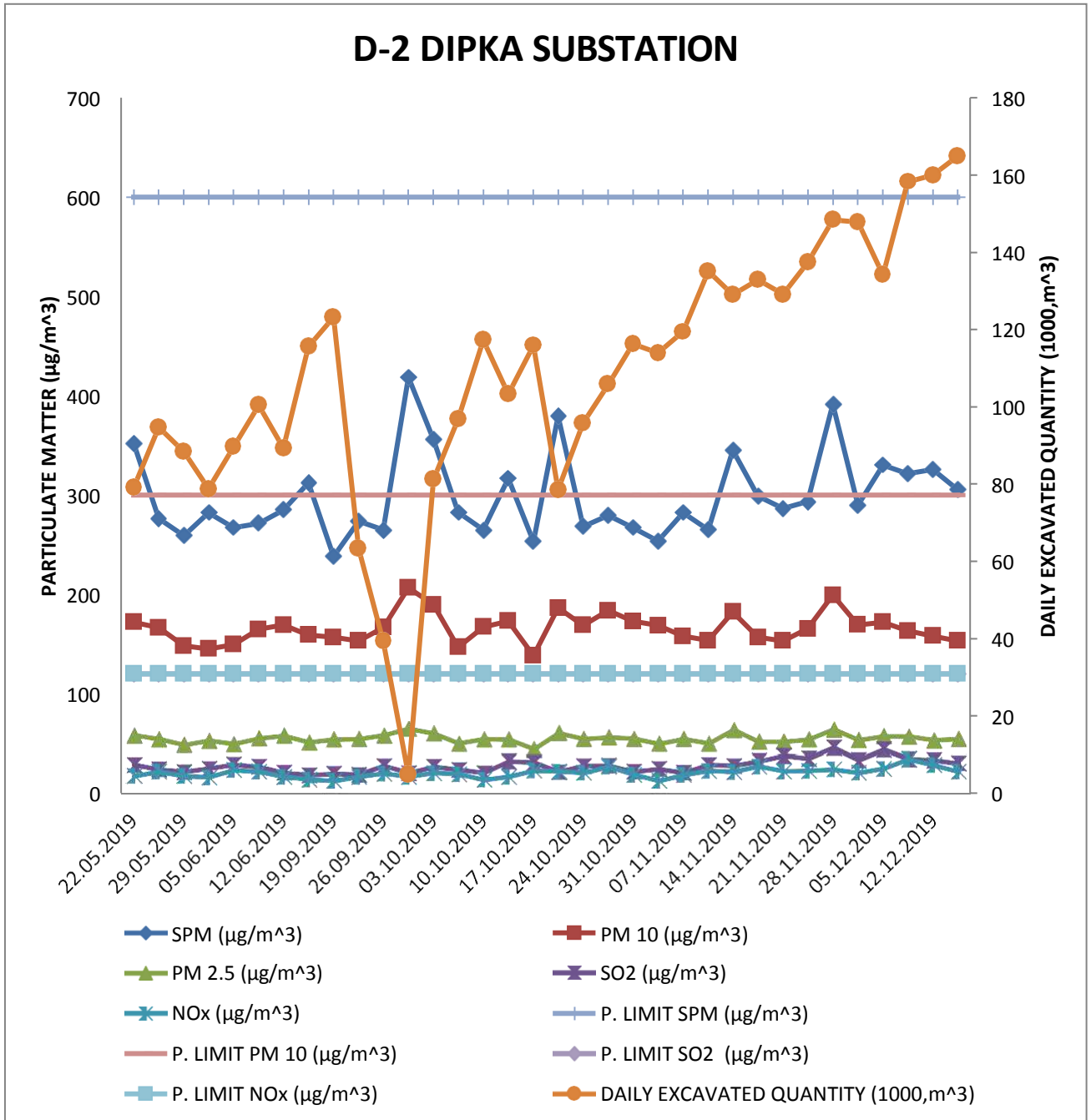
RESULT INTERPRETATION					
No. of Observations	34	34	34	34	34
Min Concentration	230.4	137.8	46.8	19.8	13.5
Max Concentration	412.4	209.7	68.7	42	32.8
98 <sup>th</sup> Percentile	397.8	207.6	67.8	41.2	32.5
Arithmetic Mean	299.18235	166.44706	54.9970588	32.95	27.058824
Std. Deviation	44.359369	20.050939	5.08142698	4.6484439	4.132731



Name of Location (D2)	D-2 DIPKA SUBSTATION						
Sr. No.	Date of Sampling	SPM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	DAILY EXCAVATED QUANTITY
Unit		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	(1000,m <sup>3</sup> )
<b>GSR 742 (E)</b>		600	300	-	120	120	-
1.	22.05.2019	352.1	172.1	56.7	28.3	17.3	79.117
2.	26.05.2019	276.1	166.4	53.1	23.8	21.6	94.669
3.	29.05.2019	259.3	148.3	47.3	21.4	17.4	88.407
4.	02.06.2019	282.3	145.3	51.3	24.5	15.9	78.79
5.	05.06.2019	267.3	149.6	48.3	28.5	23.1	89.613
6.	09.06.2019	271.6	164.8	53.9	26.3	21.5	100.392
7.	12.06.2019	285.1	169.2	56.4	20.5	16.5	89.316
8.	15.09.2019	312.4	159.3	49.8	18.2	13.8	115.582
9.	19.09.2019	238.2	156.9	52.7	19.5	12.5	123.259
10.	22.09.2019	273.8	153.4	53.4	18.7	16.5	63.301
11.	26.09.2019	264.9	166.7	56.8	27.3	19.7	39.282
12.	29.09.2019	418.7	206.7	63.4	20.1	16.5	4.723
13.	03.10.2019	356.1	189.7	58.6	26.5	20.1	81.187
14.	06.10.2019	282.6	146.9	48.7	23.4	19.2	96.829
15.	10.10.2019	264.8	167.3	53.1	20.1	13.5	117.264
16.	13.10.2019	316.9	173.2	52.9	31.5	16.4	103.339
17.	17.10.2019	253.4	138.4	43.2	30.5	22.6	115.878
18.	20.10.2019	379.6	186.3	59.3	21.4	21.8	78.522
19.	24.10.2019	268.4	168.9	53.4	27.1	20.4	95.79
20.	27.10.2019	279.6	183.6	54.8	27.4	26.5	105.834
21.	31.10.2019	267.3	172.9	53.6	21.6	18.5	116.276
22.	03.11.2019	253.6	168.7	48.6	24.3	12.4	113.916
23.	07.11.2019	282.3	157.8	53.4	20.4	18.3	119.409
24.	10.11.2019	265.3	153.6	48.7	28.4	22.3	135.052
25.	14.11.2019	345.2	182.4	62.1	27.3	21.4	129.016
26.	17.11.2019	298.7	156.9	50.7	31.8	26.7	132.91
27.	21.11.2019	286.4	153.4	50.7	37	21.8	129.111
28.	24.11.2019	293.4	165.4	52.8	34.2	22.4	137.316
29.	28.11.2019	391.2	199.4	62.8	44.8	23.7	148.375
30.	01.12.2019	289.7	169.4	52.3	32.5	20.4	147.776
31.	05.12.2019	330.4	172.1	56.1	43.2	24.6	134.137
32.	08.12.2019	321.6	163.4	55.7	33.7	33.8	158.236
33.	12.12.2019	325.6	158.2	51.9	32.6	27.9	159.924
34.	15.12.2019	305.6	153.4	53.4	29.7	21.5	164.885

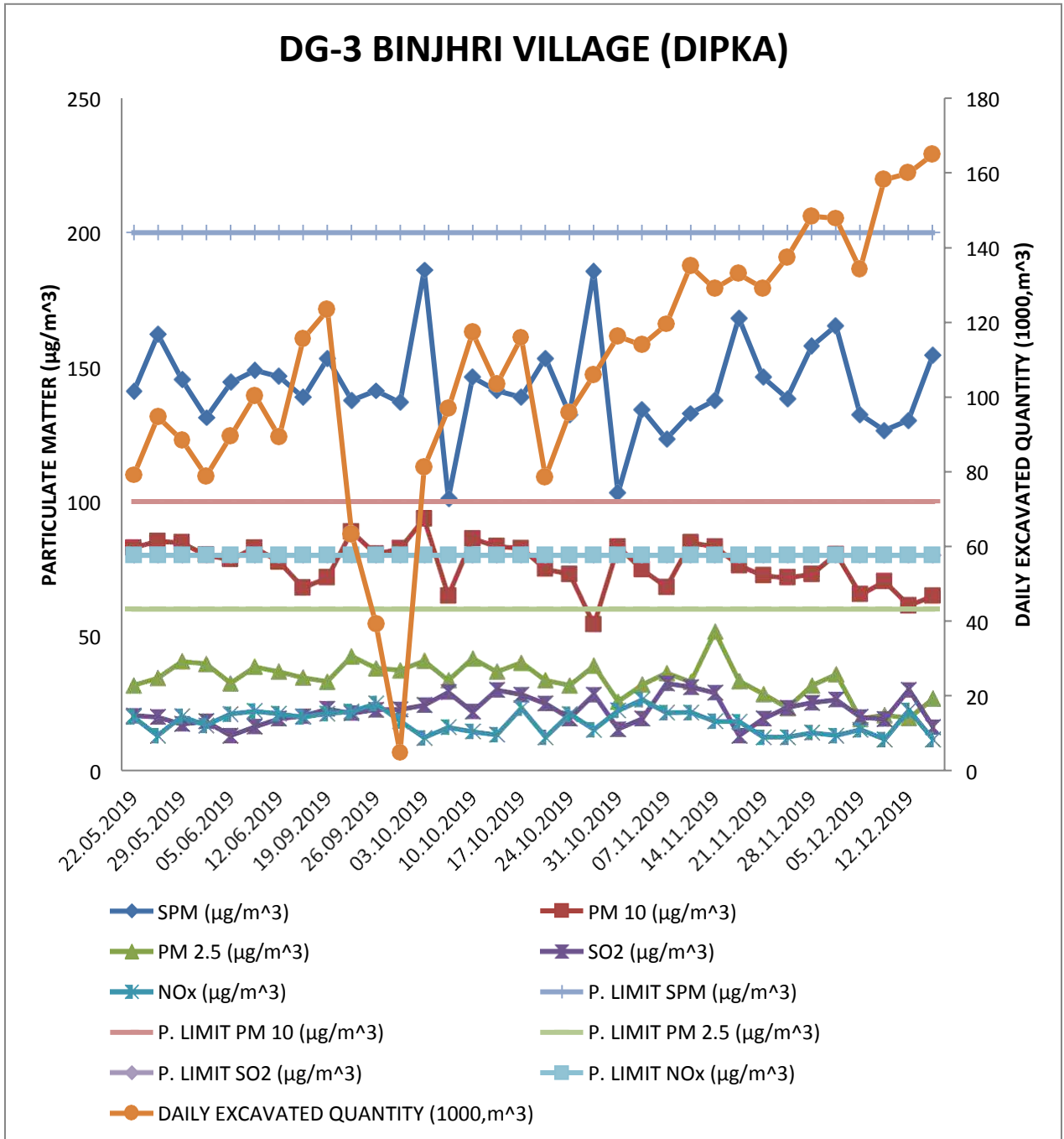


RESULT INTERPRETATION					
No. of Observations	34	34	34	34	34
Min Concentration	238.2	138.4	43.2	18.2	12.4
Max Concentration	418.7	206.7	63.4	44.8	33.8
98 <sup>th</sup> Percentile	391.2	199.4	62.8	43.2	27.9
Arithmetic Mean	298.80882	165.88235	53.5264706	27.25	20.25
Std. Deviation	42.532365	15.227855	4.41349918	6.5540758	4.5961281



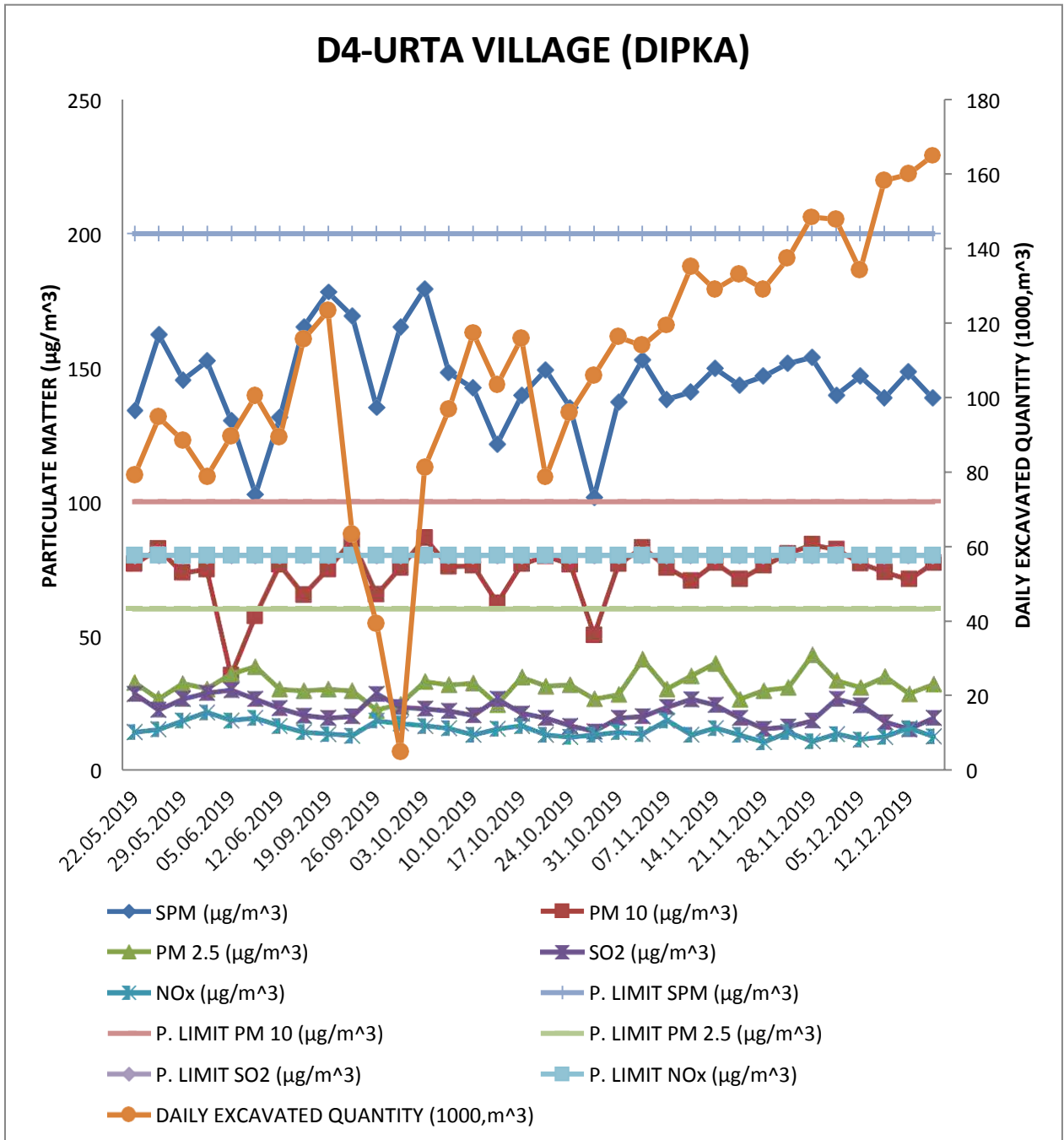
Name of Location (DG-3)	DG-3 BINJHRI VILLAGE (DIPKA)						
Sr. No.	Date of Sampling	SPM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	DAILY EXCAVATED QUANTITY
Unit		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	(1000,m <sup>3</sup> )
<b>GSR 826 (E)</b>		-	100	60	80	80	-
1.	22.05.2019	141	82.7	31.8	20.6	20.1	79.117
2.	26.05.2019	162.2	85.1	34.5	20.1	13.2	94.669
3.	29.05.2019	145.3	84.6	40.7	17.5	20.3	88.407
4.	02.06.2019	131.2	80	39.8	18.5	17	78.79
5.	05.06.2019	144.3	78.4	32.6	13.2	21.2	89.613
6.	09.06.2019	148.9	82.7	38.7	16.5	22.3	100.392
7.	12.06.2019	146.5	77.5	36.9	19.5	21.3	89.316
8.	15.09.2019	138.7	67.9	34.7	20.4	20.1	115.582
9.	19.09.2019	153.2	71.6	33.2	23.1	21.4	123.259
10.	22.09.2019	137.6	88.7	42.6	21.5	22.1	63.301
11.	26.09.2019	141.2	80.4	38.2	22.8	25.1	39.282
12.	29.09.2019	136.9	82.4	37.4	22.9	18.6	4.723
13.	03.10.2019	186	93.4	40.9	24.5	12.4	81.187
14.	06.10.2019	101.2	64.9	33.7	29.3	16.3	96.829
15.	10.10.2019	146.3	86.1	41.8	22.1	14.7	117.264
16.	13.10.2019	141.3	83.2	36.9	30.1	13.5	103.339
17.	17.10.2019	138.9	82.5	40.2	28.4	23.4	115.878
18.	20.10.2019	153.4	74.8	33.7	25.1	12.6	78.522
19.	24.10.2019	132.4	72.9	31.8	19.6	21.2	95.79
20.	27.10.2019	185.6	54.2	39.1	28.4	15.4	105.834
21.	31.10.2019	103.2	83.1	25.8	15.6	22.5	116.276
22.	03.11.2019	134.2	74.6	32.1	19.5	26.5	113.916
23.	07.11.2019	123.2	68.1	36.4	32.5	21.7	119.409
24.	10.11.2019	132.8	84.6	33.1	31.2	21.8	135.052
25.	14.11.2019	137.6	83.1	51.6	29.1	18.5	129.016
26.	17.11.2019	168.3	76.1	33.4	13.2	18.4	132.91
27.	21.11.2019	146.3	72.4	28.6	19.5	12.6	129.111
28.	24.11.2019	138.4	71.6	23.4	23.6	12.6	137.316
29.	28.11.2019	157.9	72.9	31.8	25.4	14.3	148.375
30.	01.12.2019	165.3	80.3	35.9	26.5	13.2	147.776
31.	05.12.2019	132.4	65.4	19.4	20.1	15.4	134.137
32.	08.12.2019	126.4	70.2	20.8	19.3	11.8	158.236
33.	12.12.2019	130.2	61.3	19.7	30.2	22.6	159.924
34.	15.12.2019	154.3	64.8	26.9	16.4	11.8	164.885

RESULT INTERPRETATION					
No. of Observations	34	34	34	34	34
Min Concentration	101.2	54.2	19.4	13.2	11.8
Max Concentration	186	93.4	51.6	32.5	26.5
98 <sup>th</sup> Percentile	185.6	88.7	42.6	31.2	25.1
Arithmetic Mean	143.01765	76.544118	34.0617647	22.535294	18.114706
Std. Deviation	17.988017	8.6384339	6.93340682	5.1939873	4.3277212



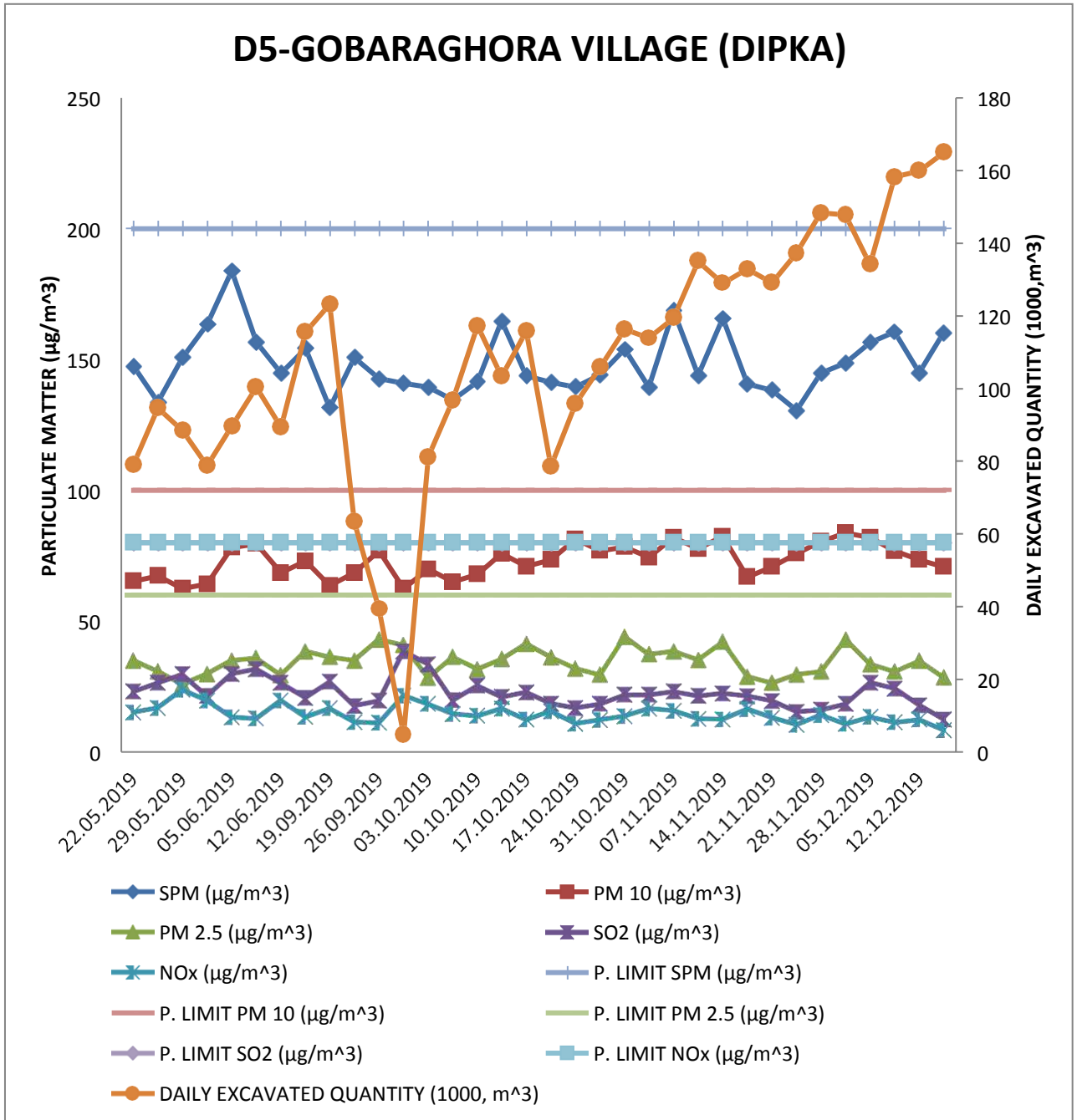
Name of Location (D4)	D4-URTA VILLAGE (DIPKA)						
Sr. No.	Date of Sampling	SPM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	DAILY EXCAVATED QUANTITY
Unit		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	(1000,m <sup>^3</sup> )
<b>GSR 826 (E)</b>		-	100	60	80	80	-
1.	22.05.2019	134.1	76.5	32.6	28.4	14.2	79.117
2.	26.05.2019	162.3	82.1	26.5	22.5	15.2	94.669
3.	29.05.2019	145.5	73.2	32.2	26.5	18.4	88.407
4.	02.06.2019	152.4	74.6	30.2	28.7	21.6	78.79
5.	05.06.2019	130.2	35.2	35.8	29.8	18.5	89.613
6.	09.06.2019	102.8	57.2	38.5	26.5	19.5	100.392
7.	12.06.2019	131.5	76.3	30.1	23.1	16.5	89.316
8.	15.09.2019	165.2	65.1	29.5	20.4	14.2	115.582
9.	19.09.2019	178.2	74.5	30.1	19.5	13.5	123.259
10.	22.09.2019	169.3	85.4	29.5	20.1	12.9	63.301
11.	26.09.2019	135.2	65.2	22.4	28.4	18.4	39.282
12.	29.09.2019	165.2	75.2	24.6	23.5	17.4	4.723
13.	03.10.2019	179.4	86.1	33	22.9	16.5	81.187
14.	06.10.2019	148.2	75.6	31.7	22.1	15.6	96.829
15.	10.10.2019	142.3	75.9	32.3	20.5	13.2	117.264
16.	13.10.2019	121.5	62.1	24.4	26.5	15.4	103.339
17.	17.10.2019	139.5	76.5	34.6	21.2	16.5	115.878
18.	20.10.2019	149.2	79.4	31.2	19.5	13.2	78.522
19.	24.10.2019	135.2	76.4	31.7	16.5	12.4	95.79
20.	27.10.2019	101.4	50.2	26.5	14.5	13.2	105.834
21.	31.10.2019	137.2	76.5	28.1	19.5	14.2	116.276
22.	03.11.2019	152.9	82.6	41.2	20.1	13.5	113.916
23.	07.11.2019	138.2	75.2	30.2	23.5	18.5	119.409
24.	10.11.2019	140.9	70.2	35.1	26.4	13.2	135.052
25.	14.11.2019	149.7	76.9	39.7	24.3	15.7	129.016
26.	17.11.2019	143.5	70.8	26.4	19.5	13.2	132.91
27.	21.11.2019	146.8	75.9	29.6	15.4	10.5	129.111
28.	24.11.2019	151.6	80.4	30.7	16.2	14.2	137.316
29.	28.11.2019	153.8	83.7	42.8	18.4	10.8	148.375
30.	01.12.2019	139.7	81.9	33.4	26.5	13.5	147.776
31.	05.12.2019	146.8	76.8	30.7	24.2	11.5	134.137
32.	08.12.2019	138.7	73.4	34.8	17.9	12.5	158.236
33.	12.12.2019	148.4	70.8	28.4	15.3	15.7	159.924
34.	15.12.2019	138.7	76.9	31.9	19.5	12.6	164.885

RESULT INTERPRETATION					
No. of Observations	34	34	34	34	34
Min Concentration	101.4	35.2	22.4	14.5	10.5
Max Concentration	179.4	86.1	42.8	29.8	21.6
98 <sup>th</sup> Percentile	178.2	85.4	41.2	28.7	19.5
Arithmetic Mean	144.6	73.4	31.5	21.9	14.9
Std. Deviation	16.975103	10.128337	4.59475792	4.2182821	2.6042831



Name of Location (D5)	D5-GOBARAGHORA VILLAGE (DIPKA)						
Sr. No.	Date of Sampling	SPM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	DAILY EXCAVATED QUANTITY
Unit		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	(1000,m <sup>3</sup> )
<b>GSR 826 (E)</b>		-	100	60	80	80	-
1.	22.05.2019	147.3	65.2	34.9	23.1	15.2	79.117
2.	26.05.2019	133.6	67.3	30.8	26.4	16.9	94.669
3.	29.05.2019	150.7	62.4	25.9	29.7	23.8	88.407
4.	02.06.2019	163.4	64.1	29.8	21.5	19.7	78.79
5.	05.06.2019	183.9	78.1	34.9	29.8	13.4	89.613
6.	09.06.2019	156.7	79.6	35.8	31.6	12.9	100.392
7.	12.06.2019	144.8	68.4	29.4	26.4	19.7	89.316
8.	15.09.2019	154.2	72.9	38.4	20.8	13.5	115.582
9.	19.09.2019	131.5	63.5	36.2	26.8	16.8	123.259
10.	22.09.2019	150.7	68.4	34.9	17.7	11.6	63.301
11.	26.09.2019	142.6	76.9	42.8	19.6	11.3	39.282
12.	29.09.2019	140.9	62.4	40.7	38.4	21.6	4.723
13.	03.10.2019	139.4	69.8	28.3	33.4	18.4	81.187
14.	06.10.2019	134.6	64.9	36.2	19.8	14.6	96.829
15.	10.10.2019	141.5	67.9	31.6	25.4	13.9	117.264
16.	13.10.2019	164.7	75.8	35.4	21.1	16.7	103.339
17.	17.10.2019	143.8	70.9	41.2	22.8	12.5	115.878
18.	20.10.2019	141.3	73.4	36.1	18.5	15.6	78.522
19.	24.10.2019	139.5	81.3	31.8	16.9	10.9	95.79
20.	27.10.2019	144.2	76.9	29.5	18.4	12.4	105.834
21.	31.10.2019	153.9	78.3	43.9	21.9	13.8	116.276
22.	03.11.2019	139.4	74.3	37.2	21.9	16.7	113.916
23.	07.11.2019	168.7	81.9	38.4	23.1	15.9	119.409
24.	10.11.2019	143.9	77.6	35.1	21.5	12.8	135.052
25.	14.11.2019	165.8	82.3	41.9	22.4	12.6	129.016
26.	17.11.2019	140.6	66.9	28.7	21.4	16.5	132.91
27.	21.11.2019	138.2	70.8	26.4	19.5	13.2	129.111
28.	24.11.2019	130.5	75.9	29.6	15.4	10.5	137.316
29.	28.11.2019	144.8	80.4	30.7	16.2	14.2	148.375
30.	01.12.2019	148.6	83.7	42.8	18.4	10.8	147.776
31.	05.12.2019	156.4	81.9	33.4	26.5	13.5	134.137
32.	08.12.2019	160.5	76.8	30.7	24.2	11.5	158.236
33.	12.12.2019	144.9	73.4	34.8	17.9	12.5	159.924
34.	15.12.2019	160.2	70.8	28.4	12.6	8.5	164.885

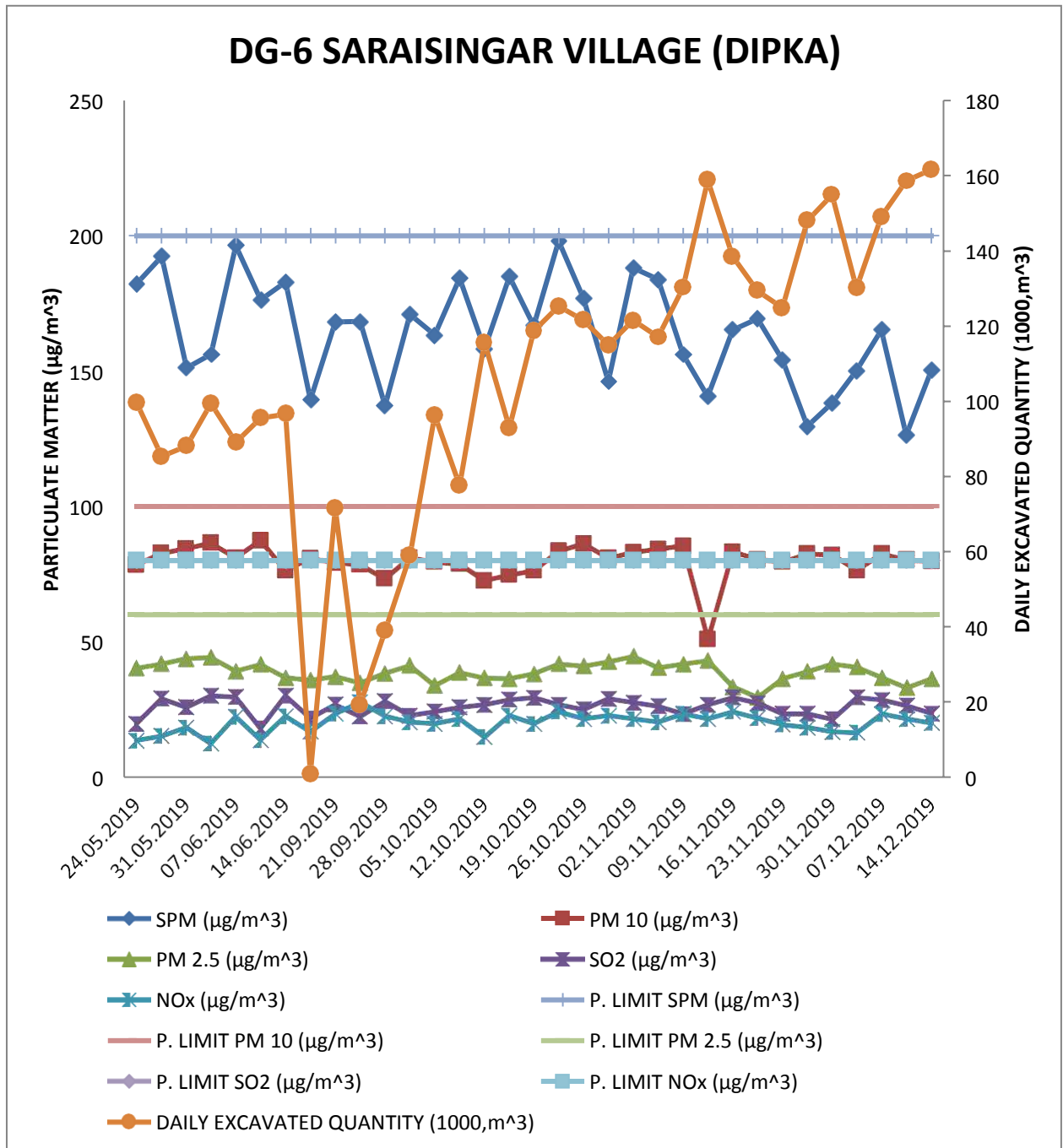
RESULT INTERPRETATION					
No. of Observations	34	34	34	34	34
Min Concentration	130.5	62.4	25.9	12.6	8.5
Max Concentration	183.9	83.7	43.9	38.4	23.8
98 <sup>th</sup> Percentile	168.7	82.3	42.8	33.4	21.6
Arithmetic Mean	148.40294	73.091176	34.3117647	22.676471	14.541176
Std. Deviation	11.891899	6.3905881	4.97860664	5.4558869	3.3400343



Name of Location (GD-6)		DG-6 SARAISINGAR VILLAGE (DIPKA)					
Sr. No.	Date of Sampling	SPM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	DAILY EXCAVATED QUANTITY
Unit		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	(1000,m <sup>^3</sup> )
<b>GSR 826 (E)</b>		-	100	60	80	80	-
1.	24.05.2019	182.3	78.3	40.3	19.8	13.6	99.556
2.	28.05.2019	192.4	82.6	41.9	29.1	15.3	85.248
3.	31.05.2019	151.3	84.3	43.7	25.9	18.4	88.063
4.	04.06.2019	156.2	86.4	44.2	30.1	12.5	99.364
5.	07.06.2019	196.4	80.9	39.2	29.7	22.4	89.043
6.	11.06.2019	176.3	87.3	41.7	18.1	13.8	95.566
7.	14.06.2019	182.9	76.3	36.8	30.1	22.6	96.576
8.	17.09.2019	139.4	80.7	35.9	21.8	16.9	0.876
9.	21.09.2019	168.2	79.1	37.2	26.9	23.5	71.522
10.	24.09.2019	168.3	78.4	34.9	22.5	27.8	19.298
11.	28.09.2019	137.2	73.2	38.4	28.1	22.6	38.895
12.	01.10.2019	170.9	80.9	41.3	22.8	20.4	58.861
13.	05.10.2019	163.4	79.4	33.9	24.3	19.8	96.227
14.	08.10.2019	184.3	78.6	38.7	25.9	21.6	77.584
15.	12.10.2019	158.2	72.5	36.7	26.8	14.9	115.588
16.	15.10.2019	184.9	74.6	36.4	28.7	22.8	92.871
17.	19.10.2019	166.8	76.2	38.2	29.4	19.8	118.7
18.	22.10.2019	198.1	83.4	41.9	26.8	24.3	125.206
19.	26.10.2019	176.9	86.1	41.1	25.1	21.6	121.558
20.	29.10.2019	146.2	80.8	42.7	29	22.8	114.857
21.	02.11.2019	188.2	82.9	44.6	27.6	21.6	121.507
22.	05.11.2019	183.9	84.1	40.5	26.3	20.4	117.065
23.	09.11.2019	156.2	85.3	41.8	23.4	23.5	130.186
24.	12.11.2019	140.7	50.8	43.1	26.8	21.6	158.778
26.	16.11.2019	165.2	83.1	33.4	29.5	24.3	138.444
27.	19.11.2019	169.4	80.3	29.5	27.4	21.9	129.359
28.	23.11.2019	154.2	79.4	36.4	23.5	19.5	124.799
29.	26.11.2019	129.6	82.4	39.1	23.5	18.4	147.995
30.	30.11.2019	138.2	81.9	41.8	21.5	16.8	154.932
31.	03.12.2019	150.2	76.3	40.7	29.5	16.5	130.071
32.	07.12.2019	165.2	82.4	36.8	28.6	23.4	149.063
33.	10.12.2019	126.4	80.2	33.1	26.5	21.6	158.605
34.	14.12.2019	150.3	79.6	36.4	23.6	20.1	161.596

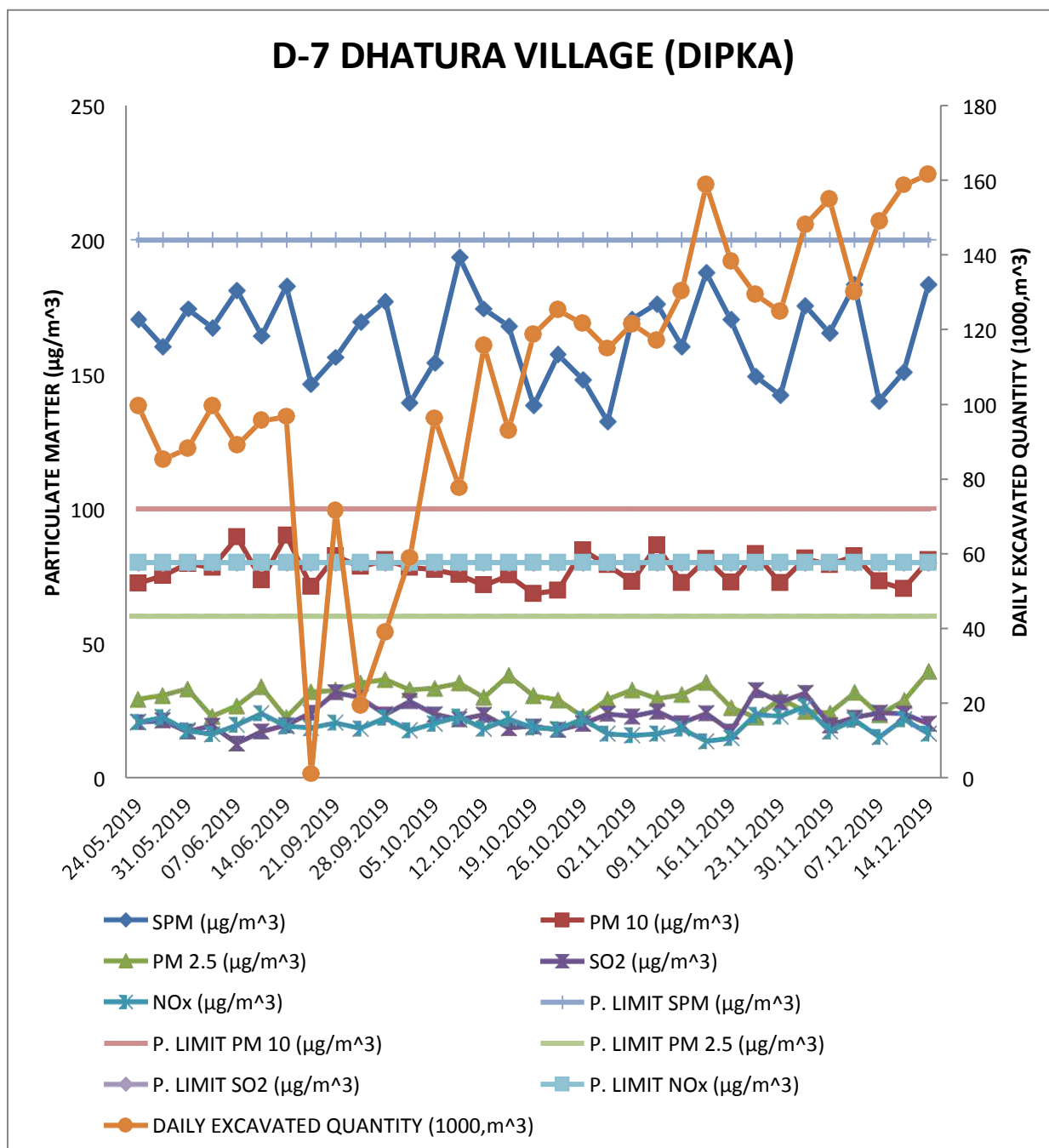


RESULT INTERPRETATION					
No. of Observations	34	34	34	34	34
Min Concentration	126.4	50.8	29.5	18.1	12.5
Max Concentration	198.1	87.3	44.6	30.1	27.8
98 <sup>th</sup> Percentile	196.4	86.4	44.2	29.7	24.3
Arithmetic Mean	164.19091	79.657576	38.8575758	26.018182	20.212121
Std. Deviation	19.540765	6.3258908	3.60173832	3.152326	3.5592975



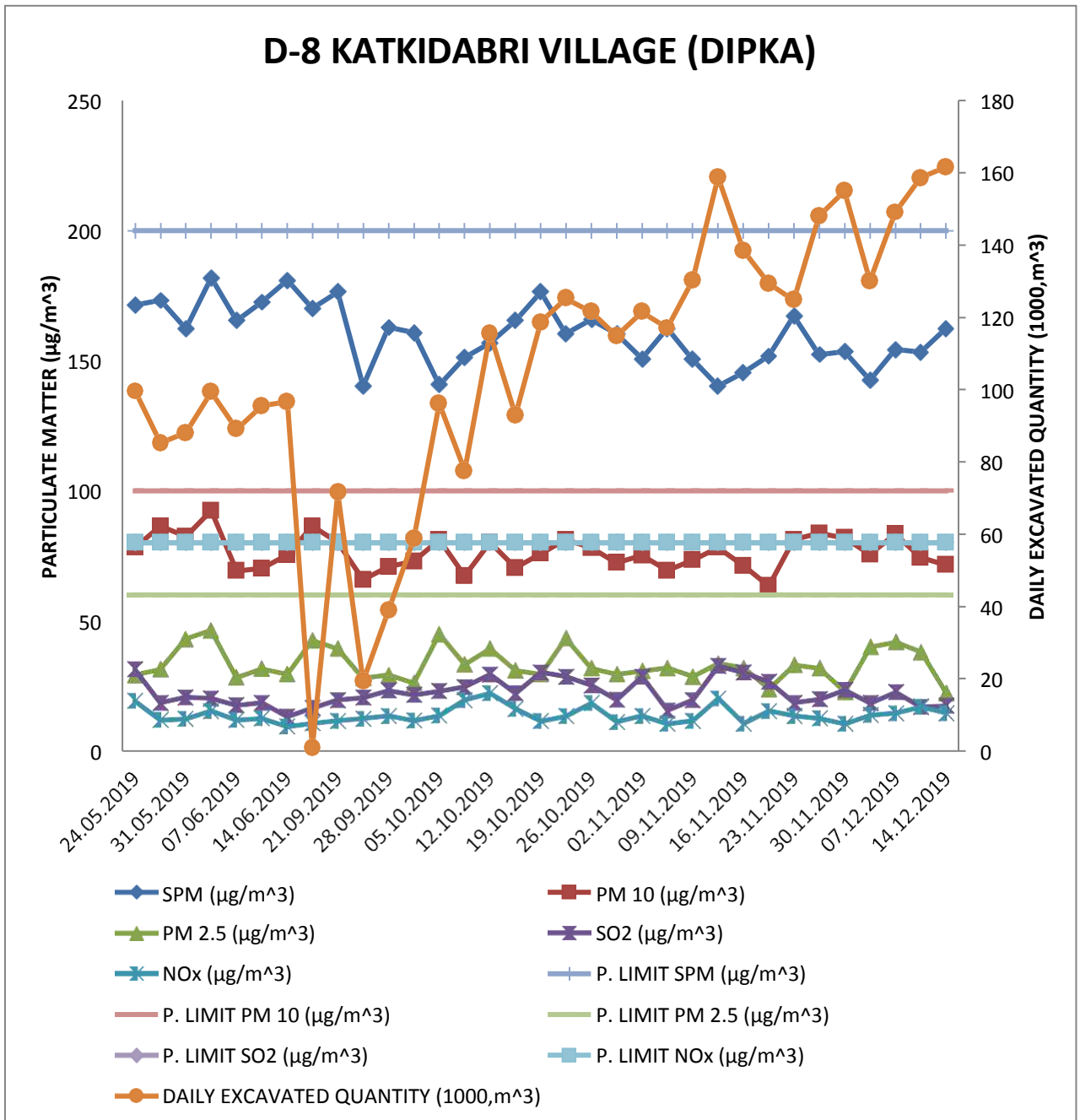
Name of Location (D-7)	D-7 DHATURA VILLAGE (DIPKA)						
Sr. No.	Date of Sampling	SPM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	DAILY EXCAVATED QUANTITY
Unit		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	(1000,m <sup>^3</sup> )
<b>GSR 826 (E)</b>		-	100	60	80	80	-
1.	24.05.2019	170.5	72.3	29.1	20.7	20.7	99.556
2.	28.05.2019	160.2	75.1	30.5	21.3	22.5	85.248
3.	31.05.2019	174.3	79.6	32.9	17.2	17.6	88.063
4.	04.06.2019	167.3	78.1	22.8	19.4	16.2	99.364
5.	07.06.2019	181.2	89.4	26.7	12.9	19.7	89.043
6.	11.06.2019	164.3	73.5	33.7	17.2	23.9	95.566
7.	14.06.2019	182.7	90.1	22.4	19.6	19.2	96.576
8.	17.09.2019	146.3	70.9	31.8	24.1	18.6	0.876
9.	21.09.2019	156.4	82.4	32.4	31.6	20.5	71.522
10.	24.09.2019	169.4	78.4	35.1	29.7	18.4	19.298
11.	28.09.2019	177.2	80.9	36.4	23.5	22.3	38.895
12.	01.10.2019	139.4	78.1	32.6	28.4	17.6	58.861
13.	05.10.2019	154.3	77.3	33.1	23.6	20.2	96.227
14.	08.10.2019	193.4	75.4	35.1	21.7	22.7	77.584
15.	12.10.2019	174.3	71.6	29.8	23.4	18.3	115.588
16.	15.10.2019	167.9	75.2	37.9	18.6	21.9	92.871
17.	19.10.2019	138.4	68.4	30.4	19.2	18.7	118.7
18.	22.10.2019	157.3	69.6	28.9	17.8	18.2	125.206
19.	26.10.2019	148.1	84.6	22.7	20.1	21.9	121.558
20.	29.10.2019	132.4	79.1	29.1	23.7	16.4	114.857
21.	02.11.2019	170.6	72.9	32.5	22.8	15.8	121.507
22.	05.11.2019	176.2	86.4	29.4	24.6	16.4	117.065
23.	09.11.2019	160.4	72.5	30.8	20.4	18.3	130.186
24.	12.11.2019	187.9	81.3	35.4	23.9	13.7	158.778
26.	16.11.2019	170.3	72.6	26.1	17.3	14.8	138.444
27.	19.11.2019	149.3	83.2	22.5	32.4	23.4	129.359
28.	23.11.2019	142.3	72.4	29.4	28.1	22.8	124.799
29.	26.11.2019	175.6	81.5	24.6	31.4	26.4	147.995
30.	30.11.2019	165.3	79.2	24	19.6	17.3	154.932
31.	03.12.2019	183.2	82.4	31.6	22.4	21.5	130.071
32.	07.12.2019	140.2	73	23.4	24.1	15.2	149.063
33.	10.12.2019	150.8	70.2	28.6	23.8	21.8	158.605
34.	14.12.2019	183.4	80.9	39.4	20.1	16.4	161.596

RESULT INTERPRETATION					
No. of Observations	34	34	34	34	34
Min Concentration	132.4	68.4	22.4	12.9	13.7
Max Concentration	193.4	90.1	39.4	32.4	26.4
98 <sup>th</sup> Percentile	187.9	89.4	37.9	31.4	22.8
Arithmetic Mean	163.9	77.5	30.1	22.6	19.4
Std. Deviation	15.964214	5.6658784	4.6425792	4.5651409	3.0125024



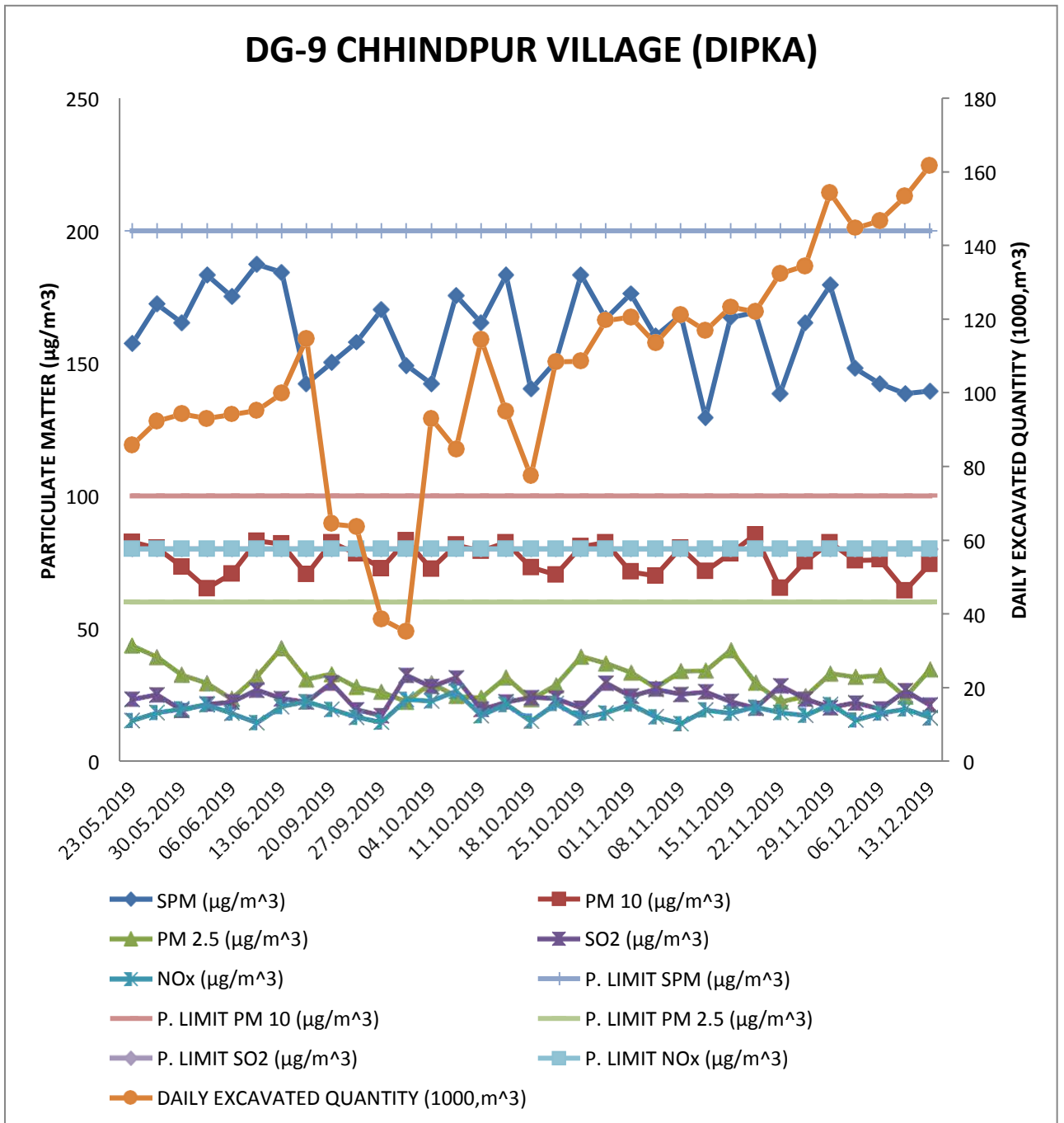
Name of Location (D-8)	D-8 KATKIDABRI VILLAGE (DIPKA)						
Sr. No.	Date of Sampling	SPM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	DAILY EXCAVATED QUANTITY
Unit		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	(1000,m <sup>^3</sup> )
<b>GSR 826 (E)</b>		-	100	60	80	80	-
1.	24.05.2019	171.3	78.3	29.1	31.2	19.2	99.556
2.	28.05.2019	173.2	86.4	31.2	18.5	11.9	85.248
3.	31.05.2019	162.3	82.4	42.8	20.6	12.4	88.063
4.	04.06.2019	181.9	92.4	46.1	20.1	15.4	99.364
5.	07.06.2019	165.4	69.2	28.1	17.5	11.9	89.043
6.	11.06.2019	172.6	70.2	31.5	18.5	12.6	95.566
7.	14.06.2019	180.9	75.4	29.4	13.2	9.4	96.576
8.	17.09.2019	170.2	86.4	42.3	16.5	10.7	0.876
9.	21.09.2019	176.4	80.1	39.1	19.5	11.6	71.522
10.	24.09.2019	140.3	65.8	27.9	20.4	12.5	19.298
11.	28.09.2019	162.8	70.8	29.1	23.1	13.5	38.895
12.	01.10.2019	160.7	72.9	26.1	21.5	11.7	58.861
13.	05.10.2019	140.7	81.2	44.6	22.9	13.6	96.227
14.	08.10.2019	151.2	67.3	33.1	24.5	19.5	77.584
15.	12.10.2019	156.8	80.2	39.1	29.3	22.1	115.588
16.	15.10.2019	165.4	70.4	30.8	22.1	16.2	92.871
17.	19.10.2019	176.4	75.9	29.4	30.1	11.5	118.7
18.	22.10.2019	160.4	81.2	43.1	28.4	13.4	125.206
19.	26.10.2019	165.8	78.1	31.7	25.1	18.4	121.558
20.	29.10.2019	160.4	72.4	29.4	19.6	11.2	114.857
21.	02.11.2019	150.7	75.2	30.6	28.4	13.5	121.507
22.	05.11.2019	162.4	69.4	31.8	15.6	10.5	117.065
23.	09.11.2019	150.4	73.4	28.4	19.5	11.6	130.186
24.	12.11.2019	140.2	78.2	33.4	32.5	20.1	158.778
26.	16.11.2019	145.3	71.2	31.8	30	10.6	138.444
27.	19.11.2019	151.8	63.4	23.7	26.5	15.4	129.359
28.	23.11.2019	167.2	81.2	32.9	18.5	13.5	124.799
29.	26.11.2019	152.3	83.7	31.7	19.8	12.6	147.995
30.	30.11.2019	153.4	81.9	22.6	23.4	10.5	154.932
31.	03.12.2019	142.5	75.6	39.8	18.4	13.8	130.071
32.	07.12.2019	154.3	83.4	41.6	22.5	14.5	149.063
33.	10.12.2019	153.2	74.3	37.8	16.9	16.9	158.605
34.	14.12.2019	162.4	71.5	22.1	17.3	14.5	161.596

RESULT INTERPRETATION					
No. of Observations	34	34	34	34	34
Min Concentration	140.2	63.4	22.1	13.2	9.4
Max Concentration	181.9	92.4	46.1	32.5	22.1
98 <sup>th</sup> Percentile	180.9	86.4	44.6	31.2	20.1
Arithmetic Mean	160.03636	76.345455	33.0939394	22.178788	13.839394
Std. Deviation	11.697217	6.6103182	6.4521285	4.9912272	3.133283



Name of Location (DG-9)	DG-9 CHHINDPUR VILLAGE (DIPKA)						
Sr. No.	Date of Sampling	SPM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	DAILY EXCAVATED QUANTITY
Unit		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	(1000,m <sup>3</sup> )
<b>GSR 826 (E)</b>		-	100	60	80	80	-
1.	23.05.2019	157.3	82.6	43.5	23.4	15.4	85.738
2.	27.05.2019	172.3	80.3	39.2	25.1	18.4	92.293
3.	30.05.2019	165.2	73.2	32.5	19.3	19.8	94.205
4.	03.06.2019	183.4	65.1	29.4	21.6	21.4	93.019
5.	06.06.2019	175.2	70.6	23.6	22.4	18.2	94.087
6.	10.06.2019	187.3	83	31.8	26.8	14.6	95.145
7.	13.06.2019	184.3	81.9	42.6	23.7	20.7	99.801
8.	16.09.2019	142.3	70.3	30.8	22.4	22.5	114.661
9.	20.09.2019	150.2	82.4	32.8	29.4	19.7	64.414
10.	23.09.2019	157.9	78.2	27.9	19.5	16.7	63.651
11.	27.09.2019	170.3	72.6	26.1	17.3	14.8	38.546
12.	30.09.2019	149.3	83.2	22.5	32.4	23.4	35
13.	04.10.2019	142.3	72.4	29.4	28.1	22.8	93.026
14.	07.10.2019	175.6	81.5	24.6	31.4	26.4	84.709
15.	11.10.2019	165.3	79.2	24	19.6	17.3	114.328
16.	14.10.2019	183.2	82.4	31.6	22.4	21.5	94.824
17.	18.10.2019	140.2	73	23.4	24.1	15.2	77.303
18.	21.10.2019	150.8	70.2	28.6	23.8	21.8	108.345
19.	25.10.2019	183.4	80.9	39.4	20.1	16.4	108.573
20.	28.10.2019	166.9	82.4	36.8	29.4	18.3	119.579
21.	01.11.2019	176.3	71.3	33.4	24.6	21.6	120.502
22.	04.11.2019	160.2	69.8	27.6	27.1	16.8	113.4
23.	08.11.2019	168.2	80.4	33.9	25.3	14.3	121.1
24.	11.11.2019	129.5	71.6	34.1	26.1	19.4	116.874
25.	15.11.2019	167.3	78.2	41.8	22.6	18.2	123.214
26.	18.11.2019	169.3	85.4	29.5	20.1	20.5	122.062
27.	22.11.2019	138.6	65.2	22.4	28.4	18.4	132.356
28.	25.11.2019	165.2	75.2	24.6	23.5	17.4	134.454
29.	29.11.2019	179.4	82.4	33	20.3	21.5	154.237
30.	02.12.2019	148.2	75.6	31.7	22.1	15.6	144.688
31.	06.12.2019	142.3	75.9	32.3	19.8	18.2	146.624
32.	09.12.2019	138.6	64.3	24.4	26.5	19.8	153.287
33.	13.12.2019	139.5	74.2	34.6	21.2	16.5	161.684

RESULT INTERPRETATION					
No. of Observations	33	33	33	33	33
Min Concentration	129.5	64.3	22.4	17.3	14.3
Max Concentration	187.3	85.4	43.5	32.4	26.4
98 <sup>th</sup> Percentile	184.3	83	42.6	31.4	23.4
Arithmetic Mean	161.37273	76.209091	31.0242424	23.9333333	18.893939
Std. Deviation	16.452646	5.9553738	5.91565879	3.7373676	2.905484

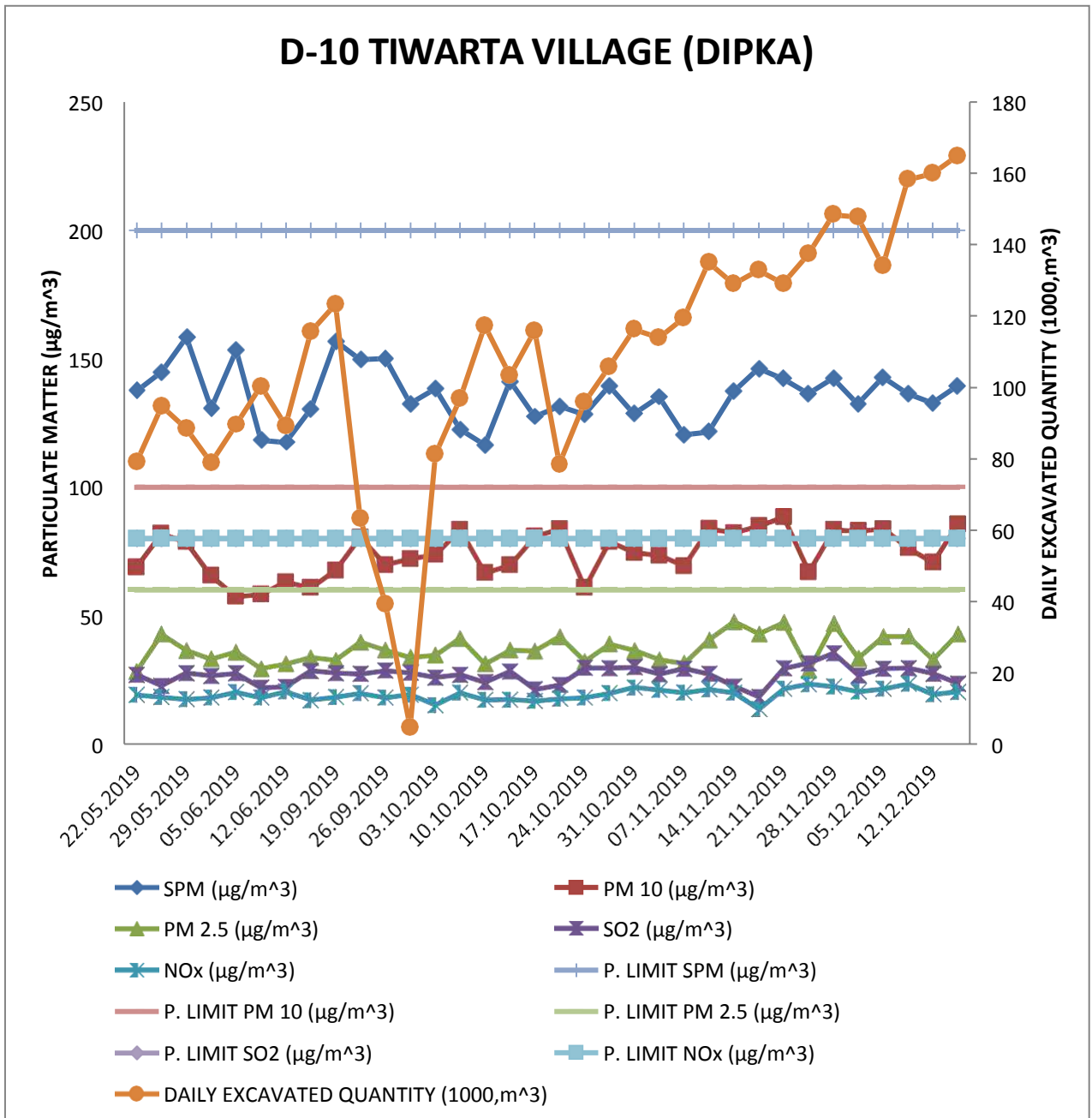


Name of Location (D-10)	D-10 TIWARTA VILLAGE (DIPKA)						
Sr. No.	Date of Sampling	SPM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	DAILY EXCAVATED QUANTITY
Unit		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	(1000,m <sup>3</sup> )
<b>GSR 826 (E)</b>		-	100	60	80	80	-
1.	22.05.2019	137.6	68.7	28.3	27	19.3	79.117
2.	26.05.2019	144.9	81.6	42.7	22.8	18.4	94.669
3.	29.05.2019	158.4	78.4	36.4	27.7	17.5	88.407
4.	02.06.2019	130.7	65.4	33.1	26.6	18.2	78.79
5.	05.06.2019	153.4	57.3	35.8	27.6	20.3	89.613
6.	09.06.2019	110.9	58.1	29.4	22	18.2	100.392
7.	12.06.2019	117.5	62.9	31.2	22.4	20.5	89.316
8.	15.09.2019	130.4	60.7	33.7	28.5	17.2	115.582
9.	19.09.2019	156.9	67.4	32.6	27.7	18.4	123.259
10.	22.09.2019	149.7	80.2	39.7	27.4	19.9	63.301
11.	26.09.2019	150.2	69.5	36.5	28.6	18.2	39.282
12.	29.09.2019	132.6	71.9	33.8	27.8	19.4	4.723
13.	03.10.2019	138.4	73.5	34.6	26	15.3	81.187
14.	06.10.2019	122.5	83.2	41.1	27	20.1	96.829
15.	10.10.2019	116.5	66.5	31.2	24.2	17.3	117.264
16.	13.10.2019	141.3	69.4	36.5	28.3	17.4	103.339
17.	17.10.2019	127.5	80.5	36.2	21.4	16.9	115.878
18.	20.10.2019	131.5	83.4	41.8	23.1	17.8	78.522
19.	24.10.2019	128.4	60.7	32.2	29.7	18.2	95.79
20.	27.10.2019	139.5	78.5	38.9	29.6	19.9	105.834
21.	31.10.2019	128.6	74.2	36.4	29.9	22.1	116.276
22.	03.11.2019	135.2	73.2	32.8	27.3	21.2	113.916
23.	07.11.2019	120.5	69.1	31.4	29.4	20.1	119.409
24.	10.11.2019	121.6	83.5	40.5	27.4	21.4	135.052
25.	14.11.2019	137.3	81.9	47.6	22.6	20.1	129.016
26.	17.11.2019	146.2	84.6	42.9	18.5	13.7	132.91
27.	21.11.2019	142.3	88.1	47.2	29.5	21.6	129.111
28.	24.11.2019	136.4	66.8	28.6	31.5	23.4	137.316
29.	28.11.2019	142.5	83.1	46.8	35.4	22.5	148.375
30.	01.12.2019	132.4	82.7	33.5	26.8	20.5	147.776
31.	05.12.2019	142.8	83.4	41.8	29.4	21.6	134.137
32.	08.12.2019	136.5	76.1	41.9	29.6	23.5	158.236
33.	12.12.2019	132.8	70.5	32.8	27.5	19.5	159.924
34.	15.12.2019	139.4	85.4	42.9	23.6	20.4	164.885

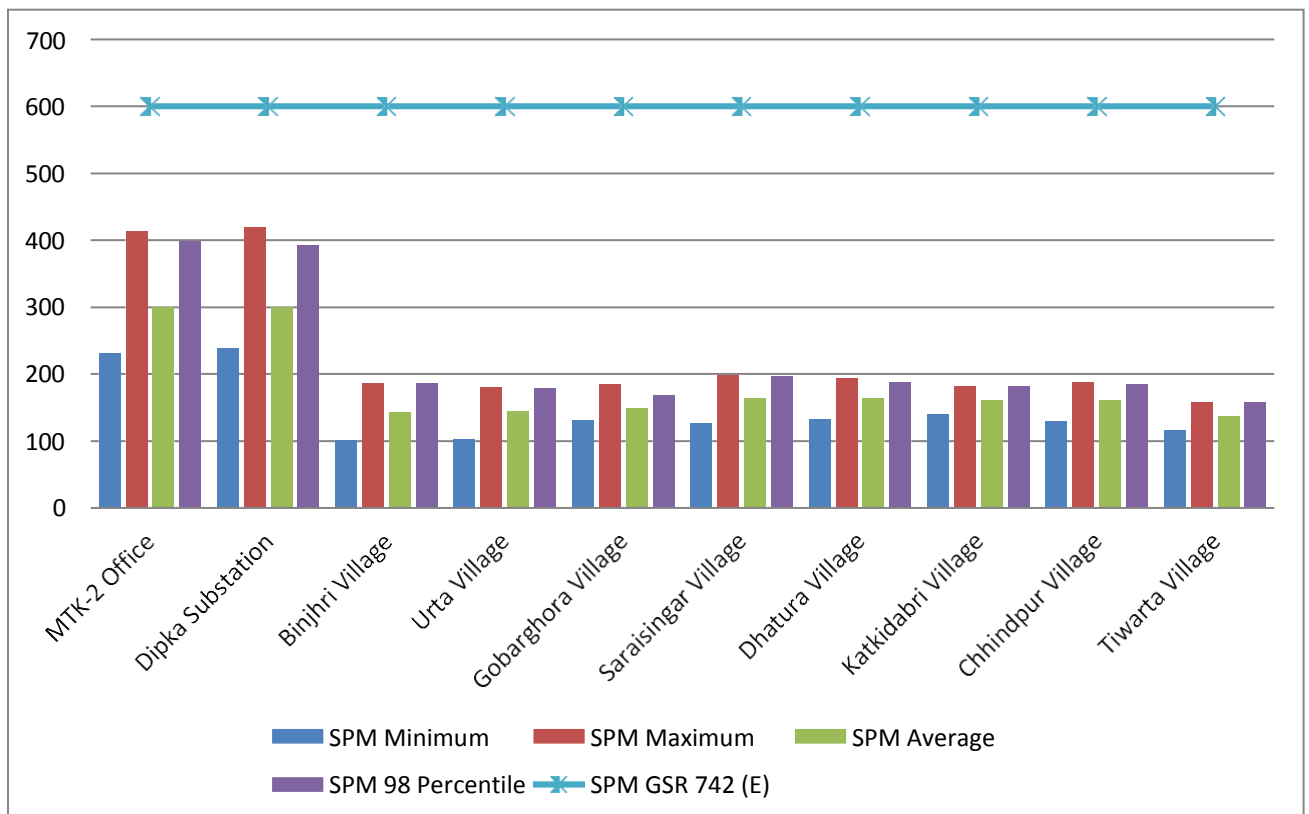


### RESULT INTERPRETATION

No. of Observations	34	34	34	34	34
Min Concentration	116.5	57.3	28.3	18.5	13.7
Max Concentration	158.4	88.1	47.6	35.4	23.5
98 <sup>th</sup> Percentile	156.9	85.4	42.7	31.5	21.6
Arithmetic Mean	135.9	74.1	36.8	26.8	19.4
Std. Deviation	10.96	8.77	5.39	3.34	2.17

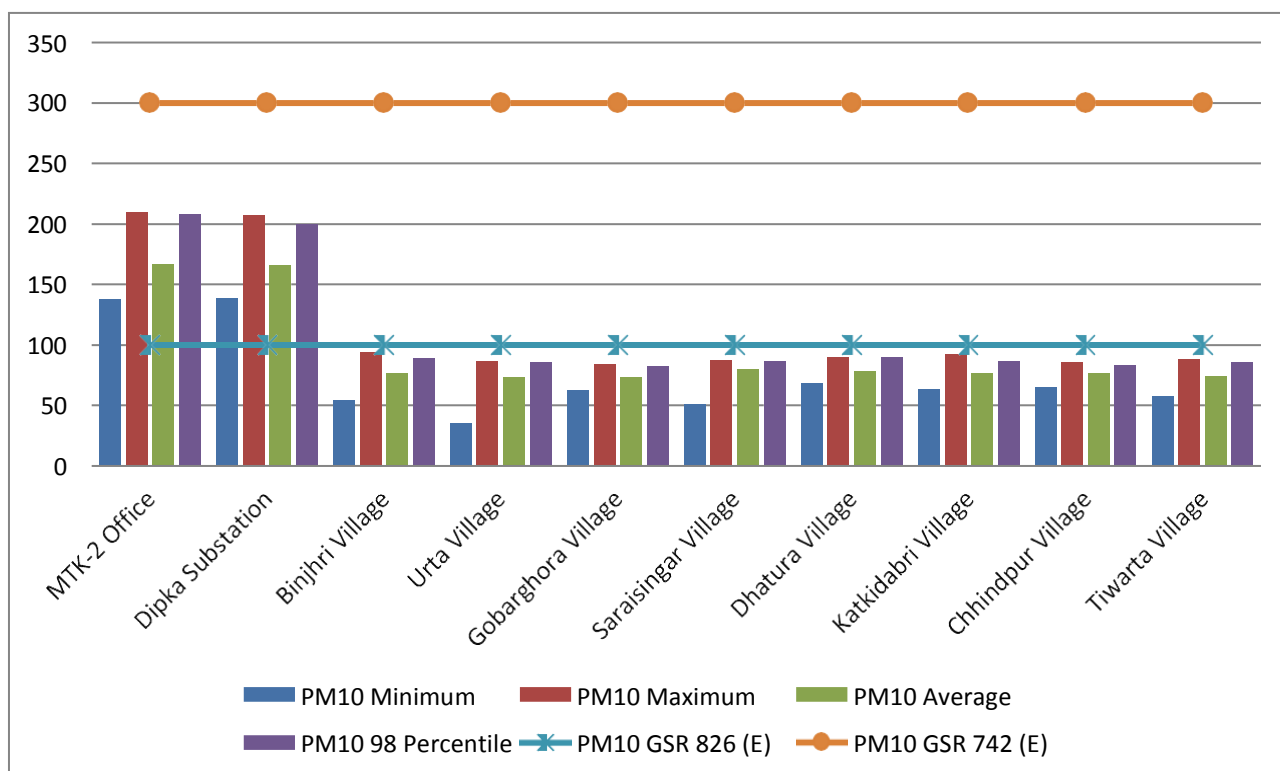


Suspended Particulate Matter					
Site	Minimum	Maximum	Average	98 Percentile	GSR 742 (E)
MTK-2 Office	230.4	412.4	299.2	397.8	600
Dipka Substaion	238.2	418.7	298.8	391.2	600
Binhri Village	101.2	186	143	185.6	NA
Urta Village	101.4	179.4	144.6	178.2	NA
Gobarghora Village	130.5	183.9	148.4	168.7	NA
Saraisingar Village	126.4	198.1	164.2	196.4	NA
Dhatura Village	132.4	193.4	163.9	187.9	NA
Katkidabri Village	140.2	181.9	160	180.9	NA
Chhindpur Village	129.5	187.3	161.4	184.3	NA
Tiwarta Village	116.5	158.4	135.9	156.9	NA



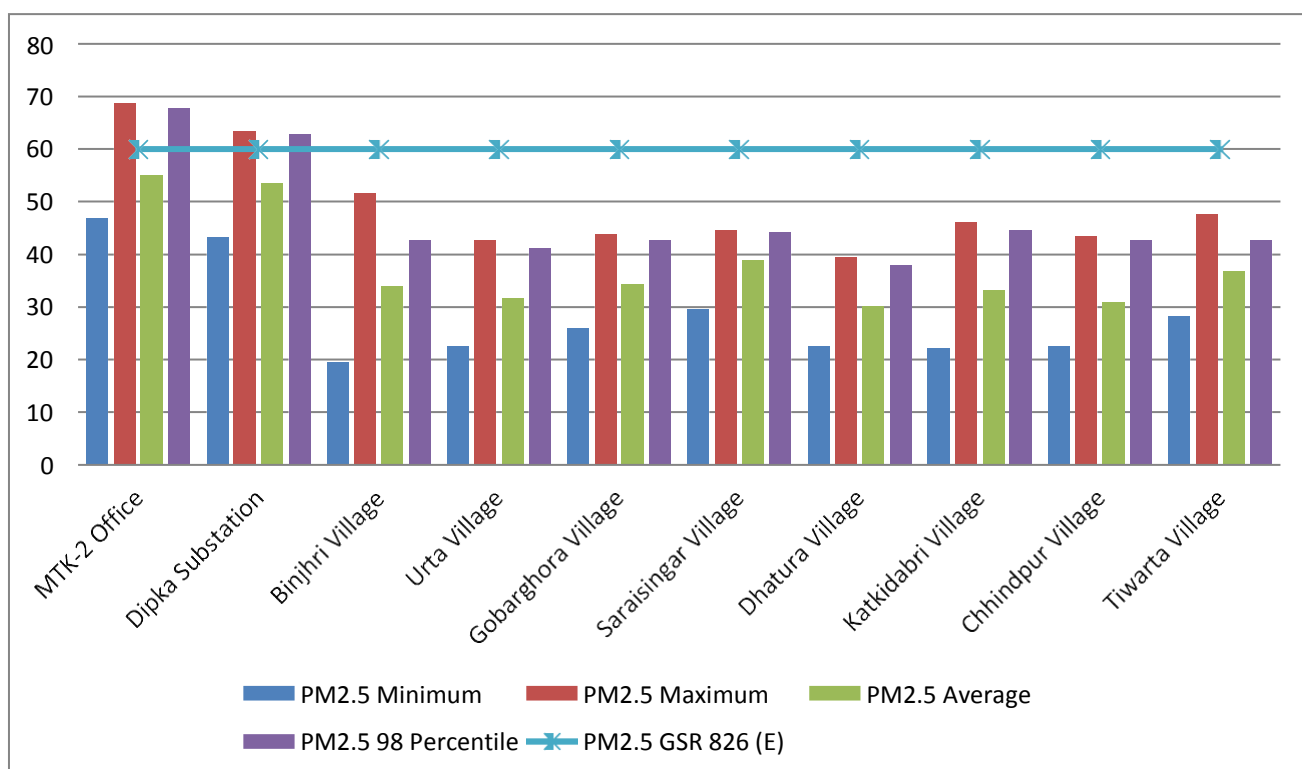
Graph 1: Suspended Particulate Matter (SPM)

Particulate Matter (PM10)						
Site	Minimum	Maximum	Average	98 Percentile	GSR 826 (E)	GSR 742 (E)
MTK-2 Office	137.8	209.7	166.4	207.6	NA	300
Dipka Substaion	138.4	206.7	165.9	199.4	NA	300
Binhri Village	54.2	93.4	76.5	88.7	100	NA
Urta Village	35.2	86.1	73.4	85.4	100	NA
Gobarghora Village	62.4	83.7	73.1	82.3	100	NA
Saraisingar Village	50.8	87.3	79.7	86.4	100	NA
Dhatura Village	68.4	90.1	77.5	89.4	100	NA
Katkidabri Village	63.4	92.4	76.4	86.4	100	NA
Chhindpur Village	64.3	85.4	76.2	83	100	NA
Tiwarta Village	57.3	88.1	74.1	85.4	100	NA



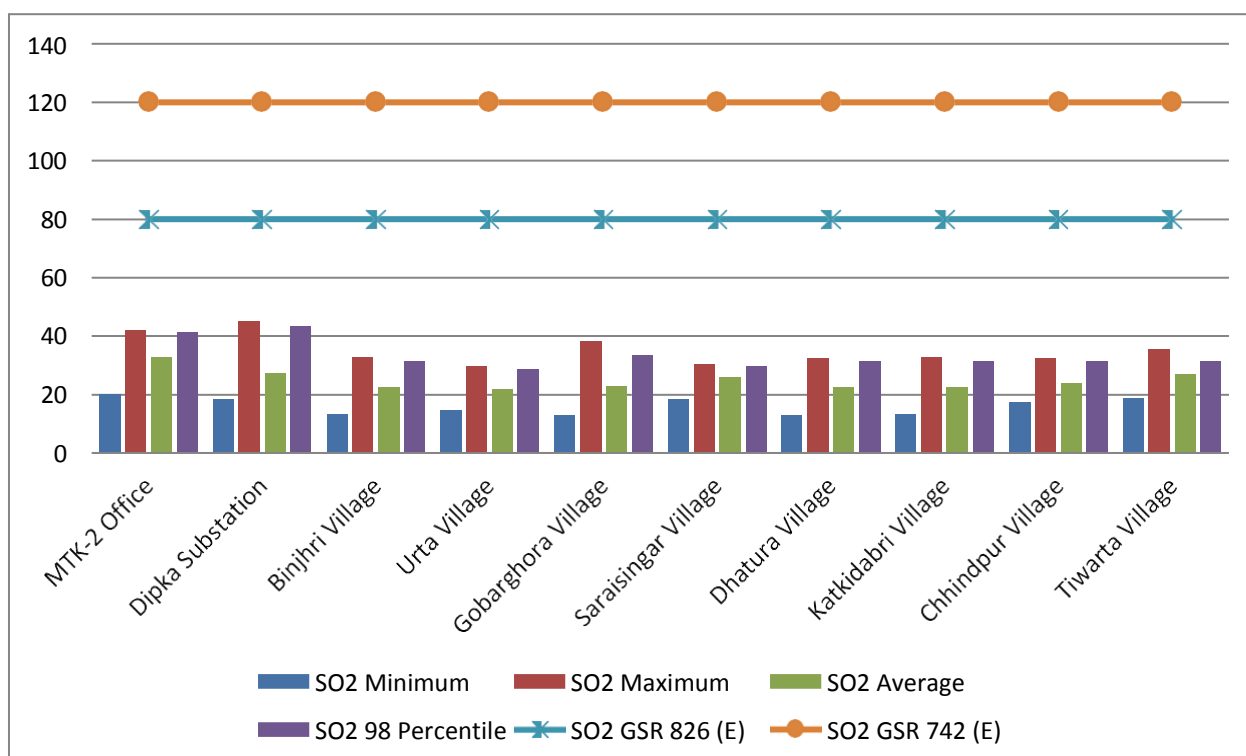
**Graph 2: Particulate Matter (PM<sub>10</sub>)**

Particulate Matter (PM2.5)					
Site	Minimum	Maximum	Average	98 Percentile	GSR 826 (E)
MTK-2 Office	46.8	68.7	54.9	67.8	NA
Dipka Substaion	43.2	63.4	53.5	62.8	NA
Binjhri Village	19.4	51.6	34	42.6	60
Urta Village	22.4	42.8	31.5	41.2	60
Gobarghora Village	25.9	43.9	34.3	42.8	60
Saraisingar Village	29.5	44.6	38.9	44.2	60
Dhatura Village	22.4	39.4	30.1	37.9	60
Katkidabri Village	22.1	46.1	33.1	44.6	60
Chhindpur Village	22.4	43.5	31	42.6	60
Tiwarta Village	28.3	47.6	36.8	42.7	60



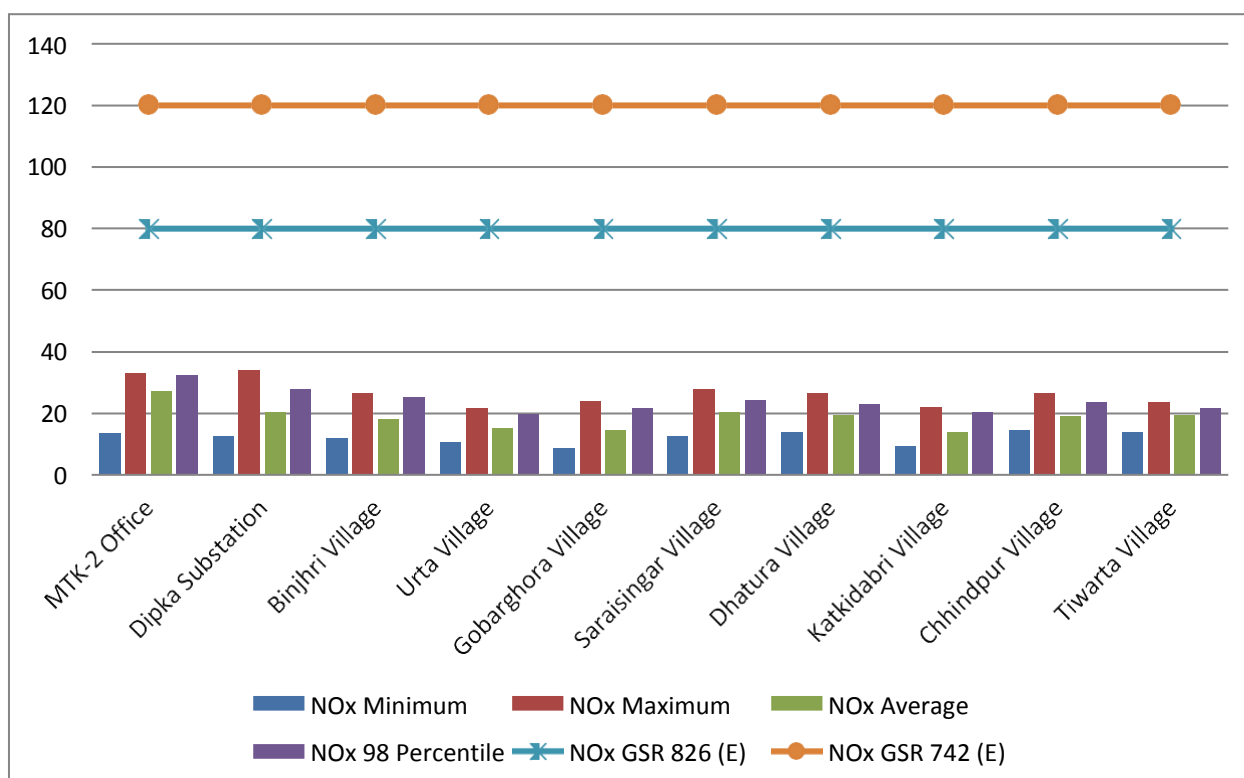
**Graph 3: Particulate Matter (PM<sub>2.5</sub>)**

Sulphur Dioxide (SO <sub>2</sub> )						
Site	Minimum	Maximum	Average	98 Percentile	GSR 826 (E)	GSR 742 (E)
MTK-2 Office	19.8	42	32.9	41.2	NA	120
Dipka Substaion	18.2	44.8	27.3	43.2	NA	120
Binhri Village	13.2	32.5	22.5	31.2	80	NA
Urta Village	14.5	29.8	21.9	28.7	80	NA
Gobarghora Village	12.6	38.4	22.7	33.4	80	NA
Saraisingar Village	18.1	30.1	26	29.7	80	NA
Dhatura Village	12.9	32.4	22.6	31.4	80	NA
Katkidabri Village	13.2	32.5	22.2	31.2	80	NA
Chhindpur Village	17.3	32.4	23.9	31.4	80	NA
Tiwarta Village	18.5	35.4	26.9	31.5	80	NA



**Graph 4: Sulphur Dioxide (SO<sub>2</sub>)**

Oxides of Nitrogen (NO <sub>x</sub> )						
Site	Minimum	Maximum	Average	98 Percentile	GSR 826 (E)	GSR 742 (E)
MTK-2 Office	13.5	32.8	27.1	32.5	NA	120
Dipka Substaion	12.4	33.8	20.3	27.9	NA	120
Binjhri Village	11.8	26.5	18.1	25.1	80	NA
Urta Village	10.5	21.6	14.9	19.5	80	NA
Gobarghora Village	8.5	23.8	14.5	21.6	80	NA
Saraisingar Village	12.5	27.8	20.2	24.3	80	NA
Dhatura Village	13.7	26.4	19.4	22.8	80	NA
Katkidabri Village	9.4	22.1	13.8	20.1	80	NA
Chhindpur Village	14.3	26.4	18.9	23.4	80	NA
Tiwarta Village	13.7	23.5	19.4	21.6	80	NA



**Graph 5: Oxides of Nitrogen (NO<sub>x</sub>)**

Air Quality Index (AQI)				
Code	Name of Location	Minimum	Maximum	Average
D1	MTK-2 Office	125	173	144
D2	Dipka Substaion	126	171	144
DG3	Binjhri Village	54	93	77
D4	Urta Village	37	86	73
D5	Gobarghora Village	62	83	73
DG6	Saraisingar Village	51	87	80
D7	Dhatura Village	68	90	78
D8	Katkidabri Village	63	92	76
DG9	Chhindpur Village	64	85	76
D10	Tiwarta Village	57	88	74

The air quality index, its categories, and associated health impacts are under:

### AQI INDEXES, CATEGORIES, AND ASSOCIATED HEALTH IMPACTS

Air Quality Index Values	AirQuality Index Categories	Associated Health Impacts
0-50	Good	Minimal Impact
51-100	Satisfactory	May cause minor breathing discomfort to sensitive people
101-200	Moderately Polluted	May cause breathing discomfort to the people with lung disease such as asthma and discomfort to people with heart disease, children and older adults
201-300	Poor	May cause breathing discomfort to people on prolonged exposure and discomfort to people with heart disease
301-400	Very Poor	May cause respiratory illness to the people on prolonged exposure. The effect may be more pronounced in people with lung and heart diseases
401-500	Severe	May cause respiratory effects even on healthy people and serious health impacts on people with lung/heart diseases. The health impacts may be experienced even during light physical activity

## 5.2.2 ASSESMENT OF WATER QUALITY

The locations of the water quality monitoring stations have been provided below. The project area contains seasonal nallah, which ultimately joins river lilagarh.

### WATER SAMPLING LOCATIONS

S. No.	Name of the sites
D1	BATARI VILLAGE NEAR PRATHMIK PATHSALA
D2	ETP , DIPKA AREA (WATER IN)
D3	SIKRI POND
D4	JHABAR VILLAGE NEAR HEALTH CENTRE
D5	COAL FACE (LOWER KUSMUNDA COAL FACE)
D6	MAIN SUMP
D7	LEELAGARH RIVER TOP BENCH (DOWNSTREAM)
D8	CISF POND
D9	ETP, SETTLING TANK
D10	ETP, OUTLET
D11	SUMP WATER DISCHARGE POINT NEAR SUBSTATION NI-1

The water quality of the study area has been surveyed, and status is as under:

#### Drinking-Water Quality

#### STATUS OF DRINKING WATER QUALITY

Sl. No.	Parameters	Value		Permissible Level*
		Minimum	Maximum	
1	pH	6.32	6.56	6.5-8.5
2	Turbidity (NTU)	<1	<1	1
3	Total Dissolved Solids (mg/L)	146	232	500
4	Total Hardness (as CaCO <sub>3</sub> ), mg/L	148.2	315.3	200
5	Nitrate as NO <sub>3</sub> , mg/L	1.16	2.25	45

\*As per IS 10500:2012, as amended on 1<sup>st</sup> June, 2015

#### Surface Water Quality

#### STATUS OF SURFACE WATER QUALITY

Sl. No.	Parameters	Value		Permissible Level*
		Minimum	Maximum	
1	pH	6.91	7.30	6.5-8.5
2	Total Suspended Solids, mg/L	11.3	33.8	--
3	Total Dissolved Solids (mg/L)	294	644	1500
4	Oil & Grease, mg/L	BDL	BDL	--
5	Dissolved Oxygen, mg/L	4.0	4.6	4.0

\*As per CPCB Classification for designated best use (A to E)



## Mine Water Quality

### STATUS OF MINE WATER QUALITY

Sl. No.	Parameters	Value	Permissible Level
1	pH	7.8	6.5-8.5
2	Nitrate Nitrogen, mg/L	2.4	10.0
3	Biochemical Oxygen Demand, (mg/L)	7.9	30.0
4	Nitrate Nitrogen, mg/L	3.1	10.0
5	Iron, mg/L	<0.06	3.0
6	Manganese, mg/L	1.41	2.0

\*as per Schd VI, Part A under EP Act, 1986

### MONTHLY VARIATION IN PHYSICO-CHEMICAL CHARACTERISTICS OF SURFACE WATER COLLECTED FROM DIFFERENT LOCATION OF THE STUDY AREA (DIPKA AREA)

Parameters	Stretch-I													
	D1							D2						
	JUNE	JUL	AUG	SEP	OCT	NOV	DEC	JUNE	JUL	AUG	SEP	OCT	NOV	DEC
pH (Units)	6.3	6.4	6.5	6.7	6.5	6.4	5.9	6.8	6.7	6.9	6.7	6.5	7.1	6.8
Dissolved Oxygen (mg/l)	4	4.1	4.3	4.5	4.01	4.7	4.0	4.5	4.3	4.6	4.8	5.1	4.7	4.5
TDS (ppm)	108	136	125	152	164	181	101	418	445	447	477	460	455	453
Total Solids (ppm)	140	150	171	165	180	197	103	210	222	245	251	255	215	221
Total Alkalinity (mg/l)	32	34	56	47	43	27	37	40	45	70	78	80	99	89
Total Hardness (mg/l)	105	121	119	148	148	169	49	56	71	82	69	148	151	143
Calcium Hardness (mg/l)	32	35	31	37	34	30	58	60	67	65	64	59	55	57
Chloride (mg/l)	35	30	22	27	26	33	26	49	50	55	70	89	88	82
Nitrate (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.00	0.99	0.95	0.89	1.02	1.03	1.05

**MONTHLY VARIATION IN PHYSICO-CHEMICAL CHARACTERISTICS OF SURFACE  
WATER COLLECTED FROM DIFFERENT LOCATION OF THE STUDY AREA (DIPKA AREA)**

Parameters	Stretch-II													
	D3							D4						
	JUNE	JUL	AUG	SEP	OCT	NOV	DEC	JUNE	JUL	AUG	SEP	OCT	NOV	DEC
pH (Units)	5.9	7.1	7.3	6.9	6.8	7.2	6.5	6.5	6.3	6.2	6.9	6.5	6.6	6.4
Dissolved Oxygen (mg/l)	4.31	4.5	4.9	4.6	5.1	4.9	5.2	4.0	4.1	4.2	4.0	4.6	4.7	4.3
TDS (ppm)	221	220	223	237	272	247	245	112	114	135	146	150	147	146
Total Solids (ppm)	132	147	105	118	120	119	121	140	140	139	135	134	131	135
Total Alkalinity (mg/l)	34	35	36	40	55	65	62	32	36	39	40	45	37	38
Total Hardness (mg/l)	56	74	85	87	99	77	85	74	75	71	63	65	69	68
Calcium Hardness (mg/l)	36	39	45	48	50	60	45	65	59	62	65	70	74	75
Chloride (mg/l)	49	50	55	70	89	107	65	80	81	78	75	74	80	82
Nitrate (mg/l)	0.99	1.33	0.45	0.75	0.78	0.68	0.65	BDL	BDL	BDL	BDL	BDL	BDL	BDL

**MONTHLY VARIATION IN PHYSICO-CHEMICAL CHARACTERISTICS OF SURFACE  
WATER COLLECTED FROM DIFFERENT LOCATION OF THE STUDY AREA (DIPKA AREA)**

Parameters	Stretch-III													
	D5							D6						
	JUNE	JUL	AUG	SEP	OCT	NOV	DEC	JUNE	JUL	AUG	SEP	OCT	NOV	DEC
pH (Units)	6.9	6.5	6.3	6.4	6.9	6.8	6.5	5.9	6.3	6.8	6.9	6.7	7.1	6.9
Dissolved Oxygen (mg/l)	5.1	4.9	4.5	4.7	4.7	4.6	5.1	5.0	5.2	5.3	4.6	4.6	4.1	4.4
TDS (ppm)	300	257	305	356	389	378	330	401	485	496	552	556	557	460
Total Solids (ppm)	220	221	223	220	226	247	240	301	300	299	337	334	305	245
Total Alkalinity (mg/l)	56	75	74	71	68	67	45	80	89	105	109	145	147	49
Total Hardness (mg/l)	58	59	70	68	65	63	68	60	68	69	70	71	65	46
Calcium Hardness (mg/l)	69	60	65	70	72	63	47	32	35	38	39	49	45	16
Chloride (mg/l)	80	105	126	125	131	135	22	135	137	134	131	133	132	126
Nitrate (mg/l)	1.20	101	0.99	0.98	0.45	0.68	1.20	0.69	0.54	1.00	1.03	1.20	1.31	1.65

**MONTHLY VARIATION IN PHYSICO-CHEMICAL CHARACTERISTICS OF SURFACE  
WATER COLLECTED FROM DIFFERENT LOCATION OF THE STUDY AREA (DIPKA AREA)**

Parameters	Stretch-IV													
	D7							D8						
	JUNE	JUL	AUG	SEP	OCT	NOV	DEC	JUNE	JUL	AUG	SEP	OCT	NOV	DEC
pH (Units)	6.3	6.5	6.8	6.4	6.8	7.1	6.8	6.5	6.6	6.7	6.9	7.0	6.8	6.8
Dissolved Oxygen (mg/l)	5.2	5.1	5.6	5.5	5.3	5.5	5.4	4.0	4.1	4.2	4.5	4.6	4.5	4.1
TDS (ppm)	335	330	333	340	345	347	334	305	304	307	309	310	311	312
Total Solids (ppm)	245	240	247	246	250	255	256	201	204	205	207	210	211	201
Total Alkalinity (mg/l)	36	45	47	49	39	38	36	36	39	40	45	47	48	47
Total Hardness (mg/l)	75	68	65	71	70	66	68	45	47	55	58	59	65	62
Calcium Hardness (mg/l)	42	47	43	38	35	37	38	65	55	45	60	62	56	52
Chloride (mg/l)	20	22	26	27	29	30	29	25	27	29	30	32	35	34
Nitrate (mg/l)	1.30	1.20	1.21	1.02	1.30	1.20	1.19	1.00	1.02	1.50	1.26	1.32	1.08	1.21

**MONTHLY VARIATION IN PHYSICO-CHEMICAL CHARACTERISTICS OF SURFACE  
WATER COLLECTED FROM DIFFERENT LOCATION OF THE STUDY AREA (DIPKA AREA)**

Parameters	Stretch-V													
	D9							D10						
	JUNE	JUL	AUG	SEP	OCT	NOV	DEC	JUNE	JUL	AUG	SEP	OCT	NOV	DEC
pH (Units)	6.5	6.6	6.8	5.9	7.0	7.1	6.2	6.1	6.2	5.9	6.4	6.5	6.7	6.8
Dissolved Oxygen (mg/l)	4.1	4.2	4.5	4.6	4.5	4.3	4.2	4.2	4.3	4.0	4.7	4.8	5.0	4.7
TDS (ppm)	201	220	197	225	240	237	213	195	194	193	200	201	204	203
Total Solids (ppm)	105	108	104	112	114	121	120	101	102	103	105	106	104	108
Total Alkalinity (mg/l)	47	45	56	55	53	51	52	35	38	37	39	41	39	42
Total Hardness (mg/l)	47	41	43	45	46	48	49	46	47	49	51	55	56	54
Calcium Hardness (mg/l)	74	65	68	71	76	72	71	56	57	58	54	52	59	58
Chloride (mg/l)	26	25	32	31	28	27	29	23	25	26	27	29	28	29
Nitrate (mg/l)	0.23	0.12	0.15	0.25	0.16	0.28	0.31	0.12	0.32	0.21	0.25	0.14	0.35	0.29

**MONTHLY VARIATION IN PHYSICO-CHEMICAL CHARACTERISTICS OF SURFACE  
WATER COLLECTED FROM DIFFERENT LOCATION OF THE STUDY AREA (DIPKA AREA)**

Parameters	Stretch-VI						
	D11						
	JUNE	JUL	AUG	SEP	OCT	NOV	DEC
pH (Units)	6.5	6.6	6.9	7.1	7.2	6.5	6.8
Dissolved Oxygen (mg/l)	4.5	4.3	4.4	4.1	5.0	5.3	5.2
TDS (ppm)	415	450	460	461	468	467	442
Total Solids (ppm)	210	223	245	233	240	241	238
Total Alkalinity (mg/l)	45	47	49	48	49	50	48
Total Hardness (mg/l)	40	45	46	47	45	42	43
Calcium Hardness (mg/l)	17	15	16	18	19	20	19
Chloride (mg/l)	23	25	26	24	25	24	25
Nitrate (mg/l)	1.25	1.45	1.65	1.45	1.49	1.43	1.34

**(WATER QUALITY INDEX AT DIFFERENT MONITORING SITES)**

STATION	MONTH	WQI	STATION	MONTH	WQI
<b>D1</b>	JUNE	39.23	<b>D6</b>	JUNE	52.39
	JUL	40.20		JUL	57.22
	AUG	44.55		AUG	59.61
	SEP	46.64		SEP	61.47
	OCT	45.57		OCT	63.84
	NOV	48.04		NOV	63.65
<b>D2</b>	JUNE	39.78	<b>D7</b>	JUNE	38.57
	JUL	40.57		JUL	39.56
	AUG	45.30		AUG	40.51
	SEP	46.34		SEP	39.59
	OCT	49.90		OCT	39.87
	NOV	52.11		NOV	40.61
<b>D3</b>	JUNE	35.99	<b>D8</b>	JUNE	38.79
	JUL	40.07		JUL	38.39
	AUG	41.88		AUG	38.22
	SEP	44.10		SEP	41.80
	OCT	48.00		OCT	42.53
	NOV	48.62		NOV	40.95

<b>D4</b>	<b>JUNE</b>	<b>36.24</b>	<b>D9</b>	<b>JUNE</b>	<b>40.01</b>
	<b>JUL</b>	<b>35.99</b>		<b>JUL</b>	<b>40.22</b>
	<b>AUG</b>	<b>36.44</b>		<b>AUG</b>	<b>44.13</b>
	<b>SEP</b>	<b>37.00</b>		<b>SEP</b>	<b>42.51</b>
	<b>OCT</b>	<b>37.88</b>		<b>OCT</b>	<b>44.91</b>
	<b>NOV</b>	<b>38.76</b>		<b>NOV</b>	<b>44.62</b>
<b>D5</b>	<b>JUNE</b>	<b>48.92</b>	<b>D10</b>	<b>JUNE</b>	<b>36.13</b>
	<b>JUL</b>	<b>85.63</b>		<b>JUL</b>	<b>35.66</b>
	<b>AUG</b>	<b>50.61</b>		<b>AUG</b>	<b>34.58</b>
	<b>SEP</b>	<b>53.05</b>		<b>SEP</b>	<b>36.85</b>
	<b>OCT</b>	<b>55.35</b>		<b>OCT</b>	<b>37.27</b>
	<b>NOV</b>	<b>53.10</b>		<b>NOV</b>	<b>38.46</b>
<b>D11</b>	<b>JUNE</b>	<b>37.28</b>	<b>D11</b>	<b>SEP</b>	<b>38.75</b>
	<b>JUL</b>	<b>37.19</b>		<b>OCT</b>	<b>41.14</b>
	<b>AUG</b>	<b>38.14</b>		<b>NOV</b>	<b>40.59</b>

## Observations

- **Ground Water (Tube well water and Dug well water)**  
The analyses shows that various physical and chemical parameters are within the permissible limits of Drinking Water Standards (IS:10500-2012).
- **Surface Water**  
The analysis shows that various parameters are within the limits of IS: 2296-1982 (Surface water, Class "C": Tolerance limits for surface waters used for drinking water source with conventional treatment followed by disinfection).
- **Waste Water**  
Samples, EW-1 were collected from effluent water of Dipka OCP. The analysis shows that various parameters are within the limits of General Standards for discharge of Effluents into inland Surface water GSR422€

### 5.2.3 ASSESMENT OF NOISE QUALITY

The status of noise level measured in and around the Dipka Mining area are as under

**Table Details of noise level measurement [in DB (A)]**

DIPKA MINE										
Sl. No	Location	Category	Shift	Min.	Max .	Avera ge	CPCB Noise Standard	Assimilative Capacity		
								Min	Max.	Avera ge
1	CGM OFFICE DIPKA	Industrial	Day	54.99	61.89	58.44	75	13.11	20.01	16.56
			Night	43.08	49.38	46.23	65	15.62	21.92	18.77
2	SILO SWITCHING STATION	Industrial	Day	56.17	60.35	58.26	75	14.65	18.83	16.74
			Night	49.29	51.58	50.435	65	13.42	15.71	14.565
3	BINJHRI VILLAGE	Residential	Day	44.8	49.84	47.32	55	5.16	10.2	7.68
			Night	37.43	40.52	38.975	45	4.48	7.57	6.025
4	TIWARTA VILLAGE	Residential	Day	45.11	49.44	47.275	55	5.56	9.89	7.725
			Night	38.75	41.13	39.94	45	3.87	6.25	5.06
5	URTA VILLAGE	Residential	Day	43.84	47.77	45.805	55	7.23	11.16	9.195
			Night	36.99	39.82	38.405	45	5.18	8.01	6.595
6	GOBARGHORA VILLAGE	Residential	Day	46.71	48.47	47.59	55	6.53	8.29	7.41
			Night	36.94	38.32	37.63	45	6.68	8.06	7.37
7	SARASINGAR VILLAGE	Residential	Day	44.98	47.67	46.325	55	7.33	10.02	8.675
			Night	36.91	38.4	37.655	45	6.6	8.09	7.345
8	DHATURA VILLAGE	Residential	Day	44.07	46.52	45.295	55	8.48	10.93	9.705
			Night	35.89	37.97	36.93	45	7.03	9.11	8.07
9	KATKIDABRI VILLAGE	Residential	Day	44.69	47.42	46.055	55	7.58	10.31	8.945
			Night	37.56	39.08	38.32	45	5.92	7.44	6.68
10	CHHINDPUR VILLAGE	Residential	Day	48.14	51.27	49.705	55	3.73	6.86	5.295
			Night	37.53	40.43	38.98	45	4.57	7.47	6.02

	Shift	Average Noise Level	CPCB NOISE STANDARD	Assimilative Capacity
Industrial Area	Day	58.35	75	16.65
	Night	48.3325	65	16.6675

	Shift	Average Noise Level	CPCB NOISE STANDARD	Assimilative Capacity
Residential Area	Day	46.92125	55	8.07875
	Night	38.35438	45	6.645625



Noise level measurements from various stations, as mentioned above, and it is found that noise level at all villages are within permissible limits of the prescribed standards for both day-time and night-time.

## CHAPTER-VI: OUTCOME OF THE STUDY

Large scale mining activities and continuous industrialization in some of the coalfields have largely damaged many natural ecosystems. Opencast coal mining, in general, results in significant visual and ecological impacts. It drastically damages flora and fauna, thereby reducing biodiversity and disrupting fundamental ecological relationships. The signs of stress on scarce natural resources are evident from the deteriorating air quality, soil degradation, polluted rivers and streams, and the general status of the environment in various regions. The envisaged benefits from large scale coal mining projects cannot be fully realized unless they are environmentally and socially sound and sustainable. It is now well recognized that, for sustainable development and optimal use of natural resources, environmental considerations are required to be integrated into the planning, designing, and implementation of development projects.

Air, Water, and Soil are the major components of ecosystem services, and they affect the carrying capacity of a particular area. Field studies and preliminary laboratory investigations have revealed that the impact of mining activities in the study area is maximum on air quality in comparison to water and soil. Water quality in the study area is not severe and can be controlled easily with the application of conventional control processes, and the soil is the least affected parameter. Since air is the most affected parameter by opencast coal mining activities, hence in this report detailed investigations have been carried out on this major air quality parameters with special reference to particulate matters of different sizes (SPM, PM10 and PM 2.5). Among gaseous pollutants, SO<sub>2</sub> and NO<sub>x</sub> have also been monitored. The rest of the parameters related to water and soil have also been included in the report.

The impact of mining and related activities on the Carrying Capacity of the region surrounding the Gevra and Dipka OCP's of the Korba coalfield area revealed an insignificant impact in the buffer zone of the mines. The parameters monitored for assessing the impact on carrying capacity with respect to air, water, soil, and noise levels at all selected sampling sites were found to be well within the permissible limits. The assimilative capacities, along with other parameters of these mines are described below:

### 6.1 CARRYING CAPACITY OF AIR

The carrying capacity in Gevra and Dipka OCP's coal mining region has been assessed by taking into account the proposed mine leasehold of the projects and area of 10 km radius around the projects as the study area. The projects fall under Korba coalfield of SECL and have tremendous potential for future growth in terms of coal production. The air shed profiles of projects have been estimated, and the assimilative potential of area based on **Coal Mine Standards** and **National Ambient Air Quality Standards** have been determined.

#### (i) For Gevra OCP

The baseline ambient air quality of the study area shows that the present assimilative potential in terms of the Air Quality Index varies from 36 to 49. The Assimilative Potential

for both—PM<sub>10</sub> and PM<sub>2.5</sub> have been estimated. It has been noted that the Assimilative Potential in terms of PM<sub>10</sub> is still available in the area as it ranges from 27.9 µg/m<sup>3</sup> to 144.9 µg/m<sup>3</sup>. The Assimilative Potential of the atmosphere at selected receptors in terms of PM<sub>2.5</sub> varies from 20.2 µg/m<sup>3</sup> to 29.9 µg/m<sup>3</sup>. The above results show that the atmosphere will have sufficient Assimilative Potential in terms of the level of PM<sub>2.5</sub> and PM<sub>10</sub> with the current control measures adopted in mine for air quality management.

## **(ii) For Dipka OCP**

The baseline ambient air quality in the study area shows that the present Assimilative Potential in terms of the Air Quality Index varies from 22 to 63. The Assimilative Potential for both—PM<sub>10</sub> and PM<sub>2.5</sub> have been estimated. It has been observed that the Assimilative Potential with control measures in terms of PM<sub>10</sub> is still available in the area, and it ranges from 28.1 µg/m<sup>3</sup> to 161.2 µg/m<sup>3</sup>. The Assimilative Potential of the atmosphere at selected receptors in terms of PM<sub>2.5</sub> varies from 20.3 µg/m<sup>3</sup> to 29.1 µg/m<sup>3</sup>. The above results show that the atmosphere in the study has sufficient Assimilative Potential in terms of the level of PM<sub>2.5</sub> and PM<sub>10</sub>.

Air Quality is the critical limiting parameter for the future growth of mining in the region. The Air Quality Index based on the Environmental Monitoring Report has been determined, and the results exhibit poor category of Air Quality Index at some sampling sites in the study area. It is proposed that the Air Pollution Control Measures and Air Quality Monitoring reports have to be reviewed at fortnightly intervals to ensure that the air quality in and around the mine area remains within the permissible limit.

## **6.2 CARRYING CAPACITY OF WATER**

Gevra coal mining area, consists of seasonal nallahs that ultimately join the Ahiran river, and the Dipka, coal mining area, consists of seasonal nallahs that ultimately join river Lilagarh. The mine water of both OCP's is being utilized to the maximum possible extent in these mines. The competing user requirements for the study area have been assessed with respect to the availability of groundwater and the stages of groundwater development in the core and buffer zones have been estimated to be safe. This shows that the project has ample supportive capacity in terms of groundwater.

The quality of drinking water, surface water, and mine water of the study area have been assessed, and the assimilative capacity of the water basin is enduring and will be able to support mining activities in the area.

## **6.3 NOISE LEVEL IN THE AREA**

The noise level in the study area of the Gevra area has been monitored for eleven receptors – two receptors located within the core zone and the rest nine receptors located in the buffer zone. Similarly, the noise level in the study area of the Dipka area has been monitored for Ten receptors – two receptors located within the core zone and the rest eight

receptors located in the buffer zone.

The values of noise levels were found to be well within the prescribed standards by CPCB at all the sampling sites of the mines. The area exhibits enduring potential in terms of assimilative capacity for the noise environment. However, there are certain pockets where there is no minimum of assimilative capacity. Such receptors need to be protected by providing noise attenuation measures such as the use of thick plantation. It should be three-tier plantation systems consisting of native tree species.

## **6.4 CARRYING CAPACITY IN LANDUSED PATTERN**

### **(i) For Gevra OCP**

The total land cover of the Gevra opencast Project was 4184.486 Ha in which the forest Management Plan, measures have been proposed for reclamation of the mine degraded land and plantation of the available areas to increase the forest area. The post-mining plantation area was 2438.672 Ha. With these measures, it is evident that the project will not have adverse impacts on the carrying capacity of the mining area, as the project has already paid for to create more than twice a forestation as compared to one existing in the project.

### **(i) For Dipka OCP**

The total land cover of the Dipka opencast Project was 1999.293 Ha, in which the forest land cover was 409.056 Ha. In the project report as well as the Environment Management Plan, measures have been proposed for reclamation of the mine degraded land and plantation of the available areas to increase the forest area. The post-mining plantation area was 1777.240 Ha. With these measures, it is evident that the project will not have adverse impacts on the carrying capacity of the mining area, as the project has already paid for to create more than thrice afforestation as compared to one existing in the project.

# **CHAPTER-VII: CONCLUSIONS AND RECOMMENDATIONS**

## **7.1 CONCLUSIONS**

It has been noted from the literature survey that even one million tons per year of coal production from an opencast mine may significantly damage the surrounding eco-system to an extent if proper control measures are not adopted in the mine. It is the control measures adopted at various polluting sources that decide whether the carrying capacity of the eco-system in the mining and surrounding area will be affected or not.

On examining the past mining records of Gevra and Dipka opencast mines, it is evident that due to adoption of the effective pollution control measures in the mines at different levels of excavation, the carrying capacity of the area around the mines was not much affected because most of the important air and water quality parameters of the area were within the permissible levels. Further, from field monitoring data collected with respect to air quality in summer and winter seasons, it is evident that the control measures adopted by the mines at most of the dust generating sources were effective, and the air quality of the area was least affected even at the current production levels. It seems from an interpretation of the collected data that the present coal production level of these mines is least affecting the ecosystem services of both the area of Gevra and Dipka opencast mines. However, if coal production has to be further increased, then additional effective control measures as suggested in the recommendations have to be implemented in both the mines. It may, however, be mentioned that our studies are primarily related to the impact on Air, Water, Soil, and Noise levels as they are the relevant parameters for mining purposes. Some studies were also carried out on the cropping system of the area, and it was noted that normal agricultural activities are continuing in the area.

## **7.2 RECOMMENDATIONS**

In order to reduce the environmental impact on ecosystem services, emphasis should be given to the coal transportation system. If the coal is not damped correctly during transportation, it releases a wide range of coal particle sizes in the environment. The larger particles settle out of air quickly and are hazardous to the workers and those residing in the immediate vicinity of the mine. AQI focuses on the dust of PM10 & PM2.5 particles. Such finer particles (PM10 and PM2.5) are transported further and can cause health hazards. In general, the dust can be controlled in the mines by (i) Sprinkling of water / fine water spray from nozzles to suppress dust re-suspension at the site. (ii) Coal transported with proper cover. The common dust control measures generally used in coal transportation are to cover the coal by a sheet made of either jute, tarpaulin, plastic sheet, or any other effective material. (III) In addition, to avoid the fall of coal from loaded trucks during transportation,

the trucks should not be overloaded. Road surfaces should be well maintained so that the coal loaded trucks are not subjected to jerks. Regular periodic maintenance of the roads used for transportation of coal and overburden has to be done to keep the roads free from potholes. Dust emissions from unpaved surfaces are usually higher than from paved surfaces. In the case of paved surfaces, the dust emissions can be minimized through controlling the movement and handling of fine materials to prevent spillages on to the paved surfaces. Remove mud and dust from the paved area regularly. At present, one sweeping machine is deployed in each area. The effectiveness of the machine is to be improved by increasing its running time, and some more such equipment has to be installed in the future. Fixed and mobile sprinklers have been provided in the mines, some of them are fitted with mist arrangement also. These machines are to be maintained properly for giving good effective results. For effective dust suppression on haul roads and coal transport roads, running time and frequency of different mobile sprinklers have to be studied for different seasons, and machines are deployed accordingly. One long-range mist spray machine is in operation in each area, number of such machines will be helpful to reduce dust pollution as it can cover a large area and deployed at different locations in the mine to suppress the PM10 and PM2.5 levels.

In many cases, the coal has to be transported over several kilometres. Water spraying under such conditions would be major challenges because it needs regular sweeping to assist in reducing re-suspension of dust due to the movement of trucks. To avoid such a problem, truck transportation is replaced by belt conveyors particularly from coal loading points to coal disposal points. In addition, the maintenance of existing conveyor belts should be looked into to avoid the spillage of coal, minimization of break down period of conveyor belts. Dust emissions from conveyors can be caused by wind pick up and through losses during loading, discharge, and transfer points. Some of the options to be considered to minimize dust picked up from conveyors are: (i) Use water spray or sprinklers or enclosures at conveyor transfer points. (ii) Regular clean-up of spillages around the transfer points and any other places where this might occur. (iii) Use of enclosed conveyor (closed belt conveyor system) for coal transportation.

In addition to this, in most of the developed countries, exposure to airborne particulate matter (PM2.5) has become a serious health issue in open cast coal mines. In India, also owing to rising health concerns, particularly in an urban area, the uses of life-saving products are gaining popularity. One such product is Pollution Mask, which filters out airborne particles and prevents workers from exposure to harmful gases. Pollution masks consist of a high-quality filter that fits on face accordingly and work effectively to prevent employees against the inhalation of harmful pollutant particles such as PM2.5.

At the current level of production of 45MT at Gevra and 35MT in Dipka, the environmental control measures adopted by these mines are adequate as per the studies conducted. These control measures are sufficient to keep the environmental parameters Air, Water, Soil, and Noise within the permissible limits. If the further expansion of these projects has to be

considered, then not only some additional equipment has to be deployed in the mines but also innovative control measures available and used in other industries have to be introduced in these mines in combination with the existing control units. The list of some additional control measures to be deployed are long-range fogging machine, mechanical road sweeping machine, wind barrier system, water spraying arrangements at strategic points of dust generation, tyre washing arrangement at exit point of coal, use of closed belt conveyor for coal transportation. The implementation of these dust control technology is expected to result adequate management of dust emission from the mines.

File No. SECL/DA/ENVT/E-office/2020/2031**Coal India Limited**

CIL - eOffice

SOUTH EASTERN COALFIELDS LIMITED

O/O HEAD OF ENVIRONMENT SECTION,DIPKA AREA

---

**SUBJECT**

**Main Category** : APPROVAL AND SANCTION

**Sub Category** : Others / Miscellaneous

**Description** : Proposal and indent for sanction of Rs.45,10,000/- on advance action basis for procurement of Long range misting/fogging blower mounted on suitable truck for dust suppression at Dipka Expansion Project

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**OTHER DETAILS**

**Language** : English

**Remarks** :



File No. 440843

# Coal India Limited

CIL - eOffice

SOUTH EASTERN COALFIELDS LIMITED

O/O HEAD OF E&amp;M SECTION,DIPKA AREA

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## SUBJECT

**Main Category** :**Sub Category** :**Description** : Scheme for procurement of Fixed Long Range (100 mtr Throw) Mist/Fog Cannon Dust Suppression Trolley Mounted System for Dipka Expansion Project, Dipka Area.

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## OTHER DETAILS

**Language** : English**Remarks** :

File No. SECL/DA/ENVT/E-office/2020/2032

## Coal India Limited

CIL - eOffice

SOUTH EASTERN COALFIELDS LIMITED

O/O HEAD OF ENVIRONMENT SECTION,DIPKA AREA

---

### SUBJECT

**Main Category** : APPROVAL AND SANCTION

**Sub Category** : Others / Miscellaneous

**Description** : Proposal and indent for sanction of Rs.35,00,000/- on advance action basis for procurement of Mechanized Sweeping Machine for dust suppression at Dipka Expansion project.

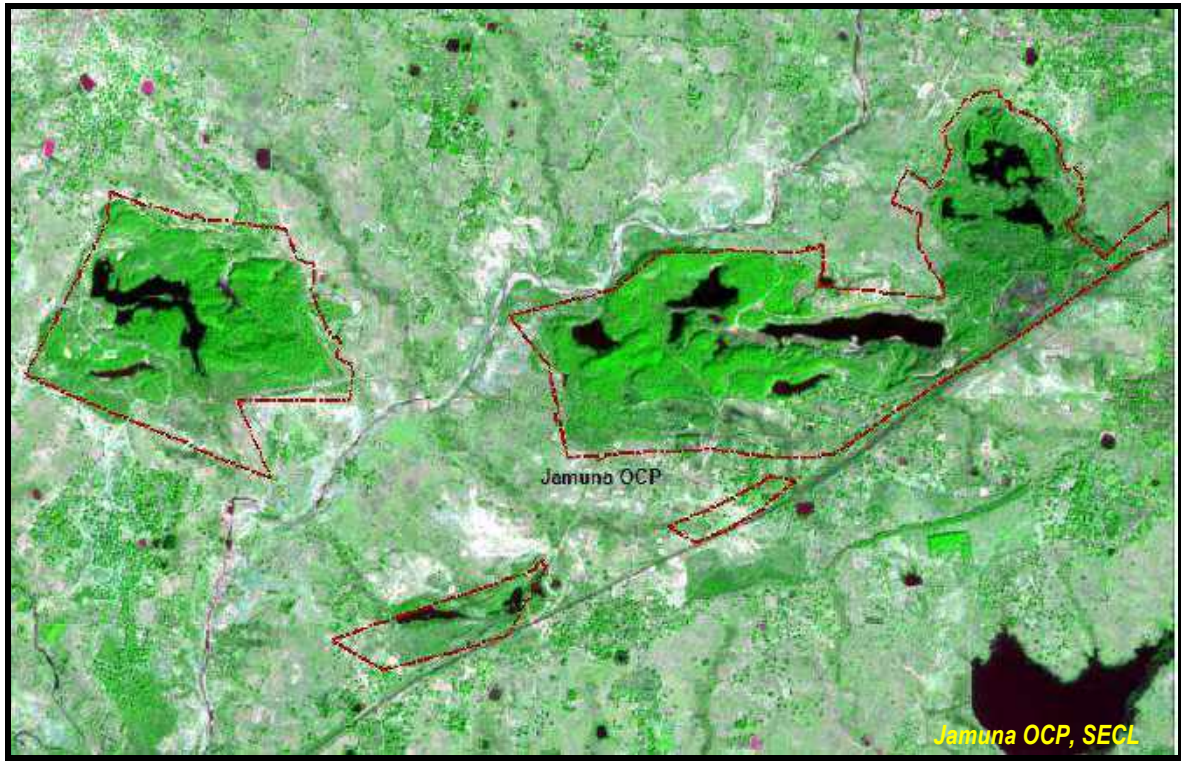
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### OTHER DETAILS

**Language** : English

**Remarks** :

**Land Restoration / Reclamation Monitoring of 19 Opencast Projects of more than 5 mcm (Coal+OB) Capacity of South Eastern Coalfields Limited based on Satellite Data of the Year 2021**



*Submitted to*  
**South Eastern Coalfields Limited**



**Land Restoration / Reclamation Monitoring of 19 Opencast Projects of more than 5 mcm (Coal+OB) Capacity of South Eastern Coalfields Limited based on Satellite Data of the Year 2021**

February 2022



**Remote Sensing Cell  
Geomatics Division  
CMPDI, Ranchi**

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## Executive Summary

- 1.0 Project** Monitoring of Land Restoration / Reclamation of 19 opencast coal mines of South Eastern Coalfields Limited (SECL) producing 5 million cu.m. or more (Coal+OB) per annum based on satellite data on annual basis.
- 2.0 Objective** The objective of the land restoration / reclamation monitoring is to assess the area under backfilling, plantation, social forestry, active mining area, water bodies, and distribution of wasteland, agricultural land and forest cover in the leasehold area of the project. This will help in assessing the progressive status of mined land reclamation and to take up remedial measures, if any, required for environmental protection.
- 3.0 Salient Findings**
- Out of the 19 projects of SECL that have been monitored in 2021-22 for land reclamation status, 8 projects viz Dipka, Gevra, Kusmunda, Manikpur, Chirimiri, Rajnagar, Dhanpuri Amlai group of Mines and Jamuna OCP were also monitored in the year 2020-21. The data of these 8 projects have been mentioned in Part A, Table 1.1. Remaining 11 projects have been included in the category of more than 5 mcm (Coal+OB) in the year 2021-22 as per CIL directives and shall be studied annually hence forth.
  - Out of these 11 newly included projects, 5 projects viz Saraipali, Baroud, Bijari, Chhal, Mahan-II OCPs were also analyzed in the previous year i.e. 2020-21 under the category of less than 5 mcm (Coal +OB). The data of these 5 projects have been mentioned in Part B, Table 1.1. The data of these mines for the year 2021-22 have been compared with that of the year 2020-21.
  - 2 projects viz. Amadand OC and Amera OC had been studied for land reclamation status in the year 2018-19, hence the data of these 2 mines for the year 2021-22 have been compared with those of the year 2018-19. The data of these 2 mines has been tabulated in Part C Table 1.2.
  - Out of the newly included 11 projects, 4 projects viz Batura OC, Ambika, Jampali, and Jagannathpur OC have been included in the list for the first time, hence the data of these mines have not been compared with any previous data. The data of these mines have been mentioned in Part D, Table 1.2



- Out of the total mine leasehold area of 199.51 Km<sup>2</sup> of the 19 opencast projects of SECL viz. Dipka, Gevra, Kusmunda, Manikpur, Chirimiri, Rajnagar, Dhanpuri, Jamuna, Saraipali, Baroud, Bijari, Chhal, Mahan-II, Amera, Amadand, Batura, Ambika, Jampali and Jagannathpur OC considered for monitoring during 2021-22; total excavated area is 75.39 Km<sup>2</sup> (37.79%) of the total leasehold area of the 19 projects taken up for this study out of which 35.10 Km<sup>2</sup> area (46.56%) is under backfilling (under Technically Reclamation), 18.83 Km<sup>2</sup> area (24.98%) is under plantation (*Biologically Reclamation*) and 21.46 Km<sup>2</sup> area (28.47%) is under active mining. It is evident from the analysis that cumulatively 71.53% of the total excavated land of the above mentioned 19 OC projects have already been under reclamation and balance 28.47% of the total excavated area is under active mining. Project wise details are given in Table-1.1 and 1.2 and graphically depicted in Fig-1.
- On comparing the status of land reclamation for the year 2021 with respect to the year 2020 in different projects of SECL mentioned in Part A of Table 1.1 viz Dipka, Gevra, Kusmunda, Manikpur, Chirimiri, Rajnagar, Dhanpuri Amlai Group of Mines, undertaken for monitoring, it is evident from the analysis that area under land reclamation has increased from 41.03Km<sup>2</sup> (Yr. 2020) to 43.49 Km<sup>2</sup> (Yr.2021).
- For Group B projects as per Table 1.1, for 5 projects viz Saraipali, Baroud, Bijari, Chhal and Mahan II, area under land reclamation has increased from 5.51 Km<sup>2</sup> (Yr. 2020) to 6.47 Km<sup>2</sup> (Yr.2021) (Refer Table 1.1 (B)).
- For Group C projects as per Table 1.1, for 2 projects viz Amera and Amadand, area under land reclamation has increased from 1.96 Km<sup>2</sup> (Yr. 2018) to 2.69 Km<sup>2</sup> (Yr.2021) (Refer Table 1.2 (C)).
- For Group D projects as per Table 1.1, for 2 projects viz Batura, Ambika, Jampali and Jagannathpur, area under land reclamation is 1.28 Km<sup>2</sup> (Yr.2021) (Refer Table 1.2(D)).
- Out of 19 opencast projects of SECL, Jamuna OCP ranks on top for overall area under land reclamation (88.07%) followed by Dhanpuri OCP (85.66%) and Chirimiri OCP (84.83%).
- It has been observed from the analysis of Satellite Data of the year 2021 that area under technical reclamation (backfilling) has increased from 23.80 Km<sup>2</sup> (Yr. 2020) to 25.98 Km<sup>2</sup> (Yr. 2021) for Group A projects, 4.63 Km<sup>2</sup> (Yr. 2020) to 5.49 Km<sup>2</sup> (Yr. 2021) for

Group B projects, 1.90 Km<sup>2</sup> (Yr. 2018) to 2.54 Km<sup>2</sup> (Yr. 2021) for Group C projects. For projects under Group D, the area under Technical Reclamation in the year 2021 is 1.09 Km<sup>2</sup>. The total area under technical reclamation in the 19 projects of SECL taken up for satellite data based land reclamation monitoring is 35.10 Km<sup>2</sup>.

- Area under biological reclamation has also increased from 17.23 Km<sup>2</sup> (Yr.2020) to 17.51 Km<sup>2</sup> in 2021 for group A projects, 0.88 Km<sup>2</sup> (Yr.2020) to 0.98 Km<sup>2</sup> in 2021 for Group B projects and 0.06 Km<sup>2</sup> (Yr.2018) to 0.15 Km<sup>2</sup> in 2021 for Group C projects. The total area under Biological reclamation in the 19 projects of SECL taken up for satellite data based land reclamation monitoring is 18.83 Km<sup>2</sup>.
- This increase in area under backfilling (*Technical Reclamation*) and in area under *Biological Reclamation* respectively is the result of the efforts of the SECL taken up towards land reclamation and environmental protection.
- The leasehold boundary of Amera and Manikpur OC have been modified in compliance with EC boundary notifications.
- It has been also observed that in the projects selected for monitoring, the total area under green cover in the leasehold has increased from 35.40 Km<sup>2</sup> (2020) to 36.12 Km<sup>2</sup> (2021) for group A projects, 1.71 Km<sup>2</sup> (2020) to 1.89 Km<sup>2</sup> (2021) for group B projects and 1.20 Km<sup>2</sup> (2018) to 1.50 Km<sup>2</sup> (2021) for group C projects. The total Green Cover generated in the leaseholds of 19 projects selected for satellite data based land reclamation monitoring is 40.09 Km<sup>2</sup>.

**Table -1.1**  
**Project wise Land Reclamation Status in Opencast Projects of SECL**  
**(> 5 million Cu. M. of Coal+OB) based on Satellite Data of the Year 2021**

(Area in Km<sup>2</sup>)

Sl. No.	Name of the Project	Total Leasehold Area		Technical Reclamation		Plantation Activities						Area under Active Mining		Total Excavated Area		Total Area under Plantation in the leaseholds (%Green Cover Generated)		Total Area Under Reclamation	
						Biological Reclamation		Other Plantation											
						Area under Backfilling		Plantation on Excavated/ Backfilled Area		Plantation on External OB Dump									
1	2	3	4	5		6		7		8		9		10(=5+6+9)		11(=6+7+8)		12(=5+6)	
		2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021
<b>(A)</b>																			
1	Dipka	19.99	19.99	2.94	3.69	0.77	1.00	1.60	1.81	1.59	1.67	3.30	2.92	7.01	7.61	3.96	4.48	3.71	4.69
				41.94%	48.49%	10.98%	13.14%					47.08%	38.37%			19.81%	22.41%	52.92%	61.63%
2	Gevra	41.84	41.84	8.80	9.19	2.60	2.55	4.15	4.28	2.94	3.18	5.29	5.35	16.69	17.09	9.69	10.01	11.40	11.74
				52.73%	53.77%	15.58%	14.92%					31.70%	31.30%			23.16%	23.92%	68.30%	68.70%
3	Kusmunda	16.72	16.72	3.28	3.72	1.32	1.27	1.94	1.92	1.60	1.58	2.56	2.78	7.16	7.77	4.86	4.77	4.60	4.99
				45.81%	47.88%	18.44%	16.34%					35.75%	35.78%			29.07%	28.53%	64.25%	64.22%
4	Manikpur	19.44	10.20	1.50	1.55	0.77	0.78	1.34	1.26	0.47	0.37	1.98	1.99	4.25	4.32	2.58	2.41	2.27	2.33
				35.29%	35.88%	18.12%	18.06%					46.59%	46.06%			25.29%	23.63%	53.41%	53.94%
5	Chirimiri	5.44	5.44	1.38	1.34	1.04	1.12	0.00	0.00	0.15	0.15	0.45	0.44	2.87	2.90	1.19	1.27	2.42	2.46
				48.08%	46.21%	36.24%	38.62%					15.68%	15.17%			21.88%	23.35%	84.32%	84.83%
6	Rajnagar	7.30	7.30	2.05	1.95	3.16	3.23	0.00	0.00	0.26	0.26	0.91	0.96	6.12	6.14	3.42	3.49	5.21	5.18
				33.50%	31.76%	51.63%	52.61%					14.87%	15.64%			46.85%	47.81%	85.13%	84.36%
7	Dhanpuri Amlai Group of Mines	14.59	14.59	3.15	3.87	2.44	2.40	1.80	1.80	0.18	0.18	1.72	1.05	7.31	7.32	4.42	4.38	5.59	6.27
				43.09%	52.87%	33.38%	32.79%					23.53%	14.34%			30.29%	30.02%	76.47%	85.66%
8	Jamuna	8.85	8.85	0.70	0.67	5.13	5.16	0.00	0.00	0.15	0.15	0.79	0.79	6.62	6.62	5.28	5.31	5.83	5.83
				10.57%	10.12%	77.49%	77.95%					11.93%	11.93%			59.66%	60.00%	88.07%	88.07%
	<b>Sub Total (A)</b>	<b>134.17</b>	<b>124.93</b>	<b>23.80</b>	<b>25.98</b>	<b>17.23</b>	<b>17.51</b>	<b>10.83</b>	<b>11.07</b>	<b>7.34</b>	<b>7.54</b>	<b>17.00</b>	<b>16.28</b>	<b>58.03</b>	<b>59.77</b>	<b>35.40</b>	<b>36.12</b>	<b>41.03</b>	<b>43.49</b>
				41.01%	43.47%	29.69%	29.30%					29.30%	27.24%			26.38%	28.91%	70.70%	72.76%
<b>(B)</b>																			
9	Saraipali	2.79	2.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.20	0.20	0.20	0.20	0.00	0.01	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	100.00%			0.00%	0.36%	0.00%	0.00%
10	Baroud	11.11	11.11	1.73	2.13	0.42	0.44	0.27	0.34	0.03	0.03	0.86	0.65	3.01	3.22	0.72	0.81	2.15	2.57
				57.48%	66.15%	13.95%	13.66%					28.57%	20.19%			6.48%	7.29%	71.43%	79.81%
11	Bijari	2.73	2.73	0.00	0.15	0.00	0.00	0.00	0.00	0.04	0.04	0.35	0.32	0.35	0.47	0.04	0.04	0.00	0.15
				0.00%	31.91%	0.00%	0.00%					100.00%	68.09%			1.47%	1.47%	0.00%	31.91%
12	Chhal	12.07	12.07	1.84	2.12	0.12	0.17	0.00	0.00	0.43	0.43	0.92	0.76	2.88	3.05	0.55	0.60	1.96	2.29
				63.89%	69.51%	4.17%	5.57%					31.94%	24.92%			4.56%	4.97%	68.06%	75.08%
13	Mahan II	2.97	2.97	1.06	1.09	0.34	0.37	0.03	0.03	0.03	0.03	0.70	0.76	2.10	2.22	0.40	0.43	1.40	1.46
				50.48%	49.10%	16.19%	16.67%					33.33%	34.23%			13.47%	14.48%	66.67%	65.77%
	<b>Sub Total (B)</b>	<b>28.88</b>	<b>31.67</b>	<b>4.63</b>	<b>5.49</b>	<b>0.88</b>	<b>0.98</b>	<b>0.30</b>	<b>0.37</b>	<b>0.53</b>	<b>0.54</b>	<b>3.03</b>	<b>2.69</b>	<b>8.54</b>	<b>9.16</b>	<b>1.71</b>	<b>1.89</b>	<b>5.51</b>	<b>6.47</b>
				54.22%	59.93%	10.30%	10.70%					35.48%	29.37%			5.92%	5.97%	64.52%	70.63%

Contd....

Table - 1.2

(Area in Km<sup>2</sup>)

Sl. No.	Name of the Project	Total Leasehold Area		Technical Reclamation		Plantation Activities						Area under Active Mining		Total Excavated Area		Total Area under Plantation in the leaseholds (%Green Cover Generated)		Total Area Under Reclamation	
						Biological Reclamation		Other Plantation											
						Area under Backfilling		Plantation on Excavated/ Backfilled Area		Plantation on External OB Dump									
1	2	3	4	5		6		7		8		9		10(=5+6+9)		11(=6+7+8)		12(=5+6)	
		2018	2021	2018	2021	2018	2021	2018	2021	2018	2021	2018	2021	2018	2021	2018	2021	2018	2021
(C)																			
14	Amera	6.72	6.64	1.05	1.10	0.06	0.15	0.08	0.08	0.45	0.45	0.43	0.30	1.54	1.55	0.59	0.68	1.11	1.25
				68.18%	70.97%	3.90%	9.68%					27.92%	19.35%			8.78%	10.24%	72.08%	80.65%
15	Amadand	13.05	13.05	0.85	1.44	0.00	0.00	0.00	0.18	0.61	0.64	0.78	0.73	1.63	2.17	0.61	0.82	0.85	1.44
				52.15%	66.36%	0.00%	0.00%	-				47.85%	33.64%			4.67%	6.28%	52.15%	66.36%
	Sub Total (C)	19.77	19.69	1.90	2.54	0.06	0.15	0.08	0.26	1.06	1.09	1.21	1.03	3.17	3.72	1.20	1.50	1.96	2.69
				59.94%	68.28%	1.89%	4.03%					38.17%	27.69%			6.07%	7.62%	61.83%	72.31%
(D)																			
16	Batura	-	9.43	-	0.00	-	0.00	-	0.00	-	0.05	-	0.00	-	0.00	-	0.05	-	0.00
					0.00%		0.00%						0.00%				0.53%		0.00%
17	Ambika	-	1.34	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00
					0.00%		0.00%						0.00%				0.00%		0.00%
18	Jampali	-	5.83	-	0.87	-	0.19	-	0.00	-	0.19	-	0.97	-	2.03	-	0.38	-	1.06
					42.86%		9.36%						47.78%				6.52%		52.22%
19	Jagannathpur	-	6.62	-	0.22	-	0.00	-	0.00	-	0.15	-	0.49	-	0.71	-	0.15	-	0.22
					30.99%		0.00%						69.01%				2.27%		30.99%
	Sub Total (D)	-	23.22	-	1.09	-	0.19	-	0.00	-	0.39	-	1.46	-	2.74		0.58	-	1.28
					39.78%		6.93%		0.00				53.28%				2.50%		46.72%
Total SECL (A+B+C+D)		182.82	199.51	30.33	35.10	18.17	18.83	11.21	11.70	8.93	9.56	21.24	21.46	69.74	75.39	38.31	40.09	48.50	53.93
				43.49%	46.56%	26.05%	24.98%					30.46%	28.47%			20.96%	20.09%	69.54%	71.53%

(% is calculated with respect to excavated area as applicable)

Note: In reference of the above Table, different parameters are classified as follows:

1. Area under **Biological Reclamation** includes Areas under Plantation done on Backfilled Area only.
2. Area under **Technical Reclamation** includes Area under Barren Backfilling only
3. Area under Active Mining Includes Coal Quarry, Advance Quarry Site, Quarry filled with water etc., if any.
4. Social Forestry and Plantation on External OB Dumps are not included in Biological Reclamation and are put under separate categories as shown in the Table above.
5. (%) calculated in the above Table is in respect to Total Excavated Area except for "Total Area under Plantation" where % is in terms of "Leasehold Area".

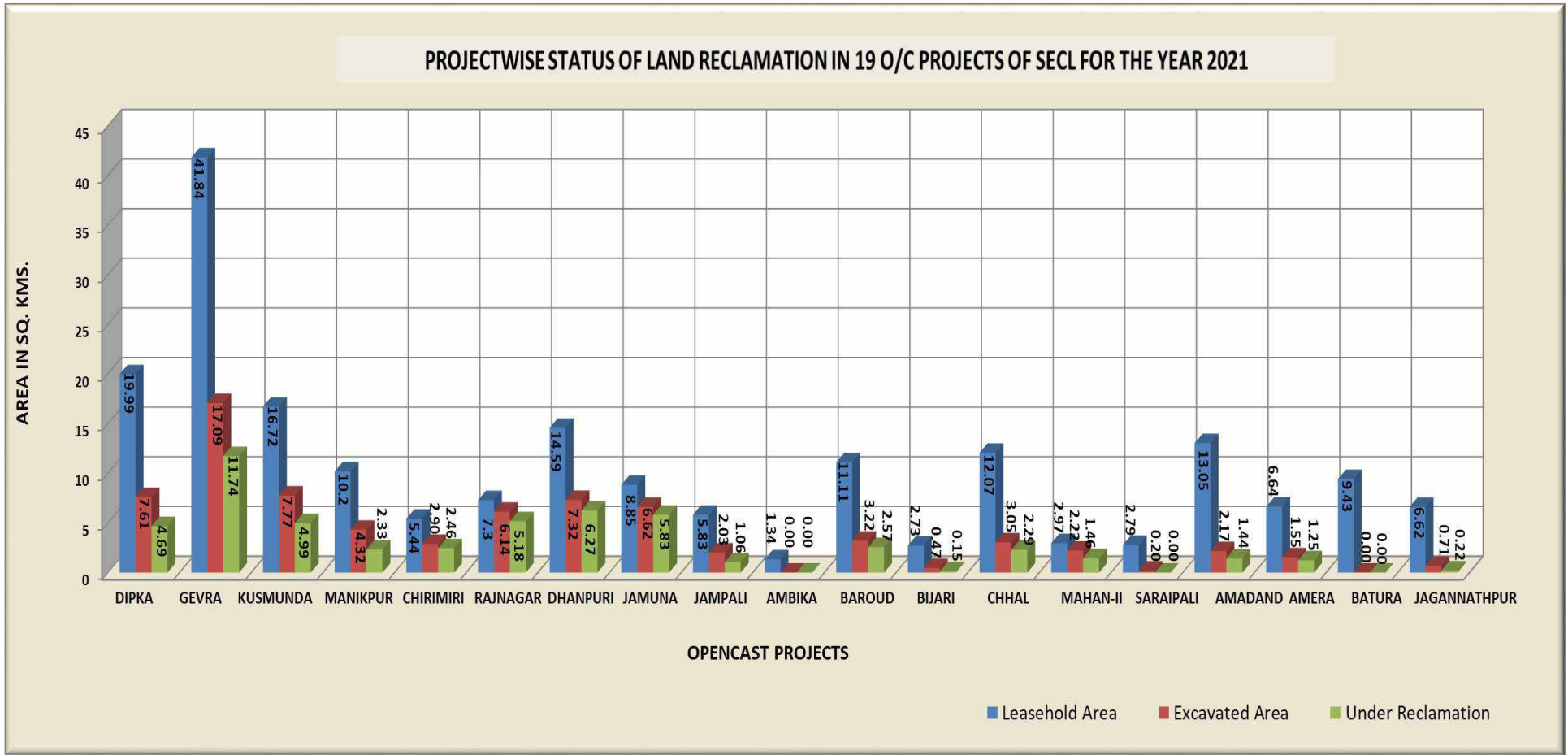
**Group Description:**

**Group A** include mines which were already under monitoring under more than 5 mcm category.

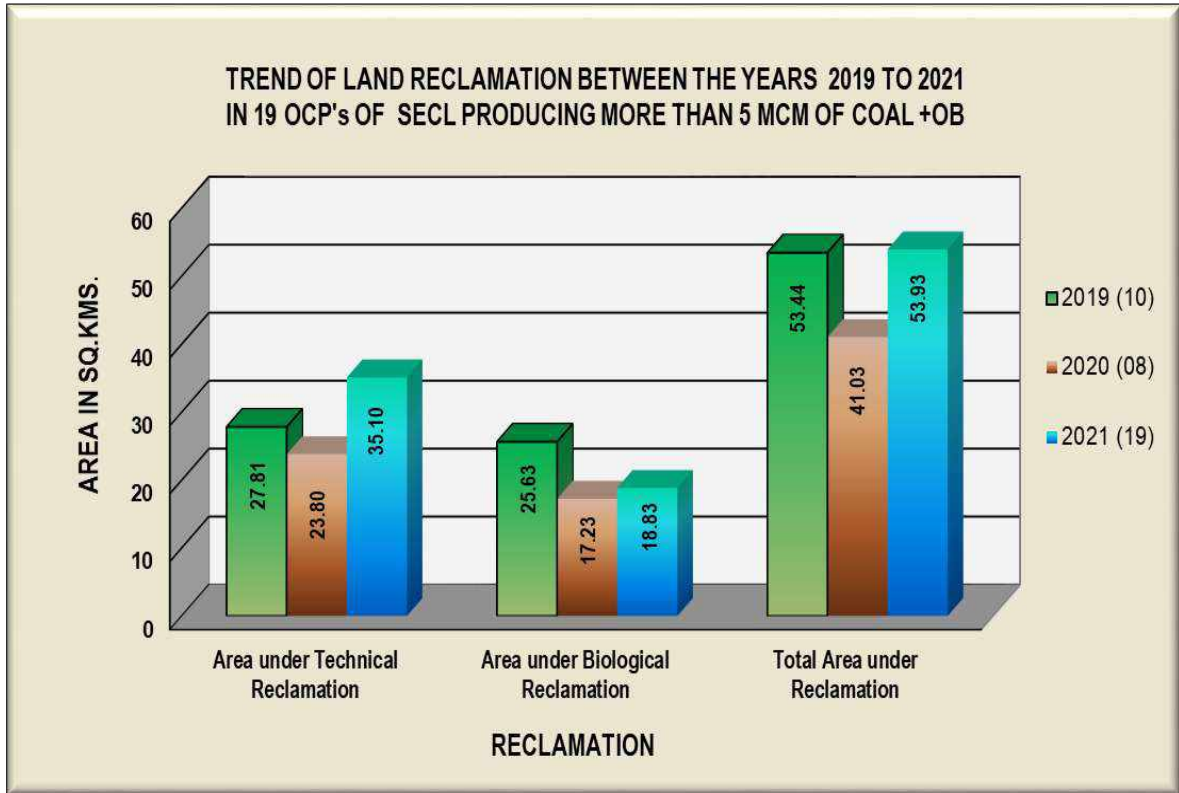
**Group B** includes mines which were previously monitored in 2020-21 under less than 5mcm but has been included in more than 5mcm category in 2021

**Group C** includes mines which were studied in 2018-19 under less than 5 mcm category and have been included into more than 5 mcm category in 2021

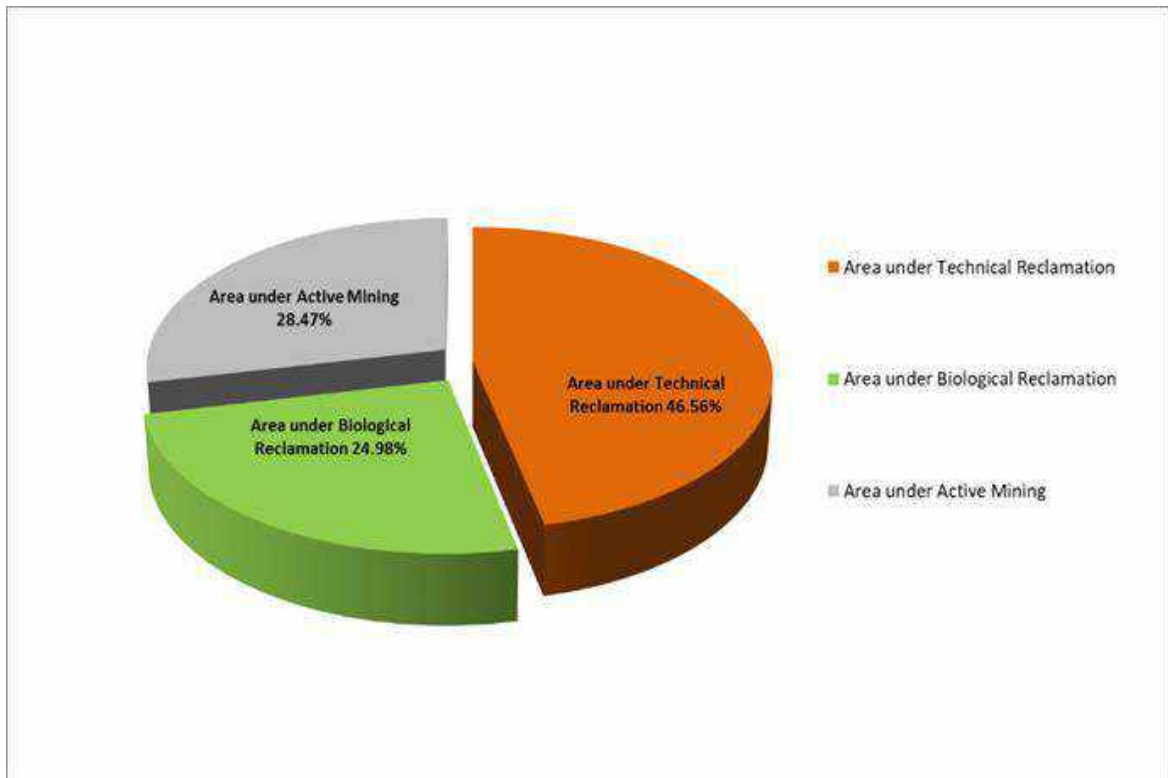
**Group D** includes mines which are being monitored for the first time.



**Fig.1: Project wise Land reclamation status in OC projects of SECL in the year 2021**



**Fig. 2: Land Reclamation Trend between the Year 2019 and 2021**



**Fig. 3: Distribution of reclamation activities in OC mines of SECL**

## **1.0 Background**

- 1.1** Land is the most important natural resource which embodies soil, water, flora - fauna and total ecosystem. All human activities are based on the land which is most scarce natural resource in our country. Mining is a site specific industry and it could not be shifted anywhere else from the location where mineral occurs. It is a fact that surface mining activities do effect the land environment due to ground breaking. Therefore, there is an urgent need to reclaim and restore the mined out land for its productive use for sustainable development of mining. This will not only mitigate environmental degradation, but would also help in creating a more congenial environment for land acquisition by coal companies in future.
- 1.2** Keeping above in view, Coal India Ltd. (CIL) issued a work order vide letter no. CIL/WBP/Env/2009/2428 dated 29.12.2009 to Central Mine Planning & Design Institute (CMPDI), Ranchi, for monitoring land reclamation. Status of all the opencast coal mines having production of more than 5 million m<sup>3</sup> per annum (Coal + OB taken together per annum) based on remote sensing satellite data, regularly on annual basis. Further, a revised work order was issued vide letter no. CIL/WBP/Env/2011/4706 dated 12.10.2012 from Coal India Limited for the period 2012-13 to 2016-17 which was subsequently followed by another work order vide letter no. CIL/WBP/Env/2017/DP/8477 dated 21.09.2017 from Coal India Limited for the period 2017-18 to 2021-22 for land reclamation monitoring of opencast projects and vegetation cover monitoring of 19 major coalfields. According to this work order, all mines in CIL with output capacity of 5 million cu. m (Coal +OB) shall be monitored every year and all mines below this capacity shall be monitored at an interval of 3 years. All coalfields in CIL shall also be monitored at an interval of 3 years as per a defined plan. An addendum to the above work order was received through CIL Letter No. CIL/ENV/2021 10628 dated 11.05.2021 wherein it was requested to take up additional 26 projects in CCL, MCL, WCL and SECL for Satellite Data based Land Reclamation monitoring on yearly basis. Out of these additional 26

mines, 11 mines belong to SECL. In pursuance of the above work order, a total of 76 projects in CIL have been taken up in the year 2021-22 for Land Reclamation monitoring in the more than 5 million (Coal+OB) category. The result of land reclamation status of all such mines to be put on the website of CIL, ([www.coalindia.in](http://www.coalindia.in)), CMPDI ([www.cmpdi.co.in](http://www.cmpdi.co.in)) and the concerned coal companies in public domain. Detail report to be submitted to Coal India and respective subsidiaries.

- 1.3 Land reclamation monitoring of all opencast coal mining projects would also comply the statutory requirements of Ministry of Environment, Forest & Climate Control (MoEF & CC). Such monitoring would not only facilitate in taking timely mitigation measures against environmental degradation, but would also enable coal companies to utilise the reclaimed land for larger socio-economic benefits in a planned way.
- 1.4 Present report is embodying the finding of the study based on satellite data of the year 2021 carried out for 19 OC projects of South Eastern Coalfields Ltd (SECL) producing more than 5 million cu.m. of Coal+OB annually. Two projects namely Dugga and Bishrampur have been excluded from the monitoring list as per the request received from SECL earlier in 2020-21.

## **2.0 Objective**

Objective of the land reclamation/restoration monitoring is to assess the area of backfilling, plantation, OB dumps, social forestry, active mining area, settlements and water bodies, distribution of wasteland, agricultural land and forest land in the leasehold areas of the projects. This is an important step taken up for assessing the progressive status of mined land reclamation and for taking up remedial measures, if any, required for environmental protection.



### 3.0 Methodology

There are number of steps involved between raw satellite data procurement and preparation of final map. National Remote Sensing Centre (NRSC) Hyderabad, being the nodal agency for satellite data supply in India, provides only raw digital satellite data, which needs further digital image processing for extracting the information and map preparation before uploading the same in the website. Methodology for land reclamation monitoring is given in given in Fig 4. Following steps are involved in land reclamation /restoration monitoring:

**3.1 Data Procurement:** After browsing the data quality and date of pass on internet, supply order for data is placed to NRSC. Secondary data like leasehold boundary, topo sheets are procured for creation of vector database.

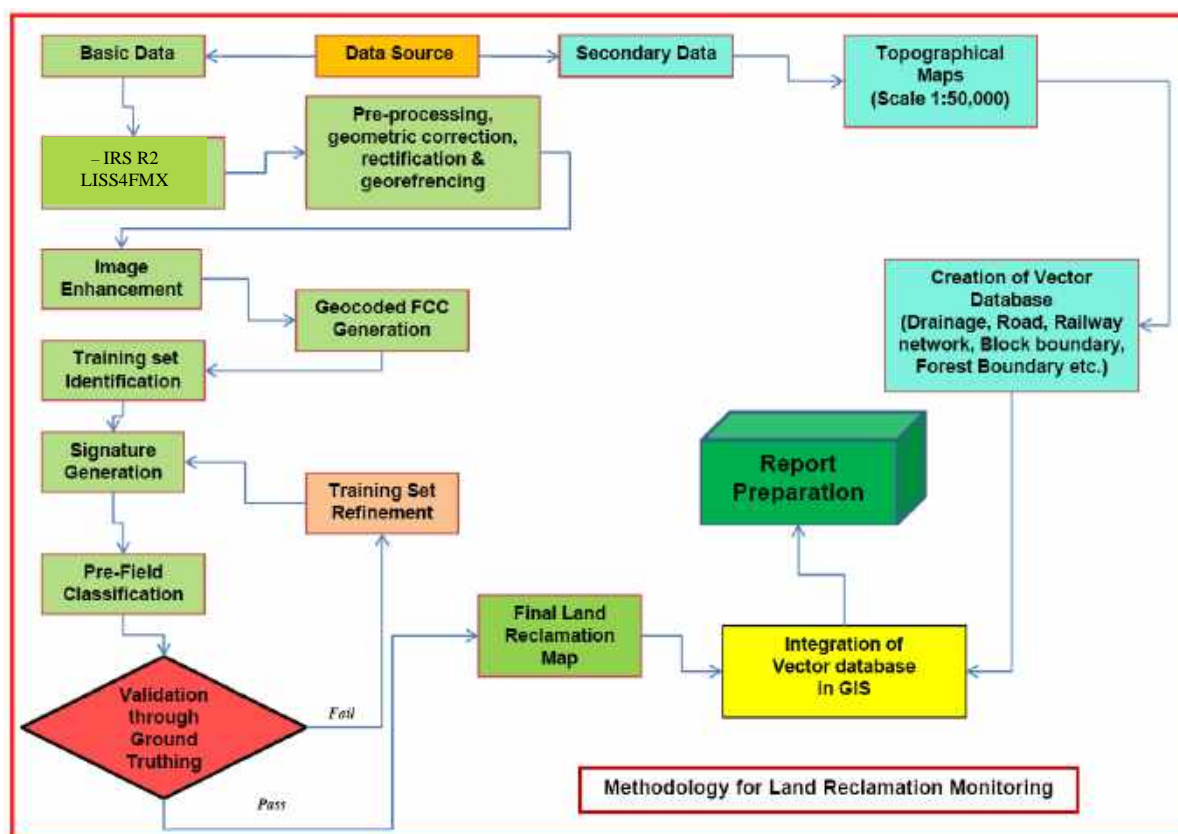


Figure: 4: **Methodology for Land Reclamation Monitoring**

**3.2 Satellite Data Processing:** Satellite data are processed using ERDAS IMAGINE / PCI GEOMATICA digital image processing software. Methodology involves the following major steps:

- **Rectification & Geo-referencing:** Inaccuracies in digital imagery may occur due to 'systematic errors' attributed to earth curvature and rotation as well as 'non-systematic errors' attributed to satellite receiving station itself. Raw digital images contain geometric distortions, which make them unusable as maps. Therefore, geo-referencing is required for correction of image data using ground control points (GCP) to make it compatible to Sol toposheet.
- **Image enhancement:** To improve the interpretability of the raw data, image enhancement is necessary. Local operations modify the value of each pixel based on brightness value of neighbouring pixels using PCI Geomatica v10.1 / ERDAS IMAGINE v2014 s/w. and enhance the image quality for interpretation.
- **Training set selection**  
Training set requires to be selected, so that software can classify the image data accurately. The image data are analysed based on the interpretation keys. These keys are evolved from certain fundamental image-elements such as tone/colour, size, shape, texture, pattern, location, association and shadow. Based on the image-elements and other geo-technical elements like land form, drainage pattern and physiography; training sets were selected/identified for each land use/cover class. Field survey was carried out by taking selective traverses in order to collect the ground information (or reference data) so that training sets are selected accurately in the image. This was intended to serve as an aid for classification.

- **Classification and Accuracy assessment**

Image classification is carried out using the maximum likelihood algorithm. The classification proceeds through the following steps: (a) calculation of statistics [i.e. signature generation] for the identified training areas, and (b) the decision boundary of maximum probability based on the mean vector, variance, covariance and correlation matrix of the pixels. After evaluating the statistical parameters of the training sets, reliability test of training sets is conducted by measuring the statistical separation between the classes that resulted from computing divergence matrix. The overall accuracy of the classification was finally assessed with reference to ground truth data.

- **Area calculation**

The area of each land use class in the leasehold is determined using ERDAS IMAGINE / PCI GEOMATICA digital image processing software.

- **Overlay of Vector data base**

Vector data base created based on secondary data. Vector layer like drainage, railway line, leasehold boundary, forest boundary etc. are superimposed on the image as vector layer in the Arc GIS database.

- **Pre-field map preparation**

Pre-field map is prepared for validation of the classification result

### **3.3 Ground Truthing:**

Selective ground verification of the land use classes are carried out in the field and necessary corrections if required, are incorporated before map finalization.

### **3.4 Land reclamation database on GIS:**

Land reclamation database is created on GIS platform to identify the temporal changes identified from satellite data of different cut-off dates.

## **4.0 Work Plan**

- 4.1** Nineteen opencast projects of SECL producing more than 5 million cubic m. (Coal + OB together) during the year 2021-22 which have been taken up for land restoration / reclamation monitoring based on the *RESOURCESAT-2(L-IV)* satellite data using ERDAS IMAGINE / PCI GEOMATICA digital image processing software on GIS platform. Land reclamation monitoring will be carried out regularly on annual basis to assess the progressive status of land restoration / reclamation in the above opencast mines. The report of this study has been uploaded on the website of CIL, CMPDI & SECL in public domain.

## **5.0 Land Reclamation Status in South Eastern Coalfields Limited**

**5.1** Following nineteen opencast projects of SECL producing 5 million cubic m. or more (Coal+OB) together were taken up for land reclamation monitoring based on satellite data during the year 2021-22:

- Dipka
- Gevra
- Kusmunda
- Manikpur
- Chirimiri
- Rajnagar
- Dhanpuri
- Jamuna
- Saraipali
- Bijari
- Chhal
- Mahan- II
- Amera
- Amadand
- Batura
- Jampali
- Ambika
- Jagannathpur

**5.2** Area statistics of different land use / cover class present in the mine leasehold area of the above 19 projects of SECL for the year 2021 are shown in the Table – 2.1 and 2.2. Land use / cover maps derived from satellite data are shown in Plate 1 - 19. Year wise changes in the different land use / cover classes in last three years based on satellite data are depicted in Bar Charts in Fig. 5 to 23.

- 5.3** Study reveals that in the above mentioned 19 projects of SECL under more than 5 mcm (Coal+OB) per annum category, out of total 75.39 Km<sup>2</sup> excavated area; 53.93 Km<sup>2</sup> area (71.53%) is under reclamation, out of which 35.10 Km<sup>2</sup> (46.56%) area is under technical reclamation and 18.83 Km<sup>2</sup> (24.98%) area is already under biological reclamation.
- 5.4** After analyzing the satellite data of the year 2021, it is evident that area under land reclamation for the selected eight (08) projects of SECL under Group A (Table 1.1) viz Dipka, Gevra, Kusmunda, Manikpur, Chirimiri, Rajnagar, Dhanpuri Amlai Group of Mines and Jamuna has increased from 41.03 Km<sup>2</sup> (70.70%) in the year 2020 to 43.49 Km<sup>2</sup> (72.76%) in the year 2021 in a period of one year. There is an increase of 2.46 Km<sup>2</sup> of area under reclamation in projects under Group A, out of which 2.18 Km<sup>2</sup> area is under technical reclamation and 0.28 Km<sup>2</sup> area is under Biological reclamation.
- 5.5** It has been also observed that although there has been overall a substantial increase of 2.18 Km<sup>2</sup> of area under technical reclamation (Barren Backfilling) for the mines under Group A during the year 2021, but for projects like Chirimiri, Rajnagar & Jamuna OCPs, area under technical reclamation has gone down slightly as compared to the year 2020 as more areas are coming under Biological Reclamation.
- 5.6** Similarly, it has been also observed that in projects like Gevra, Kusmunda & Dhanpuri Amlai Group of mines, the area under Biological Reclamation has been slightly reduced which may have resulted due to biotic interference or due to OB dumping on vegetated backfilled area in view of constrain of dumping space.
- 5.7** Total Green Cover generated in the leasehold of the eight projects of Group A has increased from 35.40 Km<sup>2</sup> (26.38%) in the year 2020 to 36.12 Km<sup>2</sup> (28.91%) in the year 2021 in a period of one year. There has been an increase of 0.72 Km<sup>2</sup> of Green Cover in the leasehold of eight projects of Group A, however in projects like Kusmunda, Manikpur

and Dhanpuri Amlai Group of mines there has been a slight reduction in area under Green Cover. In Kusmunda, a planted OB Dump on western side of OCP has been rehandled to make space for Coal Stock whereas in Manikpur OCP, the leasehold boundaries of the project has been modified as per EC notified area which has resulted in loss of Green Cover area. In Dhanpuri Amlai Group of mines there has been infrastructure development within the leasehold boundary resulting in loss of area under Green Cover.

- 5.8** In projects under Group B, viz Saraipali, Baroud, Bijari, Chhal and Mahan II, area under land reclamation has increased from 5.51 Km<sup>2</sup> (64.52%) in the year 2020 to 6.47 Km<sup>2</sup> (70.63%) in the year 2021. There is an increase of 0.96 Km<sup>2</sup> of area under reclamation in projects under Group B, out of which 0.86 Km<sup>2</sup> area is under technical reclamation and 0.10 Km<sup>2</sup> area is under Biological reclamation.

The projects under Group B were previously monitored under Less than 5mcm (Coal+OB) per annum category at an interval of three years. The previous cycle of Land Reclamation monitoring of these projects was done in 2020-21.

- 5.9** It has been observed that there has been overall an increase of 0.86 Km<sup>2</sup> of area under technical reclamation (Barren Backfilling) for the mines under Group B during the year 2021. The overall status of Technical Reclamation in Projects under Group B is indicating positive trend.
- 5.10** It has been also observed that there has been overall an increase of 0.10 Km<sup>2</sup> of area under biological reclamation (Plantation on Backfilled areas) for the mines under Group B during the year 2021. The overall status of Biological Reclamation in Projects under Group B is indicating positive trend.

**5.11** Total Green Cover generated in the leasehold of the five projects of Group B has increased from 1.71 Km<sup>2</sup> (5.92%) in the year 2020 to 1.89 Km<sup>2</sup> (5.97%) in the year 2021 in a period of one year. There has been an increase of 0.18 Km<sup>2</sup> of Green Cover in the leasehold of five projects of Group B.

**5.12** In two projects under Group C (Table 1.2) viz Amera and Amadand, area under Land Reclamation has increased from 1.96 Km<sup>2</sup> (61.83%) in the year 2020 to 2.69 Km<sup>2</sup> (72.31%) in the year 2021. There is an increase of 0.73 Km<sup>2</sup> of area under reclamation in projects under Group C, out of which 0.64 Km<sup>2</sup> area is under technical reclamation and 0.09 Km<sup>2</sup> area is under Biological reclamation.

The projects under Group C were previously monitored under Less than 5mcm (Coal+OB) per annum category at an interval of three years. The previous cycle Land Reclamation monitoring of these projects was done in 2018-19.

**5.13** It has been observed that there has been overall an increase of 0.64 Km<sup>2</sup> of area under technical reclamation (Barren Backfilling) for the mines under Group C during the year 2021. The overall status of Technical Reclamation in Projects under Group C is indicating positive trend.

**5.14** It has been also observed that there has been overall an increase of 0.09 Km<sup>2</sup> of area under biological reclamation (Plantation on Backfilled areas) for the mines under Group C during the year 2021. The overall status of Biological Reclamation in Projects under Group C is indicating positive trend.

**5.15** Total Green Cover generated in the leasehold of the two projects of Group C has increased from 1.20 Km<sup>2</sup> (6.07%) in the year 2020 to 1.50 Km<sup>2</sup> (7.62%) in the year 2021



in a period of one year. There has been an increase of 0.30 Km<sup>2</sup> of Green Cover in the leasehold of two projects of Group C.

- 5.16** In four projects under Group D (Table 1.2) viz Batura, Ambika, Jampali and Jagannathpur, area under Land Reclamation is 1.28 Km<sup>2</sup> (46.72%) in the year 2021 out of which 1.09 Km<sup>2</sup> area is under technical reclamation and 0.19 Km<sup>2</sup> area is under Biological reclamation. Total Green Cover generated in the leasehold of the four projects of Group D is 0.58 Km<sup>2</sup> (2.50%) in the year 2021.

The projects under Group D are being monitored for Land Reclamation for the first time, therefore, no comparative analysis has been done.

- 5.17** Out of 19 projects of SECL, Jamuna OCP ranks on top for land reclamation (88.07%) followed by Rajnagar (85.66%) and Chirimiri (84.83%) in the year 2021-22.

Table 2.1

Project wise Area Statistics of Land Use / Cover in the 19 OC Mines (>5mcu.m.) of SECL based on Satellite data of the Year 2021





















*(Area in Km<sup>2</sup>)*

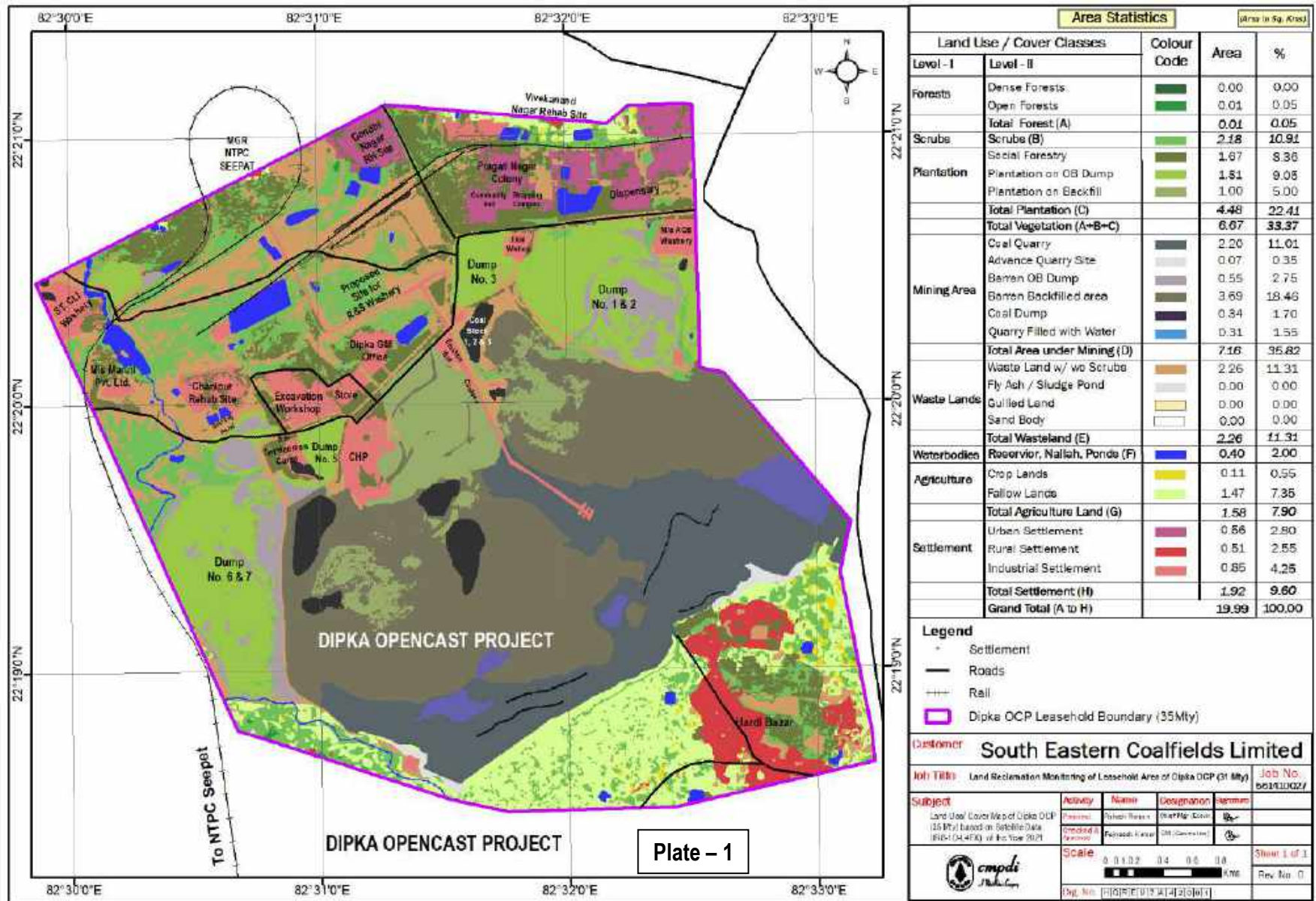
LAND USE / COVER CLASSES	colour code	DIPKA		GEVRA		KUSMUNDA		MANIKPUR		CHIRIMIRI		RAJNAGAR		DHANPURI		JAMUNA		SARAIPALI		BAROUD		
		Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	
(Area in Km <sup>2</sup> )																						
Forest																						
Dense Forest		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Open Forest		0.01	0.05	0.00	0.00	0.00	0.00	0.08	0.78	0.76	13.97	0.00	0.00	0.78	5.35	0.00	0.00	0.11	3.94	1.37	12.29	
Total Forest (A)		<b>0.01</b>	<b>0.05</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.08</b>	<b>0.78</b>	<b>0.76</b>	<b>13.97</b>	<b>0.00</b>	<b>0.00</b>	<b>0.78</b>	<b>5.35</b>	<b>0.00</b>	<b>0.00</b>	<b>0.11</b>	<b>3.94</b>	<b>1.37</b>	<b>12.29</b>	
Barren																						
Scrub (B)		2.18	10.93	3.43	8.20	0.81	4.84	0.77	7.55	0.89	16.36	0.27	3.70	2.10	14.39	0.54	6.10	0.19	6.81	2.22	19.98	
Social Forestry (C)		1.65	8.27	3.19	7.62	1.58	9.45	0.37	3.63	0.15	2.76	0.26	3.56	0.18	1.23	0.15	1.69	0.01	0.36	0.03	0.27	
Plantation on External OB Dump		1.84	9.21	4.23	10.23	1.92	11.48	1.26	12.35	0.00	0.00	0.00	0.00	1.80	12.34	0.00	0.00	0.00	0.00	0.34	3.06	
Plantation on Backfill / Excavated Area (Biological Rehabilitation)		1.00	5.00	2.50	5.98	1.27	7.60	0.78	7.65	1.12	20.59	3.23	44.22	2.40	16.45	5.16	58.31	0.00	0.00	0.44	3.96	
Total Area under Plantation (Green Cover) (D)		<b>4.51</b>	<b>22.48</b>	<b>9.97</b>	<b>23.83</b>	<b>4.77</b>	<b>28.53</b>	<b>2.41</b>	<b>23.63</b>	<b>1.27</b>	<b>23.35</b>	<b>3.49</b>	<b>47.78</b>	<b>4.38</b>	<b>30.02</b>	<b>5.31</b>	<b>60.00</b>	<b>0.01</b>	<b>0.36</b>	<b>0.81</b>	<b>7.29</b>	
Total Vegetation (A to D)		<b>6.69</b>	<b>33.46</b>	<b>13.40</b>	<b>32.03</b>	<b>5.58</b>	<b>33.37</b>	<b>3.26</b>	<b>31.96</b>	<b>2.92</b>	<b>53.68</b>	<b>3.76</b>	<b>51.48</b>	<b>7.26</b>	<b>49.76</b>	<b>5.85</b>	<b>66.10</b>	<b>0.31</b>	<b>11.11</b>	<b>4.40</b>	<b>39.56</b>	
Mining																						
Coal Quarry		2.20	11.01	3.95	9.44	2.28	13.64	1.81	17.75	0.33	6.07	0.35	4.79	0.25	1.71	0.00	0.00	0.16	5.73	0.17	1.53	
Coal Dump		0.37	1.85	0.27	0.63	0.28	1.67	0.08	0.78	0.09	1.65	0.00	0.00	0.14	0.96	0.00	0.00	0.02	0.72	0.15	1.35	
Advance Quarry Site		0.07	0.35	0.05	0.12	0.03	0.18	0.01	0.10	0.00	0.00	0.07	0.96	0.18	1.23	0.00	0.00	0.00	0.00	0.07	0.63	
Quarry Filled With Water		0.31	1.55	1.08	2.58	0.19	1.14	0.09	0.88	0.02	0.37	0.54	7.39	0.48	3.29	0.79	8.93	0.00	0.00	0.26	2.34	
Total Area under Active Mining (E)		<b>2.95</b>	<b>14.76</b>	<b>5.35</b>	<b>12.79</b>	<b>2.78</b>	<b>16.63</b>	<b>1.99</b>	<b>19.51</b>	<b>0.44</b>	<b>8.09</b>	<b>0.96</b>	<b>13.14</b>	<b>1.05</b>	<b>7.19</b>	<b>0.79</b>	<b>8.93</b>	<b>0.18</b>	<b>6.45</b>	<b>0.65</b>	<b>5.85</b>	
Technical Redamation																						
Barren OB Dump (G)		0.57	2.85	0.70	1.67	0.34	2.03	1.01	9.90	0.00	0.00	0.00	0.00	0.28	1.92	0.00	0.00	0.24	8.60	0.11	0.95	
Area under Barren Backfilling (Technical Redamation)		3.67	18.37	9.19	21.95	3.72	22.25	1.55	15.20	1.34	24.63	1.95	26.78	3.87	26.53	0.67	7.57	0.00	0.00	2.13	19.17	
Total Area under Technical Redamation (H)		<b>3.67</b>	<b>18.37</b>	<b>9.19</b>	<b>21.96</b>	<b>3.72</b>	<b>22.25</b>	<b>1.55</b>	<b>15.20</b>	<b>1.34</b>	<b>24.63</b>	<b>1.95</b>	<b>26.70</b>	<b>3.87</b>	<b>26.53</b>	<b>0.67</b>	<b>7.57</b>	<b>0.00</b>	<b>0.00</b>	<b>2.13</b>	<b>19.17</b>	
Total Area under Mining Operations (E+G+H)		<b>7.19</b>	<b>35.98</b>	<b>15.24</b>	<b>36.42</b>	<b>6.84</b>	<b>40.91</b>	<b>4.55</b>	<b>44.61</b>	<b>1.78</b>	<b>32.72</b>	<b>2.91</b>	<b>39.84</b>	<b>5.20</b>	<b>35.64</b>	<b>1.46</b>	<b>16.80</b>	<b>0.42</b>	<b>15.05</b>	<b>2.89</b>	<b>25.97</b>	
Wasteland																						
Waste Lands		2.22	11.11	4.88	11.66	1.20	7.18	0.71	6.96	0.60	11.03	0.45	6.16	1.08	7.40	0.46	5.20	0.16	5.73	0.62	5.58	
Fly Ash Pond / Sand Body		0.00	0.00	0.00	0.00	0.10	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.09		
Total Wasteland (I)		<b>2.22</b>	<b>11.11</b>	<b>4.88</b>	<b>11.66</b>	<b>1.30</b>	<b>7.78</b>	<b>0.71</b>	<b>6.96</b>	<b>0.60</b>	<b>11.03</b>	<b>0.45</b>	<b>6.16</b>	<b>1.08</b>	<b>7.40</b>	<b>0.46</b>	<b>5.20</b>	<b>0.16</b>	<b>5.73</b>	<b>0.63</b>	<b>5.67</b>	
Waterbodies																						
Reservoir, nullah, ponds		0.39	1.95	0.22	0.53	0.22	1.32	0.20	1.96	0.04	0.74	0.01	0.14	0.02	0.14	0.01	0.11	0.11	3.94	0.15	1.35	
Total Waterbodies (J)		<b>0.39</b>	<b>1.95</b>	<b>0.22</b>	<b>0.53</b>	<b>0.22</b>	<b>1.32</b>	<b>0.20</b>	<b>1.96</b>	<b>0.04</b>	<b>0.74</b>	<b>0.01</b>	<b>0.14</b>	<b>0.02</b>	<b>0.14</b>	<b>0.01</b>	<b>0.11</b>	<b>0.11</b>	<b>3.94</b>	<b>0.15</b>	<b>1.35</b>	
Agriculture																						
Crop Lands		0.11	0.55	0.68	1.63	0.47	2.81	0.05	0.49	0.00	0.00	0.01	0.14	0.24	1.64	0.00	0.00	0.14	5.02	0.30	2.70	
Fallow Lands		1.47	7.33	4.50	10.75	1.31	7.83	0.92	9.02	0.00	0.00	0.06	0.82	0.64	4.39	0.93	10.51	1.64	59.79	2.62	23.58	
Total Agriculture (K)		<b>1.58</b>	<b>7.90</b>	<b>5.18</b>	<b>12.39</b>	<b>1.78</b>	<b>10.64</b>	<b>0.97</b>	<b>9.51</b>	<b>0.00</b>	<b>0.00</b>	<b>0.07</b>	<b>0.96</b>	<b>0.88</b>	<b>6.03</b>	<b>0.93</b>	<b>10.51</b>	<b>1.78</b>	<b>63.81</b>	<b>2.92</b>	<b>26.28</b>	
Settlement																						
Urban Settlement		0.56	2.80	0.84	2.02	0.27	1.61	0.06	0.54	0.06	1.19	0.08	1.10	0.09	0.62	0.00	0.00	0.00	0.00	0.00	0.00	
Rural Settlement		0.51	2.55	0.80	1.91	0.17	1.02	0.13	1.27	0.03	0.55	0.004	0.05	0.00	0.00	0.09	1.02	0.00	0.00	0.10	0.90	
Industrial Settlement		0.85	4.25	1.27	3.04	0.56	3.35	0.33	3.19	0.01	0.18	0.02	0.27	0.06	0.41	0.05	0.56	0.01	0.36	0.03	0.27	
Total Settlement (L)		<b>1.92</b>	<b>9.60</b>	<b>2.91</b>	<b>6.97</b>	<b>1.00</b>	<b>5.98</b>	<b>0.51</b>	<b>5.00</b>	<b>0.10</b>	<b>1.83</b>	<b>0.10</b>	<b>1.42</b>	<b>0.15</b>	<b>1.03</b>	<b>0.14</b>	<b>1.58</b>	<b>0.01</b>	<b>0.36</b>	<b>0.13</b>	<b>1.17</b>	
Grand Total (A to L)		<b>19.99</b>	<b>100.00</b>	<b>41.54</b>	<b>100.00</b>	<b>16.72</b>	<b>100.00</b>	<b>10.20</b>	<b>100.00</b>	<b>5.44</b>	<b>100.00</b>	<b>7.30</b>	<b>100.00</b>	<b>14.59</b>	<b>100.00</b>	<b>8.85</b>	<b>100.00</b>	<b>2.79</b>	<b>100.00</b>	<b>11.11</b>	<b>100.00</b>	

**Table 2.2**

**Project wise Area Statistics of Land Use / Cover in OC Mines (>5mcu.m. ) of SECL based on Satellite data of the Year 2021**

(Area in Km<sup>2</sup>)

LAND USE / COVER CLASSES	COLOUR CODE	BIJARI		CHHAL		MAHAN-II		AMERA		AMADAND		BATURA		AMBIKA		JAMPALI		JAGANNATHPUR		TOTAL		
		Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	
Dense Forest		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	11.49	0.00	0.00	0.67	0.34
Open Forest		0.00	0.00	1.70	14.08	0.06	2.02	0.00	0.00	0.00	0.00	0.21	2.23	0.02	1.49	1.22	20.92	0.08	1.21	6.40	3.21	
<b>Total Forest (A)</b>		<b>0.00</b>	<b>0.00</b>	<b>1.70</b>	<b>14.08</b>	<b>0.06</b>	<b>2.02</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.21</b>	<b>2.23</b>	<b>0.02</b>	<b>1.49</b>	<b>1.89</b>	<b>32.41</b>	<b>0.08</b>	<b>1.21</b>	<b>7.07</b>	<b>3.54</b>	
Scrubs (B)		0.64	23.44	2.06	17.07	0.26	8.75	0.15	2.26	0.31	2.38	1.74	18.45	0.12	9.25	0.33	5.66	0.41	6.19	19.43	9.74	
Social Forestry (C)		0.04	1.47	0.43	3.56	0.03	1.01	0.45	6.78	0.64	4.90	0.05	0.53	0.00	0.00	0.00	0.00	0.15	2.27	9.36	4.69	
Plantation on External OB Dump		0.00	0.00	0.00	0.00	0.03	1.01	0.08	1.20	0.18	1.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.73	5.88	
Plantation on Backfill / Excavated Area (Biological Reclamation)		0.00	0.00	0.17	1.41	0.37	12.46	0.15	2.26	0.00	0.00	0.00	0.00	0.00	0.00	0.19	3.26	0.00	0.00	18.78	9.41	
<b>Total Area under Plantation (Green Cover) (D)</b>		<b>0.04</b>	<b>1.47</b>	<b>0.60</b>	<b>4.97</b>	<b>0.43</b>	<b>14.48</b>	<b>0.68</b>	<b>10.24</b>	<b>0.82</b>	<b>6.28</b>	<b>0.05</b>	<b>0.53</b>	<b>0.00</b>	<b>0.00</b>	<b>0.19</b>	<b>3.26</b>	<b>0.15</b>	<b>2.27</b>	<b>39.88</b>	<b>19.99</b>	
<b>Total Vegetation (A to D)</b>		<b>0.68</b>	<b>24.91</b>	<b>4.36</b>	<b>36.12</b>	<b>0.75</b>	<b>25.25</b>	<b>0.83</b>	<b>12.50</b>	<b>1.13</b>	<b>8.66</b>	<b>2.00</b>	<b>21.21</b>	<b>0.14</b>	<b>10.74</b>	<b>2.41</b>	<b>41.33</b>	<b>0.64</b>	<b>9.67</b>	<b>66.37</b>	<b>33.26</b>	
Coal Quarry		0.28	10.26	0.30	2.49	0.52	17.51	0.00	0.00	0.39	2.99	0.00	0.00	0.00	0.00	0.46	7.89	0.39	5.89	13.84	6.94	
Coal Dump		0.04	1.47	0.08	0.66	0.17	5.72	0.00	0.00	0.12	0.92	0.00	0.00	0.00	0.00	0.24	4.12	0.02	0.30	2.07	1.04	
Advance Quarry Site		0.01	0.37	0.06	0.50	0.00	0.00	0.00	0.00	0.13	1.00	0.00	0.00	0.00	0.00	0.18	3.09	0.07	1.06	0.93	0.47	
Quarry Filled With Water		0.03	1.10	0.32	2.65	0.07	2.36	0.30	4.52	0.09	0.69	0.00	0.00	0.00	0.00	0.09	1.54	0.01	0.15	4.67	2.34	
<b>Total Area under Active Mining (F)</b>		<b>0.36</b>	<b>13.20</b>	<b>0.76</b>	<b>6.30</b>	<b>0.76</b>	<b>25.59</b>	<b>0.30</b>	<b>4.52</b>	<b>0.73</b>	<b>5.60</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.97</b>	<b>16.64</b>	<b>0.49</b>	<b>7.40</b>	<b>21.51</b>	<b>10.78</b>	
Barren OB Dump (G)		0.15	5.49	0.08	0.66	0.07	2.36	0.02	0.30	0.64	4.90	0.00	0.00	0.00	0.00	0.21	3.60	0.18	2.72	4.60	2.30	
Area under Barren Backfilling (Technical Reclamation)		0.15	5.49	2.12	17.56	1.09	36.70	1.10	16.57	1.44	11.03	0.00	0.00	0.00	0.00	0.87	14.92	0.22	3.32	35.08	17.58	
<b>Total Area under Technical Reclamation (H)</b>		<b>0.15</b>	<b>5.49</b>	<b>2.12</b>	<b>17.56</b>	<b>1.09</b>	<b>36.70</b>	<b>1.10</b>	<b>16.57</b>	<b>1.44</b>	<b>11.03</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.87</b>	<b>14.92</b>	<b>0.22</b>	<b>3.32</b>	<b>35.08</b>	<b>17.58</b>	
<b>Total Area under Mining Operations (F+G+H)</b>		<b>0.66</b>	<b>24.18</b>	<b>2.96</b>	<b>24.52</b>	<b>1.92</b>	<b>64.65</b>	<b>1.42</b>	<b>21.39</b>	<b>2.81</b>	<b>21.53</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>2.05</b>	<b>35.16</b>	<b>0.89</b>	<b>13.44</b>	<b>61.19</b>	<b>30.67</b>	
Waste Lands		0.18	6.59	1.22	10.11	0.14	4.71	0.26	3.92	1.59	12.18	0.46	4.88	0.03	2.24	0.32	5.51	0.35	5.29	16.93	8.49	
Fly Ash Pond / Sand Body		0.00	0.00	0.02	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.08	
<b>Total Wasteland (I)</b>		<b>0.18</b>	<b>6.59</b>	<b>1.24</b>	<b>10.28</b>	<b>0.14</b>	<b>4.71</b>	<b>0.26</b>	<b>3.92</b>	<b>1.59</b>	<b>12.18</b>	<b>0.48</b>	<b>5.09</b>	<b>0.03</b>	<b>2.24</b>	<b>0.32</b>	<b>5.51</b>	<b>0.35</b>	<b>5.29</b>	<b>17.08</b>	<b>8.56</b>	
Reservoir, nallah, ponds		0.02	0.73	0.20	1.66	0.01	0.34	0.04	0.60	0.04	0.31	0.11	1.17	0.02	1.49	0.02	0.34	0.11	1.66	1.94	0.97	
<b>Total Water bodies (J)</b>		<b>0.02</b>	<b>0.73</b>	<b>0.20</b>	<b>1.66</b>	<b>0.01</b>	<b>0.34</b>	<b>0.04</b>	<b>0.60</b>	<b>0.04</b>	<b>0.31</b>	<b>0.11</b>	<b>1.17</b>	<b>0.02</b>	<b>1.49</b>	<b>0.02</b>	<b>0.34</b>	<b>0.11</b>	<b>1.66</b>	<b>1.94</b>	<b>0.97</b>	
Crop Lands		0.05	1.83	0.40	3.31	0.00	0.00	0.40	6.02	1.64	12.57	0.07	0.74	0.03	2.54	0.00	0.00	0.44	6.65	5.04	2.53	
Fallow Lands		1.10	40.29	2.74	22.70	0.12	4.04	3.53	53.16	5.52	42.30	6.72	71.26	1.08	80.75	1.01	17.32	4.07	61.48	39.98	20.04	
<b>Total Agriculture (K)</b>		<b>1.15</b>	<b>42.12</b>	<b>3.14</b>	<b>26.01</b>	<b>0.12</b>	<b>4.04</b>	<b>3.93</b>	<b>59.18</b>	<b>7.16</b>	<b>54.87</b>	<b>6.79</b>	<b>72.00</b>	<b>1.12</b>	<b>83.29</b>	<b>1.01</b>	<b>17.32</b>	<b>4.51</b>	<b>68.13</b>	<b>45.02</b>	<b>22.56</b>	
Urban Settlement		0.00	0.00	0.13	1.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.09	1.05	
Rural Settlement		0.04	1.47	0.03	0.25	0.01	0.34	0.15	2.26	0.24	1.84	0.05	0.53	0.03	2.24	0.02	0.34	0.10	1.51	2.50	1.26	
Industrial Settlement		0.00	0.00	0.01	0.08	0.02	0.67	0.01	0.15	0.08	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.30	3.33	1.67	
<b>Total Settlement (L)</b>		<b>0.04</b>	<b>1.47</b>	<b>0.17</b>	<b>1.41</b>	<b>0.03</b>	<b>1.01</b>	<b>0.16</b>	<b>2.41</b>	<b>0.32</b>	<b>2.45</b>	<b>0.05</b>	<b>0.53</b>	<b>0.03</b>	<b>2.24</b>	<b>0.02</b>	<b>0.34</b>	<b>0.12</b>	<b>1.81</b>	<b>7.91</b>	<b>3.97</b>	
<b>Grand Total (A to L)</b>		<b>2.73</b>	<b>100.00</b>	<b>12.07</b>	<b>100.00</b>	<b>2.97</b>	<b>100.00</b>	<b>6.64</b>	<b>100.00</b>	<b>13.05</b>	<b>100.00</b>	<b>9.43</b>	<b>100.00</b>	<b>1.34</b>	<b>100.00</b>	<b>5.83</b>	<b>100.00</b>	<b>6.62</b>	<b>100.00</b>	<b>199.52</b>	<b>100.00</b>	



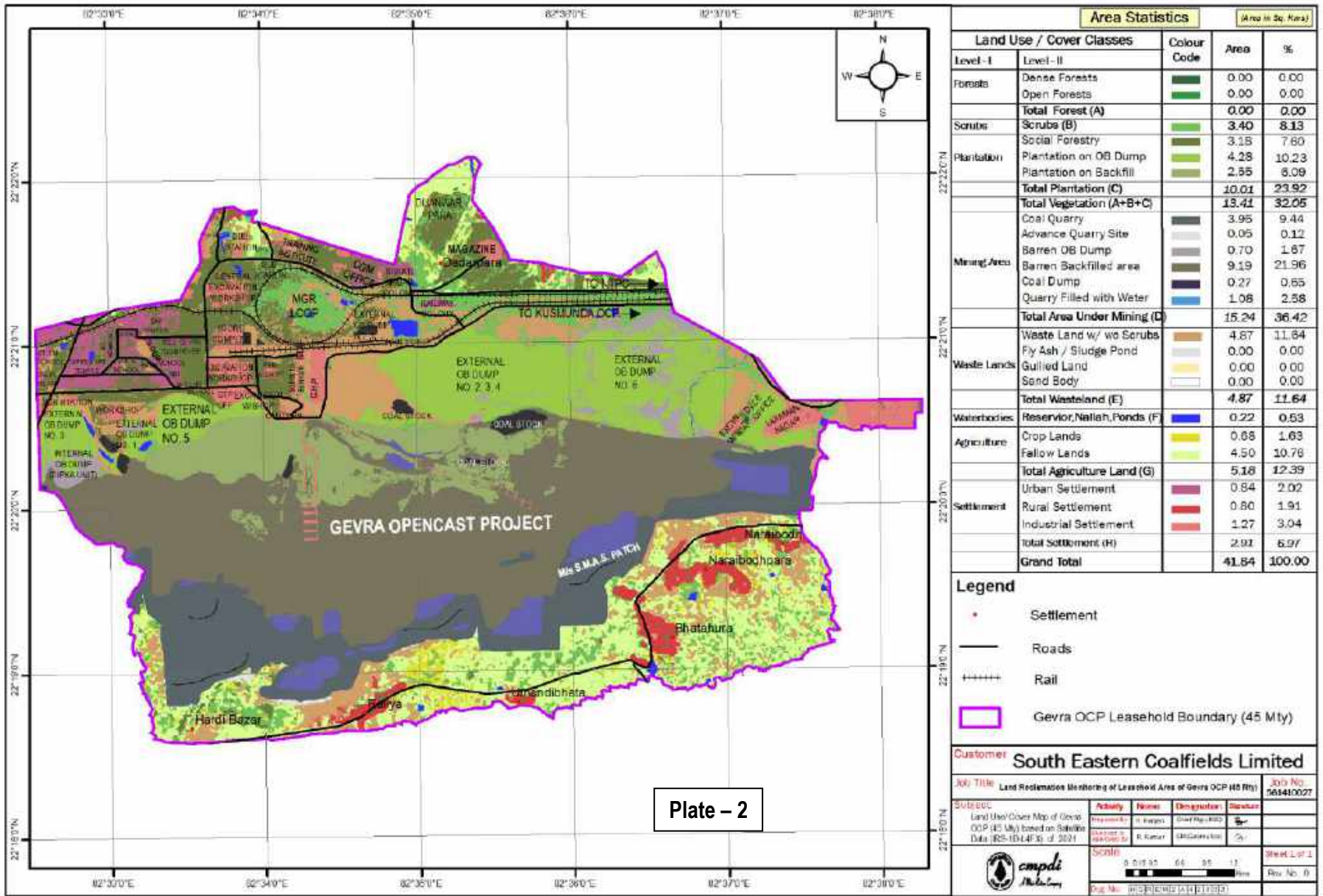


Plate - 2

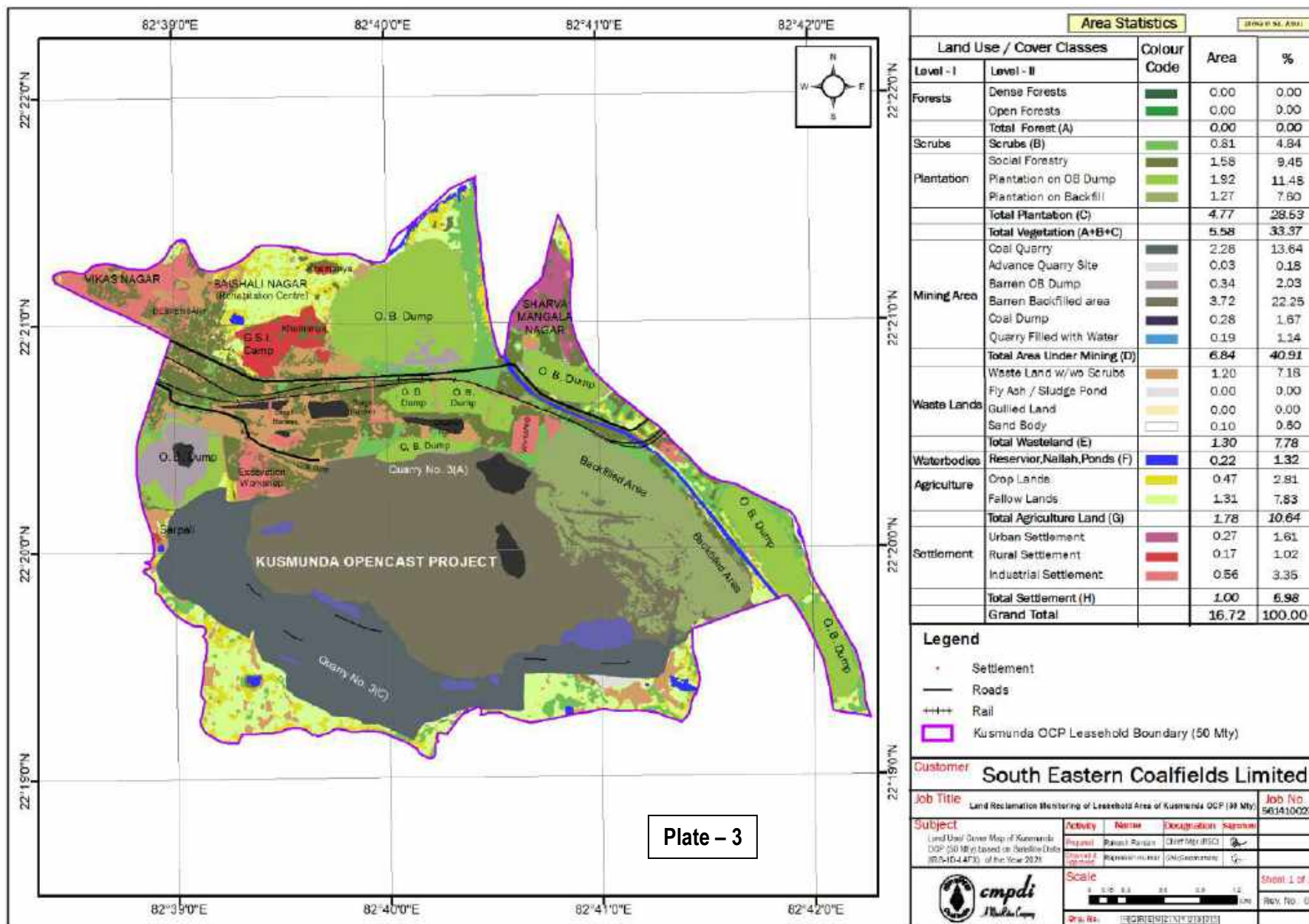


Plate - 3

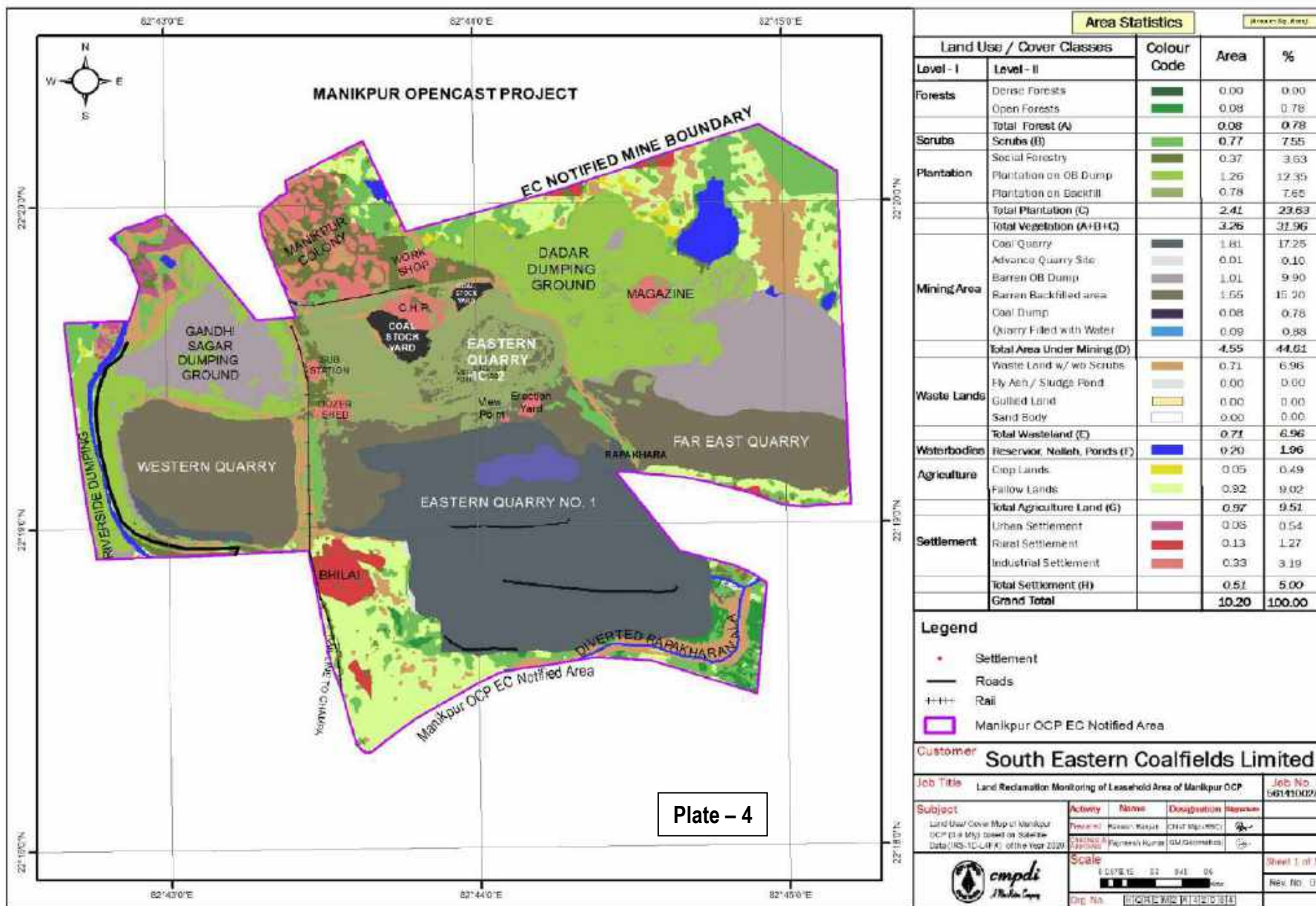
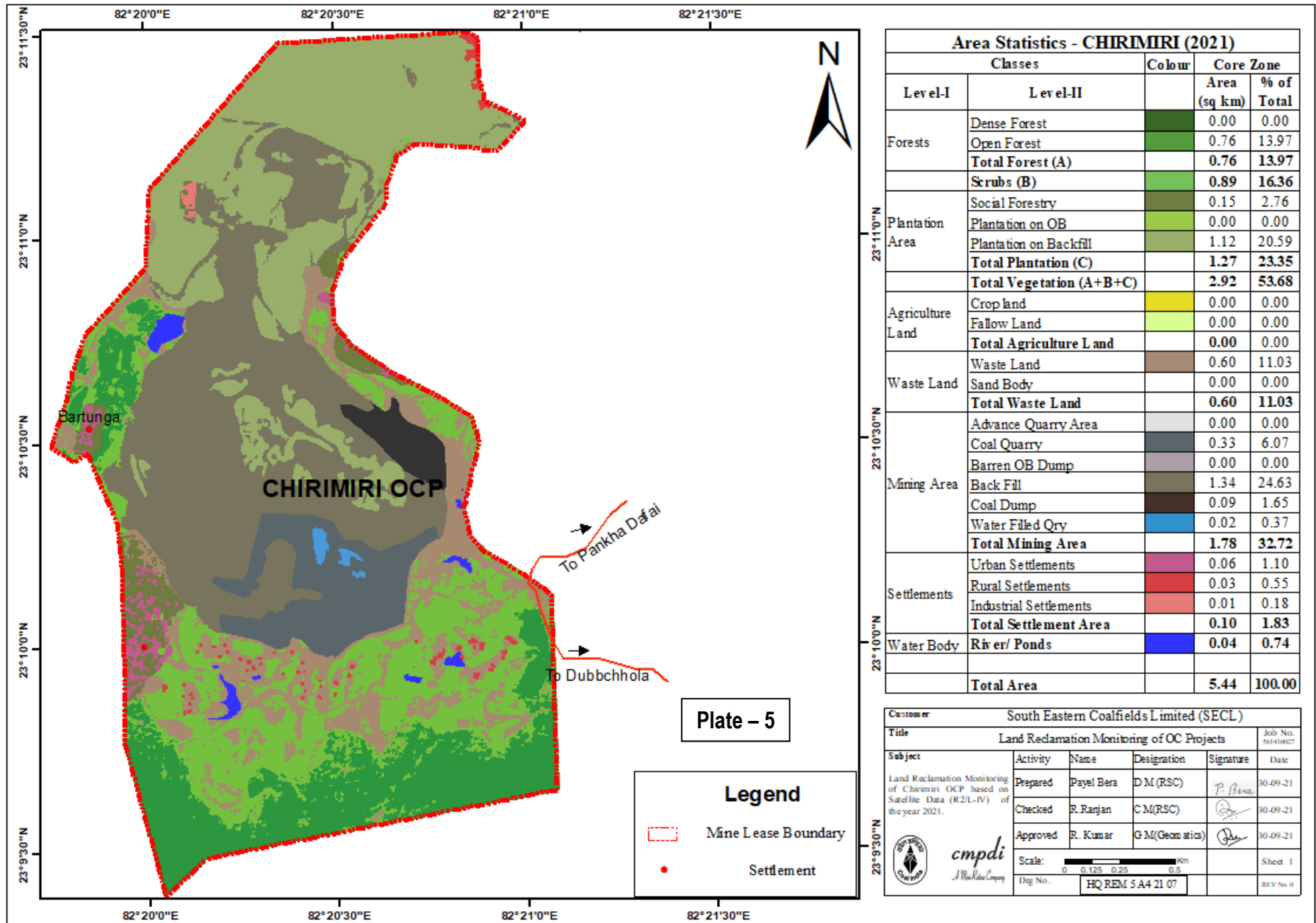
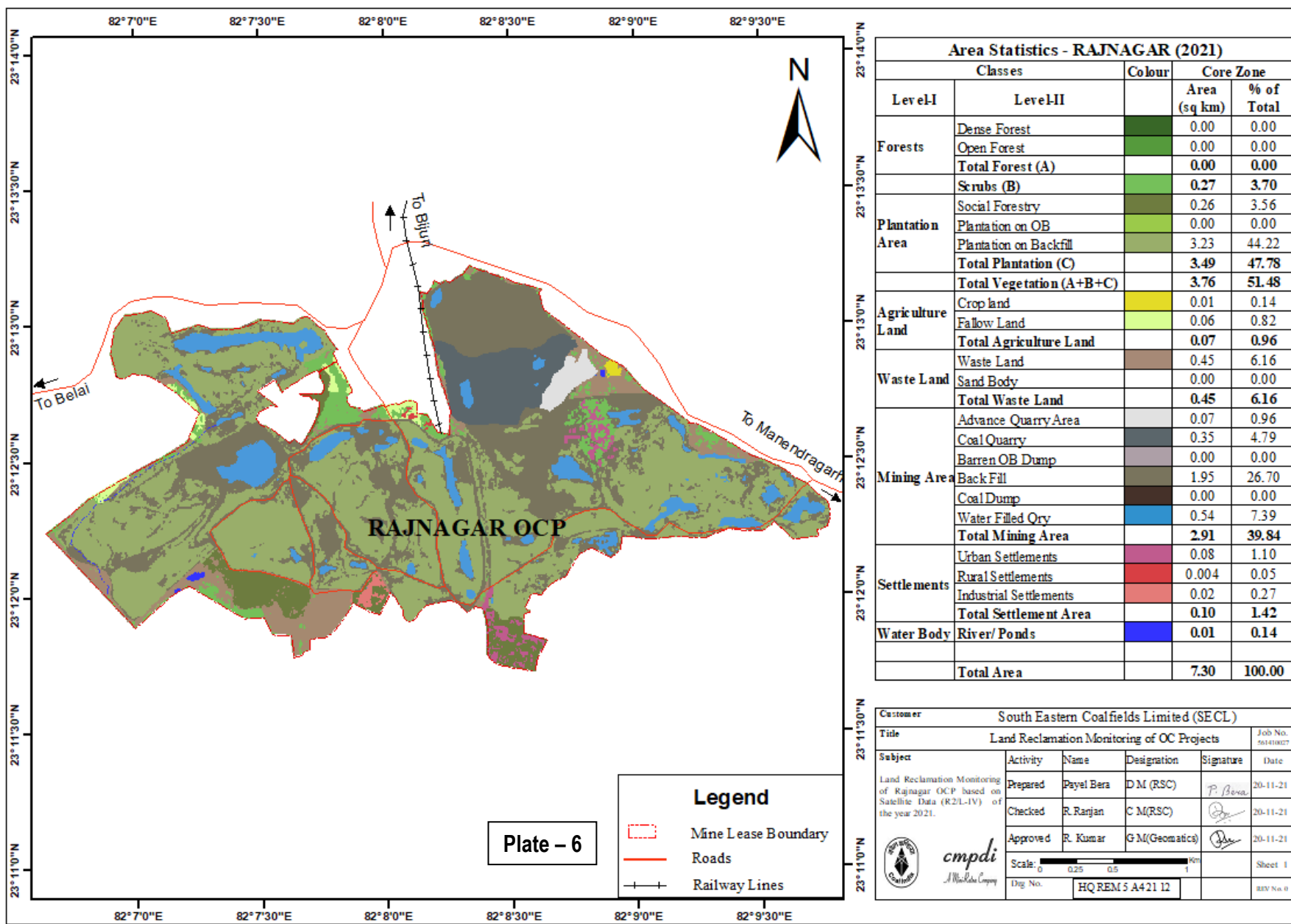


Plate - 4

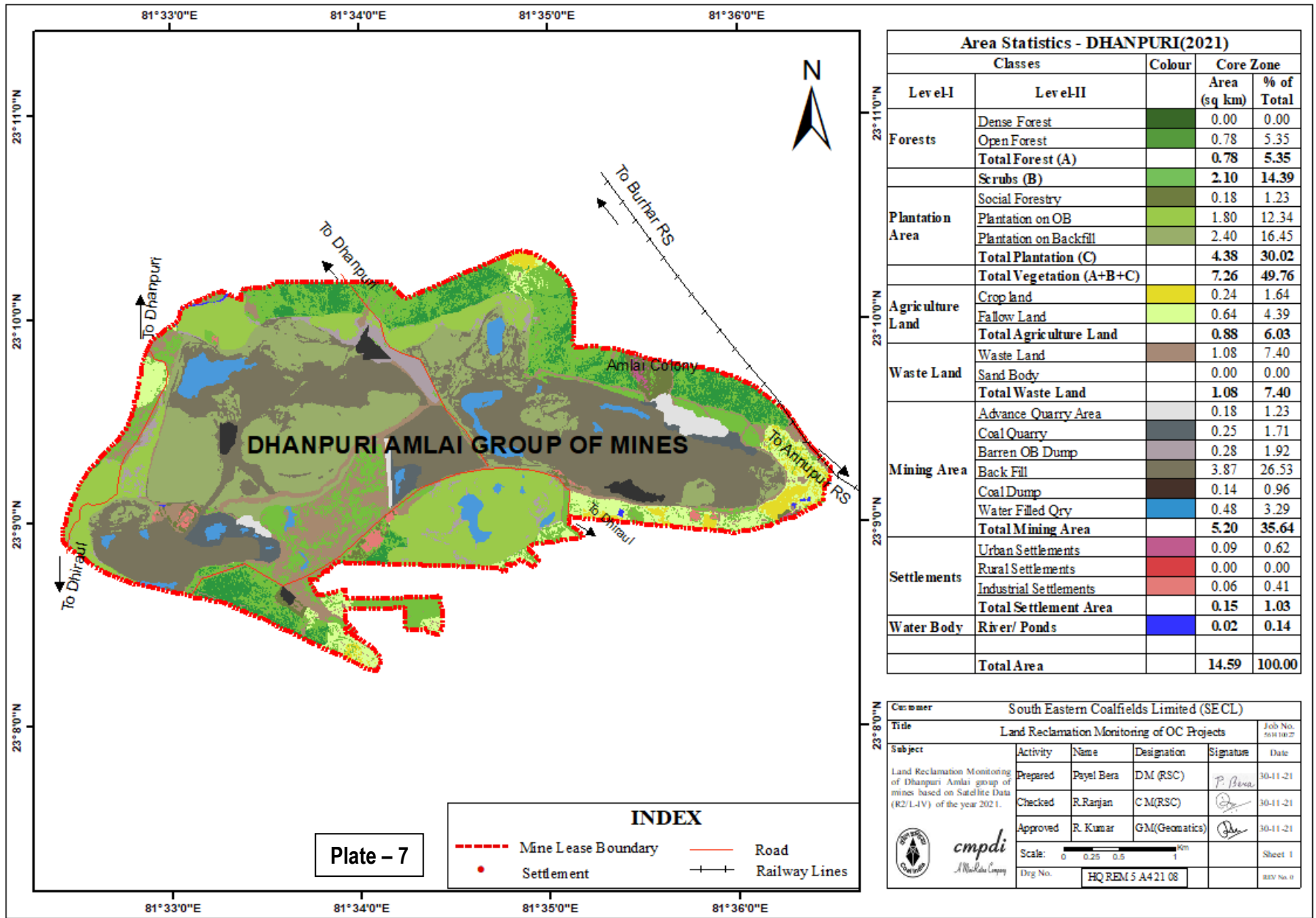


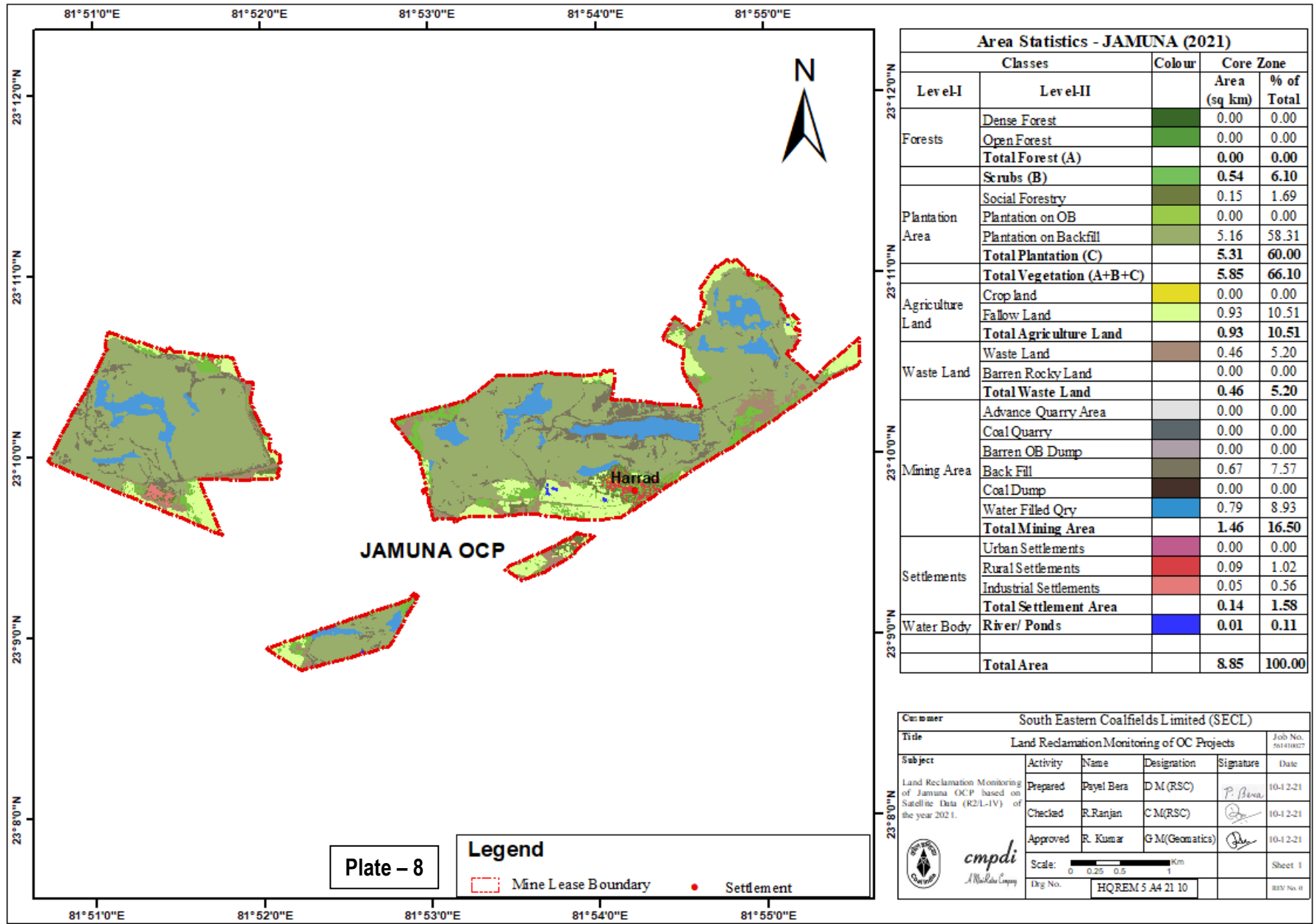




Area Statistics - RAJNAGAR (2021)				
Classes		Colour	Core Zone	
Level-I	Level-II		Area (sq km)	% of Total
Forests	Dense Forest		0.00	0.00
	Open Forest		0.00	0.00
	<b>Total Forest (A)</b>		<b>0.00</b>	<b>0.00</b>
	Scrubs (B)		0.27	3.70
Plantation Area	Social Forestry		0.26	3.56
	Plantation on OB		0.00	0.00
	Plantation on Backfill		3.23	44.22
	<b>Total Plantation (C)</b>		<b>3.49</b>	<b>47.78</b>
	<b>Total Vegetation (A+B+C)</b>		<b>3.76</b>	<b>51.48</b>
Agriculture Land	Crop land		0.01	0.14
	Fallow Land		0.06	0.82
	<b>Total Agriculture Land</b>		<b>0.07</b>	<b>0.96</b>
Waste Land	Waste Land		0.45	6.16
	Sand Body		0.00	0.00
	<b>Total Waste Land</b>		<b>0.45</b>	<b>6.16</b>
Mining Area	Advance Quarry Area		0.07	0.96
	Coal Quarry		0.35	4.79
	Barren OB Dump		0.00	0.00
	Back Fill		1.95	26.70
	Coal Dump		0.00	0.00
	Water Filled Ory		0.54	7.39
	<b>Total Mining Area</b>		<b>2.91</b>	<b>39.84</b>
Settlements	Urban Settlements		0.08	1.10
	Rural Settlements		0.004	0.05
	Industrial Settlements		0.02	0.27
	<b>Total Settlement Area</b>		<b>0.10</b>	<b>1.42</b>
Water Body	River/ Ponds		0.01	0.14
	<b>Total Area</b>		<b>7.30</b>	<b>100.00</b>

Customer: South Eastern Coalfields Limited (SECL)					
Title: Land Reclamation Monitoring of OC Projects					Job No. 561410027
Subject: Land Reclamation Monitoring of Rajnagar OCP based on Satellite Data (R21-1V) of the year 2021.	Activity	Name	Designation	Signature	Date
	Prepared	Payel Bera	DM (RSC)	<i>P. Bera</i>	20-11-21
	Checked	R. Ranjan	C M(RSC)	<i>R. Ranjan</i>	20-11-21
	Approved	R. Kumar	G.M.(Geomatics)	<i>R. Kumar</i>	20-11-21
Scale: 0 0.25 0.5 1 Km					
Dwg. No. HQREM 5 A421 12		Sheet 1			
REV No. 0					





Area Statistics - JAMUNA (2021)				
Classes		Colour	Core Zone	
Level-I	Level-II		Area (sq km)	% of Total
Forests	Dense Forest		0.00	0.00
	Open Forest		0.00	0.00
	<b>Total Forest (A)</b>		<b>0.00</b>	<b>0.00</b>
	<b>Scrubs (B)</b>		<b>0.54</b>	<b>6.10</b>
Plantation Area	Social Forestry		0.15	1.69
	Plantation on OB		0.00	0.00
	Plantation on Backfill		5.16	58.31
	<b>Total Plantation (C)</b>		<b>5.31</b>	<b>60.00</b>
	<b>Total Vegetation (A+B+C)</b>		<b>5.85</b>	<b>66.10</b>
Agriculture Land	Crop Land		0.00	0.00
	Fallow Land		0.93	10.51
	<b>Total Agriculture Land</b>		<b>0.93</b>	<b>10.51</b>
Waste Land	Waste Land		0.46	5.20
	Barren Rocky Land		0.00	0.00
	<b>Total Waste Land</b>		<b>0.46</b>	<b>5.20</b>
Mining Area	Advance Quarry Area		0.00	0.00
	Coal Quarry		0.00	0.00
	Barren OB Dump		0.00	0.00
	Back Fill		0.67	7.57
	Coal Dump		0.00	0.00
	Water Filled Qry		0.79	8.93
	<b>Total Mining Area</b>		<b>1.46</b>	<b>16.50</b>
Settlements	Urban Settlements		0.00	0.00
	Rural Settlements		0.09	1.02
	Industrial Settlements		0.05	0.56
	<b>Total Settlement Area</b>		<b>0.14</b>	<b>1.58</b>
Water Body	River/ Ponds		0.01	0.11
	<b>Total Area</b>		<b>8.85</b>	<b>100.00</b>

Customer: South Eastern Coalfields Limited (SECL)					
Title:	Land Reclamation Monitoring of OC Projects				Job No. 561410027
Subject:	Activity	Name	Designation	Signature	Date
Land Reclamation Monitoring of Jamuna OCP based on Satellite Data (R2-L-IV) of the year 2021.	Prepared	Payel Bera	DM (RSC)	<i>P. Bera</i>	10-12-21
	Checked	R. Ranjan	CM (RSC)	<i>R. Ranjan</i>	10-12-21
	Approved	R. Kumar	GM (Geomatics)	<i>R. Kumar</i>	10-12-21
Scale:		0 0.25 0.5 1 Km		Sheet 1	
Dwg No.		HQREM 5 A4 21 10			

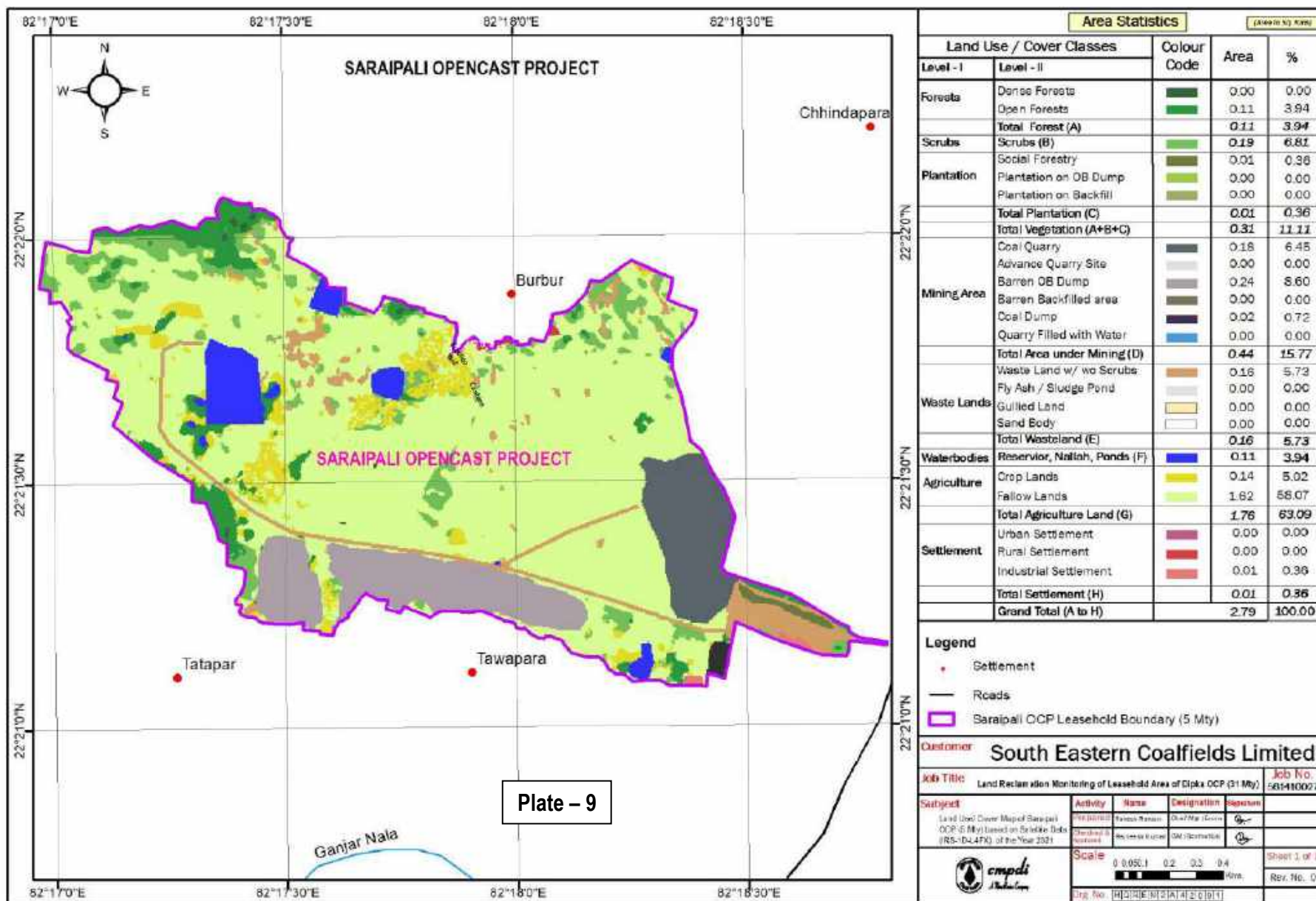
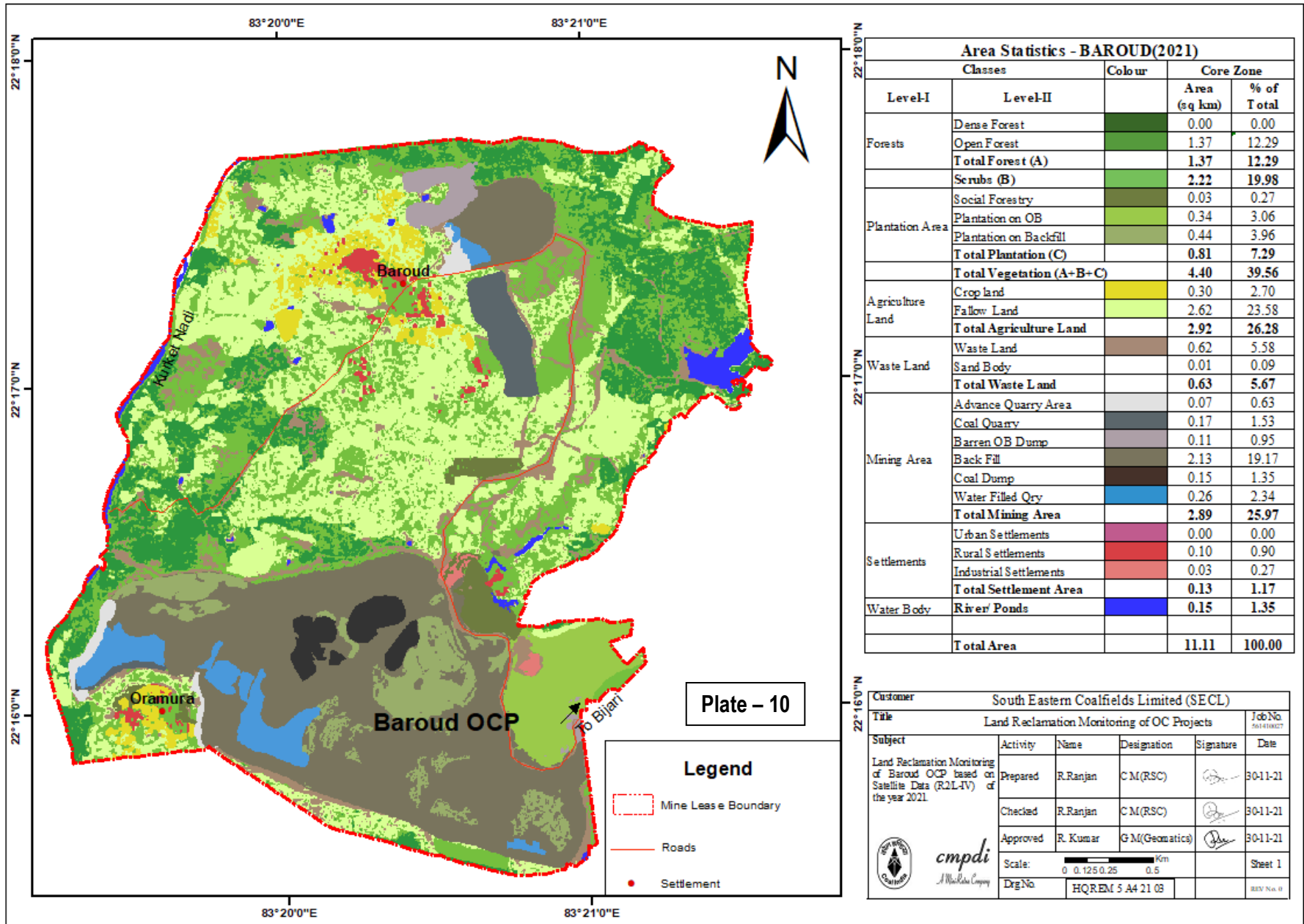
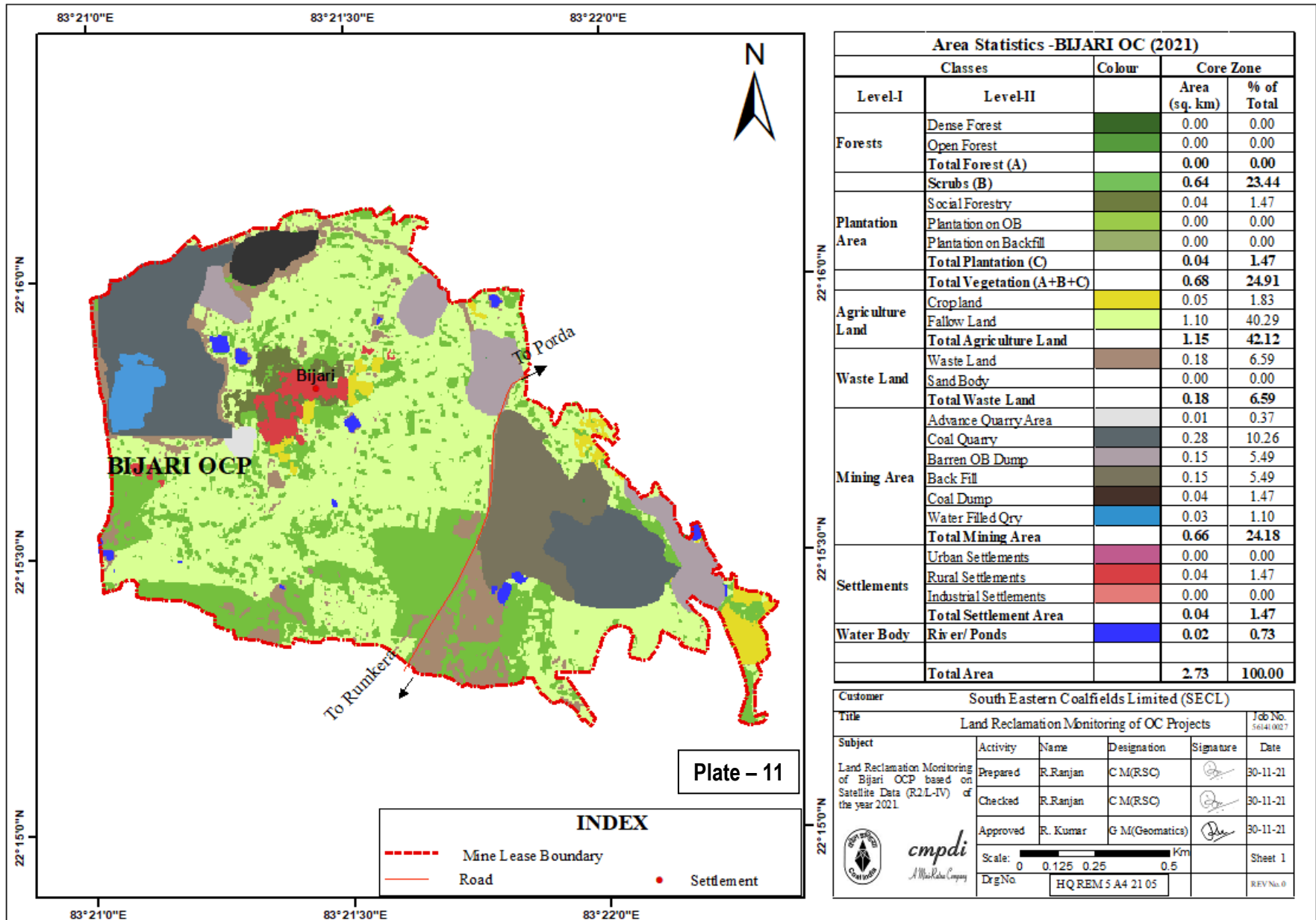


Plate - 9



Area Statistics - BAROUD(2021)				
Classes		Colour	Core Zone	
Level-I	Level-II		Area (sq km)	% of Total
Forests	Dense Forest		0.00	0.00
	Open Forest		1.37	12.29
	<b>Total Forest (A)</b>		<b>1.37</b>	<b>12.29</b>
	<b>Scrubs (B)</b>		<b>2.22</b>	<b>19.98</b>
Plantation Area	Social Forestry		0.03	0.27
	Plantation on OB		0.34	3.06
	Plantation on Backfill		0.44	3.96
	<b>Total Plantation (C)</b>		<b>0.81</b>	<b>7.29</b>
	<b>Total Vegetation (A+B+C)</b>		<b>4.40</b>	<b>39.56</b>
Agriculture Land	Crop land		0.30	2.70
	Fallow Land		2.62	23.58
	<b>Total Agriculture Land</b>		<b>2.92</b>	<b>26.28</b>
Waste Land	Waste Land		0.62	5.58
	Sand Body		0.01	0.09
	<b>Total Waste Land</b>		<b>0.63</b>	<b>5.67</b>
Mining Area	Advance Quarry Area		0.07	0.63
	Coal Quarry		0.17	1.53
	Barren OB Dump		0.11	0.95
	Back Fill		2.13	19.17
	Coal Dump		0.15	1.35
	<b>Total Mining Area</b>		<b>2.89</b>	<b>25.97</b>
Settlements	Urban Settlements		0.00	0.00
	Rural Settlements		0.10	0.90
	Industrial Settlements		0.03	0.27
	<b>Total Settlement Area</b>		<b>0.13</b>	<b>1.17</b>
Water Body	River/ Ponds		0.15	1.35
	<b>Total Area</b>		<b>11.11</b>	<b>100.00</b>

Customer		South Eastern Coalfields Limited (SECL)			
Title		Land Reclamation Monitoring of OC Projects			
Subject		Activity	Name	Designation	Signature
Land Reclamation Monitoring of Baroud OCP based on Satellite Data (R2L-TV) of the year 2021		Prepared	R.Ranjan	CM(RSC)	30-11-21
		Checked	R.Ranjan	CM(RSC)	30-11-21
		Approved	R. Kumar	GM(Geomatics)	30-11-21
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		Dwg.No	HQREM 5 A4 21 03		REV No. 0



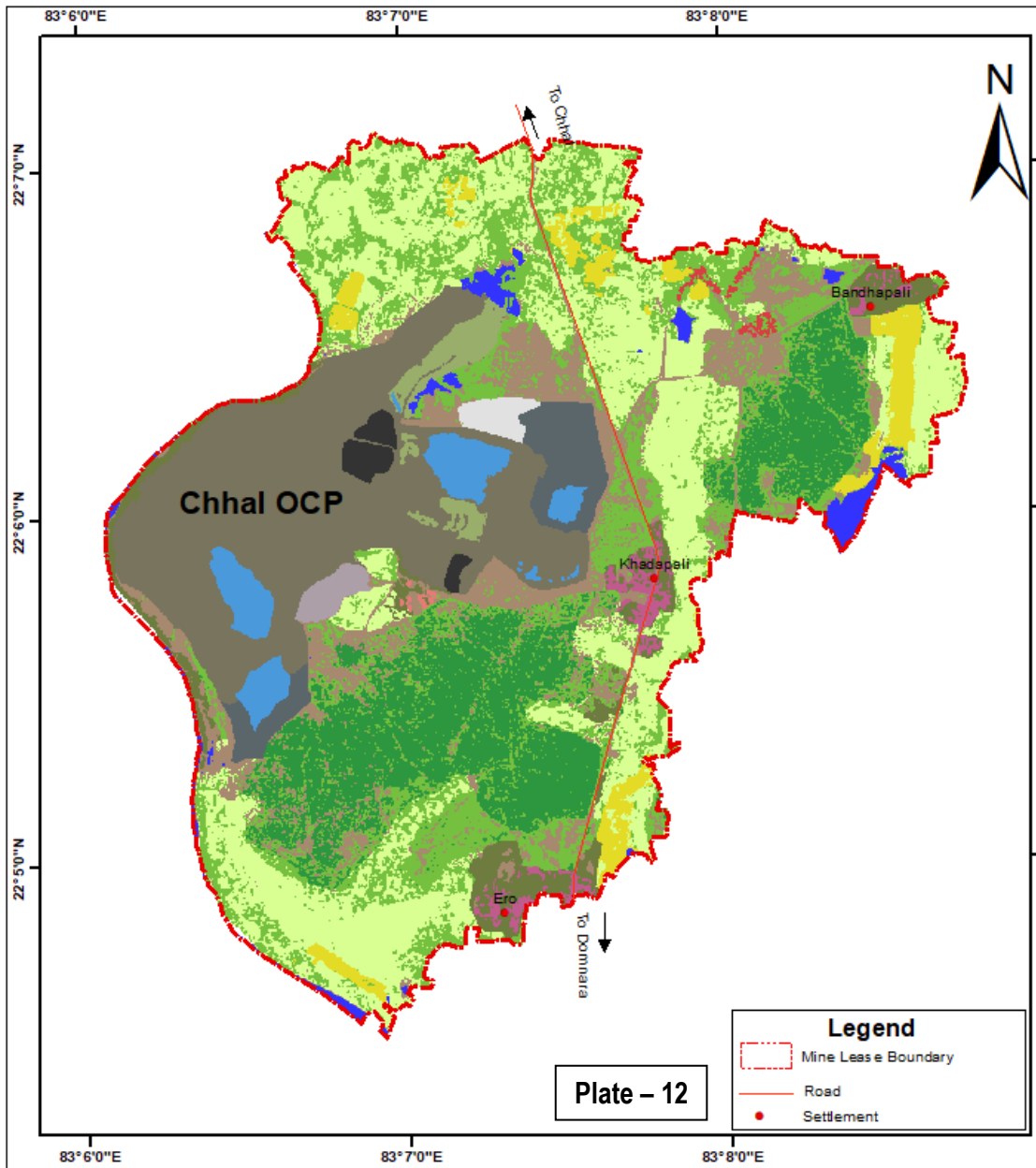
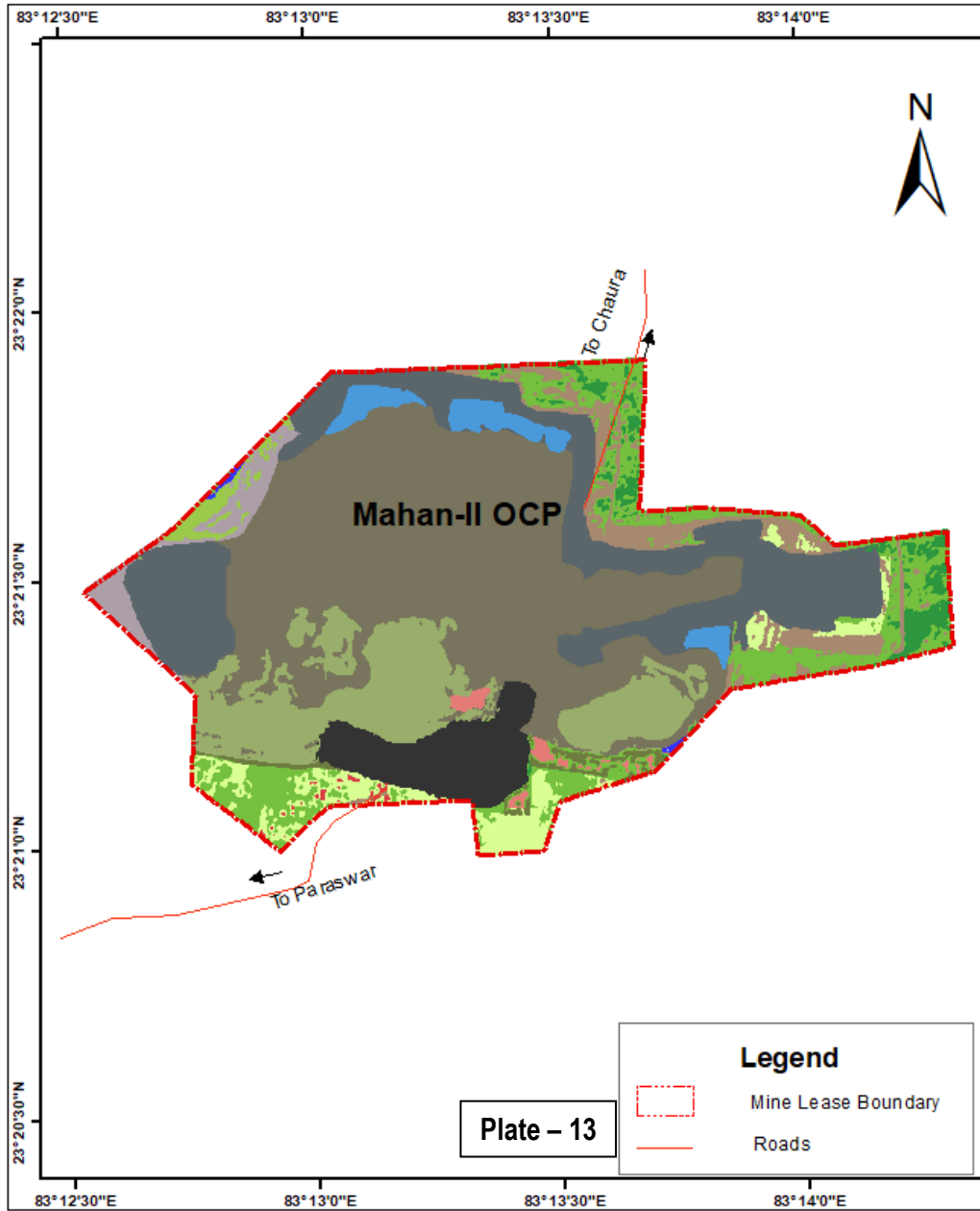


Plate - 12

Area Statistics -Chhal OCP(2021)				
Classes		Colour	Core Zone	
Level-I	Level-II		Area (sq km)	% of Total
Forests	Dense Forest		0.00	0.00
	Open Forest		1.70	14.08
	<b>Total Forest (A)</b>		<b>1.70</b>	<b>14.08</b>
	<b>Scrubs (B)</b>		<b>2.06</b>	<b>17.07</b>
Plantation Area	Social Forestry		0.43	3.56
	Plantation on OB		0.00	0.00
	Plantation on Backfill		0.17	1.41
	<b>Total Plantation (C)</b>		<b>0.60</b>	<b>4.97</b>
	<b>Total Vegetation (A+B+C)</b>		<b>4.36</b>	<b>36.12</b>
Agriculture Land	Crop land		0.40	3.31
	Fallow Land		2.74	22.70
	<b>Total Agriculture Land</b>		<b>3.14</b>	<b>26.01</b>
Waste Land	Waste Land		1.22	10.11
	Sand Body		0.02	0.17
	<b>Total Waste Land</b>		<b>1.24</b>	<b>10.28</b>
Mining Area	Advance Quarry Area		0.06	0.50
	Coal Quarry		0.30	2.49
	Barren OB Dump		0.08	0.66
	Back Fill		2.12	17.56
	Coal Dump		0.08	0.66
	Water Filled Qry		0.32	2.65
	<b>Total Mining Area</b>		<b>2.96</b>	<b>24.52</b>
Settlements	Urban Settlements		0.13	1.08
	Rural Settlements		0.03	0.25
	Industrial Settlements		0.01	0.08
	<b>Total Settlement Area</b>		<b>0.17</b>	<b>1.41</b>
Water Body	River/ Ponds		0.20	1.66
	<b>Total Area</b>		<b>12.07</b>	<b>100.00</b>

Customer: South Eastern Coalfields Limited (SECL)					
Title	Land Reclamation Monitoring of OC Projects				Job No. 561410027
Subject	Activity	Name	Designation	Signature	Date
Land Reclamation Monitoring of Chhal OCP based on Satellite Data (R2/L-IV) of the year 2021.	Prepared	R.Ranjan	C/M(RSC)		30-11-21
	Checked	R.Ranjan	C/M(RSC)		30-11-21
	Approved	R. Kumar	G M(Geomatics)		30-11-21
Scale: 0 0.25 0.5 1 Km					Sheet 1
Drg No. HQ REM 5 A4 21 06					REV No. 0



Area Statistics - Mahan II(2021)				
Classes		Colour	Core Zone	
Level-I	Level-II		Area (sq km.)	% of Total
Forests	Dense Forest		0.00	0.00
	Open Forest		0.06	2.02
	<b>Total Forest (A)</b>		<b>0.06</b>	<b>2.02</b>
	<b>Scrubs (B)</b>		<b>0.26</b>	<b>8.75</b>
Plantation Area	Social Forestry		0.03	1.01
	Plantation on OB		0.03	1.01
	Plantation on Backfill		0.37	12.46
	<b>Total Plantation (C)</b>		<b>0.43</b>	<b>14.48</b>
	<b>Total Vegetation (A+B+C)</b>		<b>0.75</b>	<b>25.25</b>
Agriculture Land	Crop land		0.00	0.00
	Fallow Land		0.12	4.04
	<b>Total Agriculture Land</b>		<b>0.12</b>	<b>4.04</b>
Waste Land	Waste Land		0.14	4.71
	Sand Body		0.00	0.00
	<b>Total Waste Land</b>		<b>0.14</b>	<b>4.71</b>
Mining Area	Advance Quarry Area		0.00	0.00
	Coal Quarry		0.52	17.51
	Barren OB Dump		0.07	2.36
	Back Fill		1.09	36.70
	Coal Dump		0.17	5.72
	Water Filled Qry		0.07	2.36
	<b>Total Mining Area</b>		<b>1.92</b>	<b>64.65</b>
Settlements	Urban Settlements		0.00	0.00
	Rural Settlements		0.01	0.34
	Industrial Settlements		0.02	0.67
	<b>Total Settlement Area</b>		<b>0.03</b>	<b>1.01</b>
Water Body	River/ Ponds		0.01	0.34
	<b>Total Area</b>		<b>2.97</b>	<b>100.00</b>

Customer		South Eastern Coalfields Limited (SECL)			
Title	Land Reclamation Monitoring of OC Projects				Job No. 561410027
Subject	Activity	Name	Designation	Signature	Date
Land Reclamation Monitoring of Mahan-II OCP based on Satellite Data (R2/L-IV) of the year 2021.	Prepared	Payel Bera	D M (RSC)	<i>P. Bera</i>	10-12-21
	Checked	R.Ranjan	C M(RSC)	<i>R.Ranjan</i>	10-12-21
	Approved	R. Kumar	G M(Geomatics)	<i>R. Kumar</i>	10-12-21
Scale: 0 0.125 0.25 0.5 Km		Drg No		HQ REM 5 A 4 21 11	
Sheet 1		REV No. 0			



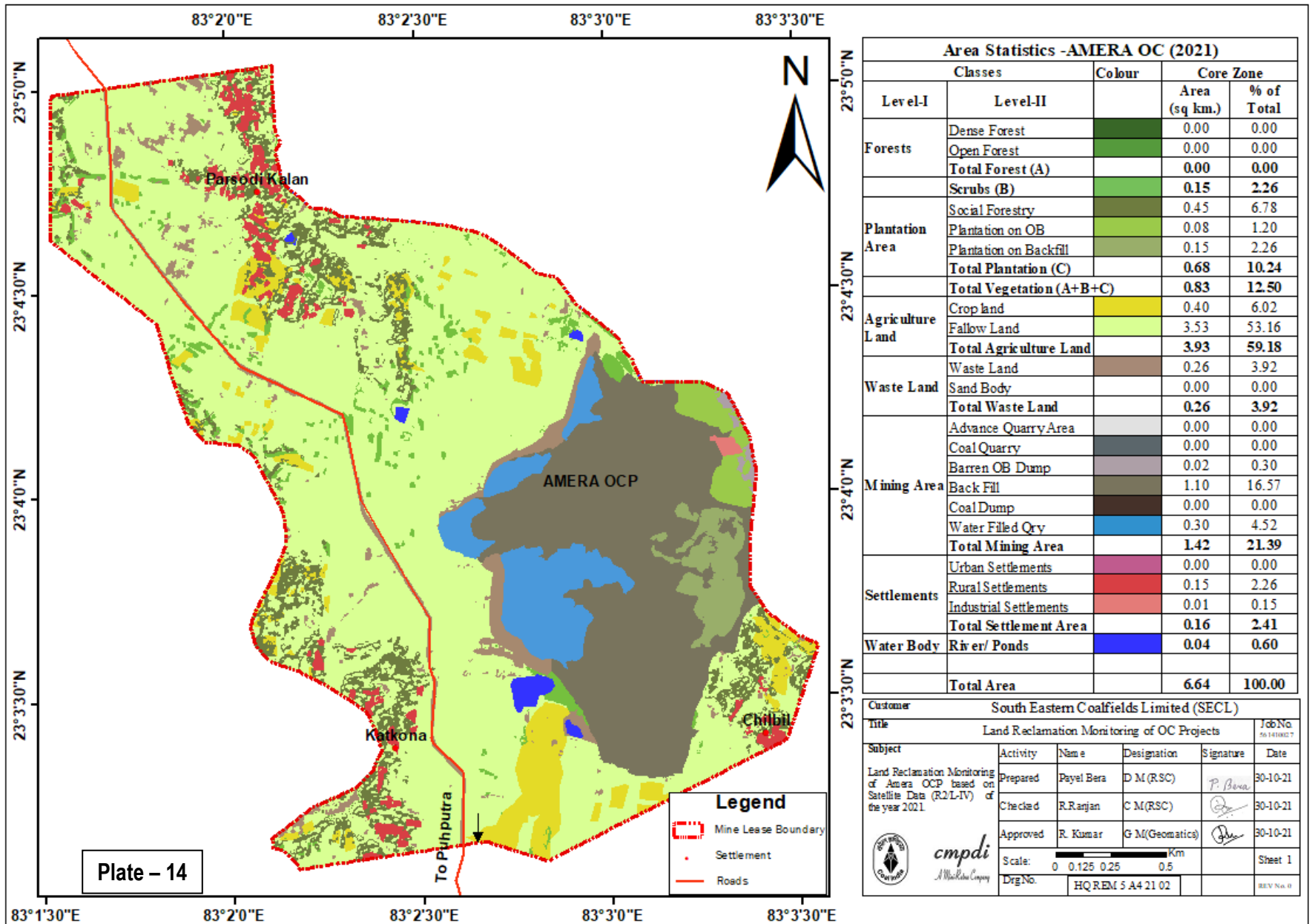


Plate - 14

Area Statistics -AMERA OC (2021)				
Level-I	Level-II	Colour	Core Zone	
			Area (sq km.)	% of Total
Forests	Dense Forest		0.00	0.00
	Open Forest		0.00	0.00
	<b>Total Forest (A)</b>		<b>0.00</b>	<b>0.00</b>
	Scrubs (B)		0.15	2.26
Plantation Area	Social Forestry		0.45	6.78
	Plantation on OB		0.08	1.20
	Plantation on Backfill		0.15	2.26
	<b>Total Plantation (C)</b>		<b>0.68</b>	<b>10.24</b>
	<b>Total Vegetation (A+B+C)</b>		<b>0.83</b>	<b>12.50</b>
Agriculture Land	Crop land		0.40	6.02
	Fallow Land		3.53	53.16
	<b>Total Agriculture Land</b>		<b>3.93</b>	<b>59.18</b>
Waste Land	Waste Land		0.26	3.92
	Sand Body		0.00	0.00
	<b>Total Waste Land</b>		<b>0.26</b>	<b>3.92</b>
Mining Area	Advance Quarry Area		0.00	0.00
	Coal Quarry		0.00	0.00
	Barren OB Dump		0.02	0.30
	Back Fill		1.10	16.57
	Coal Dump		0.00	0.00
	Water Filled Qry		0.30	4.52
	<b>Total Mining Area</b>		<b>1.42</b>	<b>21.39</b>
Settlements	Urban Settlements		0.00	0.00
	Rural Settlements		0.15	2.26
	Industrial Settlements		0.01	0.15
	<b>Total Settlement Area</b>		<b>0.16</b>	<b>2.41</b>
Water Body	River/ Ponds		0.04	0.60
	<b>Total Area</b>		<b>6.64</b>	<b>100.00</b>

Customer: South Eastern Coalfields Limited (SECL)					
Title: Land Reclamation Monitoring of OC Projects		Job No: 561410027			
Subject: Land Reclamation Monitoring of Amera OCP based on Satellite Data (R/L-IV) of the year 2021	Activity	Name	Designation	Signature	Date
	Prepared	Payel Bera	D M (RSC)	<i>P. Bera</i>	30-10-21
	Checked	R.Ranjan	C M (RSC)	<i>R.Ranjan</i>	30-10-21
	Approved	R. Kumar	G M (Geomatics)	<i>R. Kumar</i>	30-10-21
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					REV No. 0



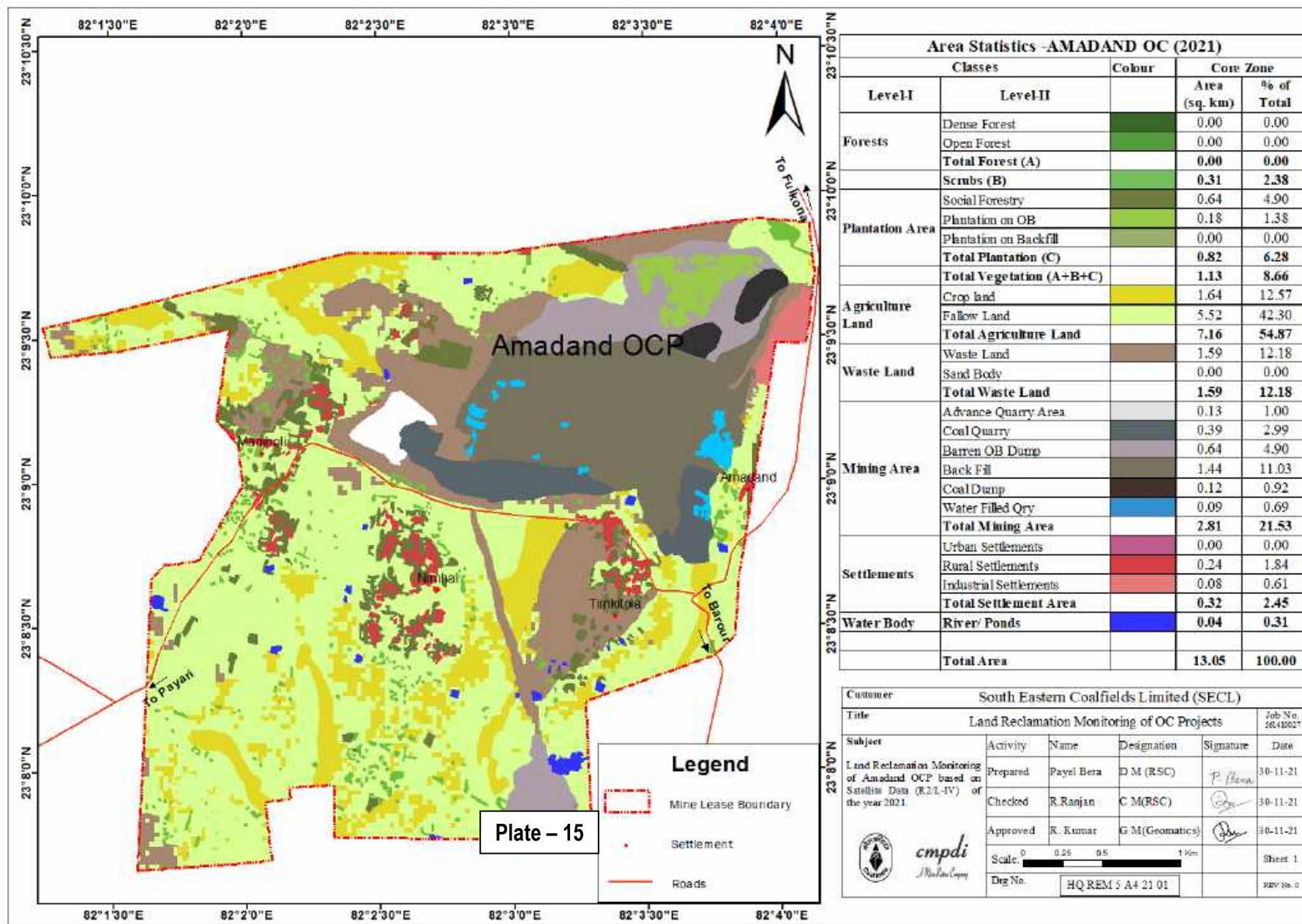
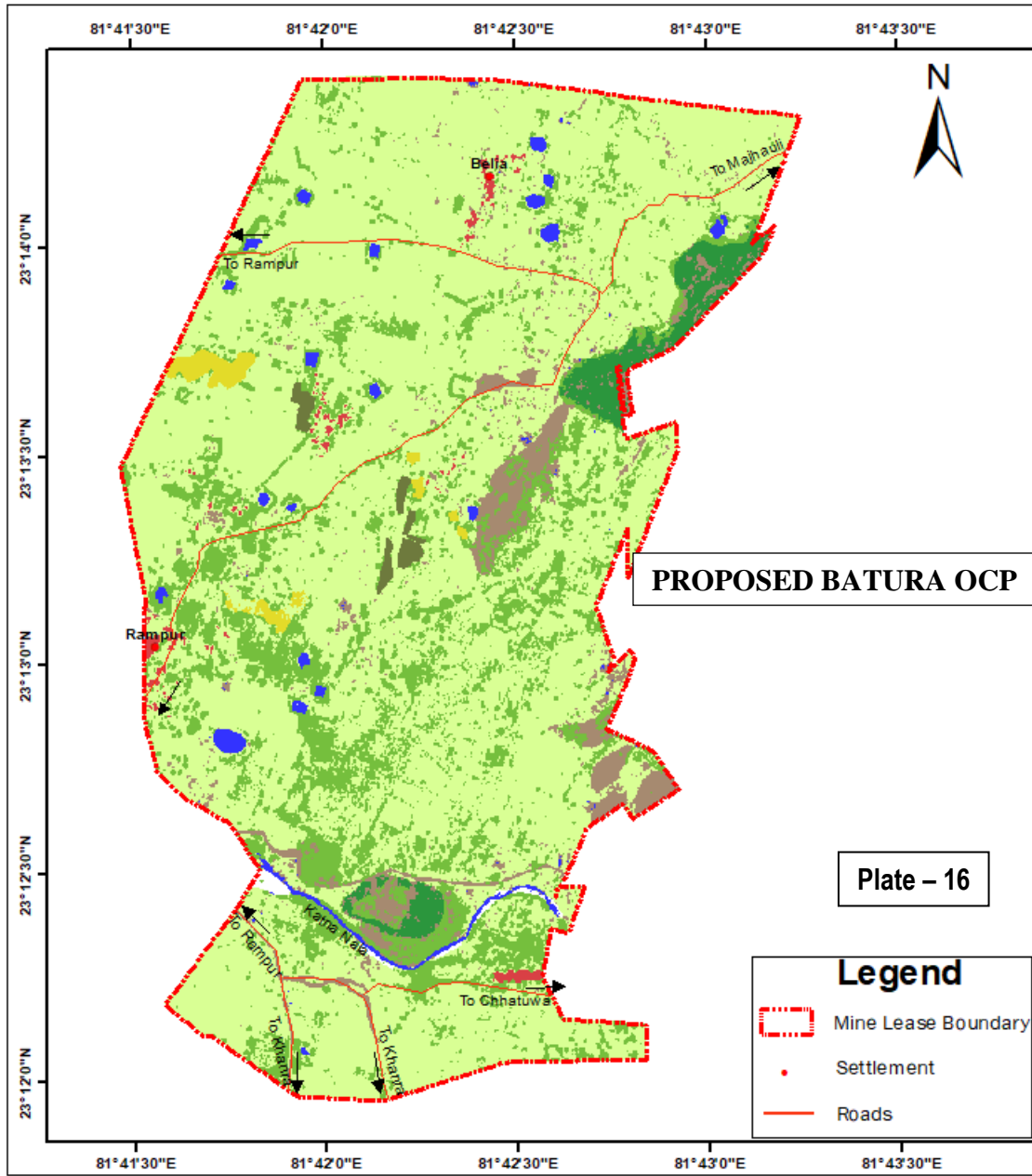


Plate - 15

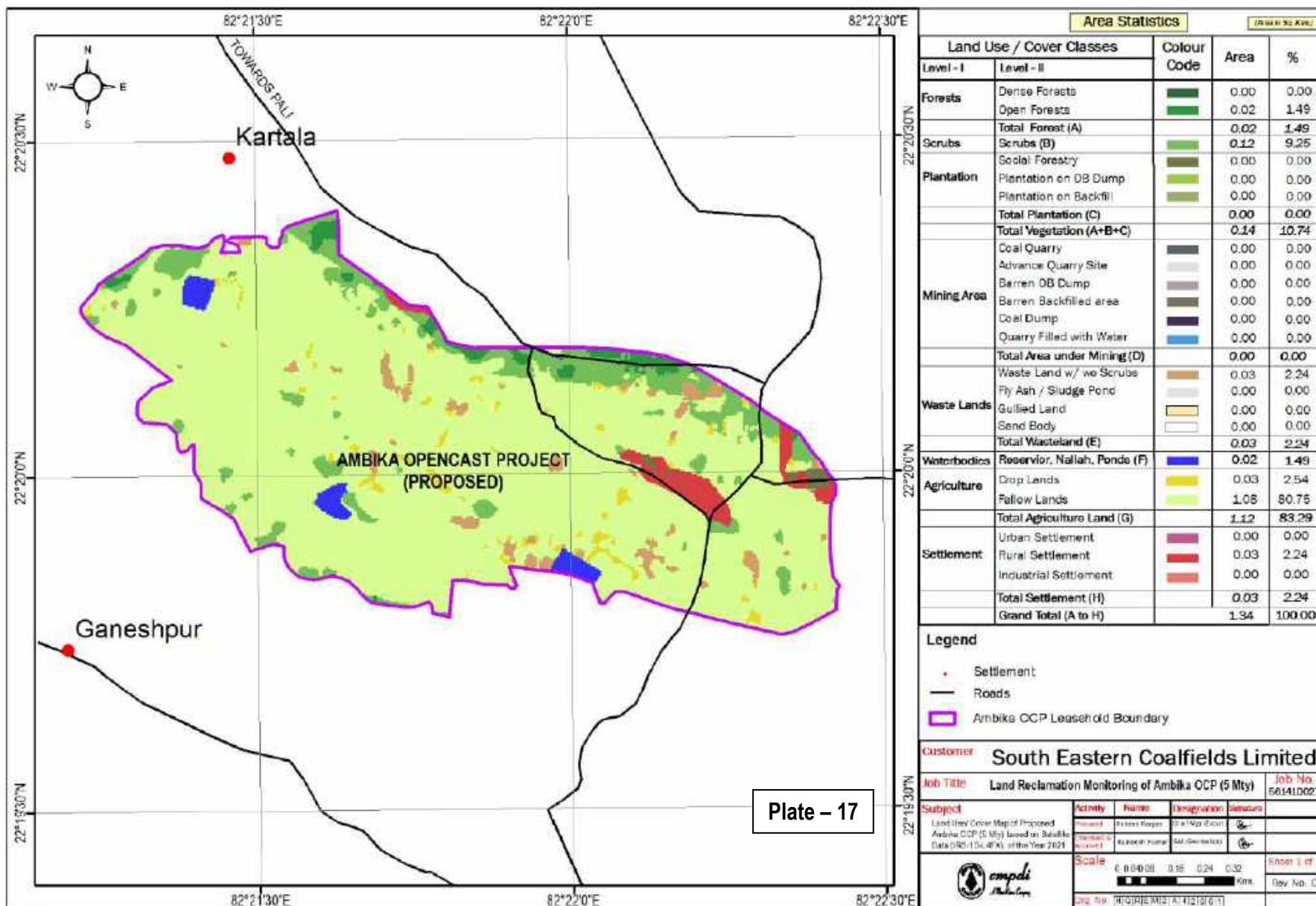
Area Statistics -AMADAND OC (2021)				
Classes		Colour	Core Zone	
Level-I	Level-II		Area (sq. km)	% of Total
Forests	Dense Forest		0.00	0.00
	Open Forest		0.00	0.00
	<b>Total Forest (A)</b>		<b>0.00</b>	<b>0.00</b>
	<b>Scrubs (B)</b>		<b>0.31</b>	<b>2.38</b>
Plantation Area	Social Forestry		0.64	4.90
	Plantation on OB		0.18	1.38
	Plantation on Backfill		0.00	0.00
	<b>Total Plantation (C)</b>		<b>0.82</b>	<b>6.28</b>
	<b>Total Vegetation (A+B+C)</b>		<b>1.13</b>	<b>8.66</b>
Agriculture Land	Crop land		1.64	12.57
	Fallow Land		5.52	42.30
	<b>Total Agriculture Land</b>		<b>7.16</b>	<b>54.87</b>
Waste Land	Waste Land		1.59	12.18
	Sand Body		0.00	0.00
	<b>Total Waste Land</b>		<b>1.59</b>	<b>12.18</b>
Mining Area	Advance Quarry Area		0.13	1.00
	Coal Quarry		0.39	2.99
	Barren OB Dump		0.64	4.90
	Back Fill		1.44	11.03
	Coal Dump		0.12	0.92
	Water Filled Qry		0.09	0.69
	<b>Total Mining Area</b>		<b>2.81</b>	<b>21.53</b>
Settlements	Urban Settlements		0.00	0.00
	Rural Settlements		0.24	1.84
	Industrial Settlements		0.08	0.61
	<b>Total Settlement Area</b>		<b>0.32</b>	<b>2.45</b>
Water Body	River/ Ponds		0.04	0.31
	<b>Total Area</b>		<b>13.05</b>	<b>100.00</b>

Customer						South Eastern Coalfields Limited (SECL)					
Title						Land Reclamation Monitoring of OC Projects					
Job No.						56.410027					
Subject						Land Reclamation Monitoring of Amadand OCP based on Satellite Data (R2L-IV) of the year 2021.					
Activity	Name	Designation	Signature	Date							
Prepared	Payal Bera	D M (RSC)	<i>P. Bera</i>	30-11-21							
Checked	R. Ranjan	C M(RSC)	<i>R. Ranjan</i>	30-11-21							
Approved	R. Kumar	G M(Geomatics)	<i>R. Kumar</i>	30-11-21							
Scale						0 0.25 0.5 1 Km					
Sheet						1					
Dwg No.						HQ REM 5 A4 21 01					
REV						No. 0					



Area Statistics - Batura(2021)				
Level-I	Classes	Colour	Core Zone	
			Area (sq km)	% of Total
Forests	Dense Forest		0.00	0.00
	Open Forest		0.21	2.23
	<b>Total Forest (A)</b>		<b>0.21</b>	<b>2.23</b>
Plantation Area	<b>Scrubs (B)</b>		1.74	<b>18.45</b>
	Social Forestry		0.05	0.53
	Plantation on OB		0.00	0.00
	Plantation on Backfill		0.00	0.00
	<b>Total Plantation (C)</b>		<b>0.05</b>	<b>0.53</b>
	<b>Total Vegetation (A+B+C)</b>		<b>2.00</b>	<b>21.21</b>
Agriculture Land	Crop land		0.07	0.74
	Fallow Land		6.72	71.26
	<b>Total Agriculture Land</b>		<b>6.79</b>	<b>72.00</b>
Waste Land	Waste Land		0.46	4.88
	Sand Body		0.02	0.21
	<b>Total Waste Land</b>		<b>0.48</b>	<b>5.09</b>
Mining Area	Advance Quarry Area		0.00	0.00
	Coal Quarry		0.00	0.00
	Barren OB Dump		0.00	0.00
	Back Fill		0.00	0.00
	Coal Dump		0.00	0.00
	Water Filled Ory		0.00	0.00
	<b>Total Mining Area</b>		<b>0.00</b>	<b>0.00</b>
Settlements	Urban Settlements		0.00	0.00
	Rural Settlements		0.05	0.53
	Industrial Settlements		0.00	0.00
	<b>Total Settlement Area</b>		<b>0.05</b>	<b>0.53</b>
Water Body	River/ Ponds		0.11	1.17
	<b>Total Area</b>		<b>9.43</b>	<b>100.00</b>

Customer South Eastern Coalfields Limited (SECL)					
Title Land Reclamation Monitoring of OC Projects					Job No. 561410027
Subject Land Reclamation Monitoring of Batura OCP based on Satellite Data (R/L-IV) of the year 2021.	Activity	Name	Designation	Signature	Date
	Prepared	Payel Bera	D M (RSC)	<i>P. Bera</i>	30-11-21
	Checked	R. Ranjan	C M (RSC)	<i>R. Ranjan</i>	30-11-21
	Approved	R. Kumar	G M (Geomatics)	<i>R. Kumar</i>	30-11-21
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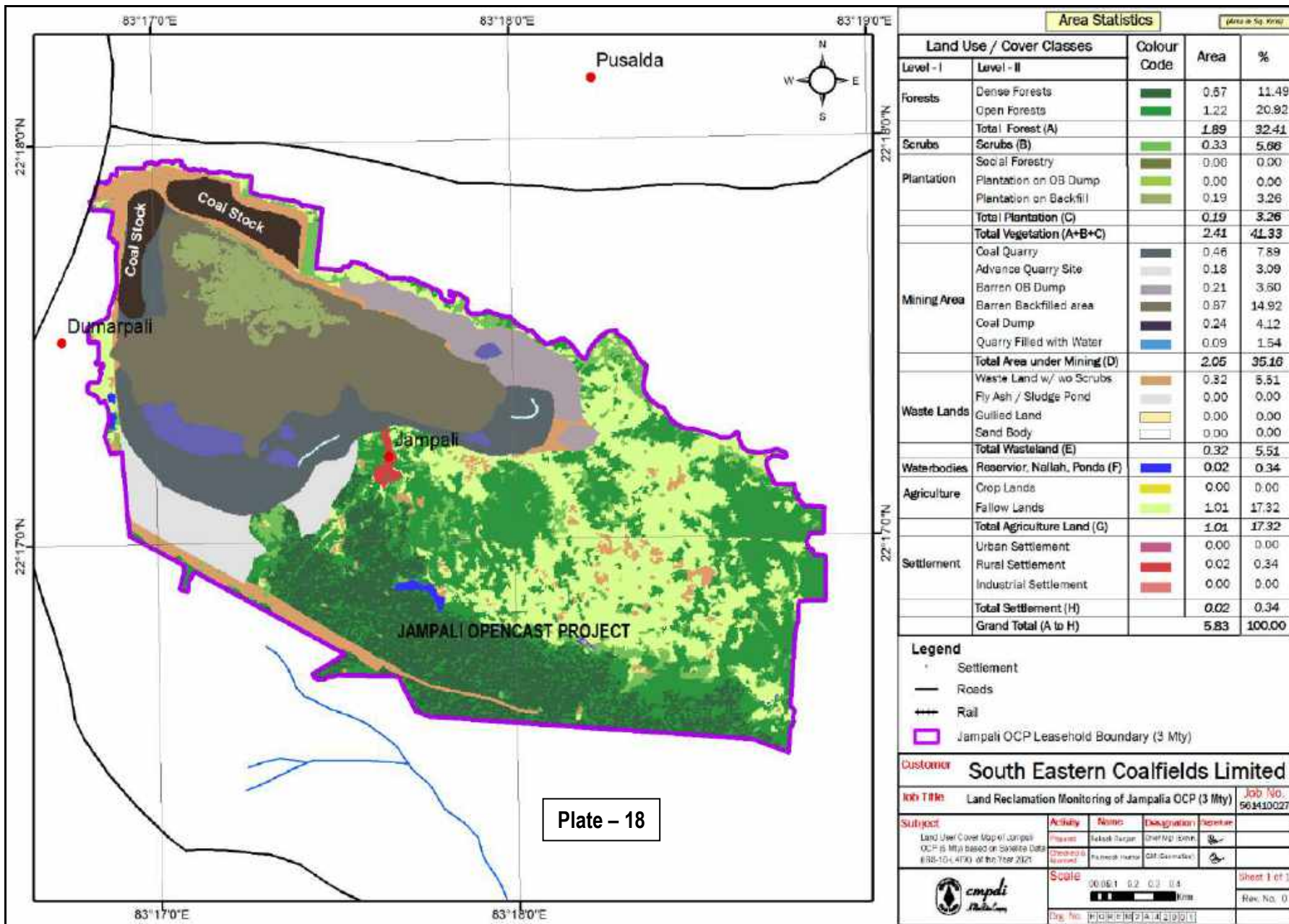
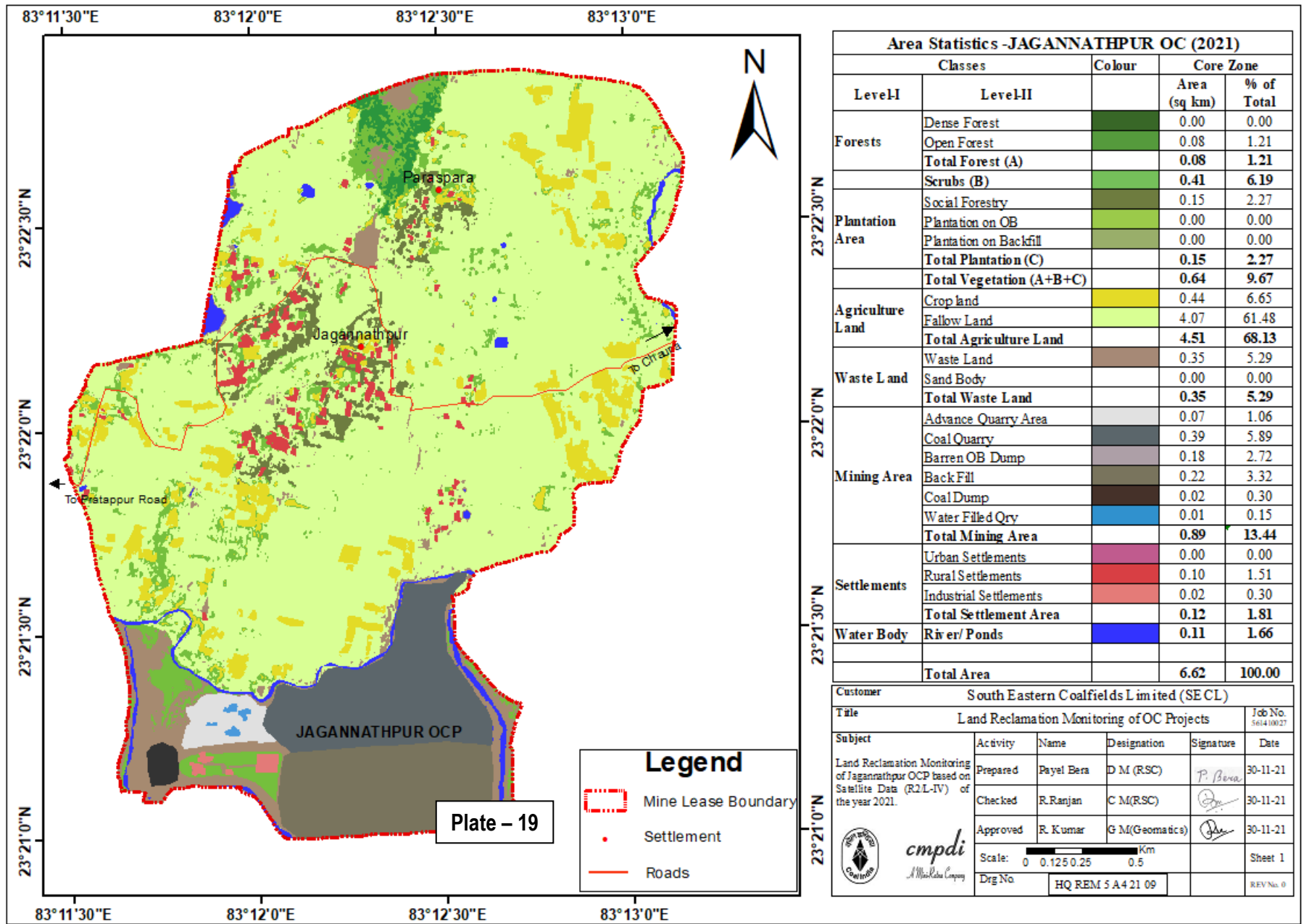


Plate - 18



Area Statistics -JAGANNATHPUR OC (2021)				
Classes		Colour	Core Zone	
Level-I	Level-II		Area (sq km)	% of Total
Forests	Dense Forest		0.00	0.00
	Open Forest		0.08	1.21
	<b>Total Forest (A)</b>		<b>0.08</b>	<b>1.21</b>
	Scrubs (B)		0.41	6.19
Plantation Area	Social Forestry		0.15	2.27
	Plantation on OB		0.00	0.00
	Plantation on Backfill		0.00	0.00
	<b>Total Plantation (C)</b>		<b>0.15</b>	<b>2.27</b>
	<b>Total Vegetation (A+B+C)</b>		<b>0.64</b>	<b>9.67</b>
Agriculture Land	Crop land		0.44	6.65
	Fallow Land		4.07	61.48
	<b>Total Agriculture Land</b>		<b>4.51</b>	<b>68.13</b>
Waste Land	Waste Land		0.35	5.29
	Sand Body		0.00	0.00
	<b>Total Waste Land</b>		<b>0.35</b>	<b>5.29</b>
Mining Area	Advance Quarry Area		0.07	1.06
	Coal Quarry		0.39	5.89
	Barren OB Dump		0.18	2.72
	Back Fill		0.22	3.32
	Coal Dump		0.02	0.30
	Water Filled Qry		0.01	0.15
	<b>Total Mining Area</b>		<b>0.89</b>	<b>13.44</b>
Settlements	Urban Settlements		0.00	0.00
	Rural Settlements		0.10	1.51
	Industrial Settlements		0.02	0.30
	<b>Total Settlement Area</b>		<b>0.12</b>	<b>1.81</b>
Water Body	River/Ponds		0.11	1.66
<b>Total Area</b>			<b>6.62</b>	<b>100.00</b>

Customer: South Eastern Coalfields Limited (SECL)					
Title: Land Reclamation Monitoring of OC Projects					Job No. 561410027
Subject	Activity	Name	Designation	Signature	Date
Land Reclamation Monitoring of Jagannathpur OCP based on Satellite Data (R/L-IV) of the year 2021.	Prepared	Payel Bera	D M (RSC)	<i>P. Bera</i>	30-11-21
	Checked	R.Ranjan	C M(RSC)	<i>R. Ranjan</i>	30-11-21
	Approved	R. Kumar	G M(Geomatics)	<i>R. Kumar</i>	30-11-21
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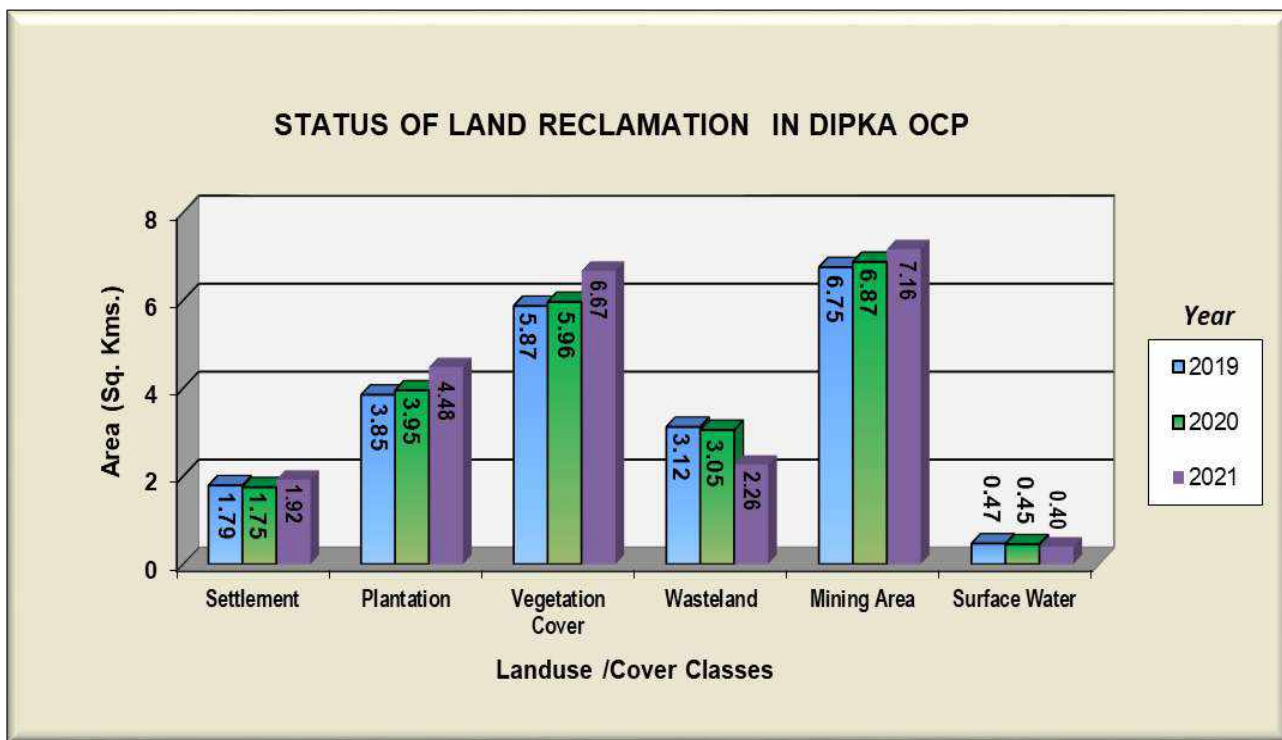
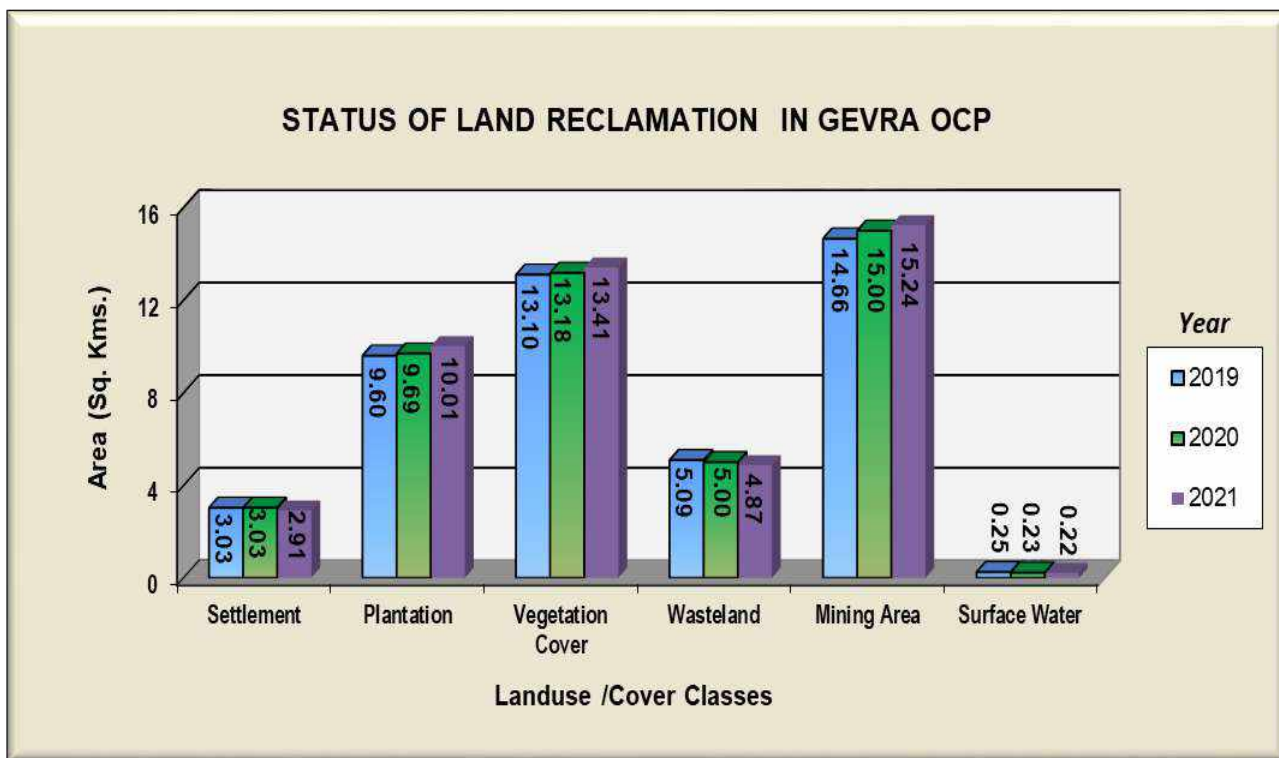


Figure 5



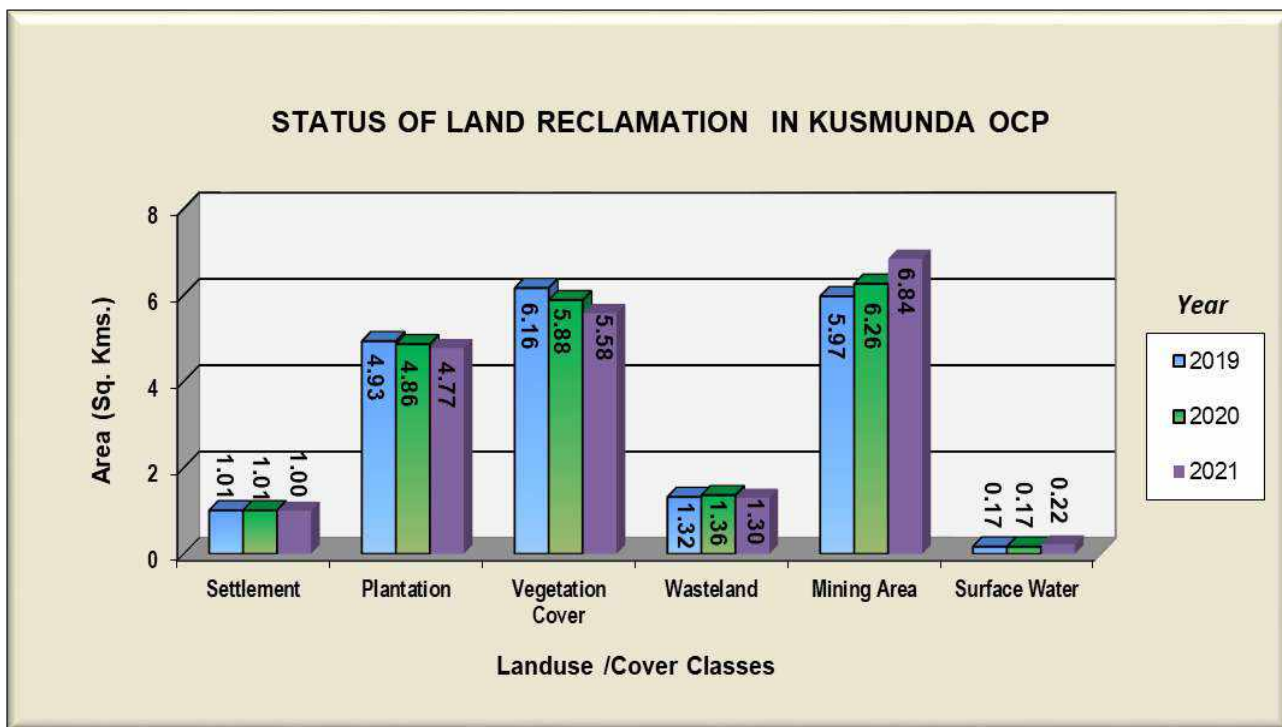


Figure 7

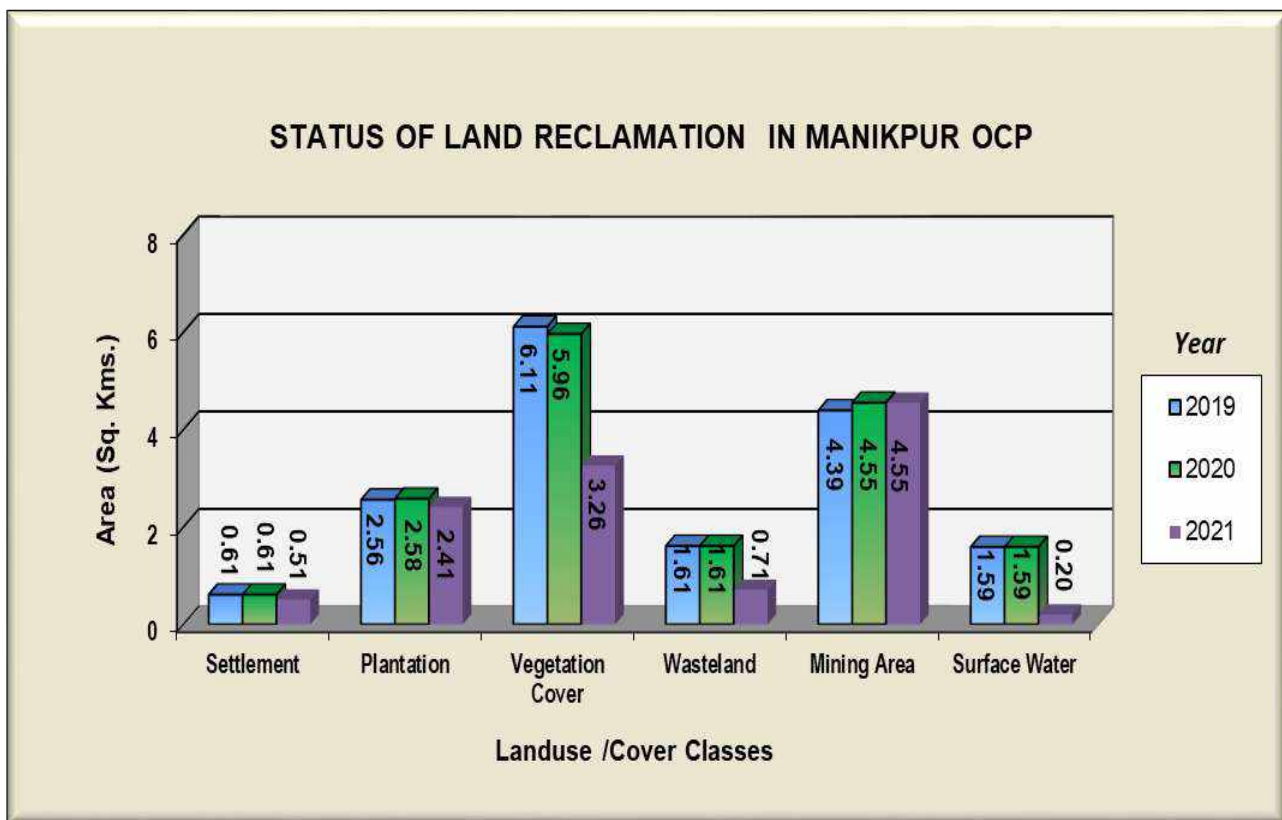


Figure 8



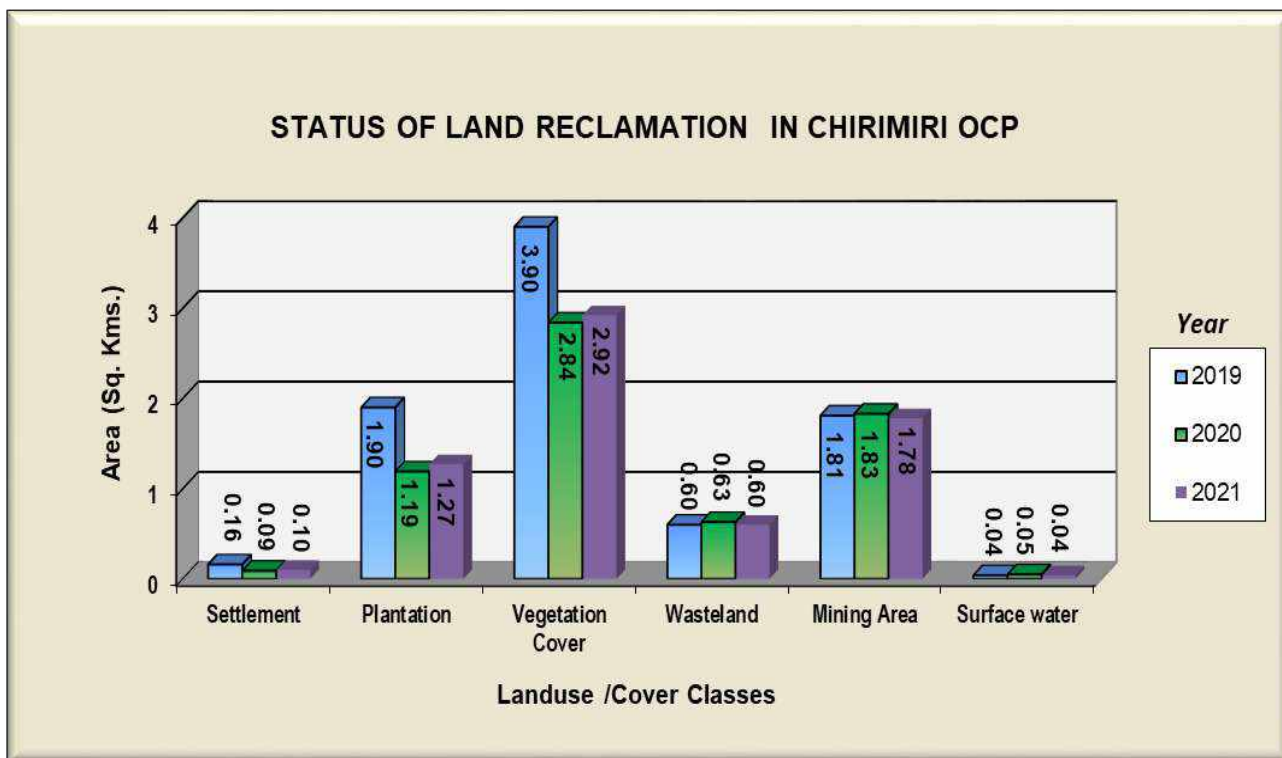


Figure 9

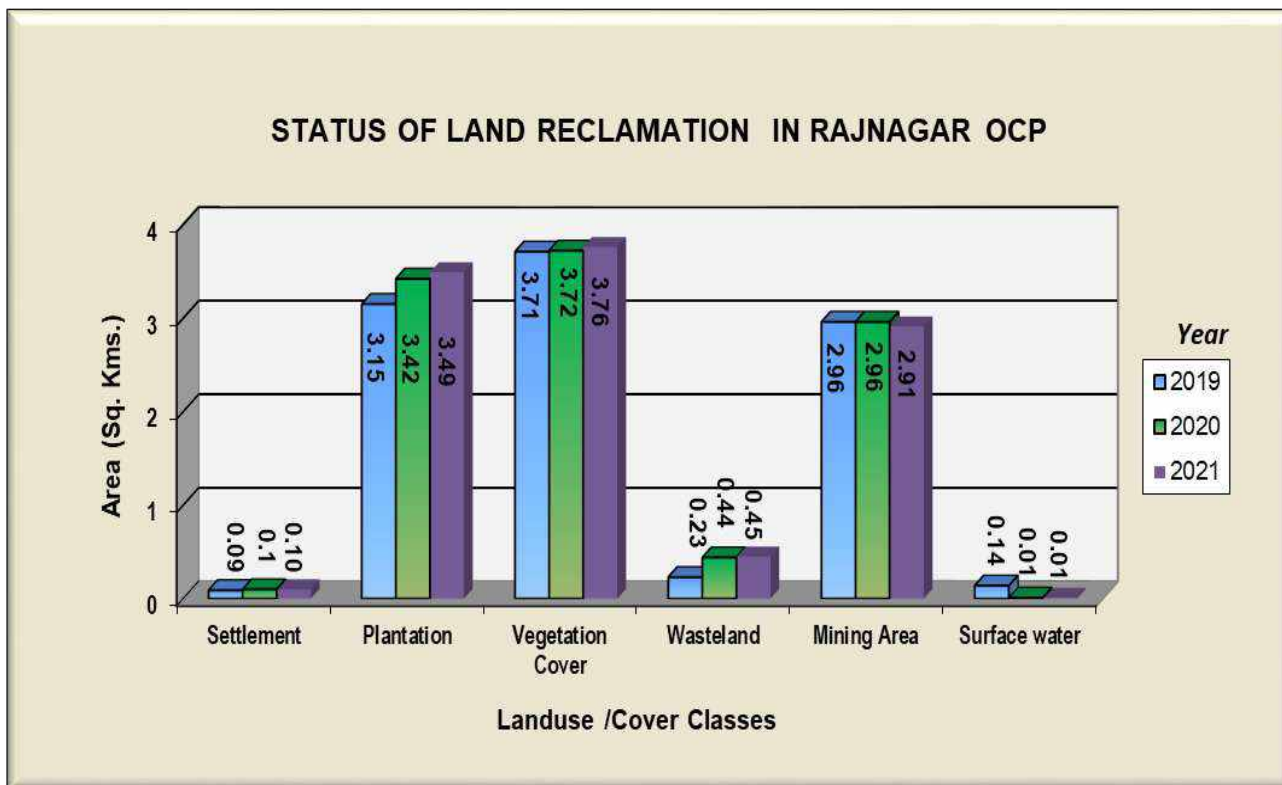
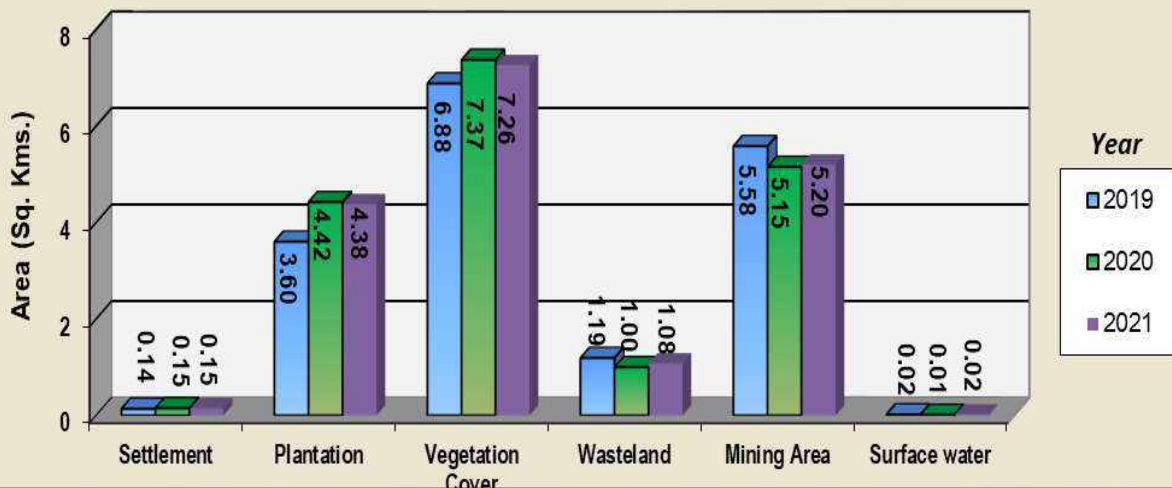
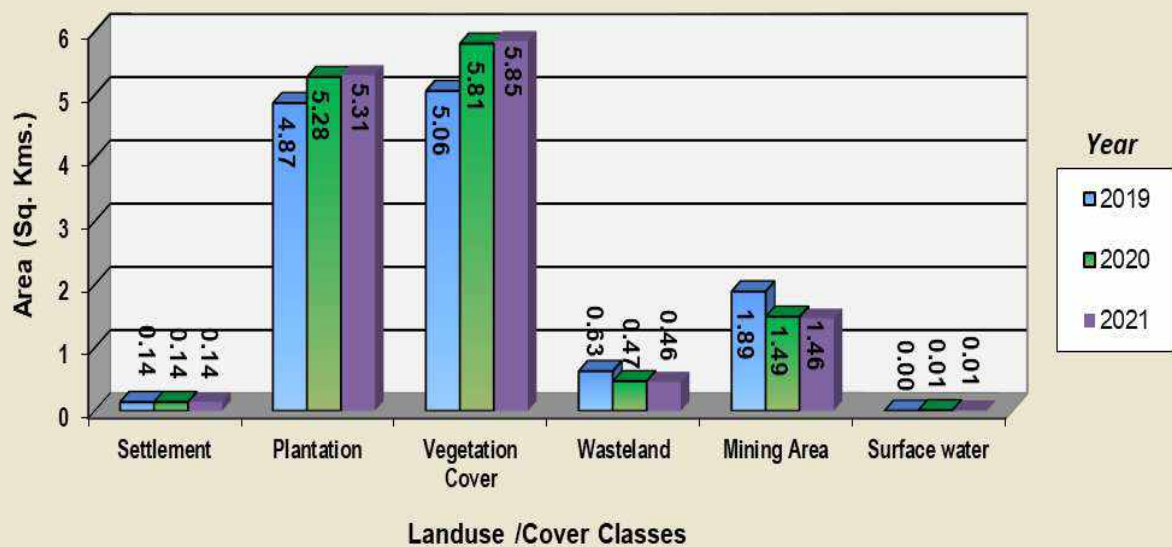


Figure 10

**STATUS OF LAND RECLAMATION IN DHANPURI AMLAI GROUP OF MINES**



**STATUS OF LAND RECLAMATION IN JAMUNA OCP**



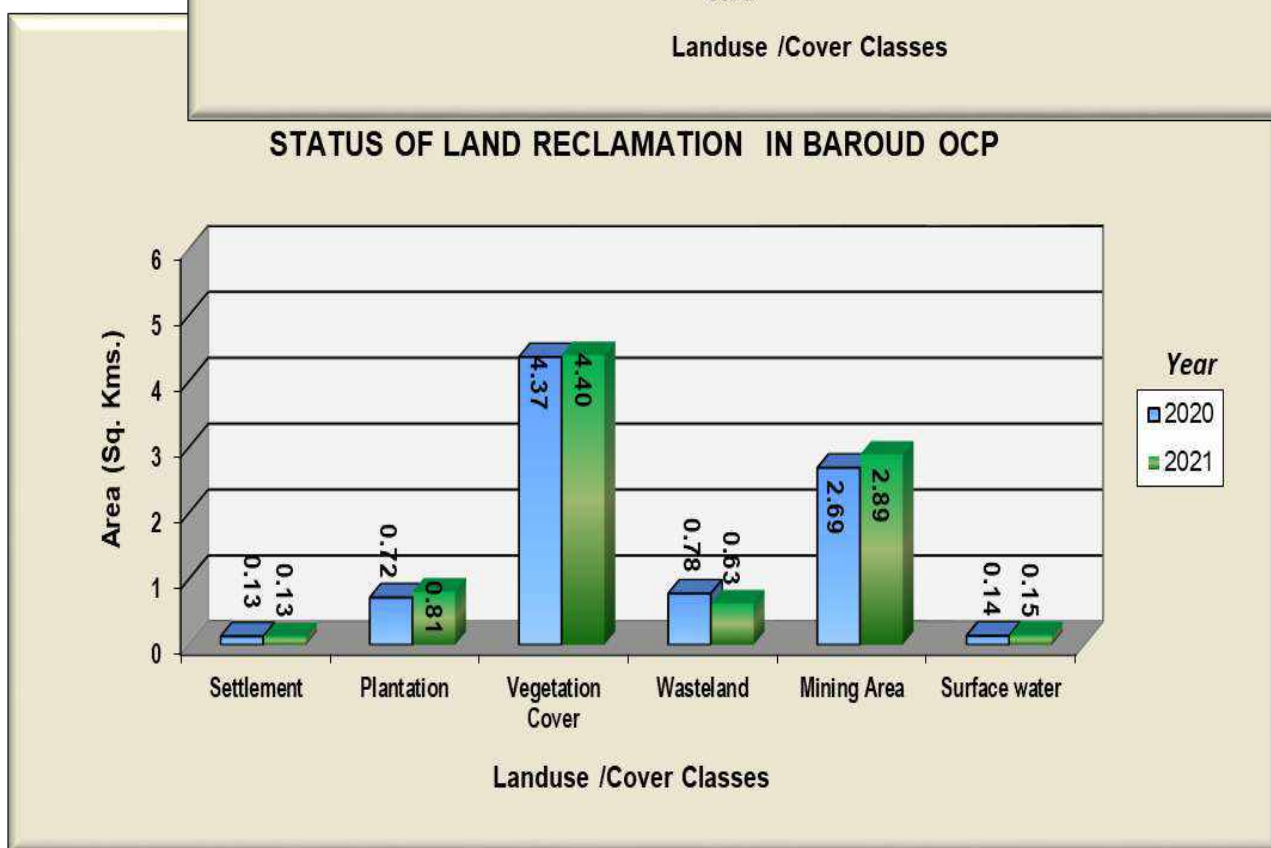
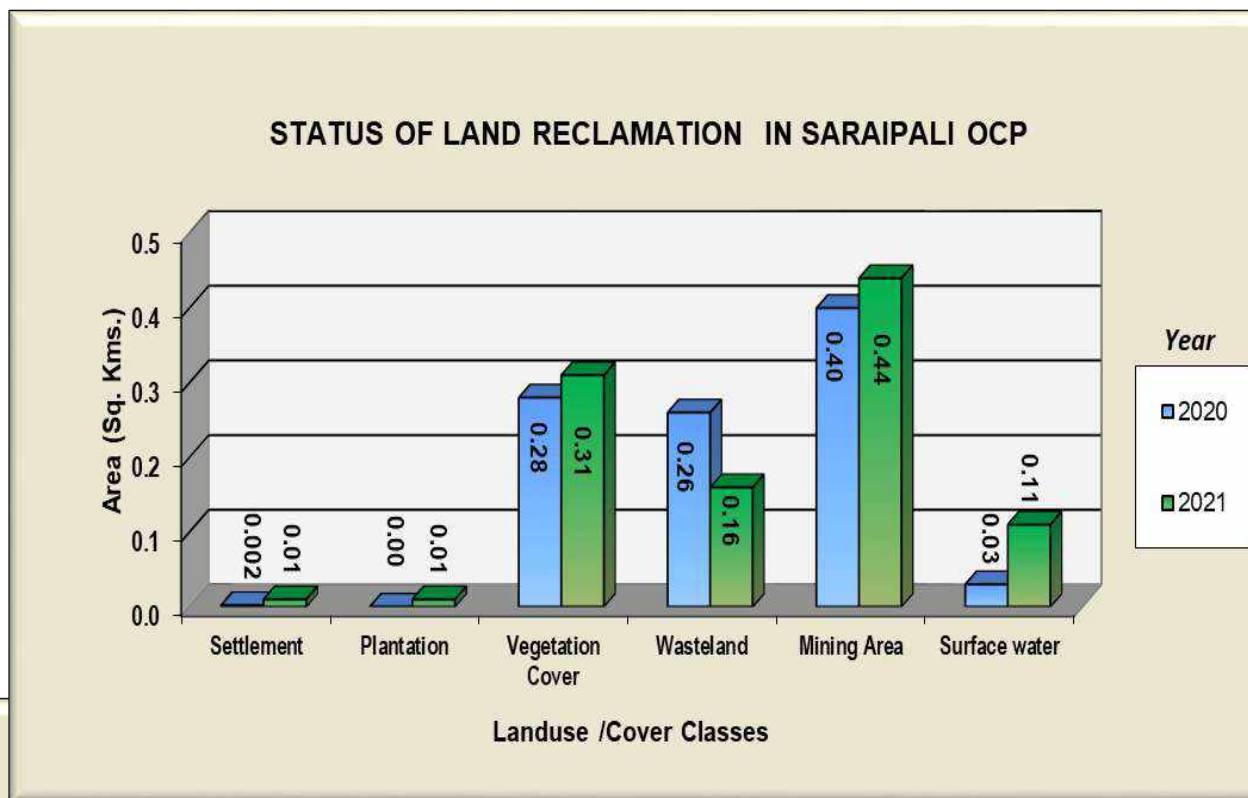
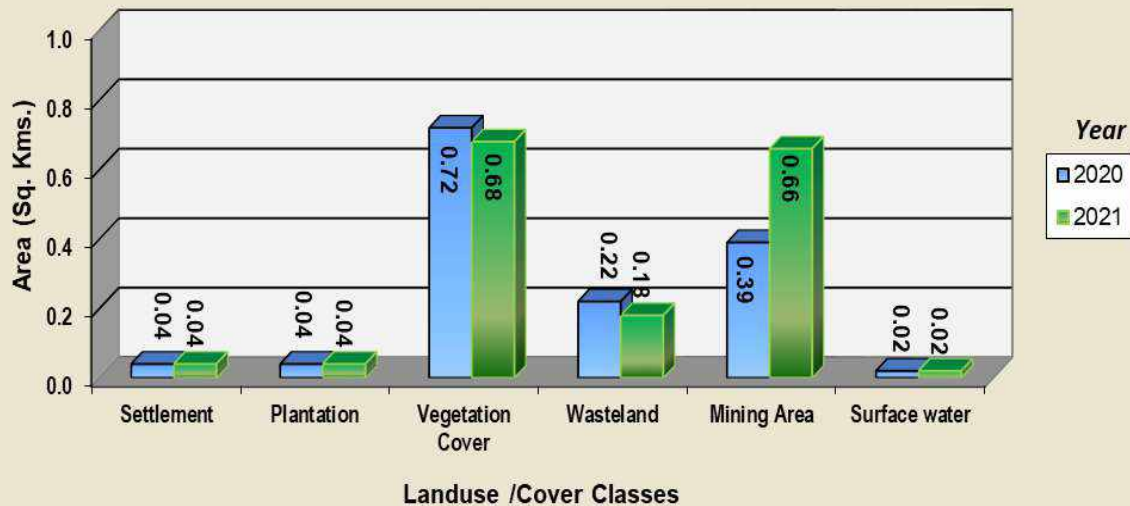
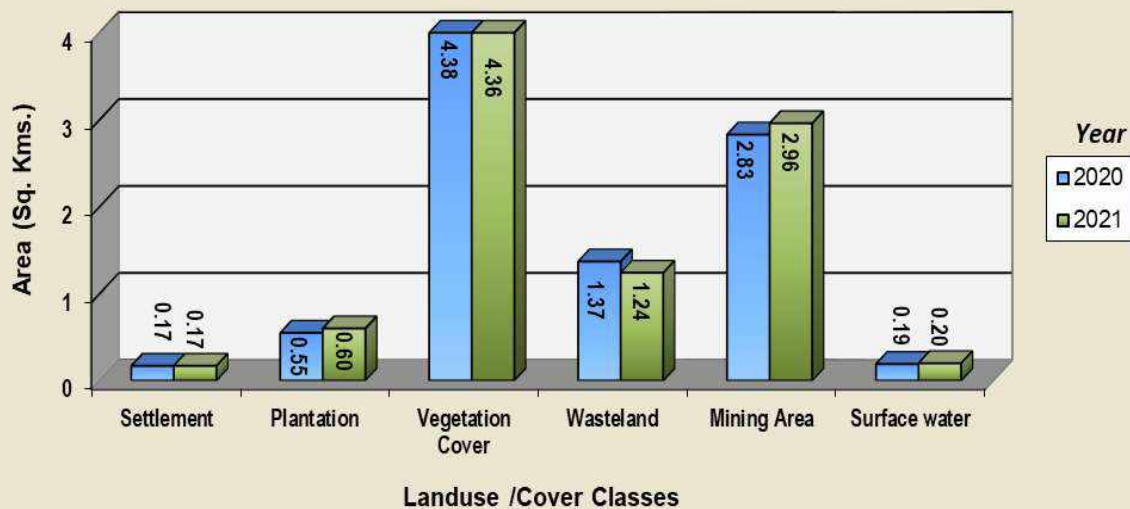


Figure 14

**STATUS OF LAND RECLAMATION IN BIJARI OCP**



**STATUS OF LAND RECLAMATION IN CHHAL OCP**



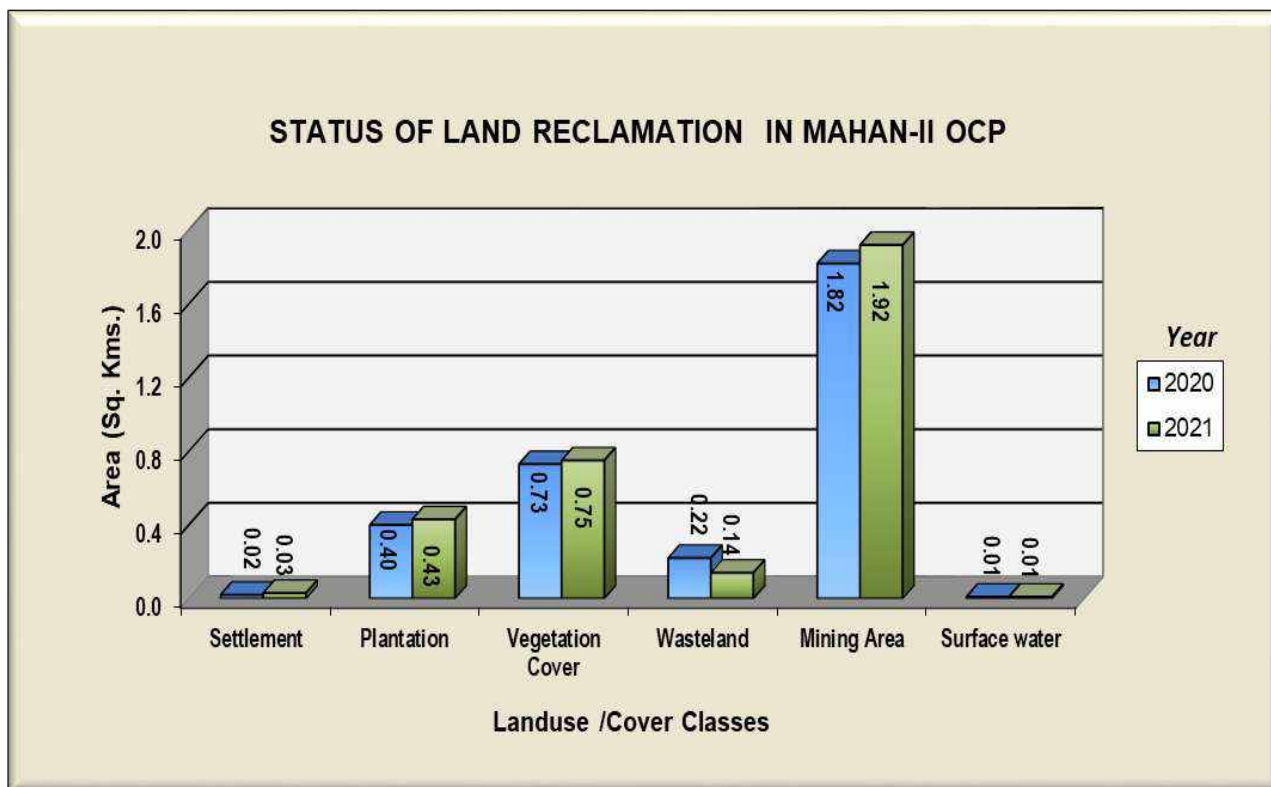


Figure 17

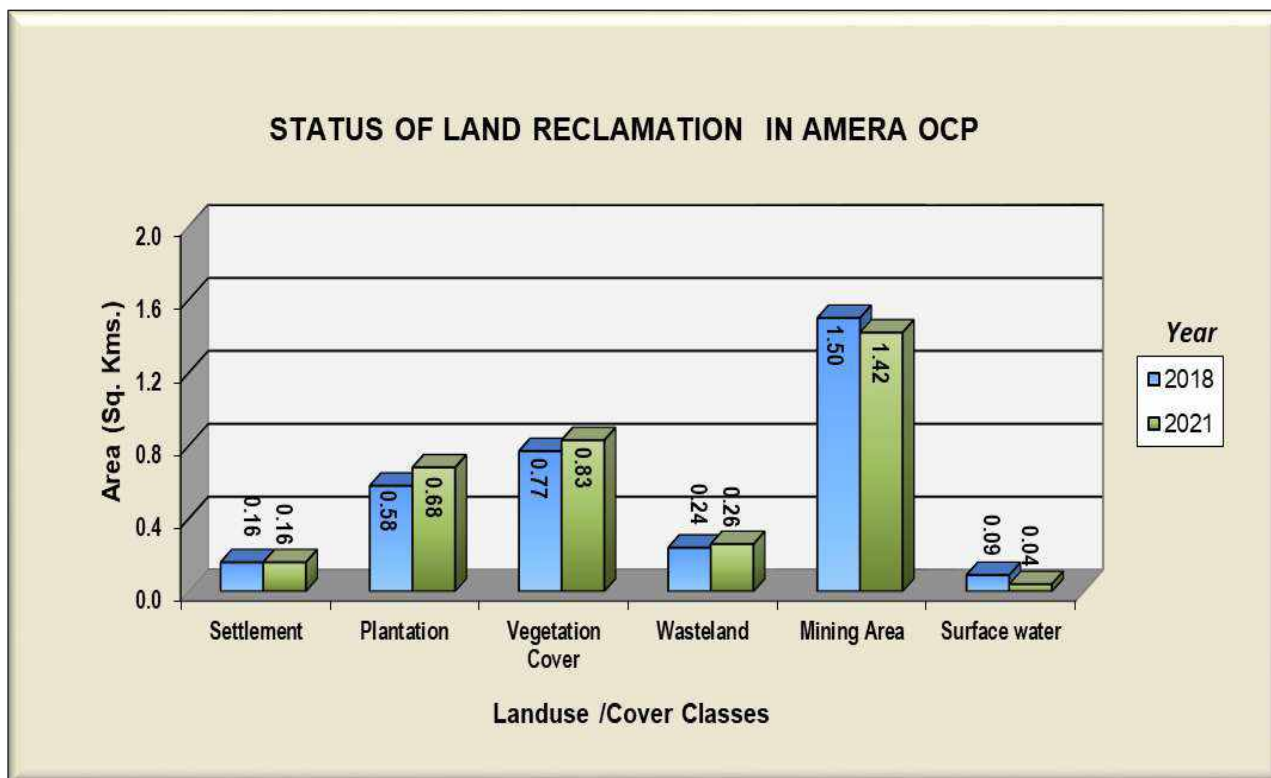
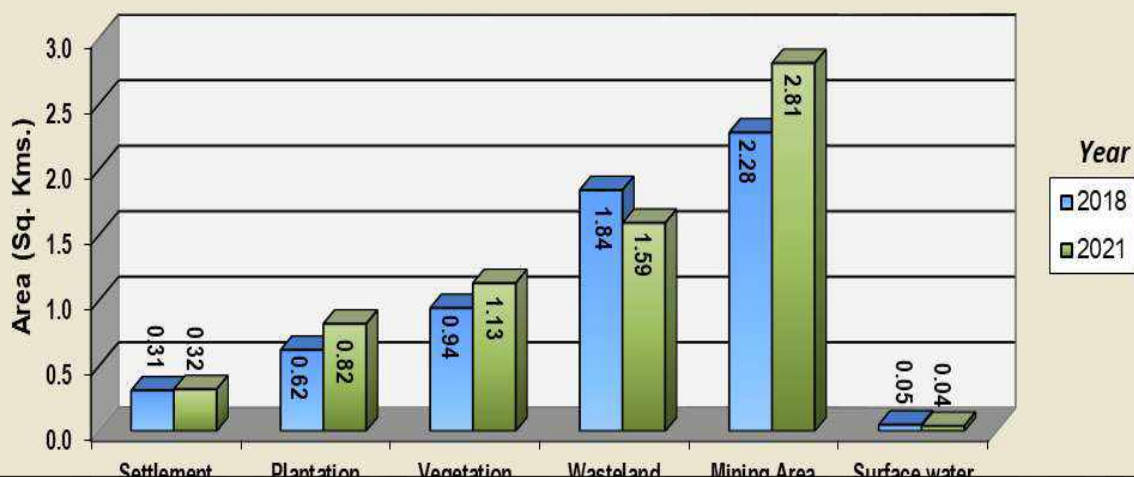
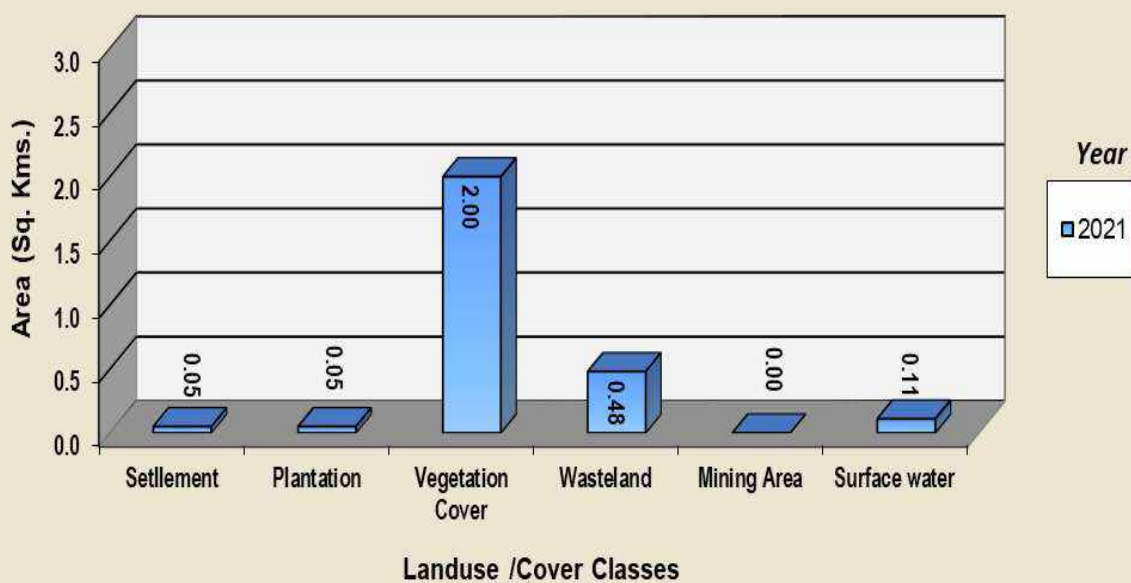


Figure 18

**STATUS OF LAND RECLAMATION IN AMADAND OCP**



**STATUS OF LAND RECLAMATION IN BATURA OCP**



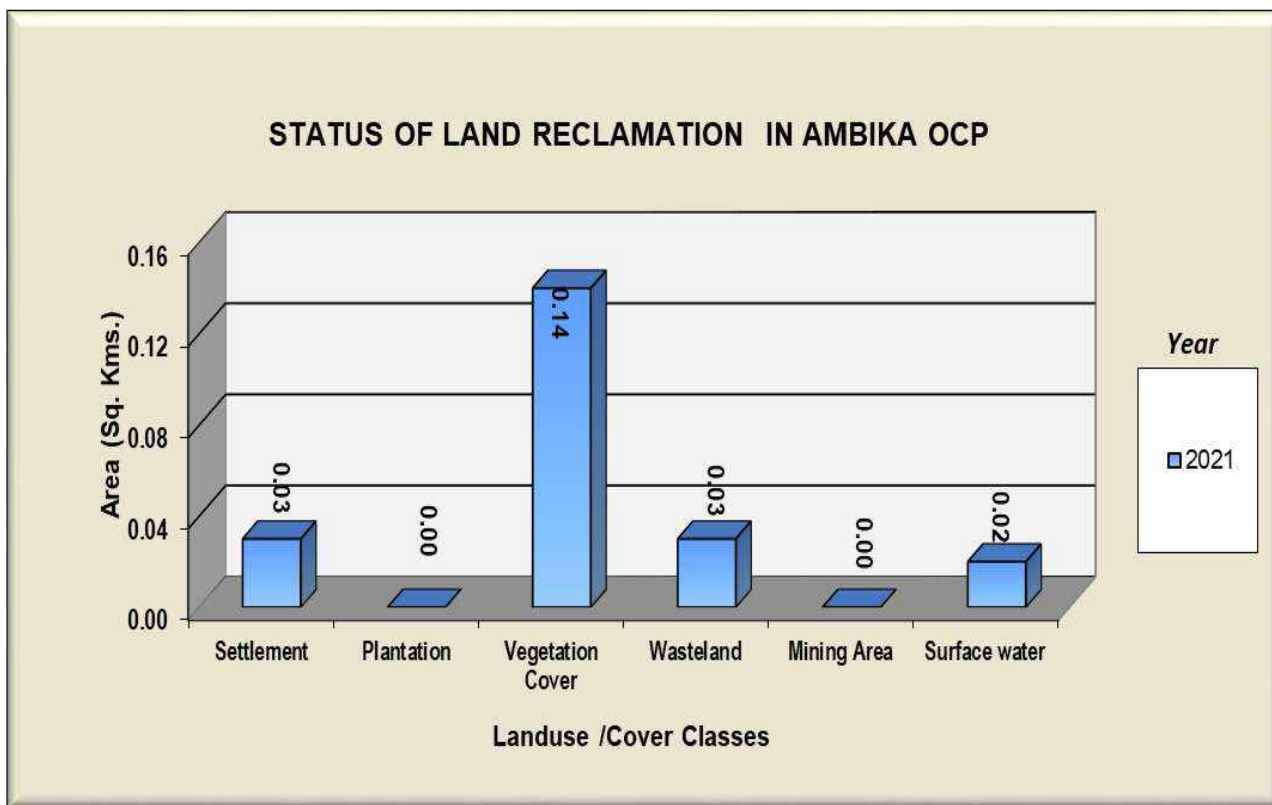


Figure 21

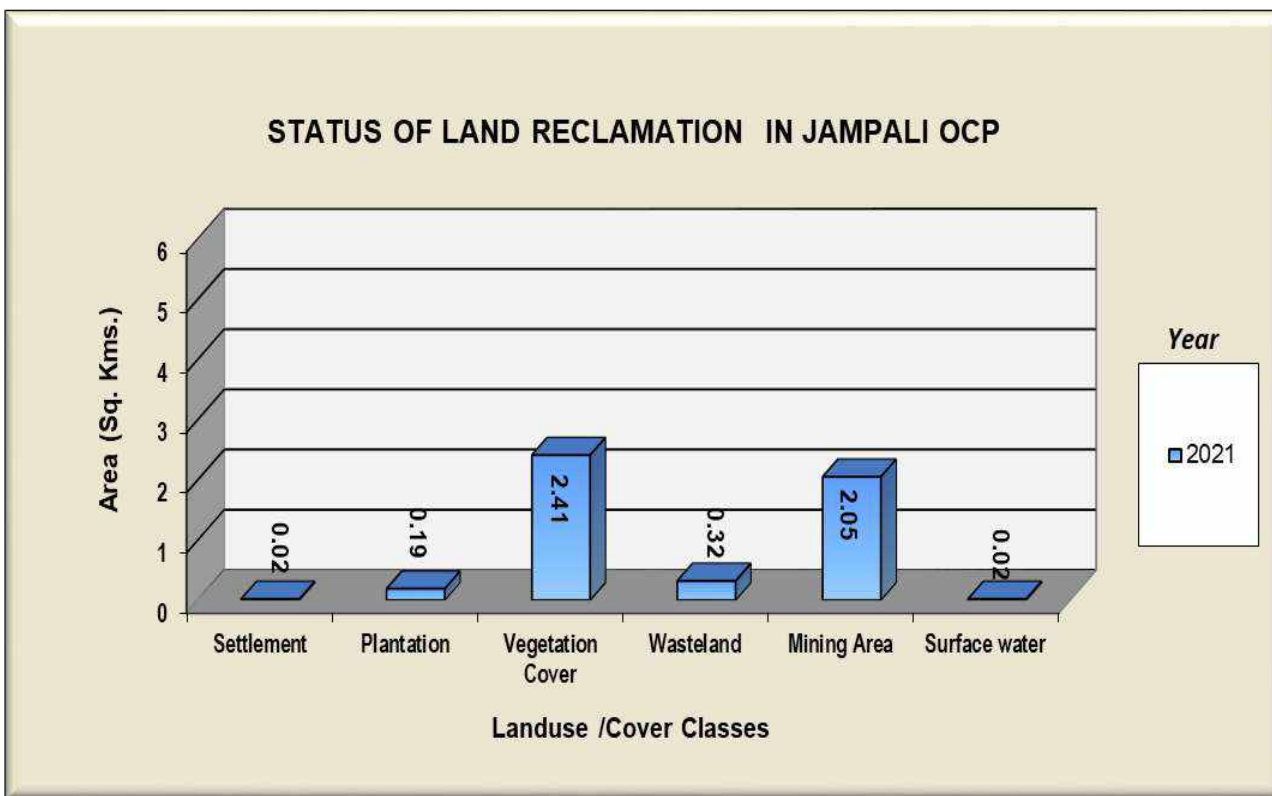
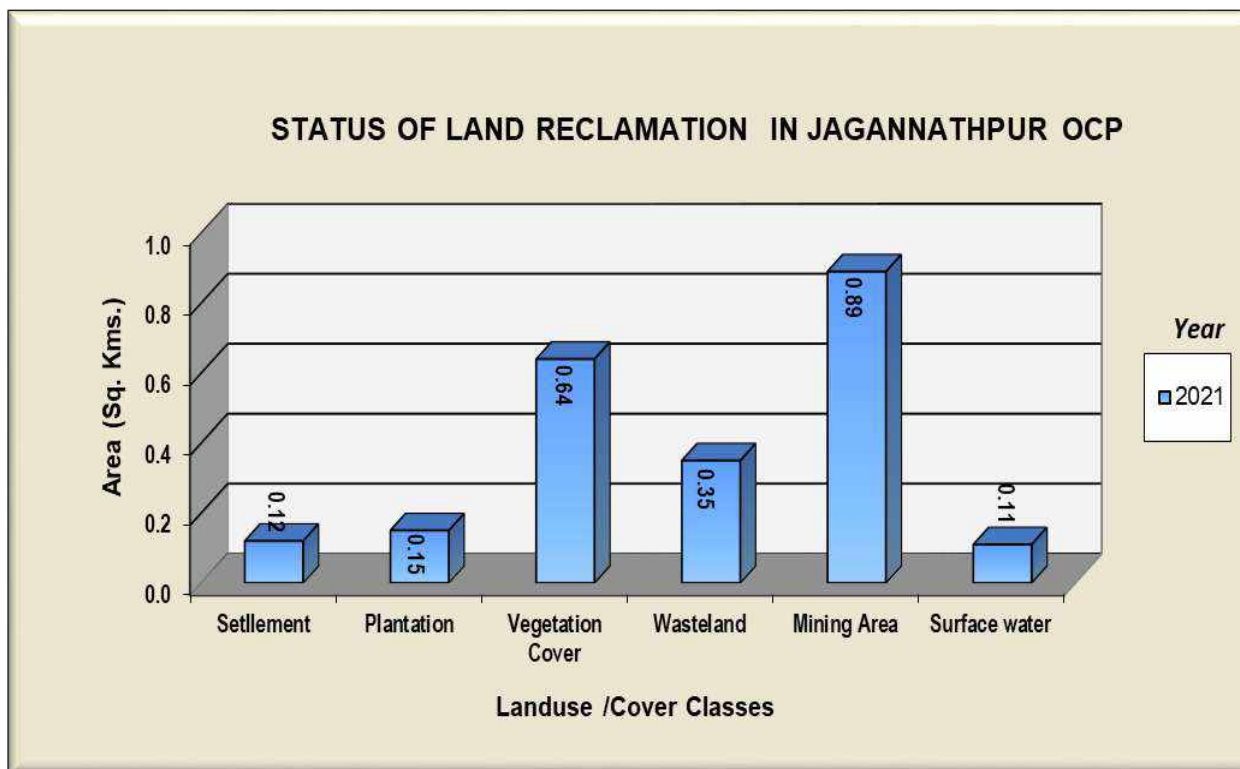


Figure 22



Photograph – 1: **Plantation on OB Dumps in Dipka Opencast Project**





Photograph – 2: **Plantation on Backfilled/OB Dumps in Dipka Opencast Project**



Photograph – 3: **Plantation in Gevra Opencast Project**



Photograph – 4: ***New Plantation in Gevra Opencast Project***



Photograph – 5: ***Overview of Kusmunda Opencast Project***



Photograph – 6: **Roadside *Plantation in Kusmunda Opencast Project***



Photograph – 7: ***Plantation in Manikpur Opencast Project***



Photograph – 8: *Plantation on OB Dumps in Manikpur Opencast Project*



Photograph – 9: **Overview of Chirimiri Opencast Project**



Photograph – 10: **Plantation in Chirimiri Opencast Project**



Photograph – 11: *Plantation in Rajnagar Opencast Project*



Photograph – 12: *Plantation in Dhanpuri Opencast Project*



Photograph – 13: *Overview of Dhanpuri Amlai group of mines Project*



Photograph – 14: *Plantation in Jamuna Opencast Project*



Photograph – 15: *Mine overview of Saraipali Opencast Project*



Photograph – 16: *Plantation in Saraipali Opencast Project*





Photograph – 17: **Plantation in Baroud Opencast Project**



Photograph – 18: **OB Dump in Bijari Opencast Project**



Photograph – 19: **Backfilling in Chhal Opencast Project**



Photograph – 20: **Plantation in Chhal Opencast Project**



Photograph – 21: *Mahan- II Opencast Project*



Photograph – 22: *Plantation in Amera Opencast Project*



Photograph – 23: *Plantation in Amadand Opencast Project*



Photograph – 24: *Natural Vegetation in Proposed Batura Opencast Project*



Photograph – 25: *Plantation in proposed Ambika Opencast Project*



Photograph – 26: *Plantation in Jampali Opencast Project*



**Photograph – 27: *Plantation in Jagannathpur Opencast Project***



**Photograph – 28: *Overview of Jagannathpur Opencast Project***



*cmpdi*  
A Mini-Ratus Company

## Central Mine Planning & Design Institute Ltd.

(A Subsidiary of Coal India Ltd.)

Gondwana Place, Kanke Road, Ranchi 834031, Jharkhand

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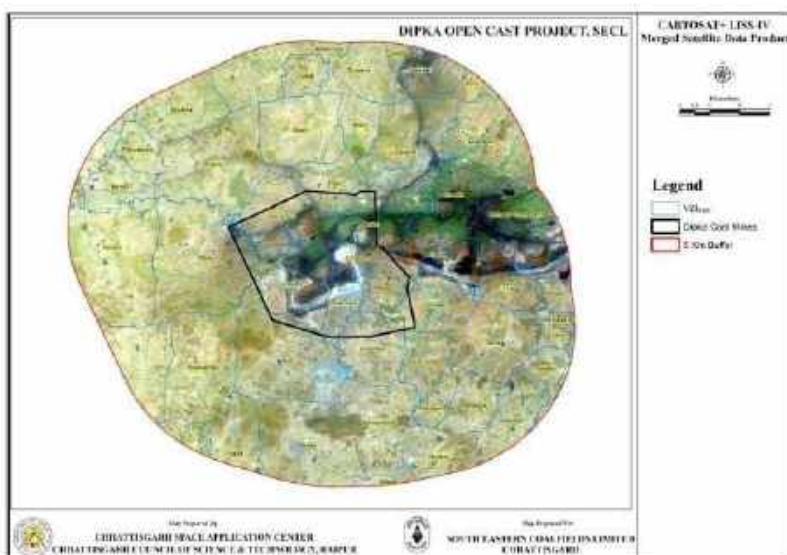
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**A REPORT ON  
CATCHMENT AREA TREATMENT PLAN USING  
REMOTE SENSING AND GIS**

**DIPKA AREA OF SOUTH EASTERN COALFIELDS Ltd,  
DISTRICT KORBA  
CHHATTISGARH STATE**

**ACTION PLAN REPORT**

**SURFACE DRAINAGE PLAN WITH SURFACE WATER  
CONSERVATION PLAN FOR DIPKA EXPANSION PROJECT**



*Submitted by:*

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# Preamble

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Effective utilization of natural resources and their management is essential for the growth and development of any economy. This requires systematic planning so that development issues do not come in the way of environmental considerations. Keeping the environmental issues in mind while planning is the most crucial ingredient for any development planning. Reliable and timely information on resources is pre-requisite for the mining development of a plan.

Various central and state departments are involved in the process of monitoring the Environmental impact of anthropogenic activities. Information on natural resources when viewed on a Satellite Data gives a synoptic view of the area of interest and thematic interpretation is possible to identify areas that need specific attention for initiating conservation measures.

GIS and Remote Sensing over the years have served a useful tool for decision support. Most of the information is not available in the form that they can be directly depicted spatially over various other layers. This information is mostly available in tabular format and spread over many departments. GIS and Remote Sensing allows us to transform information from various sources to one platform and enables decisions or planning exercises in a scientific and timely manner for the benefit of the target group.

The Council has established Chhattisgarh Space Applications Centre to monitor the States natural resources. The CGSAC has been established:

- a. To carry out all work related to Remote Sensing Applications and GIS for the State of Chhattisgarh.
- b. To carry out work related to Satellite Communications for Training, Education and Health, etc. for the State of Chhattisgarh.
- c. To take up the National projects within the State as well as outside the State.

The CGSAC also promotes training in Remote Sensing/GIS technology for the various line departments and students & faculty members of various Universities and colleges to popularize the techniques.

Chhattisgarh Space Applications Centre of Chhattisgarh Council of Science and Technology over the years has built in-house capacity to take-up tasks that are information intensive and require scientific data interpretation skills for natural resource mapping and GIS database creation. CGSAC of the council has well trained team of Senior Scientists to undertake this task.

# 1. Technical Proposal

South Eastern Coalfields Ltd (SECL) approached the Council to provide technical support and provide relevant inputs for the preparation of forest clearance and environment clearance proposals. Remote Sensing and GIS based inputs are required for the preparation of a comprehensive catchment area treatment plan in the area to arrest flow of silt in the Hasdo River and to improve water regime.

## 1.1. Study area

The proposed study area of SECL lies in the Korba District of the State. As per the information provided to the Council the GIS area of the Dipka project area is estimated to be 1991.36 Ha. However, the SECL Dipka has informed the Council that their lease area is 1999.293 Ha. It was also informed that the study is to be carried out for the 5Km buffer of the Dipka project boundary; the area within 5 km buffer is estimated to be 18660 Ha.

---

**It is also to inform here that the GIS area is based on the Ortho Rectified Satellite Images only and no DGPS survey was carried out for this purposed by the Council. The difference in area may be due to standard map projections adopted (WGS84, UTM) in this study and the field measured area could be topographic area.**

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Based on the area information provided SECL with the 5 Km. Buffer is plotted on the State boundary and is shown in Figure 1-1.

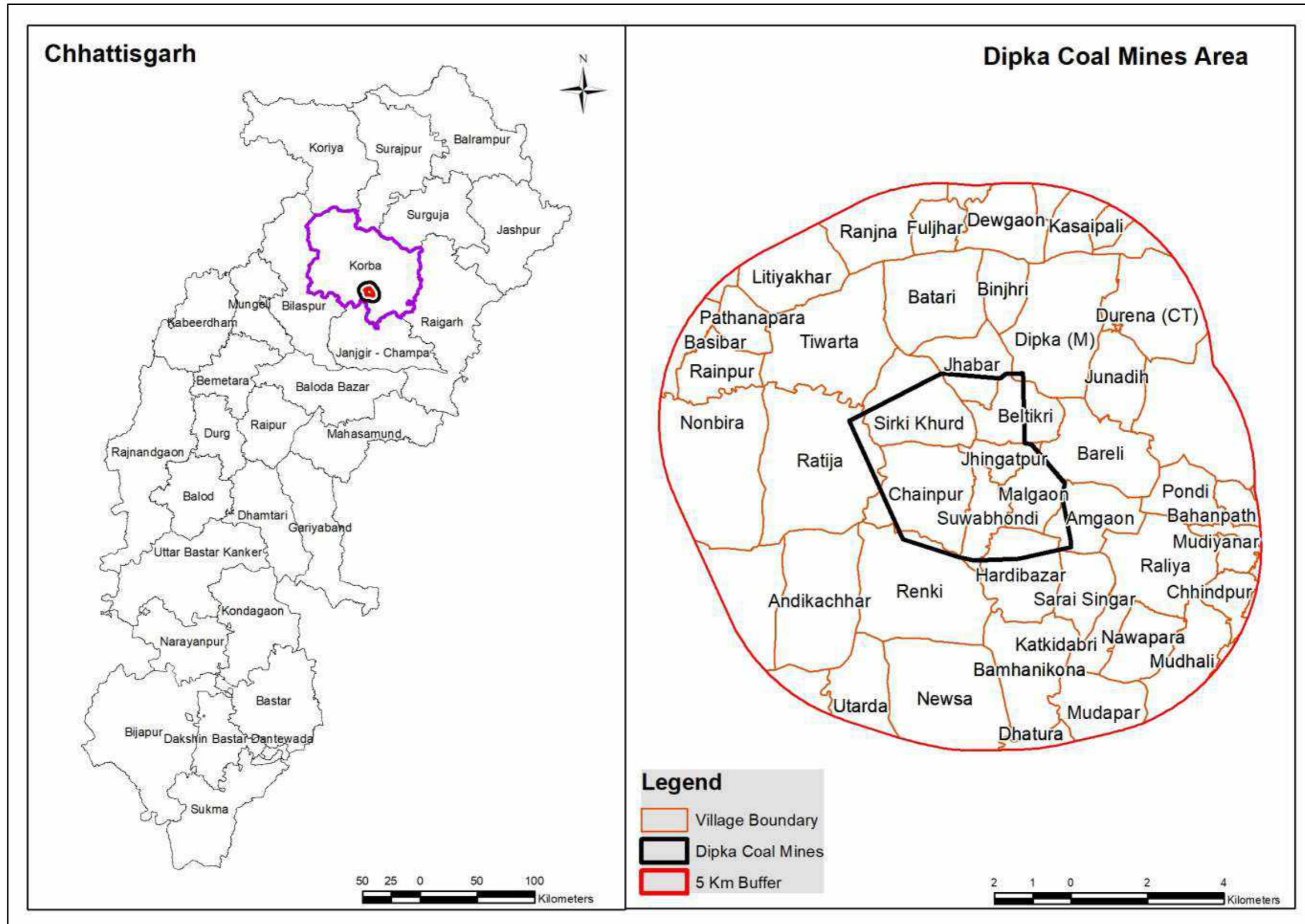


Figure 1-1 Regional Location of SECL Project Area

## 1.2. Scope of the work

The Scope of the work indicated by the SECL vide letter no. SECL/DA/ENV/2018/1320 dated 02/11/2018 is as under:

The study to be carried out by the council should enable the South Eastern Coalfields Ltd. to address the issues:

1. The problem of silt and debris load to river from the susceptible areas of the catchment based on Universal Soil Loss Equation (USLE) and field observation.
2. Checking the sediment load from the tributaries directly discharging into the river.
3. Protecting the directly draining catchment from scouring / sloughing
4. Mitigative measures for the erosion and other hazards resulting from the project activities

After carefully going through the requirements, Council proposes to process and generate the following maps to meet the requirements of SECL:

1. Rectification & Geo Coding of High Resolution
2. Satellite data based interpretation of Geology.
3. Overlay of Geological Structures on the Geology map.
4. Landuse/landcover of the area
5. Geomorphological setup
6. Slope
7. Drainage network
8. Surface waterbody
9. Infrastructure facilities including details of existing features:
  - a. Road
  - b. Rail
  - c. Settlement locations
10. Village boundary with 2011 census based socio-economic profile
11. Forest & Cadastral information.
12. Action plan for soil and water conservation

### 1.3. Work Elements

Council's proposal against each of the work element indicated by SECL are enumerated below for getting technical consent from SECL:

Sl	As indicated by SECL Ltd.	Council's Proposal	Remarks
<b>1</b>	<b>Estimation of soil erosion</b>	Council proposes to use Universal Soil Loss Equation to identify and delineate areas that are prone to erosion	Widely used in erosion related research studies.
<b>a</b>	<b>Study of drainage pattern of the catchment area</b>	Council shall create drainage network map from Survey of India toposheets and High Resolution satellite images created under SIS-DP project	Standard procedure adopted in GIS studies
<b>b</b>	<b>Delineation of watersheds and sub-watersheds of free draining catchment</b>	Council shall use the National Atlas of Watersheds published by National Bureau of Soil Survey and Landuse Survey as standard base and subdivide the published watershed boundaries into smaller manageable Micro, Mini, Milli -watersheds	Standard procedure adopted in GIS studies
<b>c</b>	<b>Assessment of slope of the catchment area</b>	Council shall generate slope from the DEM generated from the CARTOSAT – 1 Stereo images	Slope based on DEM at 10 mts. Posting is available.
<b>d</b>	<b>Land use and land cover mapping using remote sensing and GIS</b>	Council shall create landuse/landcover map of the entire study area. Using existing satellite images and 10 mts pixel images available in free domain.  (SECL provided boundary) As per initial estimated the <b>GIS areas</b> of the mine is = 1991.36 Ha. And SECL Reported area is 1999.293 Ha.  And the 5 km buffer of the boundary amounts to = 18660 Ha)	The boundary provided by SECL has been used and a buffer of 5 kms shall be created.
<b>e</b>	<b>Study of soil parameters under directly draining area</b>	Council has soil physiographic class maps of the study area, which would be provided as deliverables.	Not fresh mapping required.
<b>f</b>	<b>Study of soil details, silt yield and its delivery potential</b>	Council proposes to use Universal Soil Loss Equation to identify and delineate areas that are prone to erosion	Widely used in erosion related research studies.



Sl	As indicated by SECL Ltd.	Council's Proposal	Remarks
2	<b>Prioritization of Sub-watersheds</b>	Based on the intensity in erosion the watersheds shall be prioritized	-
a	<b>Preparation of a framework of sub-watersheds</b>	The framework shall be based on the enumeration at point no. 1b	No separate effort is required
b	<b>Generation of a map indicating erosion-intensity</b>	Council shall generate erosion-intensity map based on the results of the processing enumerated at 1f	Output maps shall be presented on A3 paper with the final report.
c	<b>Assignment of weightage values to various mapping units</b>	Council shall use the landuse/ landcover, soil and erosion intensity maps as input to derive Prioritization of watersheds	As adopted in multi criteria analysis in GIS.
d	<b>Assignment of maximum delivery ratios to various erosion intensity mapping units and assessment of adjusted delivery ratios for different sub-watersheds</b>	As universal soil loss equation shall be used, the outputs should suffice the present need	Not fresh analysis will be carried out.
e	<b>Computing Silt-Yield Index for individual sub-watersheds</b>	As universal soil loss equation shall be used, the outputs should suffice the present need	Not fresh analysis will be carried out.
f	<b>Grading of sub-watersheds for prioritization</b>	As indicated in 2c	-
3	<b>Identification of area for Comprehensive Area Treatment</b>	As indicated in 2c	-
4	<b>Preparation of Schedule of Implementation</b>	Council shall generate a suggestive action plan map of the 18660 Ha study area.	-

Sl	As indicated by SECL Ltd.	Council's Proposal	Remarks
5	Preparation of treatment measures and their cost estimate	Actual engineering design of each structure and their costing shall be prepared by SECL/officers of irrigation departments	Beyond the Council's purview

For the above, South Eastern Coalfields Ltd. provided work order to the council.

#### 1.4. Methodology Adopted

As per the needs identified in Section 1, Council proposes following methodology:

#### 1.5. Satellite data Processing

Council shall process the CARTOSAT and suitable LISS-IV satellite data so as to enable 1:10,000 scale mapping of the feature in the 5 Km. Buffer of SECL area. The total area to be mapped is estimated to be about 186.60 Sq.Km (18660 Ha.). The area of interest (18660 Ha) falls in one RESOURCESAT-1, LISS-IV Mx scenes and three CARTOSAT-1 scenes. Figure 1-2 shows the SECL area with 5 Km. buffer and satellite data foot prints.

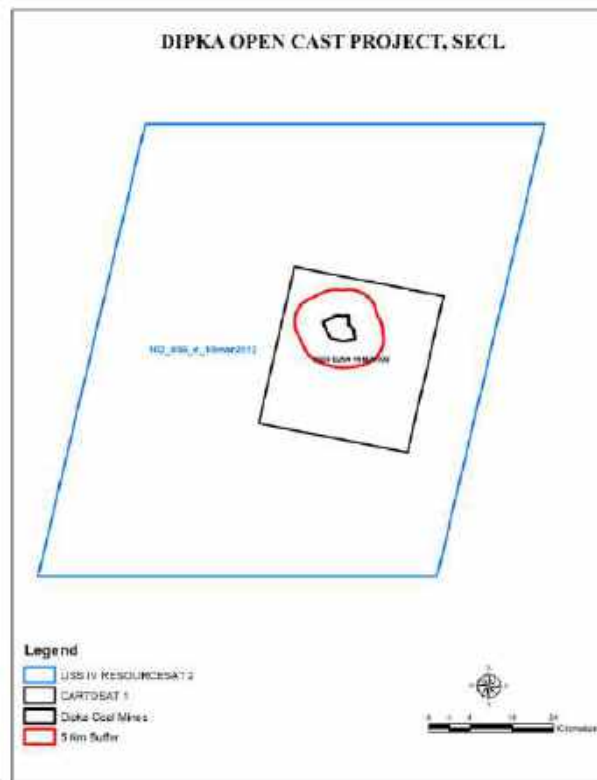


Figure 1-2 SECL Area location with Satellite Data Footprints

## 1.6. Outputs

Deliverables of this project will be:

1. Soft copy of Rectified & Geo-referenced Fused multi spectral (FCC) with 2.5 mt. resolution satellite data of the study area in **geotiff format** on CD/DVD.
2. Hard copy colour prints of Map compositions of satellite data and Thematic mapping (as per sections 1.1 and 0 above) of features on A3 Size paper (on best fit scale) with proper annotations, legend and scale information.
  - Geology & Geological Structures, Landuse/landcover, Geomorphological setup, Slope, Drainage network, Surface waterbody, Infrastructure facilities including details of existing features (**a.** Road, **b.** Rail, **c.** Settlement locations), Village boundary with 2011 census based socio-economic profile and action plan (containing soil and water conservation measures).
3. Soft copies of maps compositions on A3 Size paper in **.jpeg format** in CD/DVD.
4. Soft copies of GIS data created in the project in **.shp format** in CD/DVD. (for further used by SECL)
5. Report in **.pdf format** containing interpretation of the thematic data generated with area statistics.

1.7. Snapshots of the SECL Area

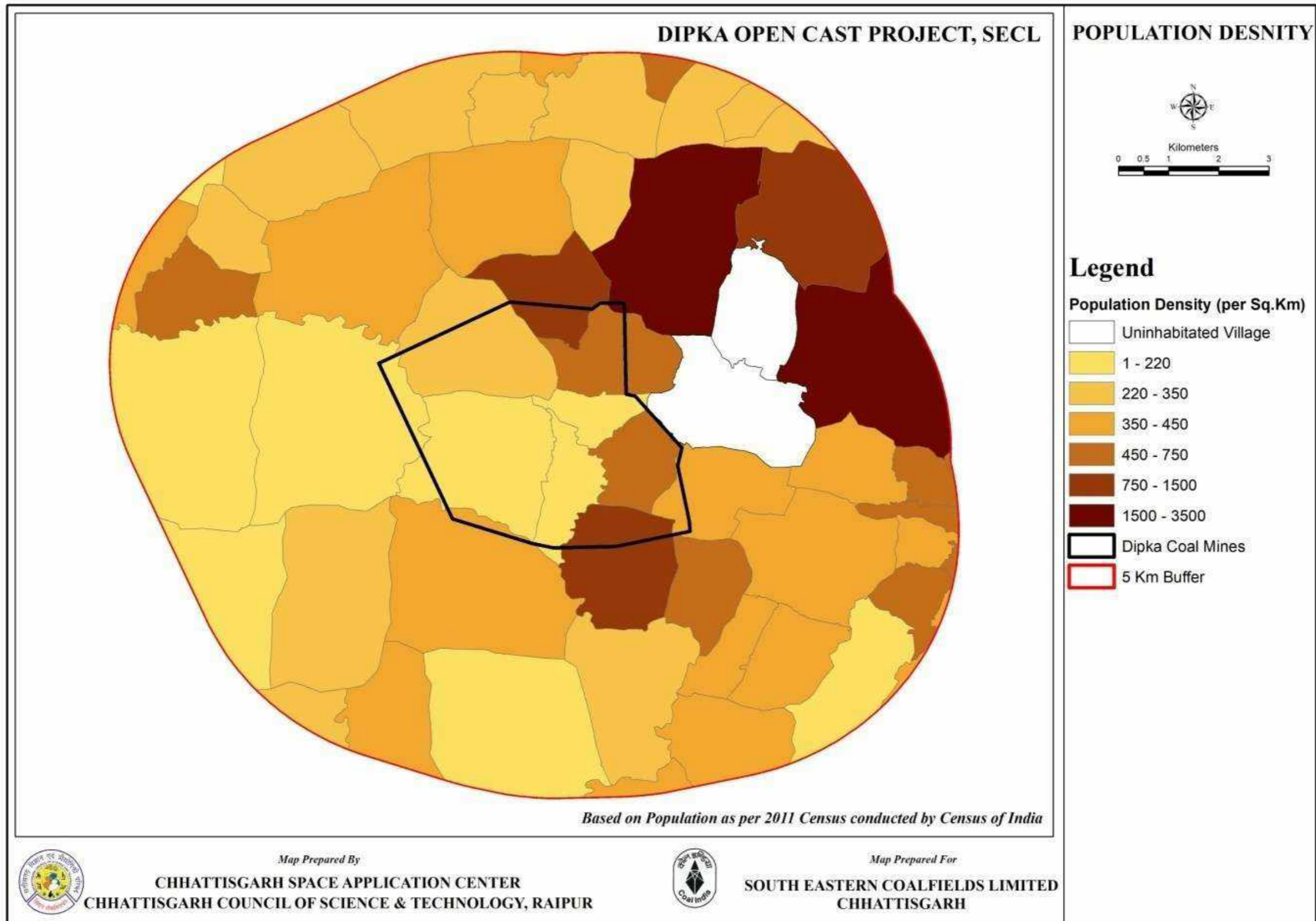


Figure 1-3 Population Density of villages around SECL project area

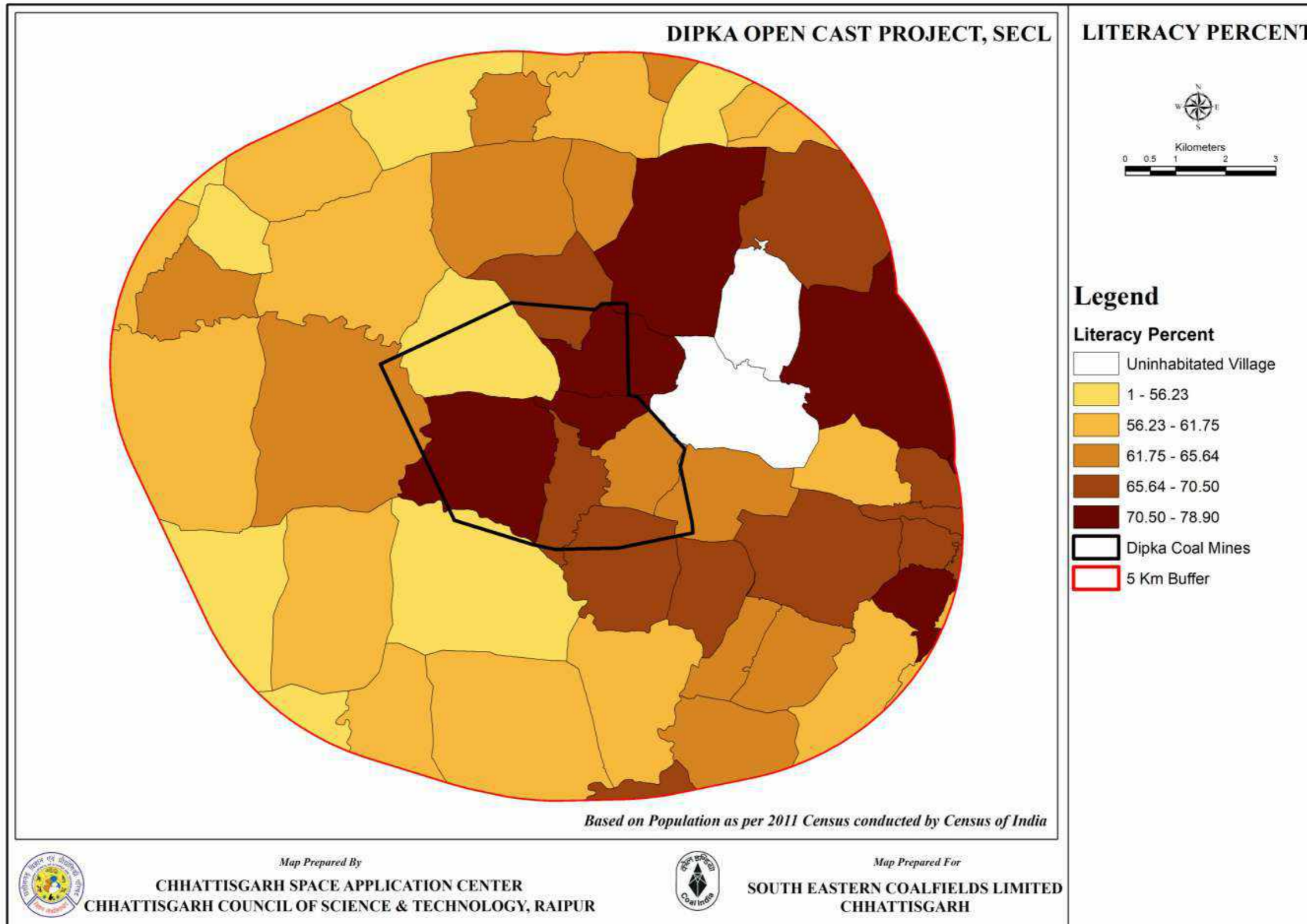


Figure 1-4 Literacy of villages around SECL project area

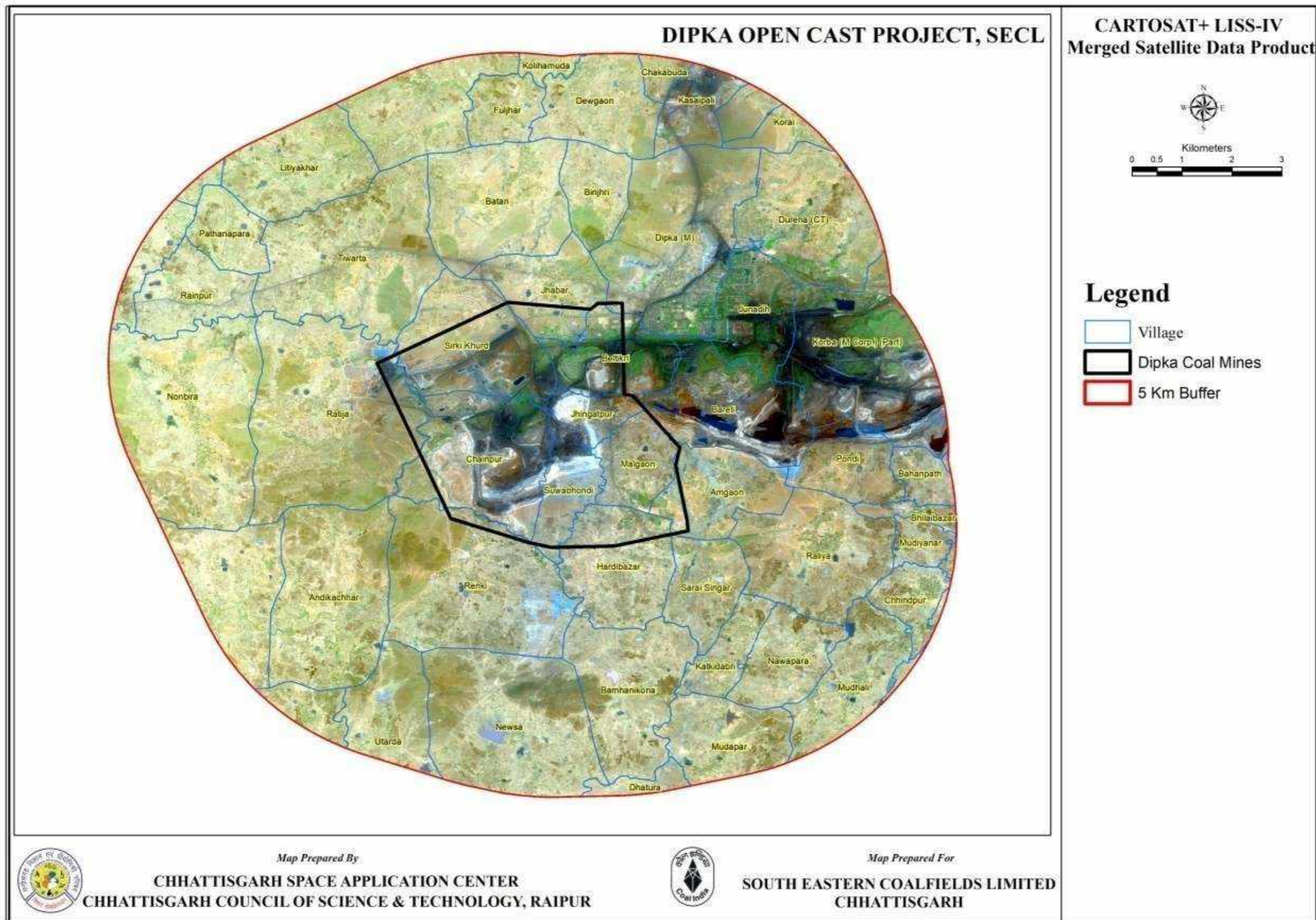


Figure 1-5 Dipka Project Area as viewed on CARTOSAT+ LISS-IV merged Satellite data Product

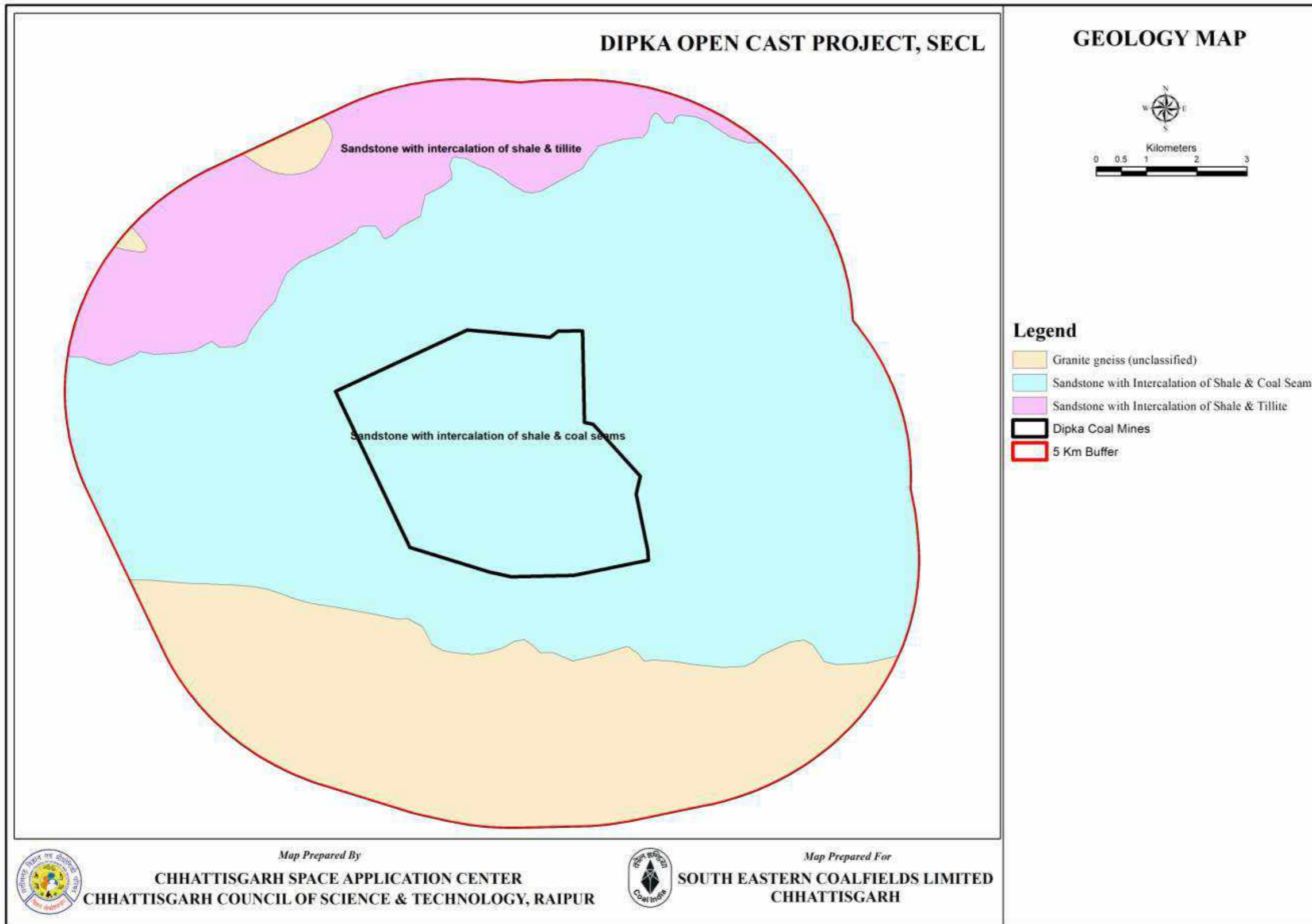


Figure 1-6 Geology of Dipka Project Area

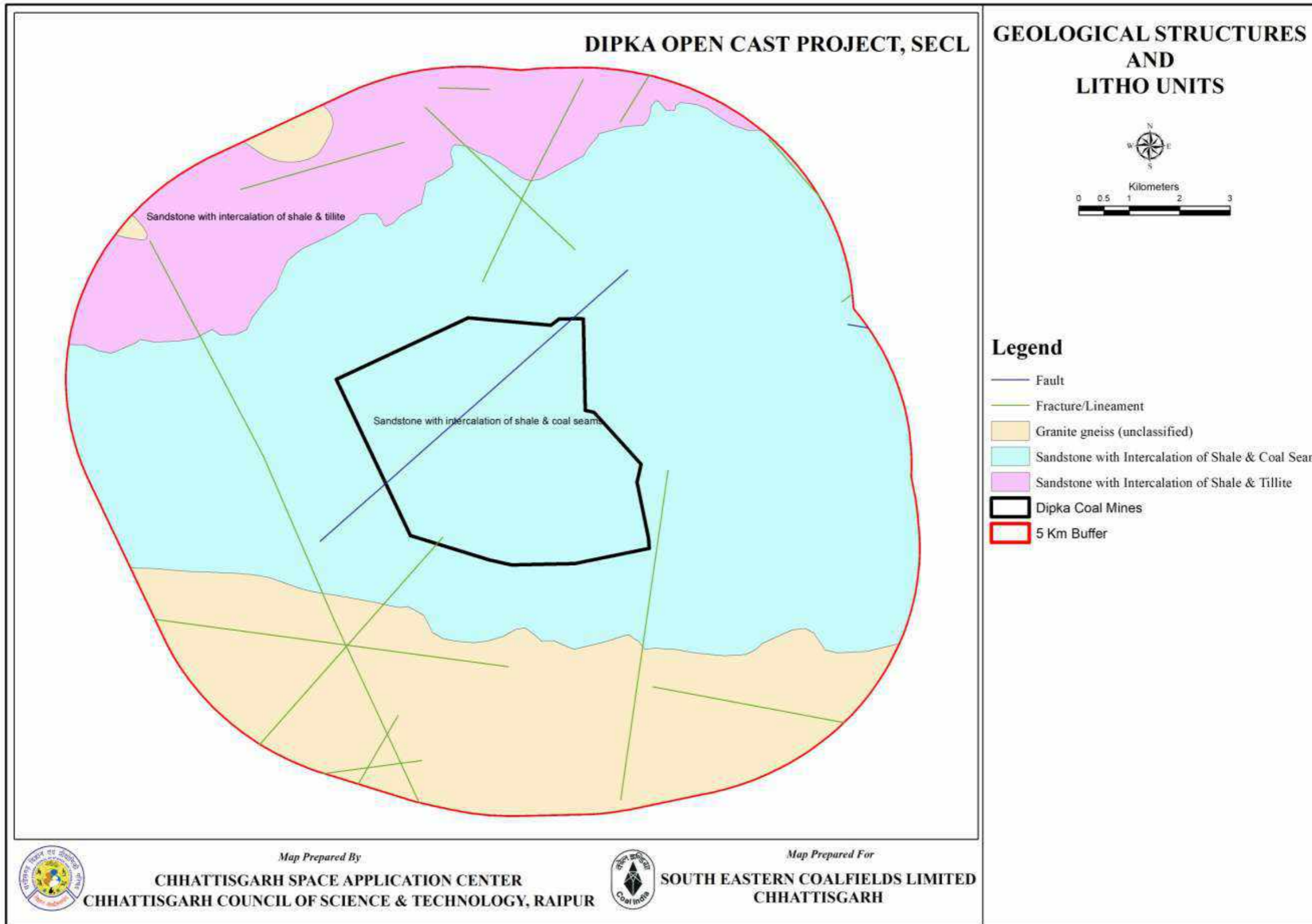


Figure 1-7 Geological Structures of Dipka Project Area



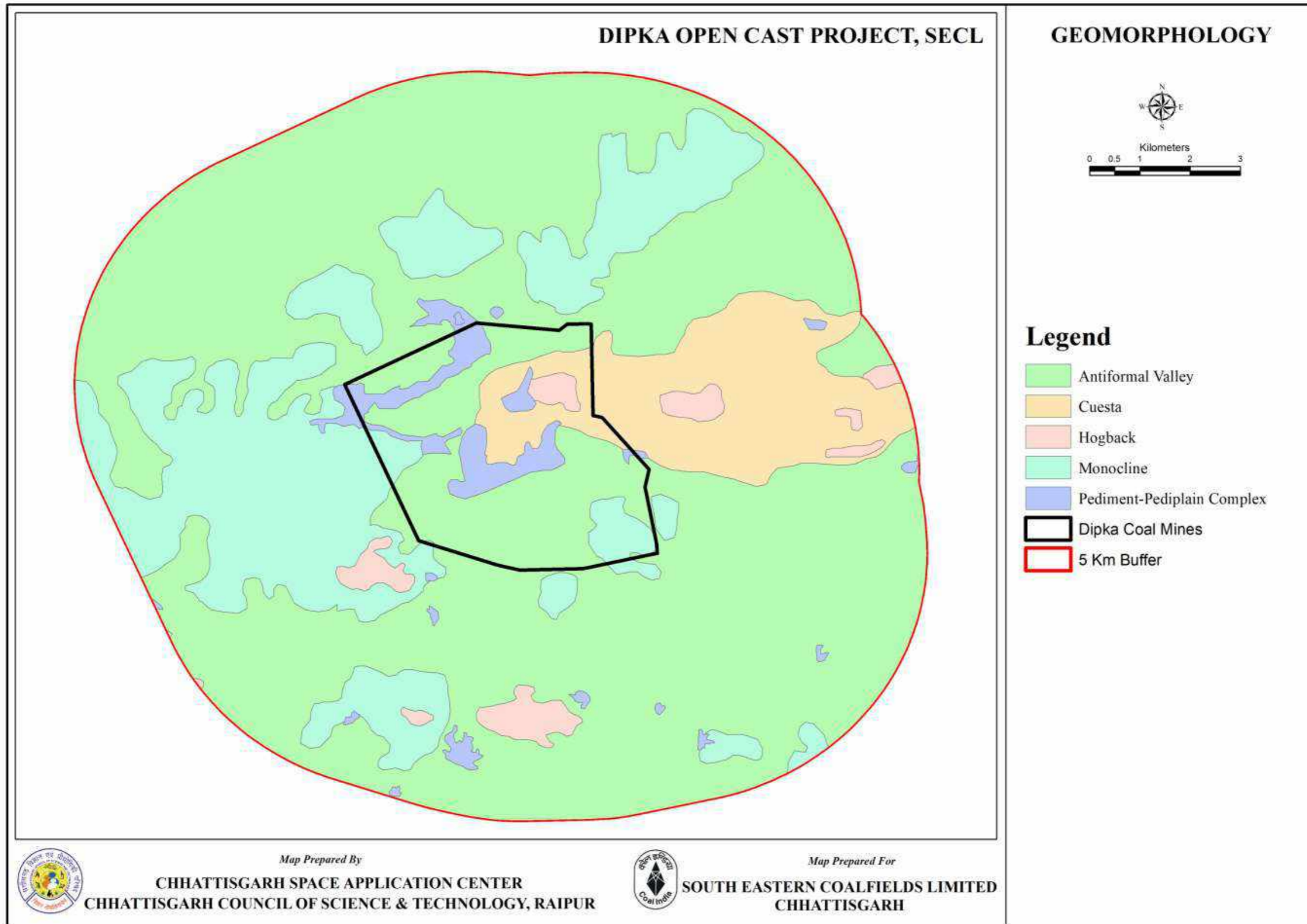


Figure 1-8 Geomorphology of Dipka Project Area (Based on Satellite data interpretation)

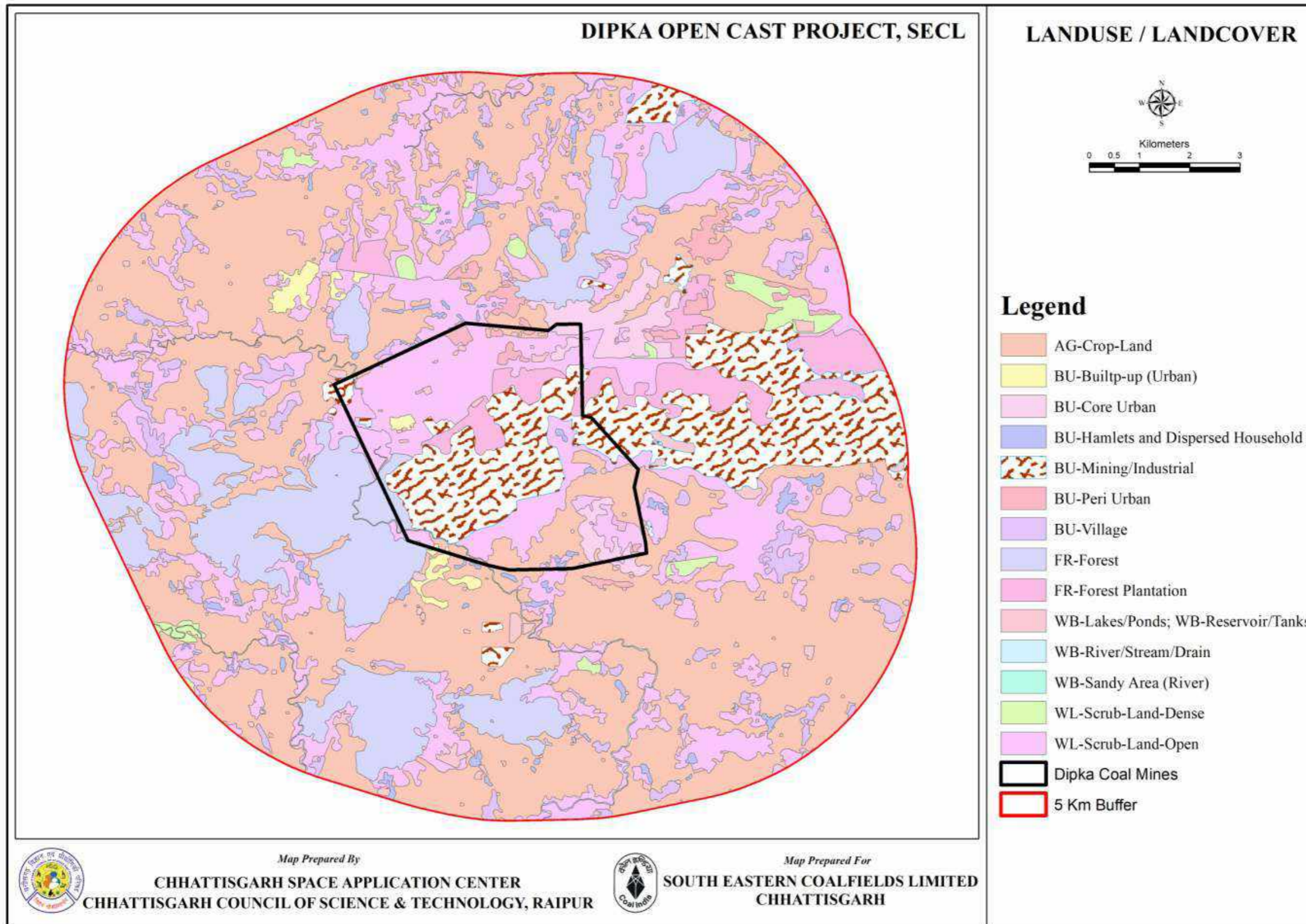


Figure 1-9 Existing Landuse of Dipka Project Area (Based on Satellite data interpretation)

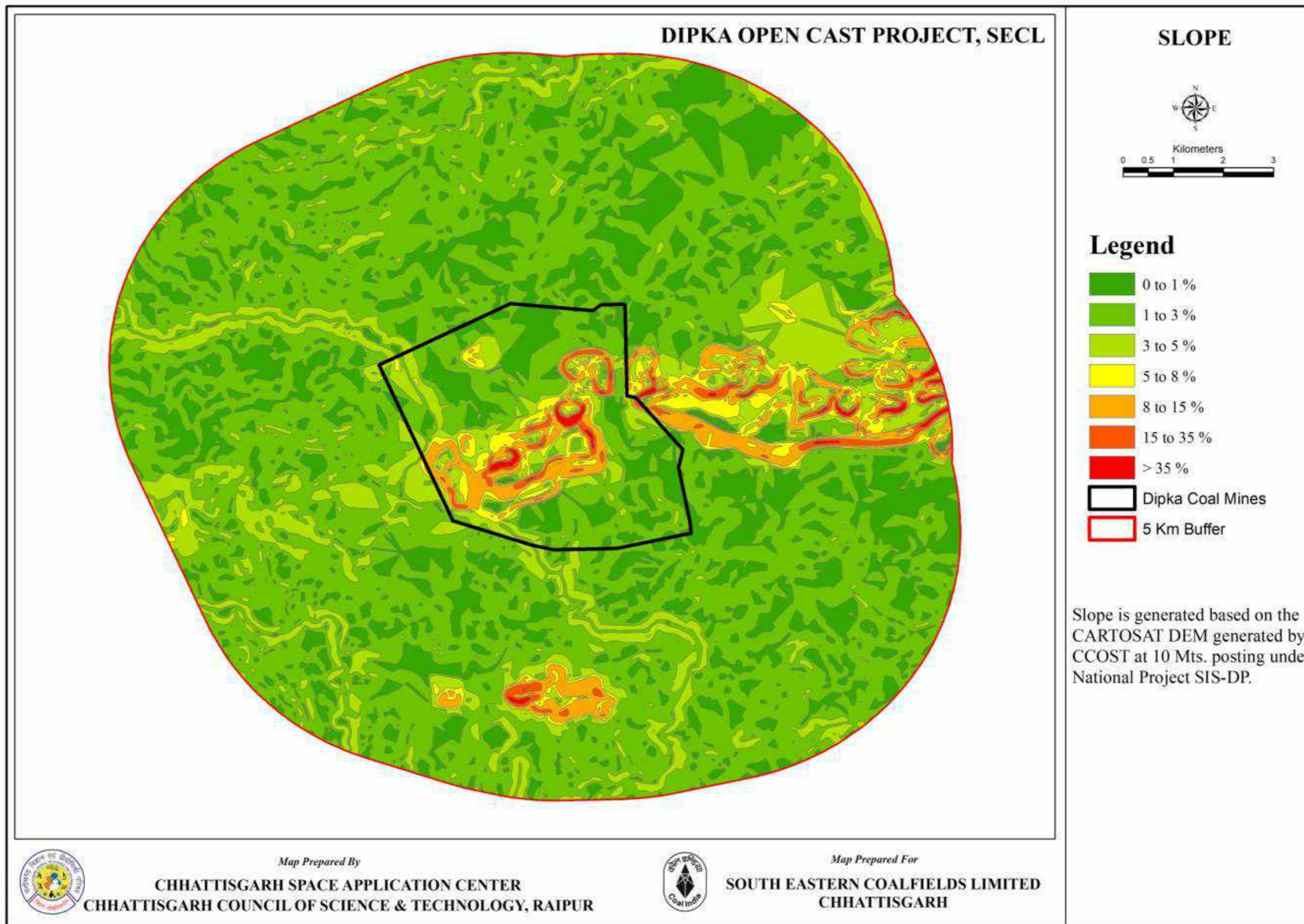


Figure 1-10 Slope of Dipka Project Area

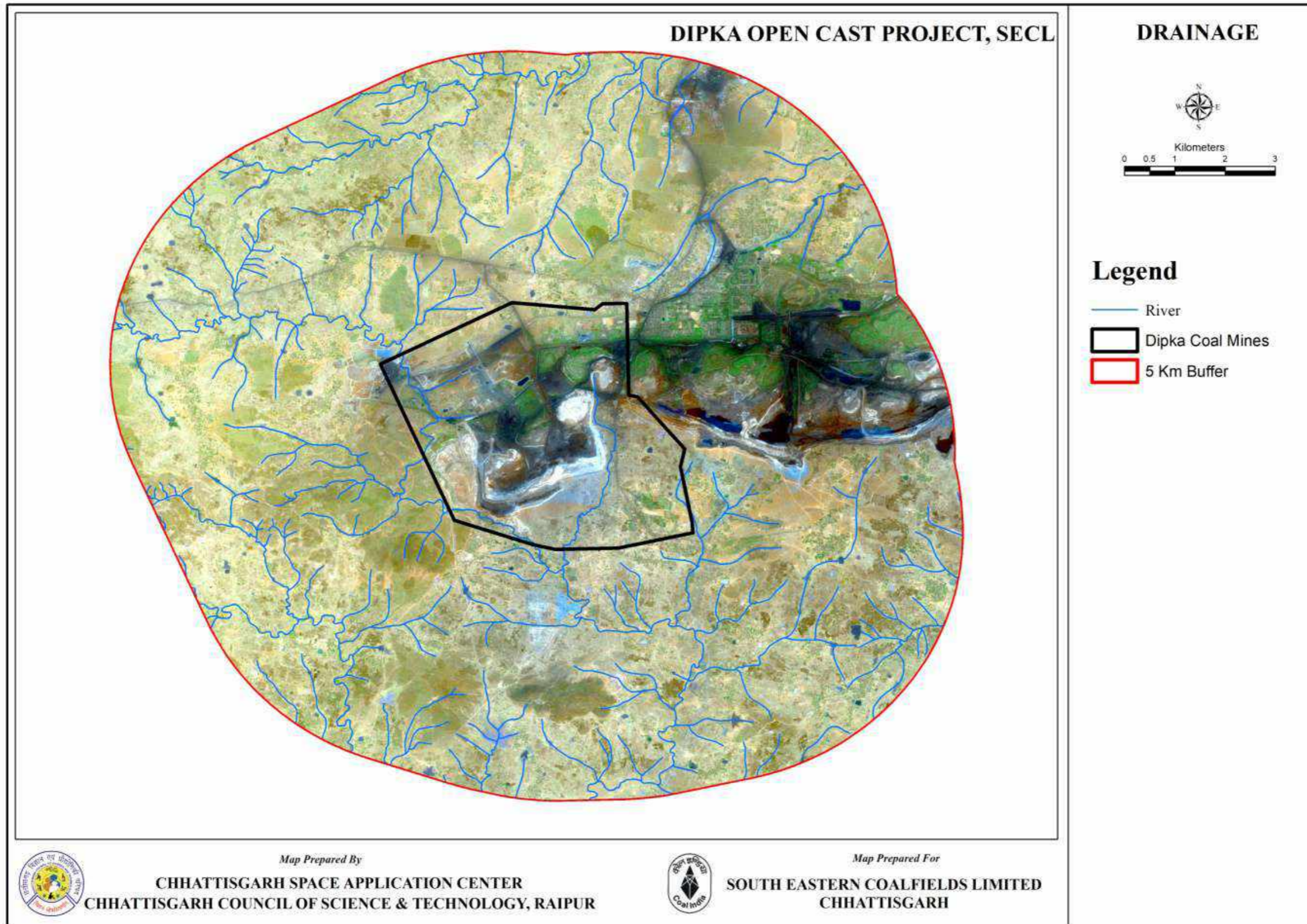


Figure 1-11 Drainage of Dipka Project Area

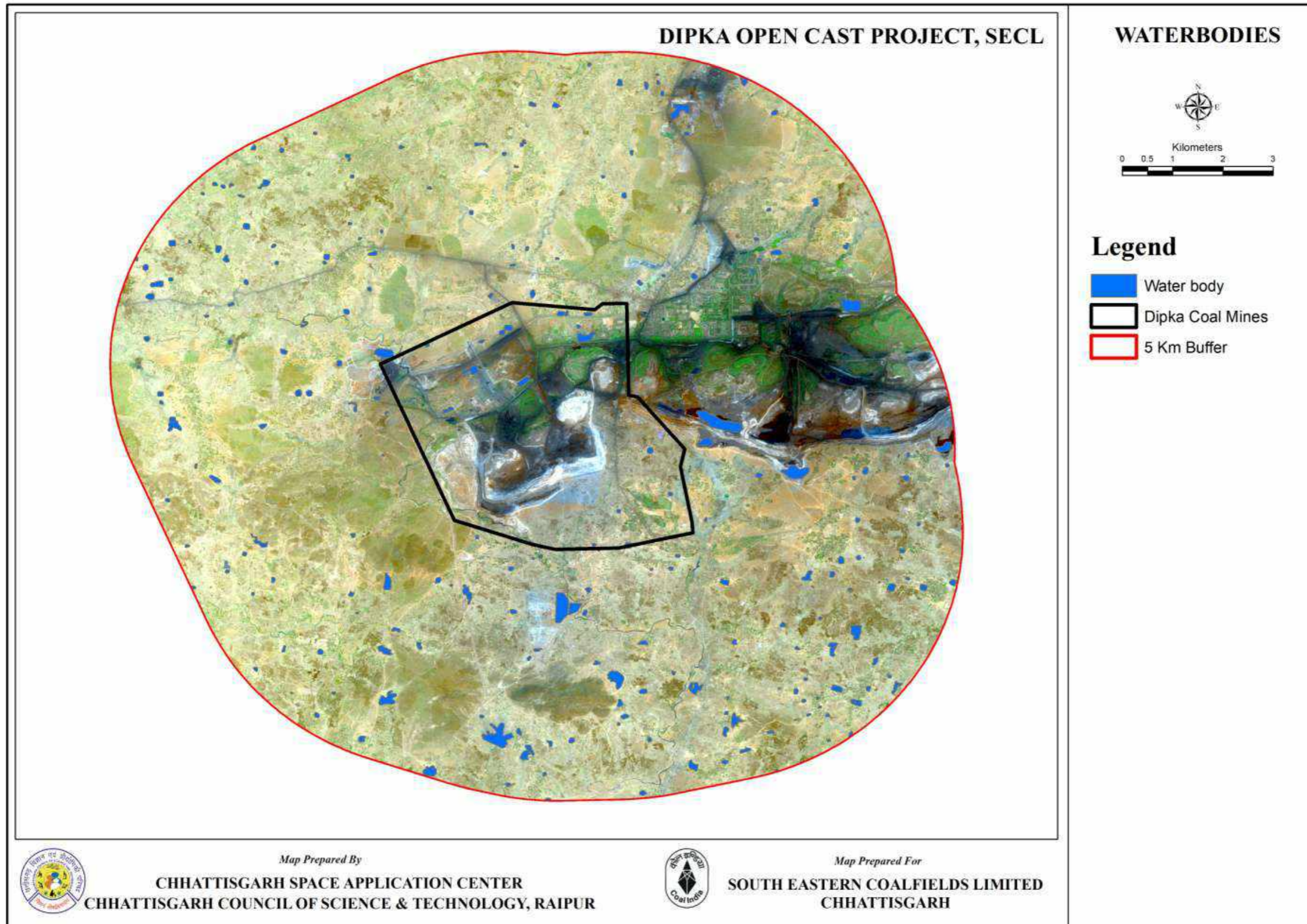


Figure 1-12 Waterbodies of Dipka Project Area

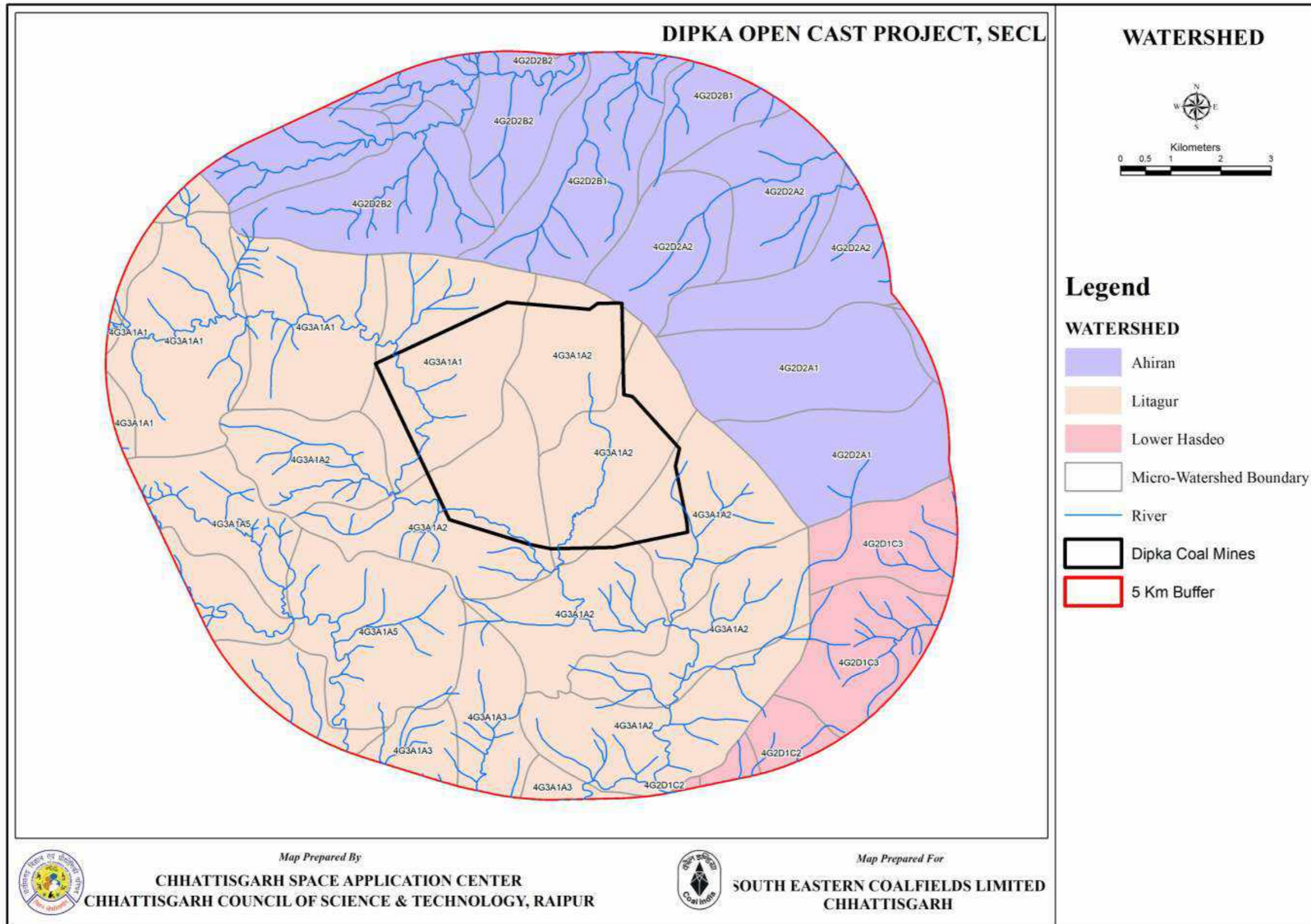


Figure 1-13 Watersheds of Dipka Project Area (Based on NBSSLUP Atlas)

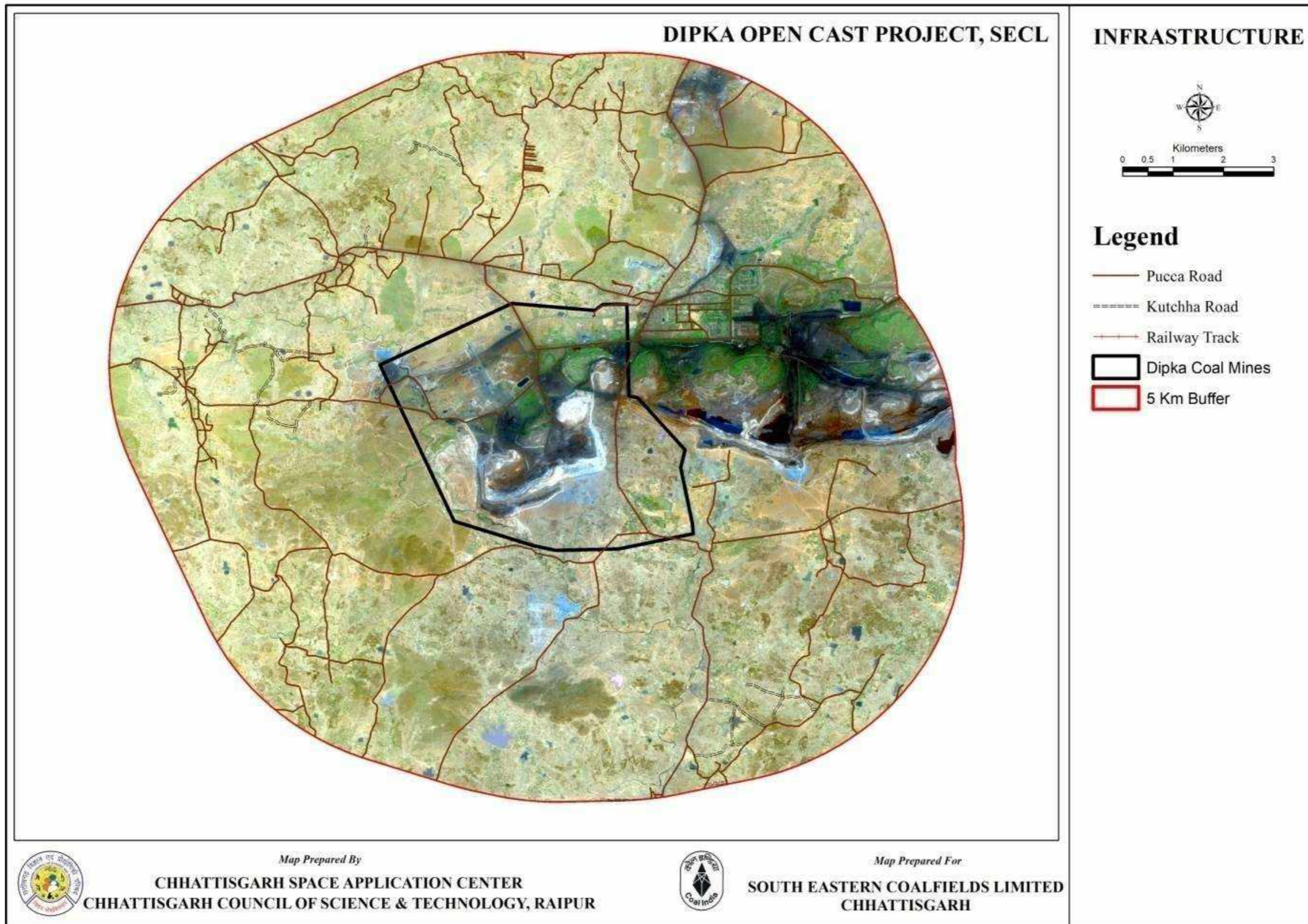


Figure 1-14 Transport Infrastructure of Dipka Project Area

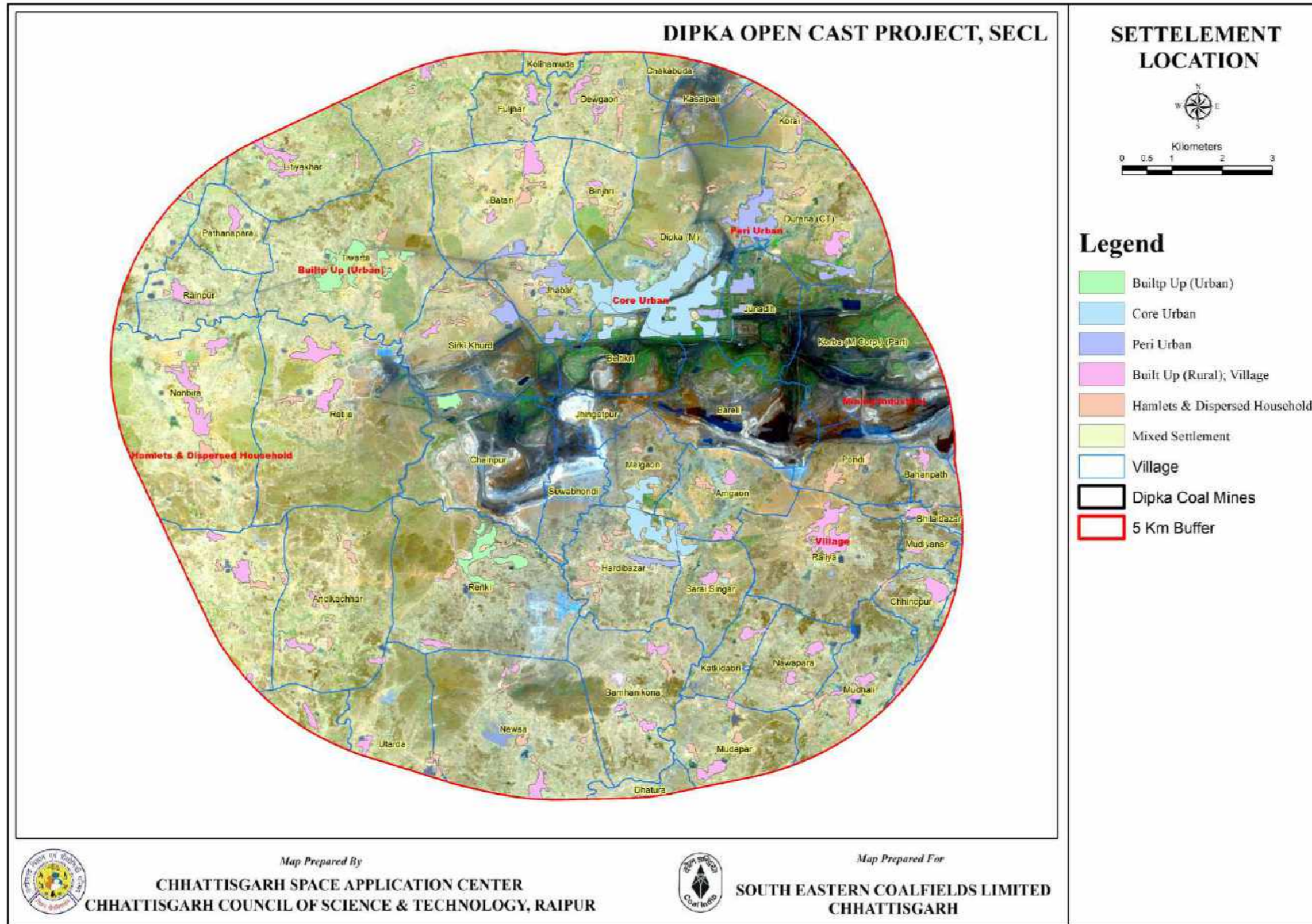


Figure 1-15 Settlement Locations around Dipka Project Area



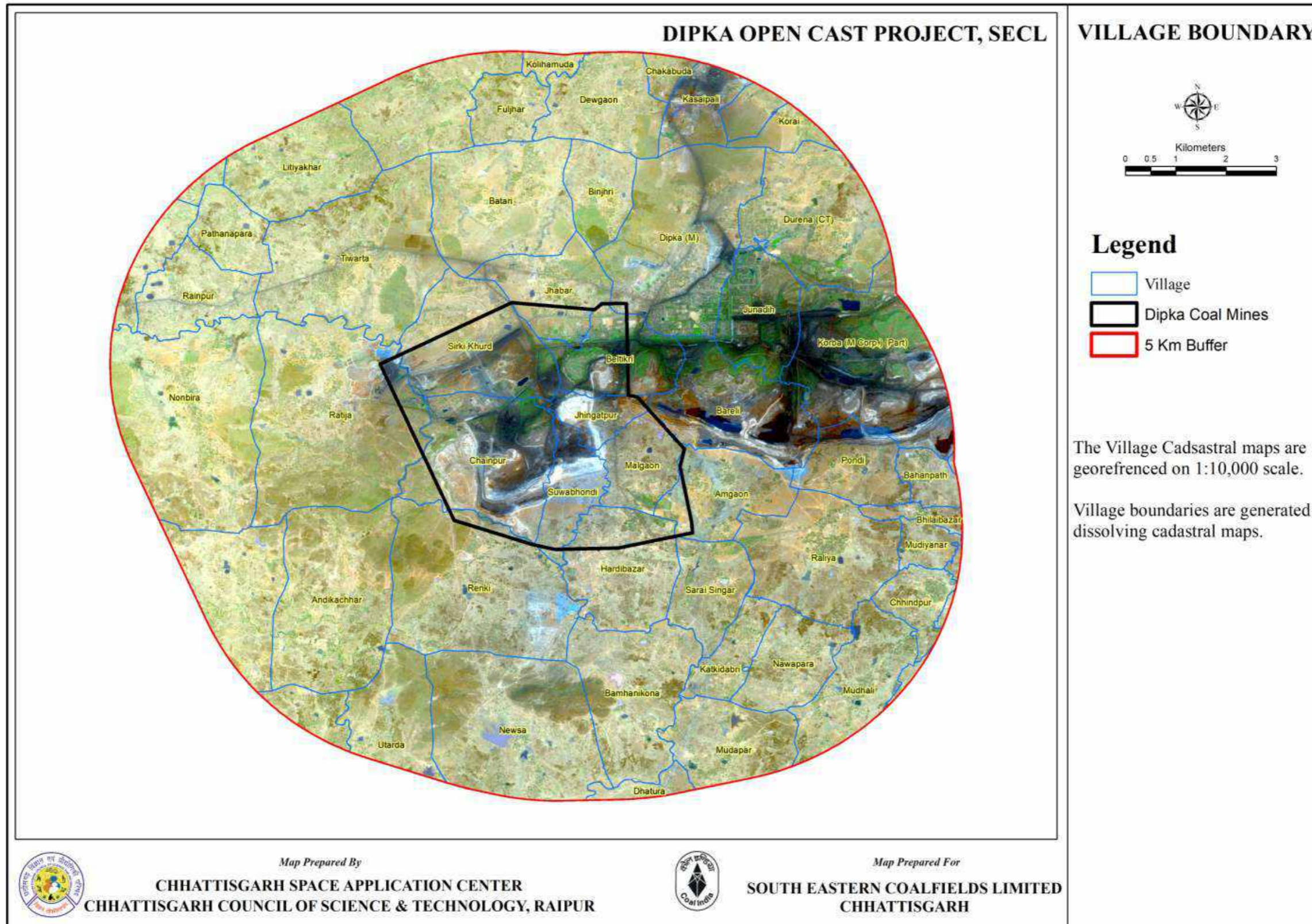


Figure 1-16 Village Boundaries within Dipka Project Area

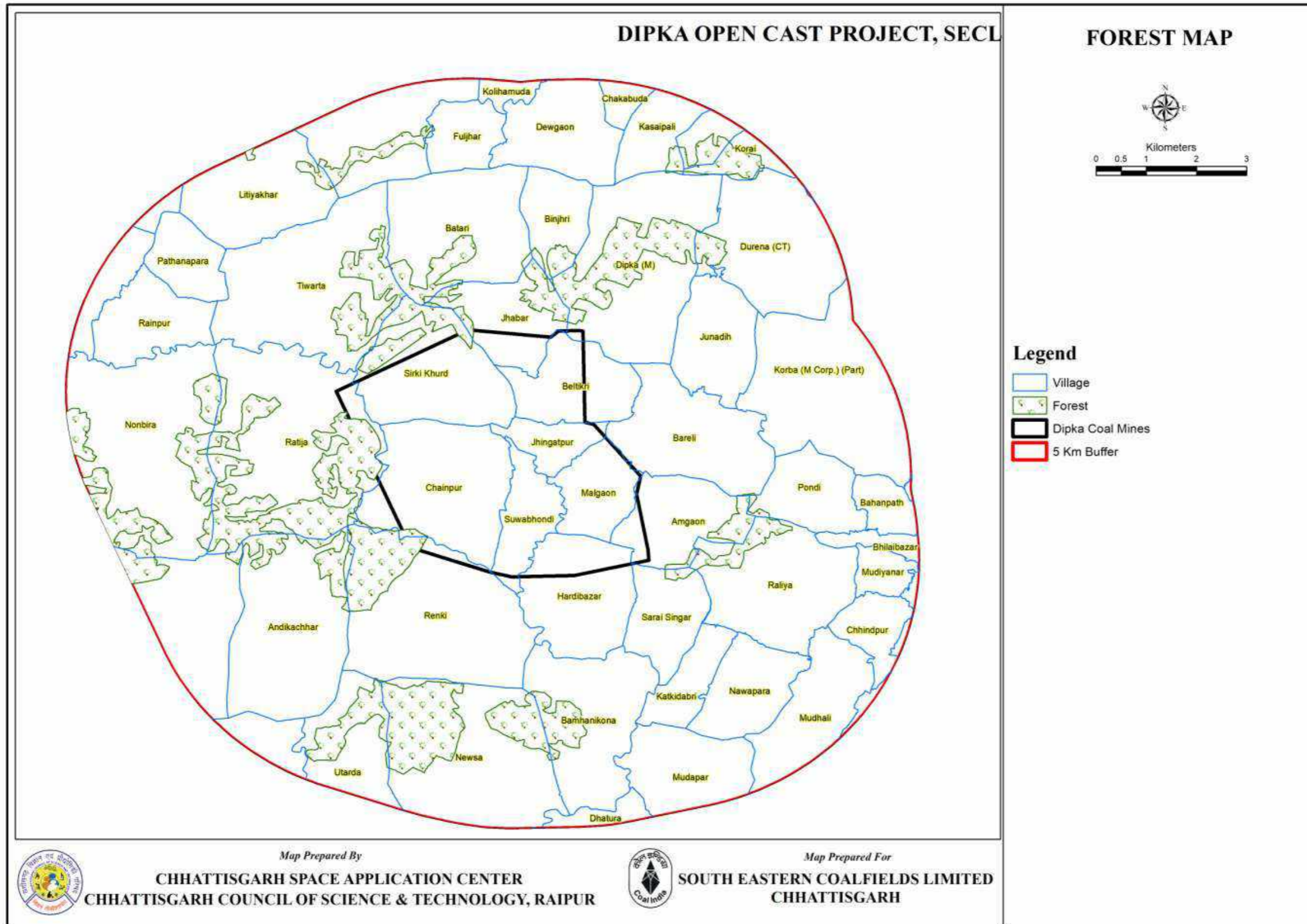
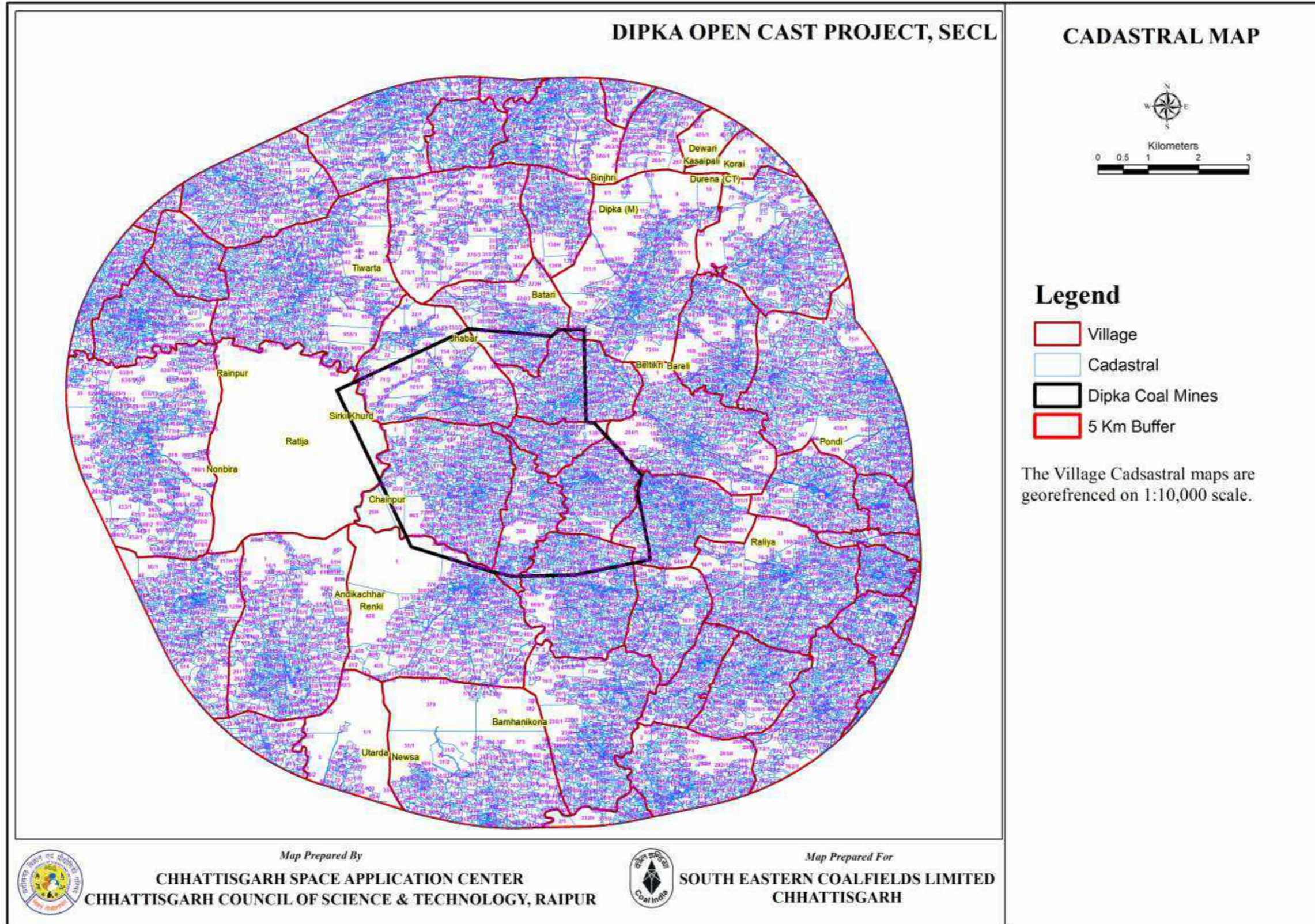


Figure 1-17 Forest Boundaries within Dipka Project Area



*Map Prepared By*

**CHHATTISGARH SPACE APPLICATION CENTER  
CHHATTISGARH COUNCIL OF SCIENCE & TECHNOLOGY, RAIPUR**

*Map Prepared For*

**SOUTH EASTERN COALFIELDS LIMITED  
CHHATTISGARH**

Figure 1-18 Cadastral Details (Transformed on 1:10,000 scale) within Dipka Project Area

## 2. Erosion Control Recommendations

### 2.1. Field Observation of Erosion and Sediment Sources

There are numerous potential sources of erosion and sediment transport. The four key areas of concern at the Dipka-SECL Mine include:

- Steep slopes present throughout the Mine site, and various other areas with high potential for water and wind induced erosion;
- Areas where mining has exposed fresh rock and loose material of fresh dump the vegetative cover is removed which exposes erosion prone material. The weathering agents and process can create runoff and fluidized movement of soils and overburden;
- Mine Outlet drains are not mapable from the satellite data used. These Outlet drains also require vegetative bunds where ever erosion is seen on the ground.

The field observations were further seen expressed on the satellite images and have been mapped for deriving erosion control measures in the Dipka-SECL Mine area.

Also the outputs of Universal Soil Loss Equation (ULSE) bring out the areas of erosion. Both the modeled output and the field observation were put together to derive the recommendations for change in existing landuse and built erosion control measures within the existing drainage (small nalas, streams and rivers)

As field observation it is strongly recommended that the Garland Drainage constructed by SECL needs to be strengthened and maintained regularly. The Garland Drainage being not mapable it could not be reflected on the Action Plan Map submitted here.

**Table 2-1 Landuse Recommendations**

<b>EROSION CONTROL MEASURES (PROPOSED LANDUSE)</b>	<b>AREA (Ha.)</b>
Area Proposed for Phase Wise Plantation	139.38
Gap Plantation	11.78
Steep Slope Stability Measures/Carpeting	8.34

**Table 2-2 Erosion Control Recommendations**

<b>Erosion Control Measures (Proposed Structures)</b>	<b>Number of Structures</b>
Check Dam	3
Nala Bunds/Boulder Checks	10
Vegetative Bunds	18

## 2.2. Weightages assigned

The Weightages assigned to each thematic class used as input to execute Universal Soil Loss Equation are as under:

**Table 2-3 Weightages assigned to each thematic class**

Name of thematic map - Landuse layer		
Landuse Classes	C Factor Weightages	P Factor Weightages
AGCR (Crop Land)	0.34	0.4
BUMN (Mining/Industrial)	0.1	0.5
BURH (Hemlets And Dispersed House Hold)	0.2	0.5
BURU (Urban)	0.2	0.5
BURV (Village)	0.2	0.5
BUUC (Core Urban)	0.1	0.5
BUUP (Periurban)	0.2	0.5
BUUR (Builtup (Urban))	0.1	0.5
FRDE (Forest)	0.01	0.2
FRPL (Forest Plantation)	0.01	0.2
WBCN (Canal)	0	0.1
WBLP (Lake/Pond)	0	0.1
WBRS (River/Stream)	0	0.1
WBRT (Reservoir/Tanks)	0	0.1
WBSA (Sandy Area)	0.01	0.2
WLAD (Active Dump)	0.7	1
WLBR (Barren Rock)	0.2	0.6
WLDS (Dump Slope)	0.8	1
WLGU (Guilled/Ravenous)	0.4	1
WLOD (Old Dump)	0.44	1
WLSD (Scrub Land Dense)	0.2	0.4
WLSP (Scrub Land Open)	0.3	0.6
WLWL (WaterLogged)	0.01	0.1

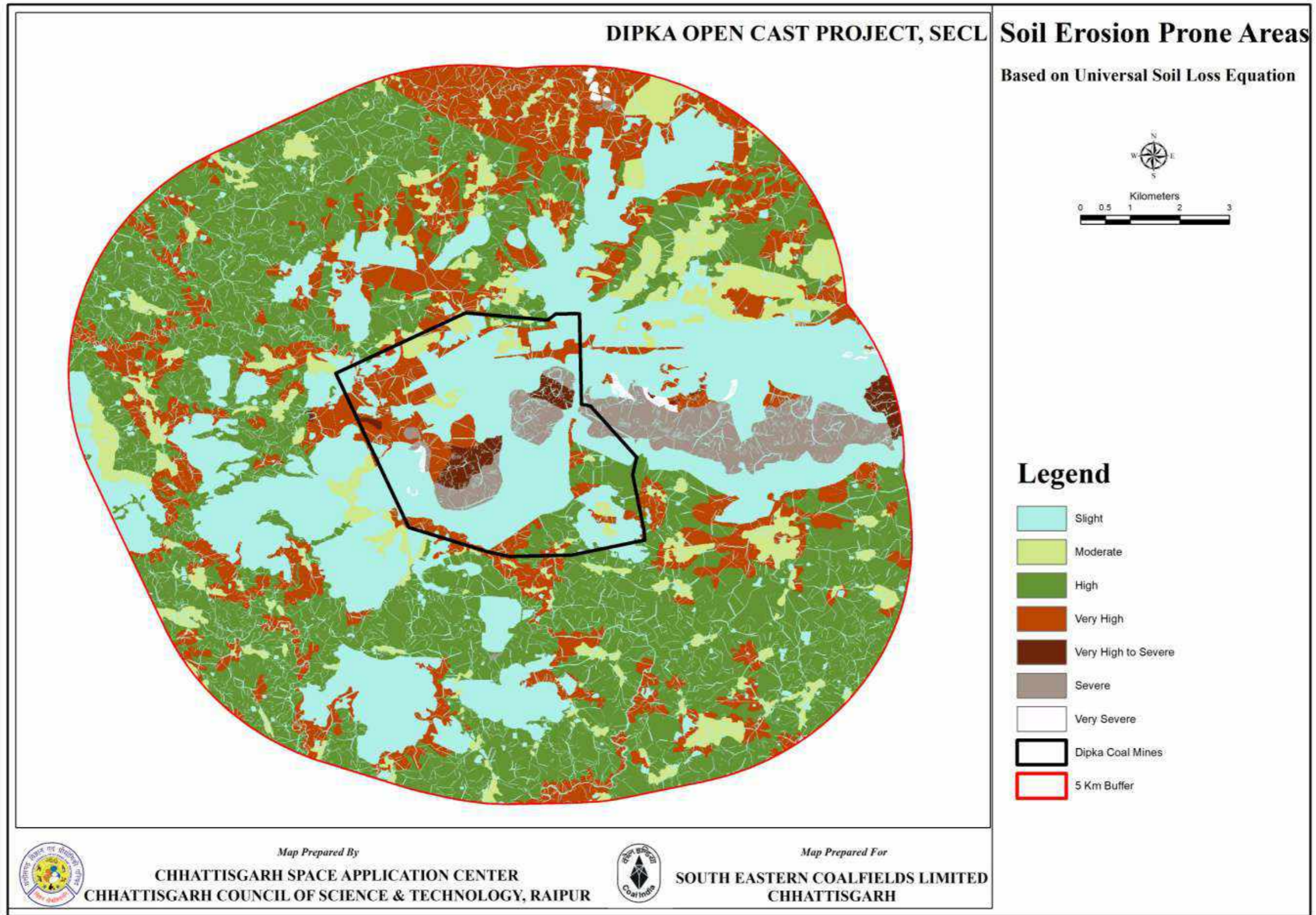


Figure 2-1 Erosion Potential areas within Dipka Project Area

### 2.3. Sub-Watershed Prioritization

Based on the Soil erosion intensity the sub-watersheds of the study area were assigned priority for erosion control measures. The sub-watersheds Prioritization map is as under:

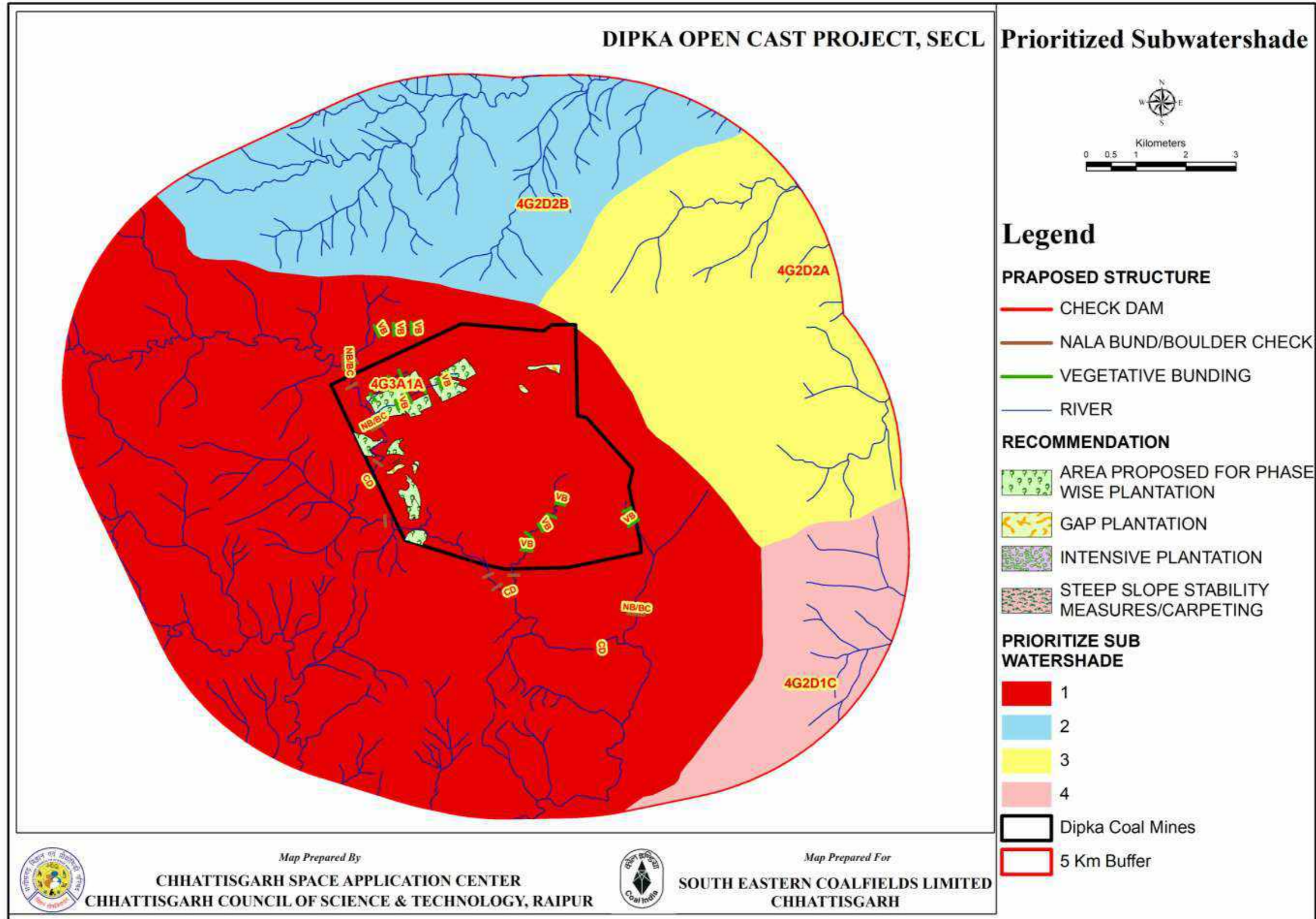


Figure 2-2 Prioritize Sub-watershed within Dipka Project Area

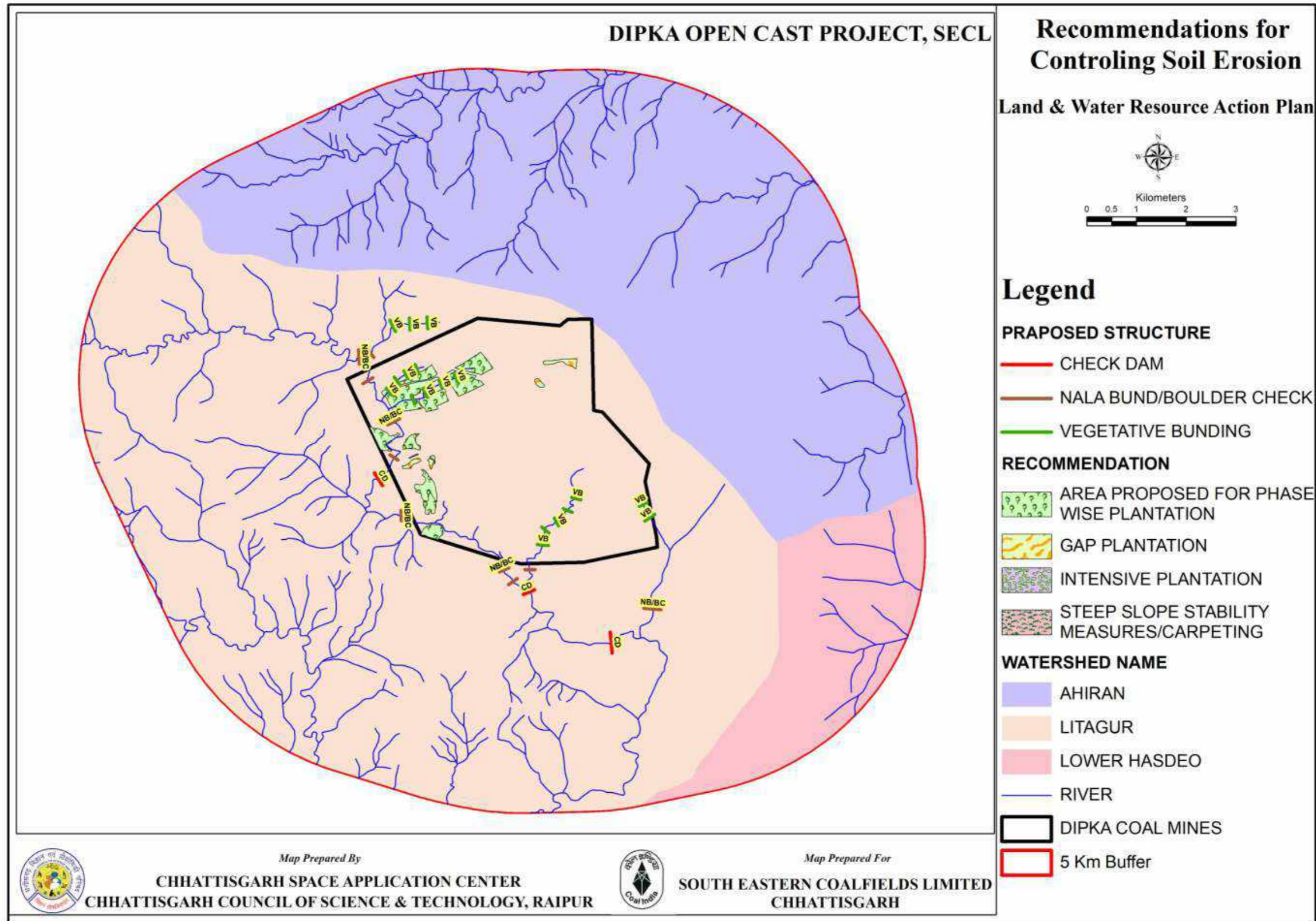


Figure 2-3 Action Plan for Surface Drainage including Surface Conservation Plan within Dipka Project Area



### **2.3.1. Objectives of Erosion Control Measures**

- Intercepting raindrops, reducing their velocity and lessening the erosive effect of rainfall;
- Reducing the velocity of surface runoff, thereby reducing the rate of erosion;
- Sustaining plant roots, and their associated microorganisms, helping to bind soil together, increasing infiltration and reducing runoff; and
- Promoting deeply rooted plants, thus providing tensile strength to slopes and decreasing the incidence of erosion, slumping, and slope failure

### **2.4. Other Erosion and Sediment Control Measures**

Multiple control methods outline in this section provide Dipka Mine options that can be tailored to the type of erosion and sedimentation to be prevented or reduced. On site application of mitigation measures will be determined based on a variety of factors, and the most appropriate should be implemented.

#### **2.4.1. Settling tanks/Ditching**

During heavy rainfall and thawing events, water movement on site can be significant. Strategically placed ditches and runoff collection structures can help direct water movement by reducing the total amount of water and reducing its interaction with erosion prone sites. Creating an intercepting ditch above the cut slope will catch water and direct it to less erosion prone areas, thereby reducing runoff over sensitive regions. Intercepting ditches around the mine site convey water to the Main Pit which can be subsequently pumped to water treatment plant.

#### **2.4.2. Revegetation**

Establishing a vegetative layer is critical to sites where there are exposed slopes and no further construction is planned. Once established, a vegetative layer eliminates the need for continual monitoring and maintenance by protecting the lighter, organic soil fractions from being displaced, retaining moisture, and preventing slope destabilization. Establishing permanent areas of vegetation, or the temporary seeding of hardy, fast growing species, can offer short or long term erosion control. The choice of vegetation species will depend on many factors, such as availability, hardiness and emergence.

Two important factors in choosing vegetation well suited specifically for erosion control are; those that provide roughness on the site surface, and have extensive rooting systems that will break up the top layer of soil. Both of these factors will improve water infiltration into the soil. Seedbed preparations for vegetation establishment on steep slopes will have to be considered for those sites where it is determined to be a concern, and could include slope stabilization, stream course protection through the use of mats and mulch or organic matter application. Soil properties including organic matter content and nutrient level must also be addressed to promote successful re-vegetation. Revegetation must be done with appropriate engineering consultation to ensure that the roots of seeded species will not adversely affect

the structural properties of the surface to be revegetated. Following construction of mine infrastructure, revegetation can be immediately implemented on areas disturbed during construction, but which are no longer required for operations (e.g., overburden stockpiles, disturbed pits, along road routes and road ditches).

#### **2.4.3. Silt Fencing**

Installing silt fence as a sediment control method is a common method employed for level areas with diffuse erosion potential from sheeting on light soils. Silt fences are used to protect downslope areas and prevent further movement of the sediment as it is being transported. Settling of coarser material occurs as the runoff ponds upstream of the fence. Silt fencing is not appropriate for heavy flow areas and requires continuous maintenance.

#### **2.4.4. Sheeting/Matting**

Impermeable polyethylene sheets can offer immediate and temporary erosion control. Their use is suited for emergency responses or for short term protection in an area where the sheets will not be disturbed, because they are susceptible to tearing or movement by wind and heavy rainfall events. Also, they require inspection and maintenance until more permanent erosion measures can be implemented. However, properly installed and anchored, they can provide complete isolation of the erodible surfaces from the effects of wind and water erosion.

Blanco et al, (2008) mentioned the importance of coir matting in dump stability. The coir matting is widely used in the dump slope stabilization and prevention of dump failures. It is a biodegradable coir geo-textile made of coconut fiber or husk. It facilitates new vegetation by absorbing water and preventing topsoil from drying out. Seeding or plantation is done after blanketing the coir matting on the dump slope. They provide dump soil good support allowing natural vegetation to become established. The process of coir matt blanketing on the dump slopes is strongly recommended. First the dump soil slopes are maintained properly. The seeding is done next. After that the coir matt are placed on the dump with proper anchor. Then the seedling will soon cover the dump with vegetation which stabilizes the dump.

Paithankar A. G. et al, (2001) described the plantation system in the dump slope. Vegetation in dump slope protects dump failures through root systems and plant cover, which improve soil particle aggregation in a low cohesion situation, preventing the dump failures. The roots of the fast growing plants and bushes penetrate through the failure zones to the stable and the compact soil beneath. So it holds the moving dump soil mass and prevents the dump failures.

#### **2.4.5. Proposed Species for Plantation**

It is very important to evolve vegetation at multiple levels - plant trees, shrubs, and groundcovers. A multi-level canopy will do the best job of intercepting and slowing precipitation before it hits the ground, thus reducing surface erosion.

Also species selection should be such that species found in the state should be preferred and Leguminous should be planted in conjunction with other species. The recommended planting material for the SECL area are as under:

**Table 2-4 Recommended Species of Plants**

<b>Proposed Tree Species (Local/Common Name)</b>	<b>Botanical Name</b>
Mahua (Seed)	<i>Madhuca longifolia</i>
Saja (Seed)	<i>Terminalia tomentosa</i>
Aam (seed, seedling transplantation)	<i>Mangifera indica</i>
Kumhi (Seed)	<i>Careya arborea</i>
Rohan (Seed)	<i>Soymida febrifuga</i>
Sidha (Seed)	<i>Lagerstroemia parviflora</i>
Neem (Seed)	<i>Azadirachta indica</i>
Karanj (seed)	<i>Pongamia pinnata</i>
Haldu (Seed)	<i>Adina cordifolia</i>
Bel (Seed)	<i>Aegle marmelos</i>
Maharukh (Seed)	<i>Ailanthus excelsa</i>
Chichwa (Seed)	<i>Albizzia odoratissima</i>
Asta (Seed)	<i>Bauhinia racemosa</i>
Kasai (Seed)	<i>Bridelia retusa</i>
Mainphal (Seed)	<i>Catunaregam spinosa</i>
Lasora (Seed)	<i>Cordia myxa</i>
Jamrashi (Seed)	<i>Elaeodendron glaucum</i>
Bhonrsal (Seed)	<i>Hymenodictyon excelsum</i>
Baranga (Seed)	<i>Kydia calycina</i>
Kari (Seed)	<i>Miliusa tomentosa</i>
Kusum (Seed)	<i>Schleichera oleosa</i>
Jamun (Seed)	<i>Syzygium cumini</i>
Rohina (Seed)	<i>Soymida febrifuga</i>
Reetha	<i>Sapindus mukorossi</i>
Korkat	<i>Dillenia pentagyna</i>
Moyan	<i>Lannea coromandelica</i>
Bargad (Transplantation)	<i>Ficus benghalensis</i>
Pipal (Transplantation)	<i>Ficus religiosa</i>
Umar (Transplantation)	<i>Ficus racemosa</i>
Pakar (Transplantation)	<i>Ficus infectoria</i>
Imli (Seed) Leguminous	<i>Tamarindus indica</i>

Amaltas (Seed) Leguminous	<i>Cassia fistula</i>
Babool (Seed) Leguminous	<i>Acacia nilotica</i>
Kala siris (Seed) Leguminous	<i>Albizia lebbek</i>
Palas (Seed) Leguminous	<i>Butea monosperma</i>
<b>Proposed Shrub Species (Local/Common Name)</b>	<b>Botanical Name</b>
Chilhi (Seed)	<i>Casearia tomentosa</i>
Dikamali (Seed)	<i>Gardenia gummifera</i>
Adusa (Seed)	<i>Adhatoda vasica</i>
Akol (Seed)	<i>Alangium salvifolium</i>
Karonda (Seed)	<i>Carissa spinarum</i>
Baibirang (Seed)	<i>Embelia ribes</i>
Marodphali (Seed)	<i>Helecteres isora</i>
Dudhi (Seed, Transplantation)	<i>Holarrhena antidysenterica</i>
Chipti (Seed) Leguminous	<i>Desmodium pulchellum</i>
Chapar (Seed) Leguminous	<i>Moghamia chapar</i>
<b>Proposed Climbers and Lianas Species (Local/Common Name)</b>	<b>Botanical Name</b>
Satawar (Seed, Tuber)	<i>Asparagus racemosus</i> –
Dangkanda (Seed, Tuber, Bulbil)	<i>Dioscorea bulbifera</i>
Baichandi (Tuber, Bulbil)	<i>Dioscorea hispida</i>
Gudmar (Cutting, Seed)	<i>Gymnema sylvestre</i>
Palasbel (Seed)	<i>Spatholobus roxburghii</i>
Malkangni (Seed)	<i>Celestrus peniculata</i>
Dhimarbel (Seed)	<i>Ichnocarpus frutescens</i>
Ramdaton (Seed)	<i>Smilax zeylanica</i>
Guruch (Cutting, Seed)	<i>Tinospora cordifolia</i>
Keoti (Seed)	<i>Vallisneria spiralis</i>
Keoti (Seed)	<i>Ventilago calyculata</i>
Mahul (Seed) Leguminous	<i>Bauhinia vahlii</i>
Bel Palas (Leguminous)	<i>Butea roxburghii</i>
<b>Soil Stabilizer Grasses</b>	<b>Botanical Name</b>
Vetiver grass	<i>Chrysopogon zizanioides</i>
Moonj grass	<i>Saccharum munja</i>

Stylish Hemata grass	<i>Stylosanthes Sp.</i>
Andropogon aciculatus	
Dicanthium (Bothriochloa) pertusa	
Saccharum spontaneum	
<b>For water logged areas</b>	<b>Botanical Name</b>
Bermuda grass also known as Vilfa stellate	<i>Cynodon dactylon</i>

#### 2.4.5.1. Mechanism

Planting a relatively large area, especially on steep slopes of old dumps where fresh erosion is seen, hydroseeding can be carried out in a very short period of time. It can be very effective for hillsides and sloping lawns to help with erosion control and quick planting. Hydro seeding will typically cost effective than planting with sod, but more than broadcast seeding. Results are often quick with high germination rates producing grass growth in about a week and mowing maintenance beginning around 3 to 4 weeks from the date of application. Fiber mulch accelerates the growing process by maintaining moisture around the seeds thereby increasing the rate of germination.

\*\*\*\*\*



**छत्तीसगढ़ शासन**  
**वन विभाग**

Detail Project Report

**SURFACE DRAINAGE PLAN WITH SURFACE  
WATER CONSERVATION PLAN FOR DIPKA  
EXPANSION PROJECT**

**Katghora Division, Korba, Chhattisgarh**

**Project Cost : 253.640 L**

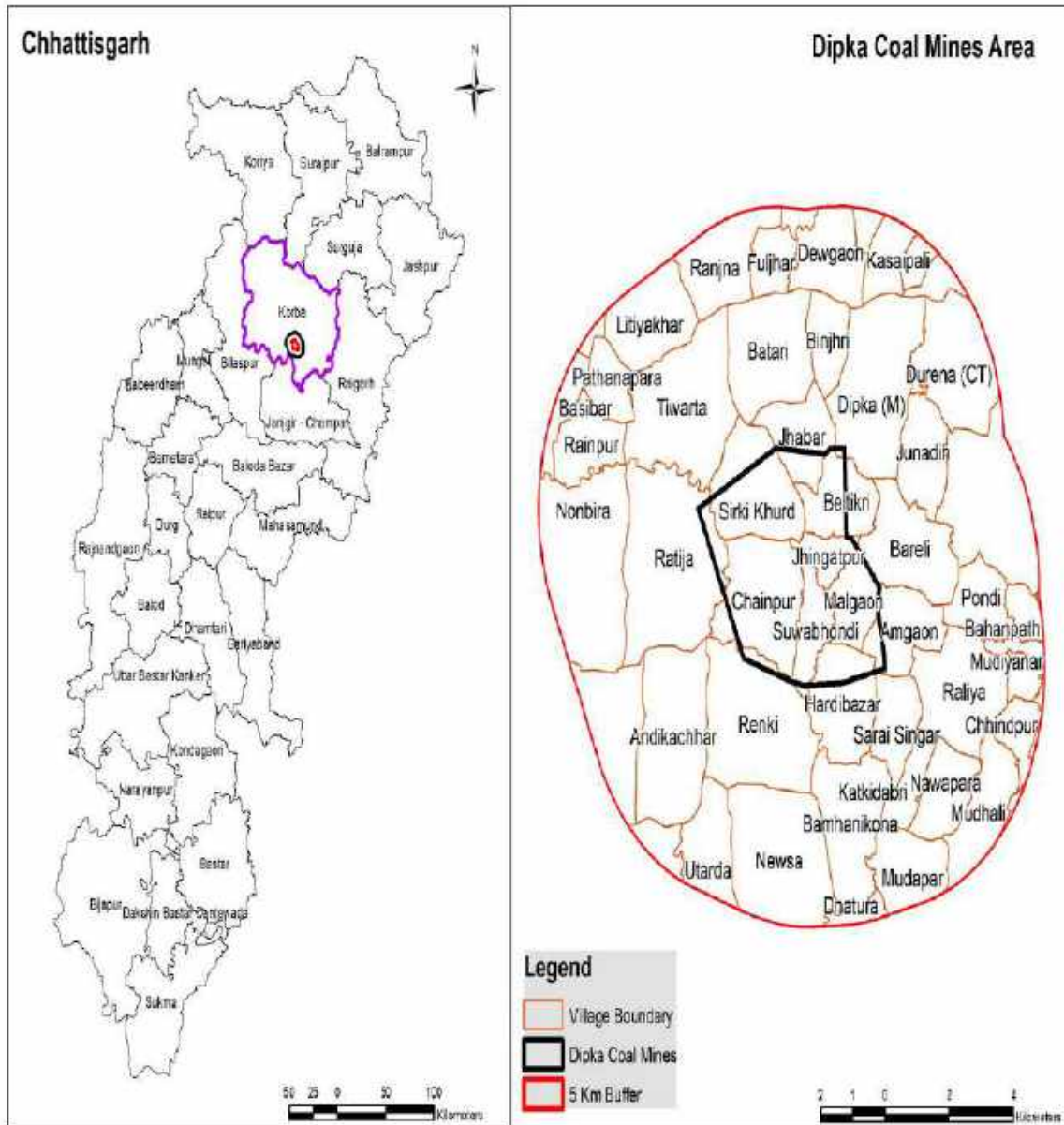
Prepared by : Technical Team of Division Katghora.

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# Chapter - 1 Maps and Layers

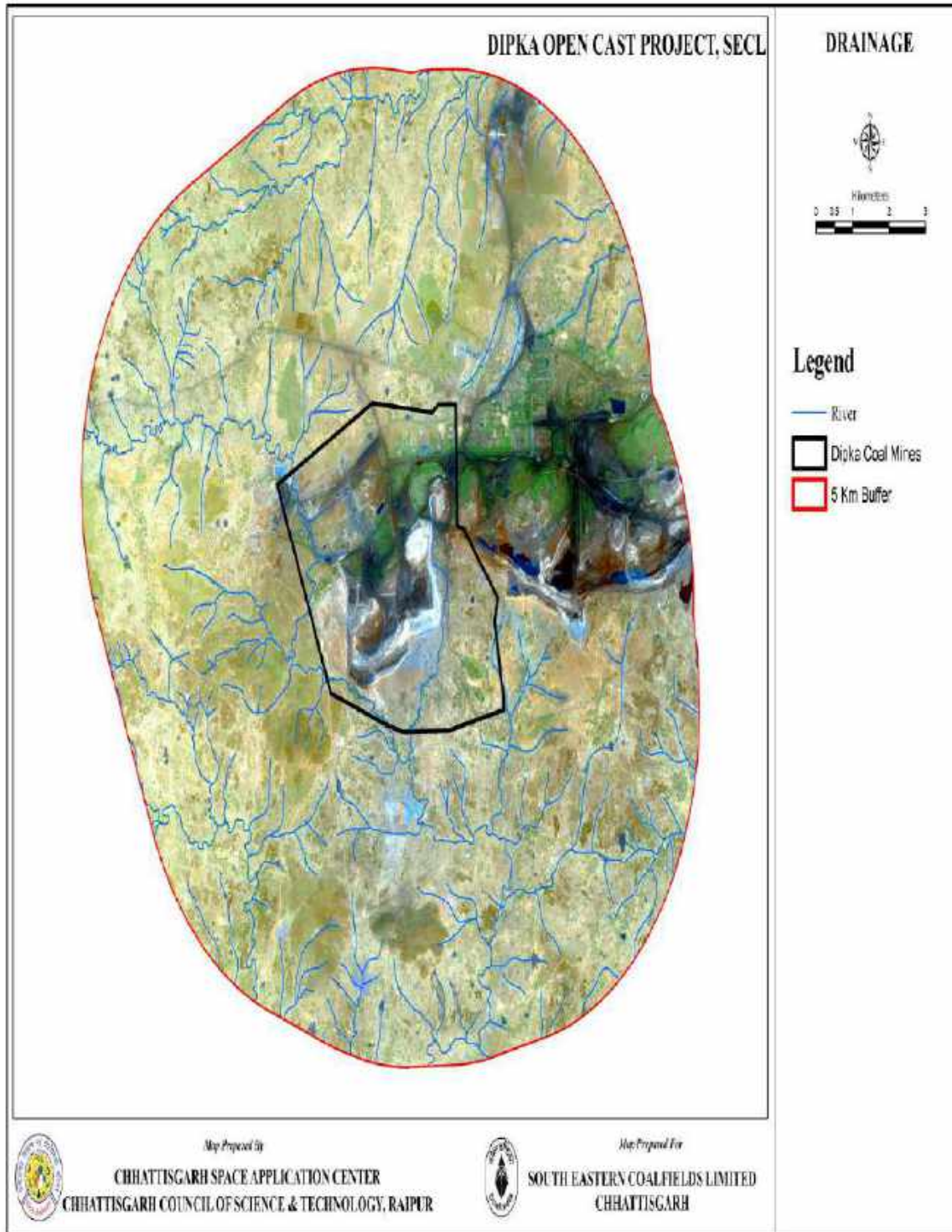
## 1.1 Regional Location



**Figure 1:** Regional Location of SECL Project Area



## 1.2 Drainage map



**Figure 2:** Drainage map

1.3 Land use/ Land cover map

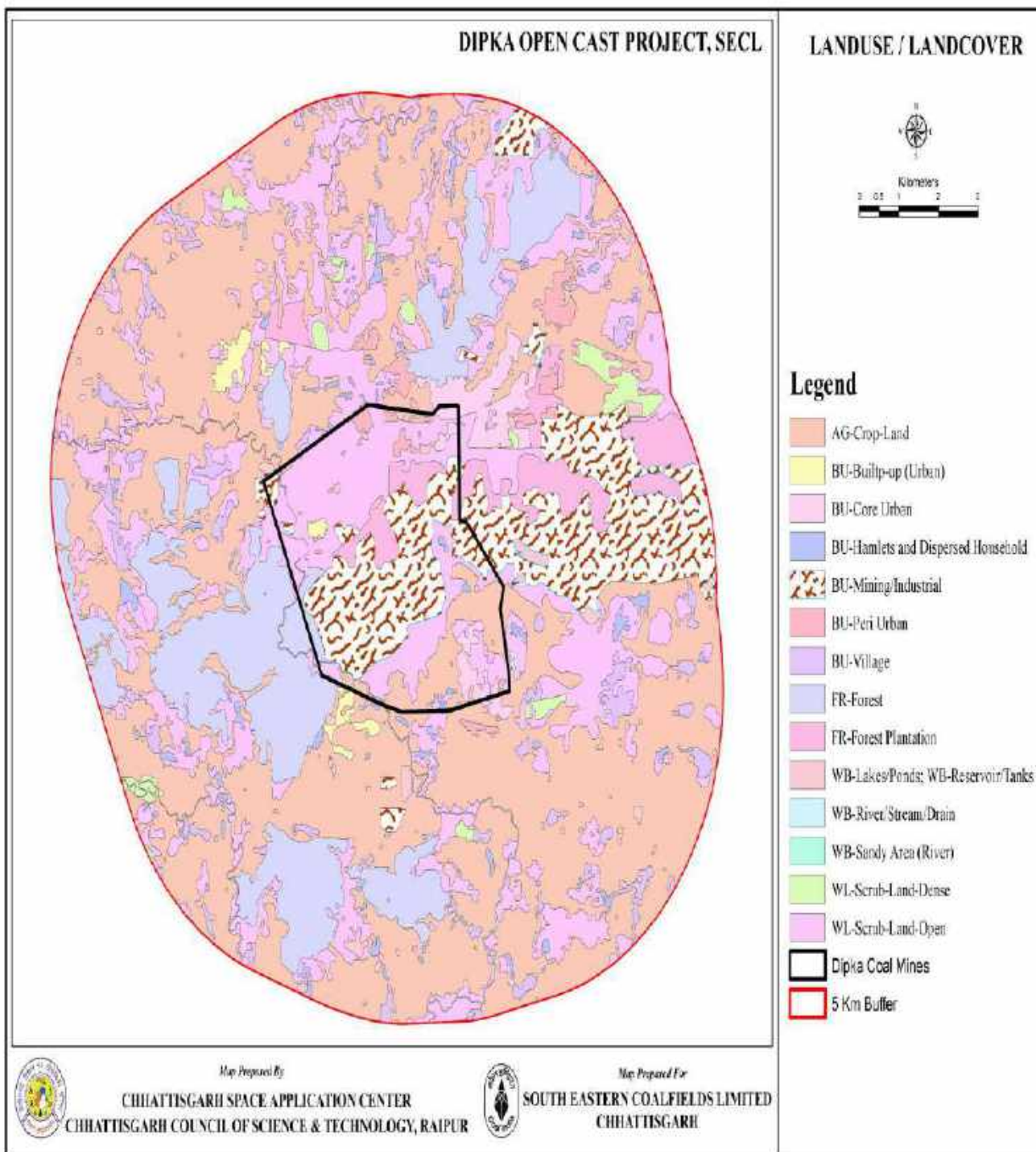


Figure 3: Land Use Land Cover Map

### 1.4 Soil erosion map

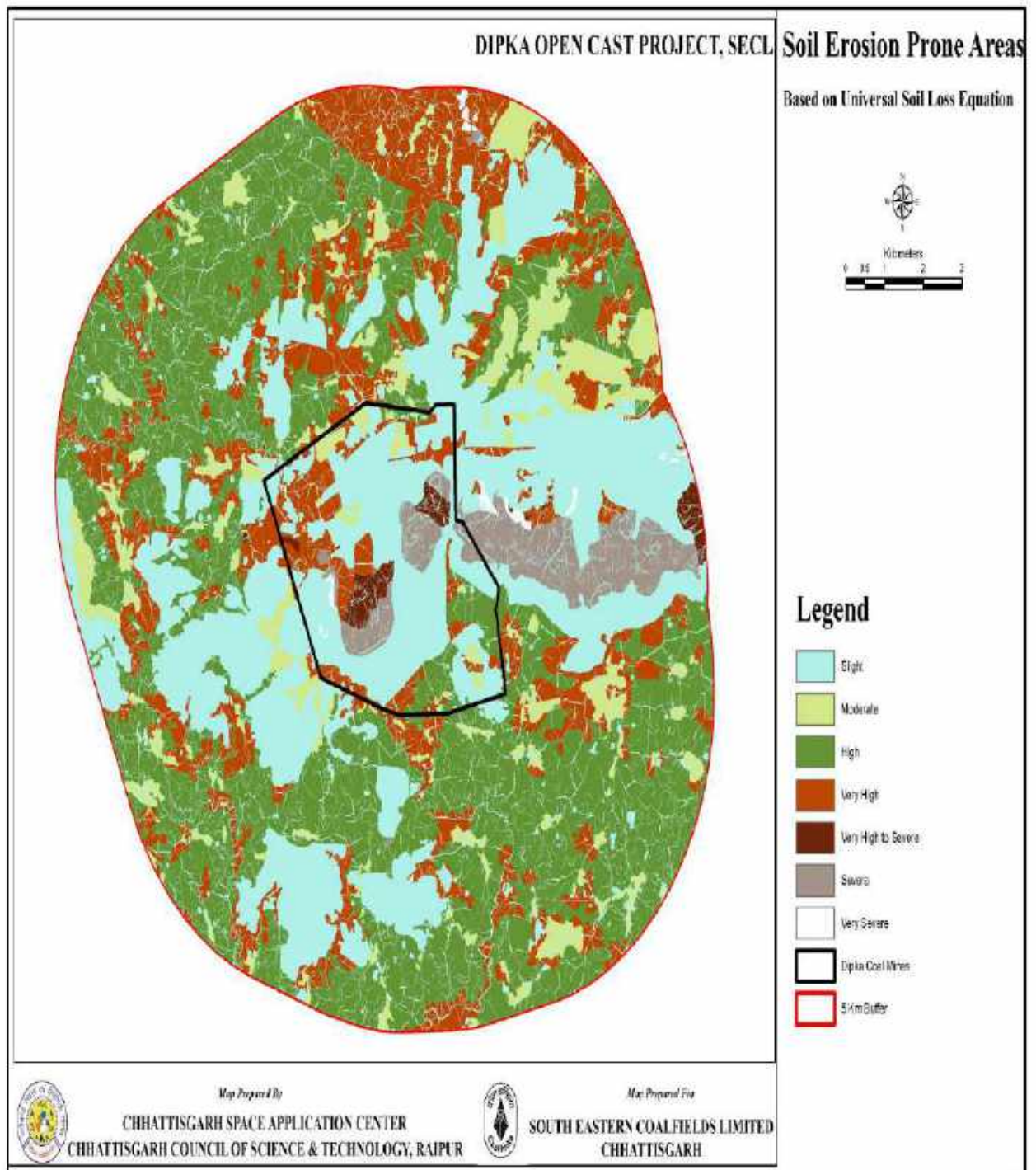


Figure 4 – Soil erosion map

### 1.5 Geomorphology Map

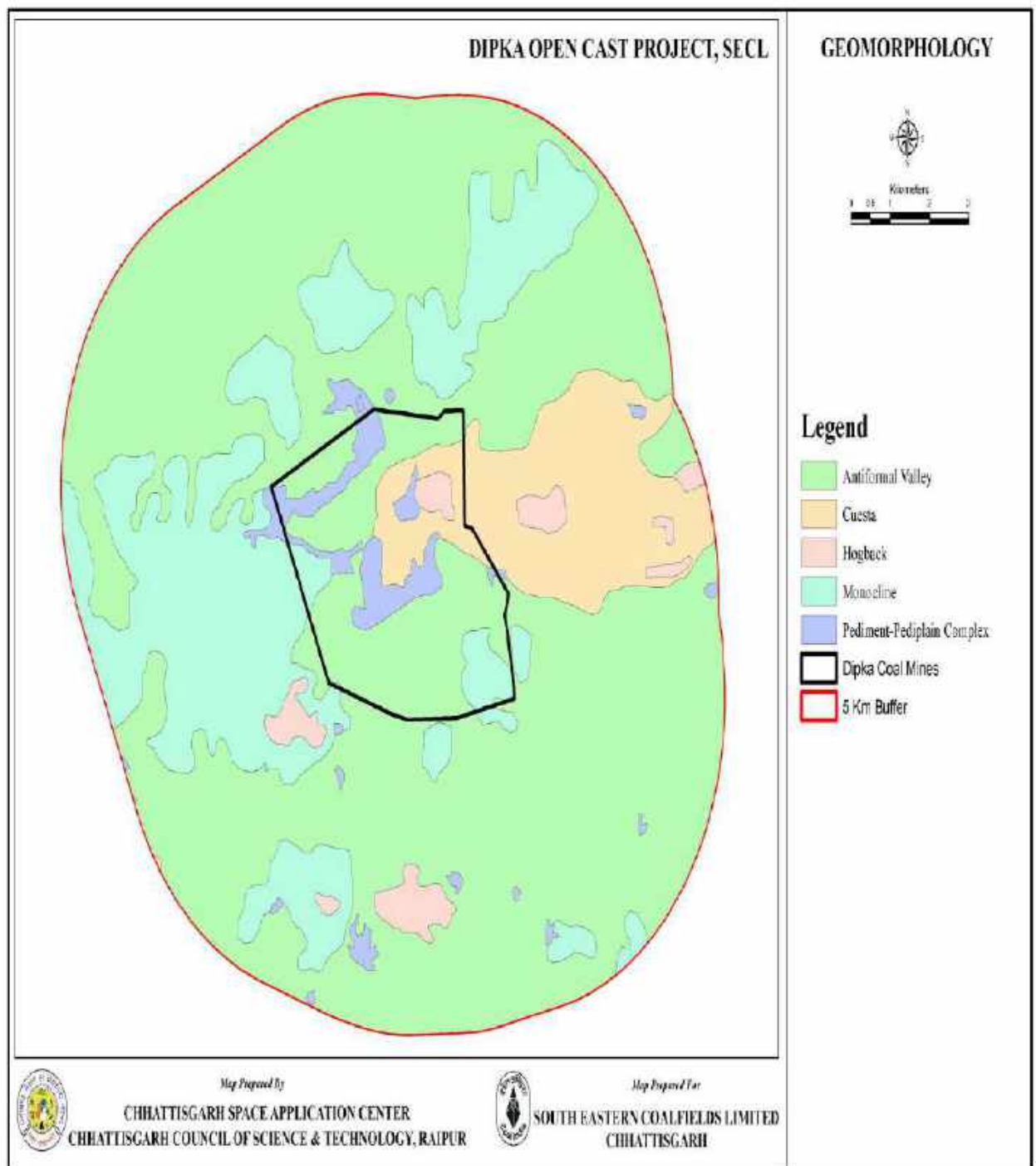
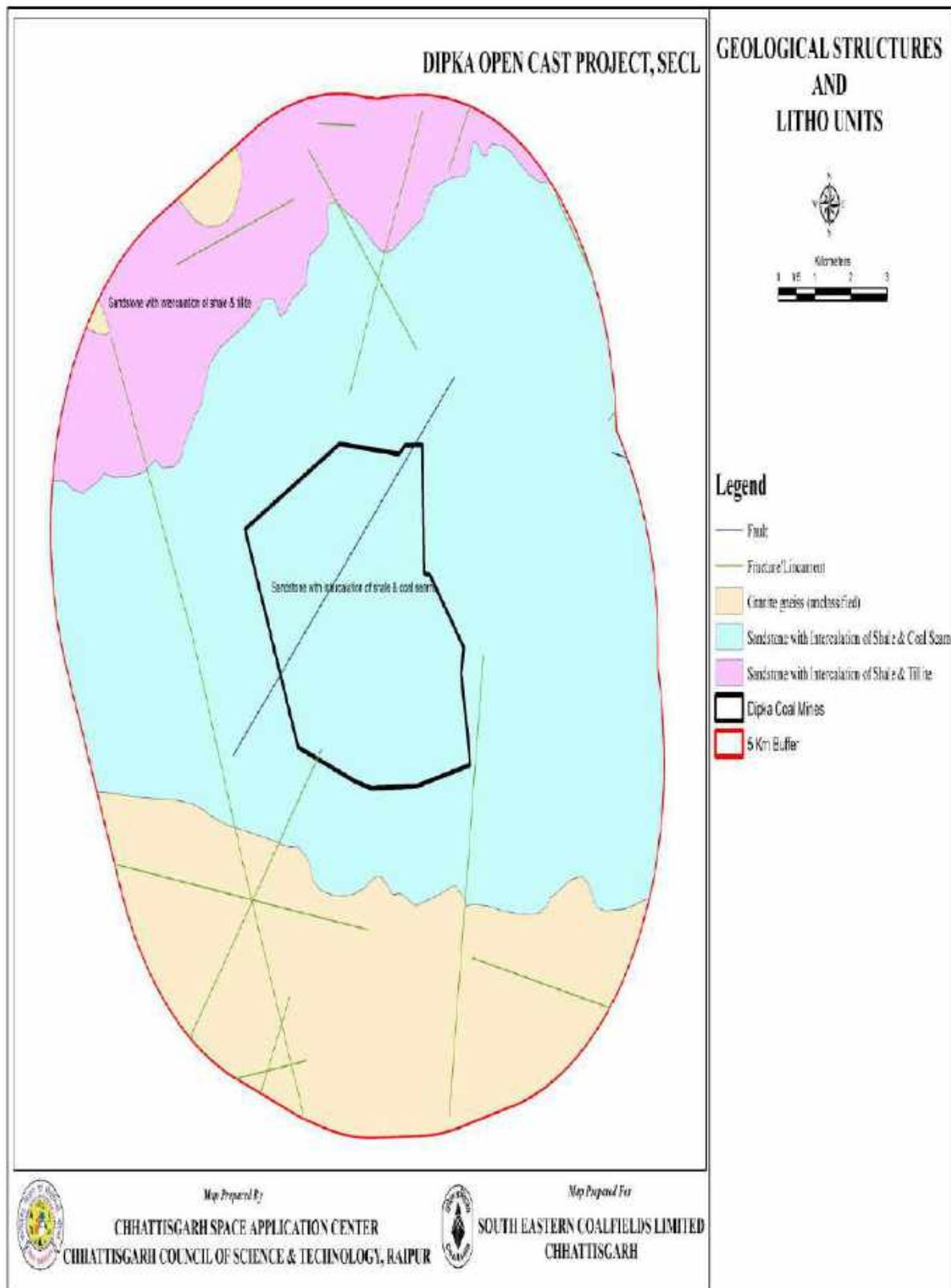


Figure 5 : Geomorphology map

### 1.6 Lineament map



**Figure 6 - lineament maps**

1.7 Cadastral map

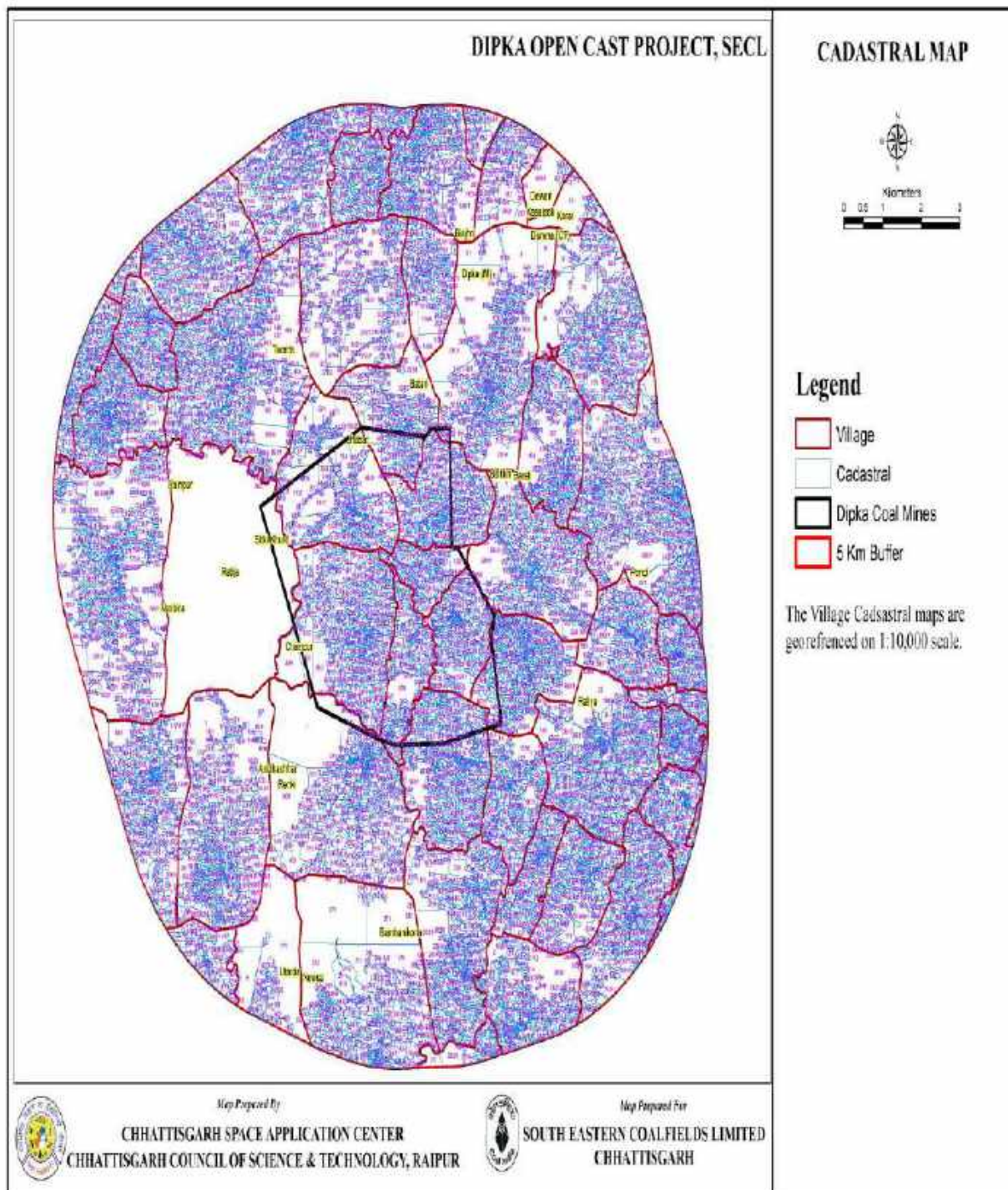
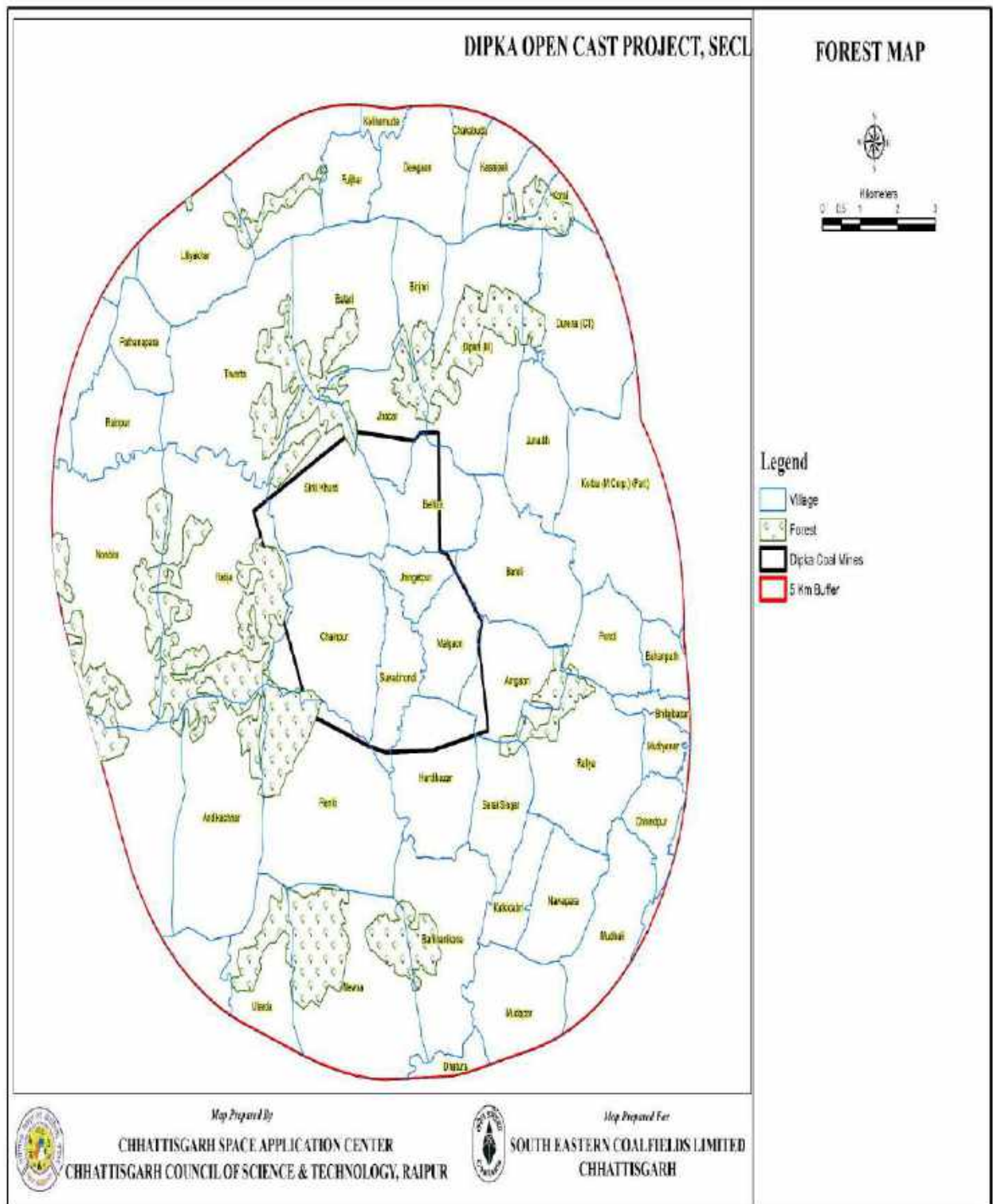


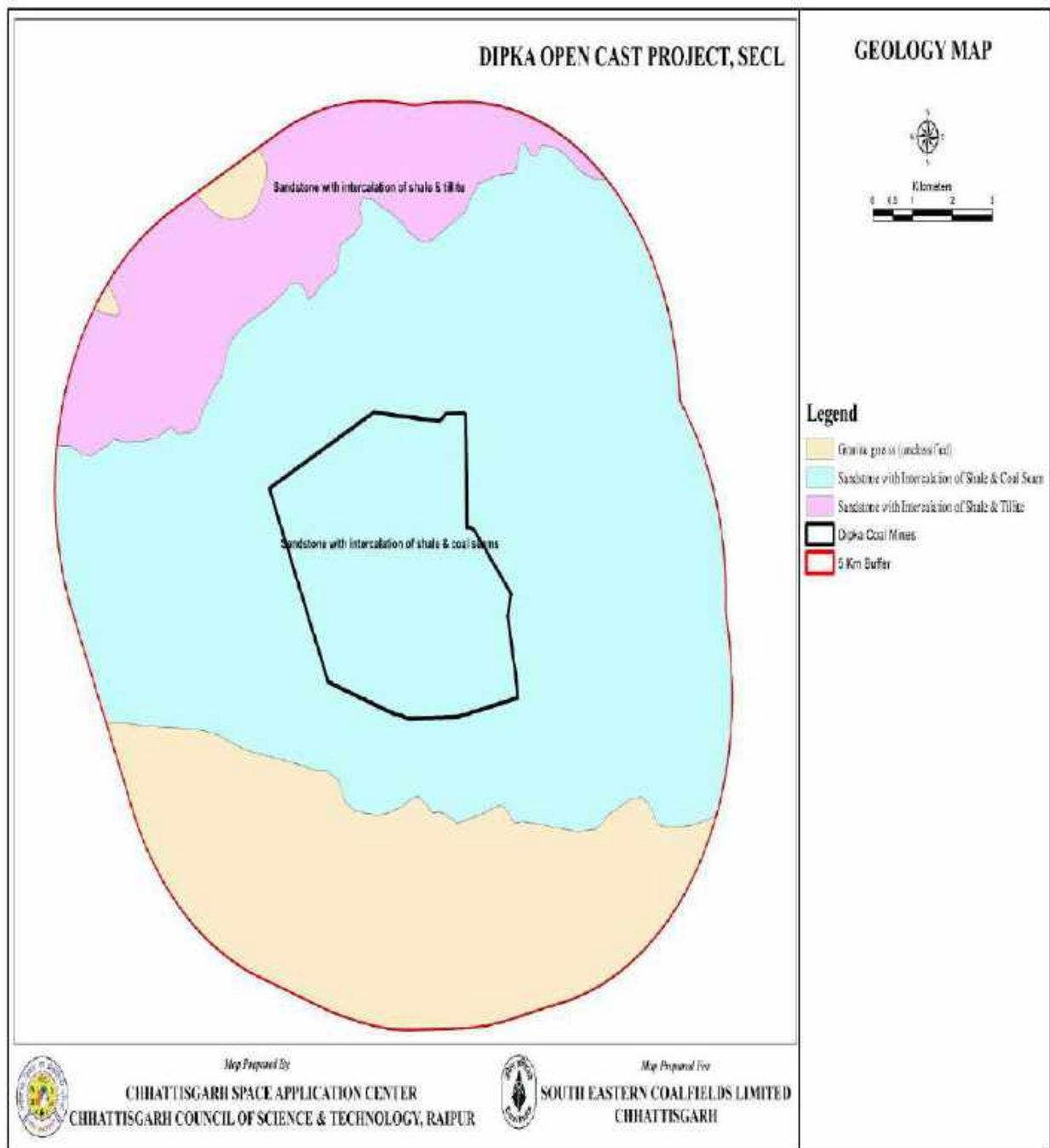
Figure 7: Cadastral Details (Transformed on 1:10,000 scale) within Gevra Project Area

### 1.8 Forest Map



**Figure 8 :** Forest Boundaries within Gevra Project Area

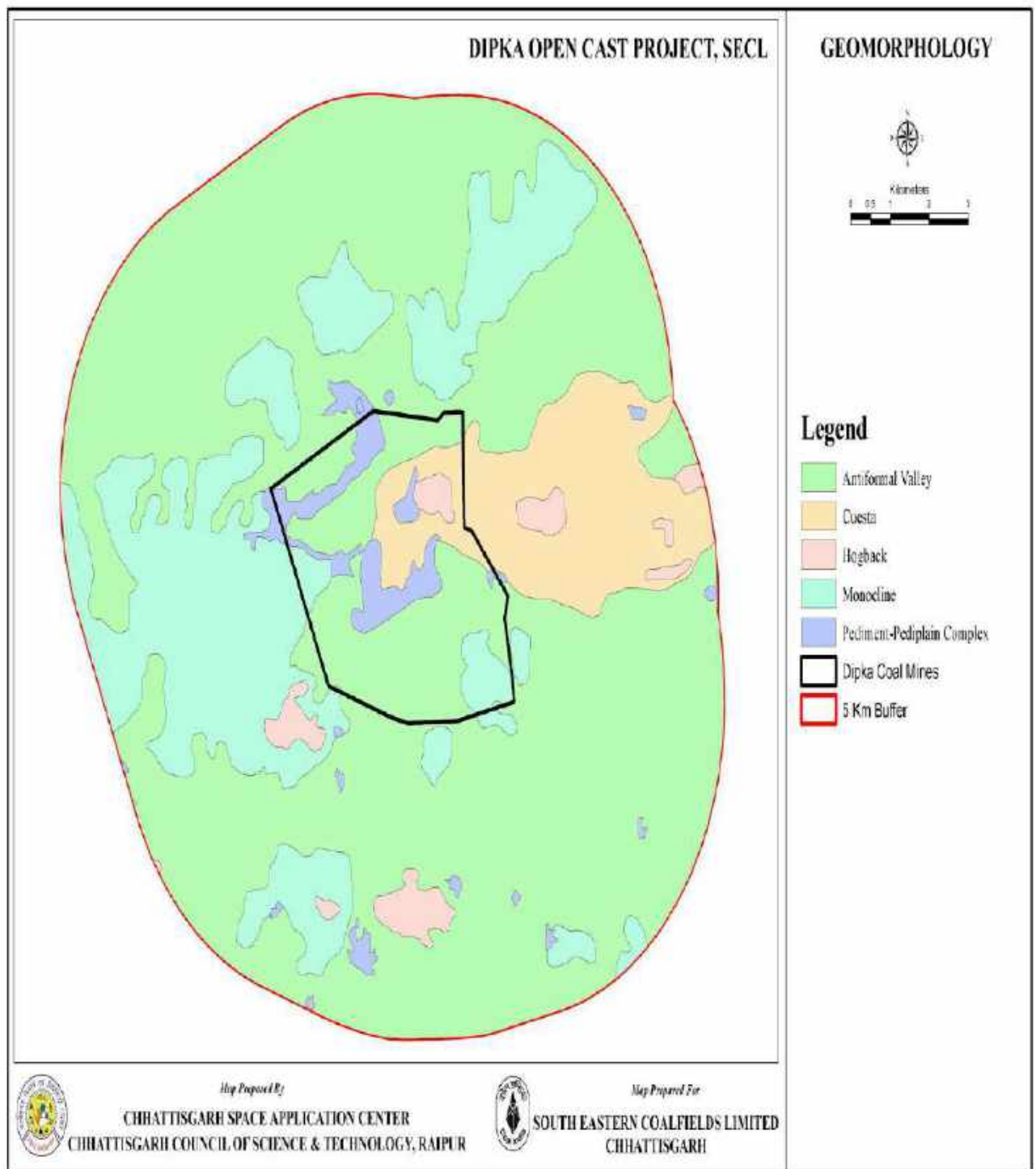
## 1.9 Geology map



**Figure 9** : Geology map



### 1.10 Geomorphology map



**Figure 10:** Geomorphology Map

1.11 Dipka Project Area as viewed on CARTOSAT+ LISS-IV merged Satellite data Product

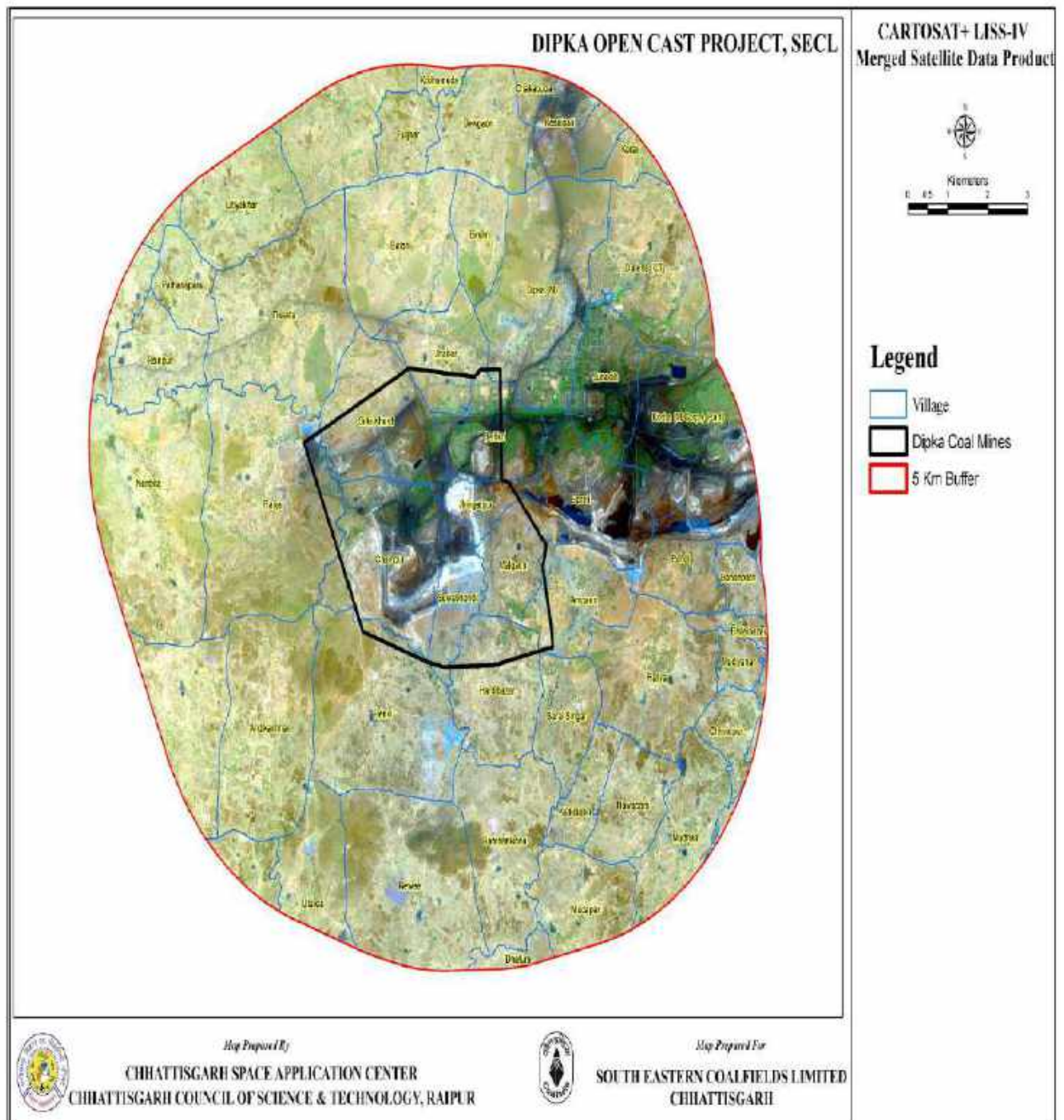
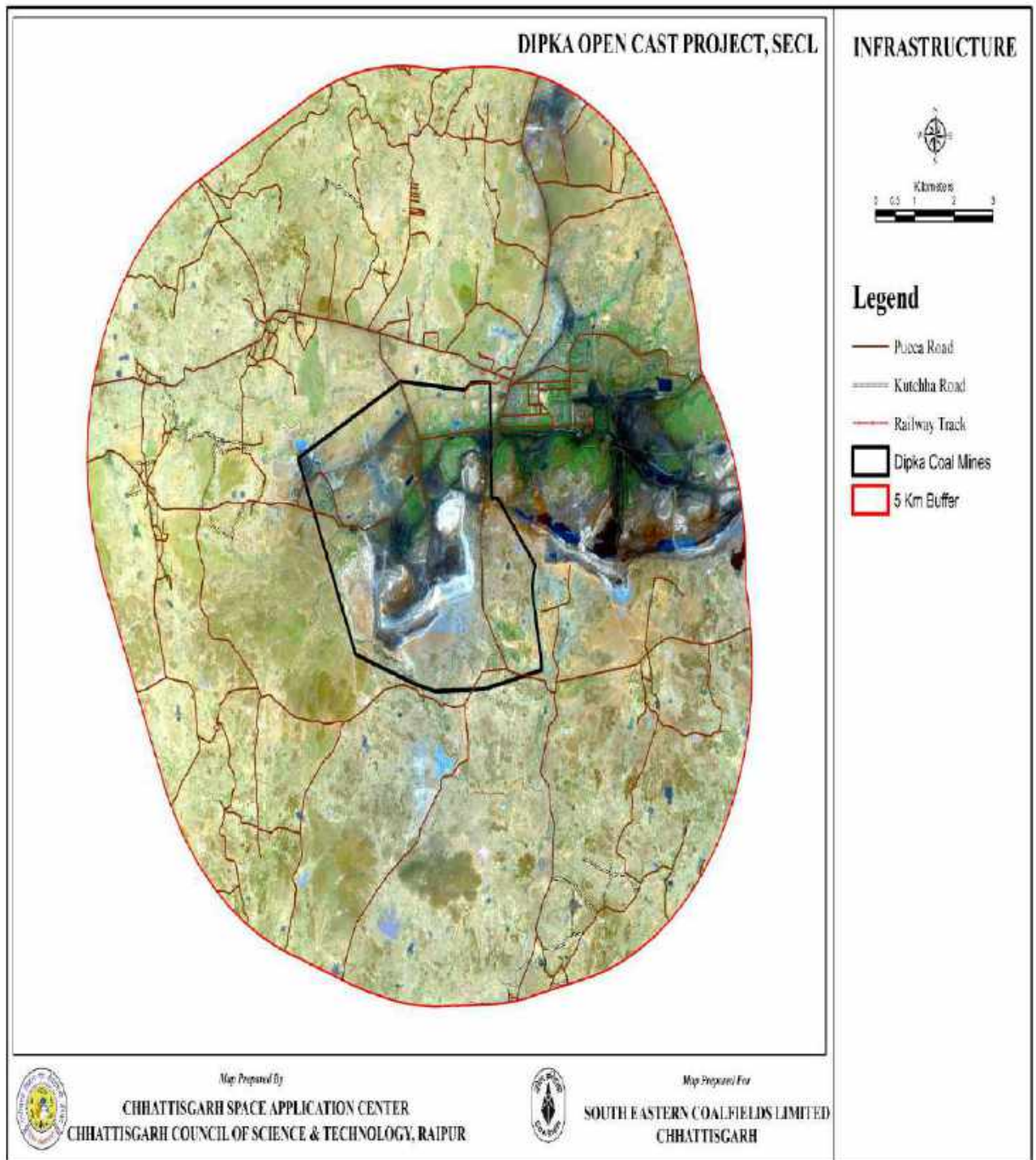


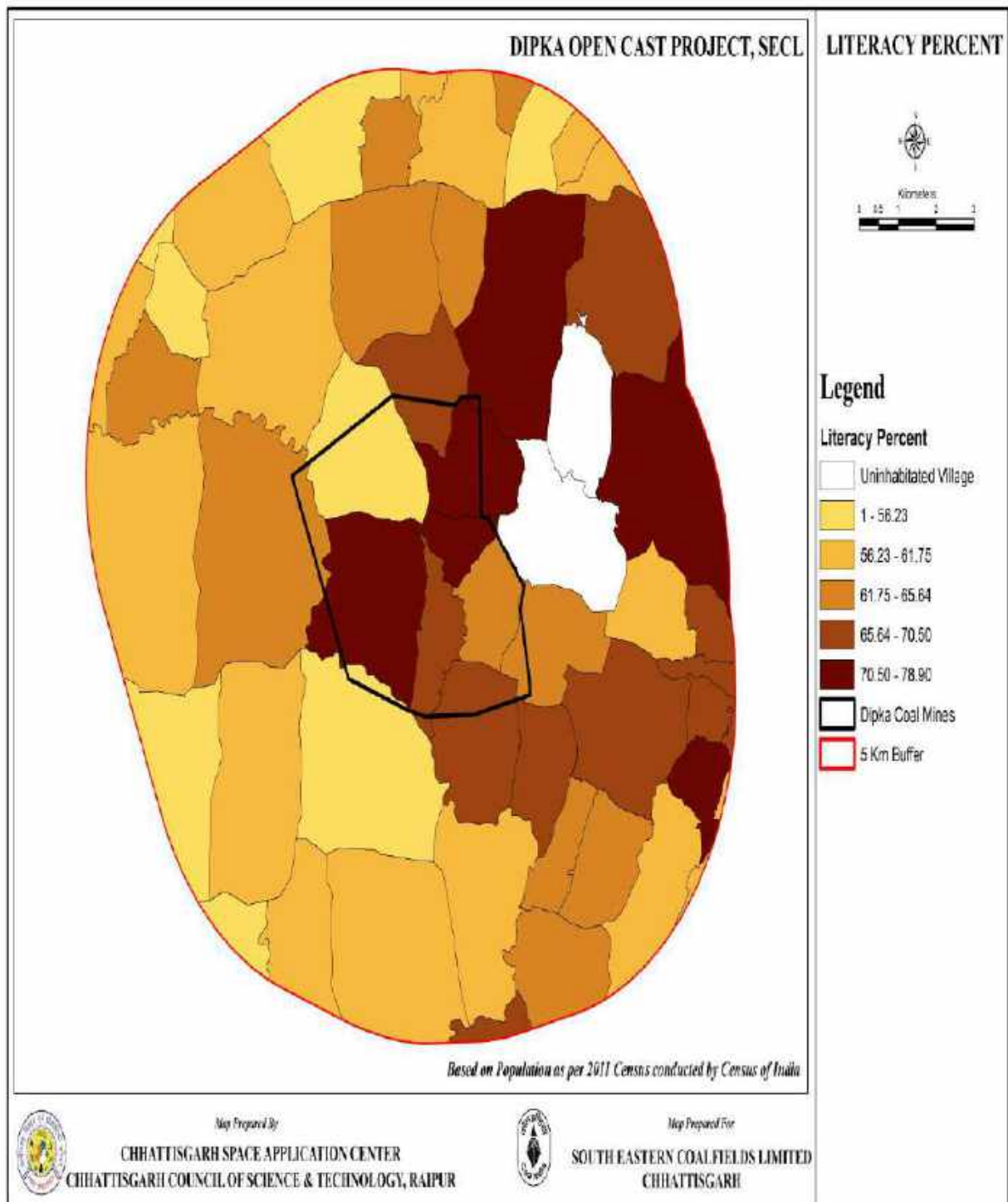
Figure 11 : Dipka Project Area as viewed on CARTOSAT+ LISS-IV merged Satellite data Product

### 1.12 Transport infrastructure



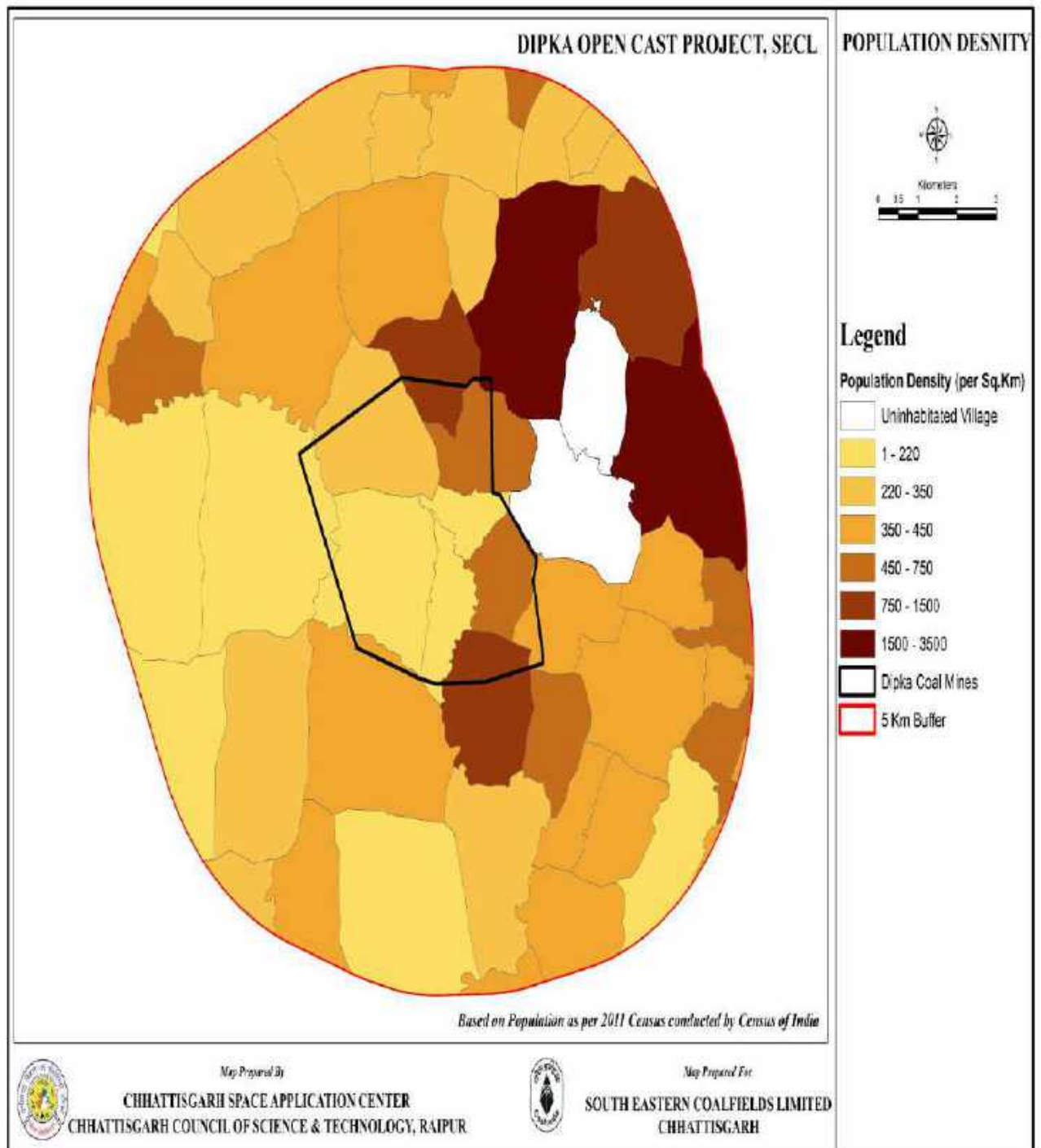
**Figure 12 :** Transport Infrastructure of Dipka Project Area1.2.15 slope profile Map

### 1.13 Literacy map



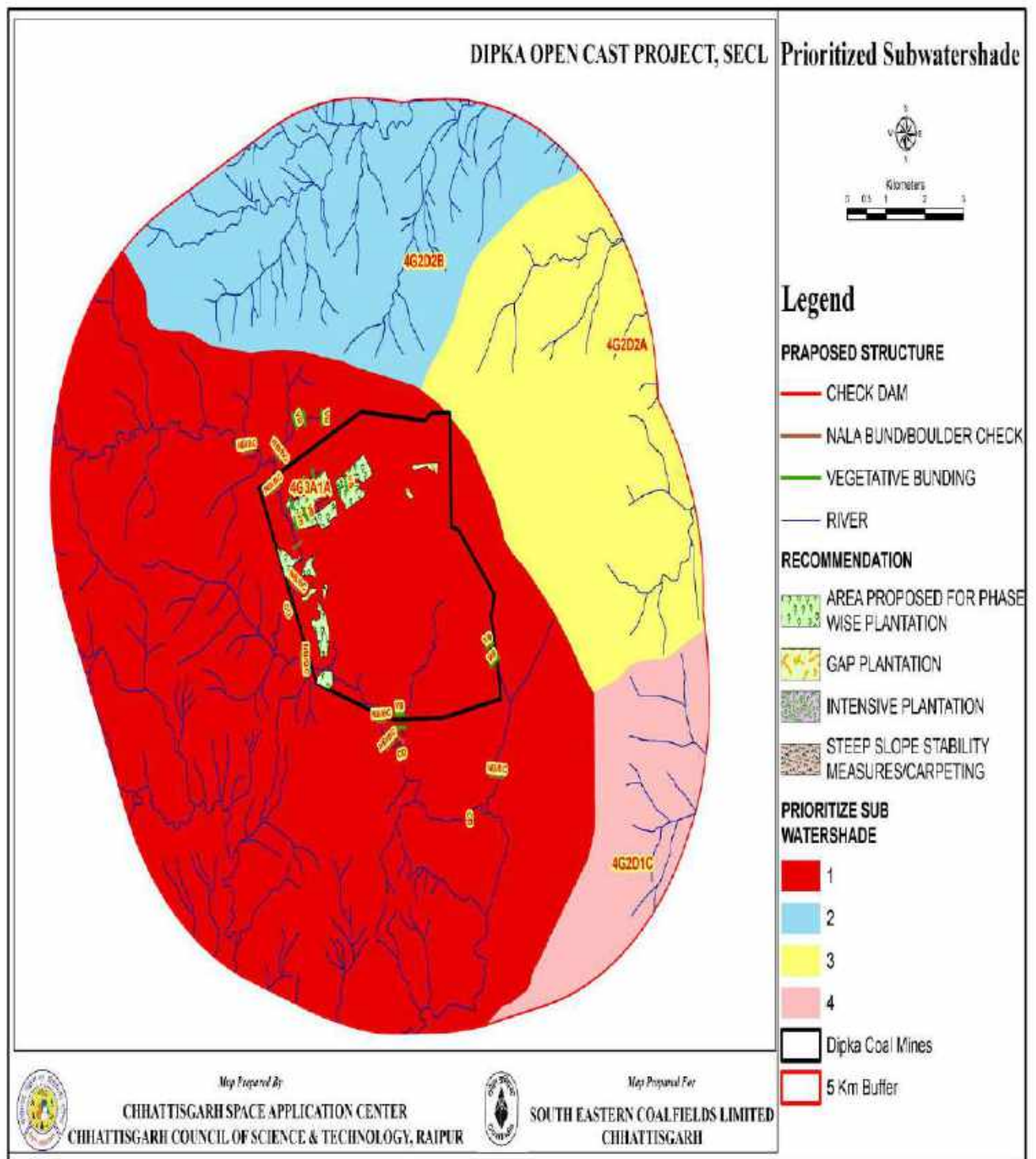
**Figure 13 : Literacy map**

### 1.14 Population density



**Figure 14:** Population density

### 1.15 Prioritize Sub-watershed within Dipka Project Area



**Figure 15:** Prioritize Sub-watershed within Dipka Project Area

1.16 settlement location

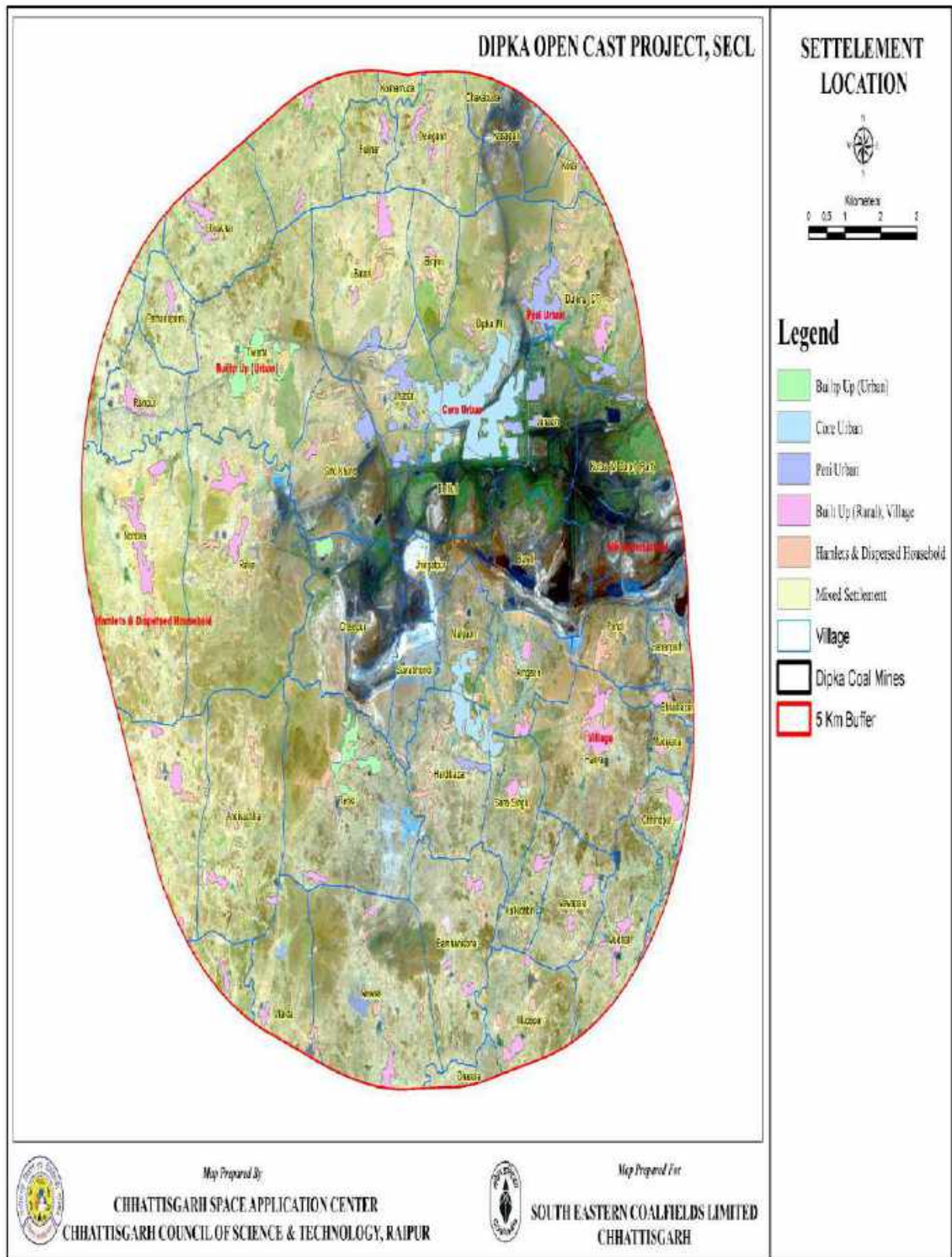


Figure 16 : Settlement Locations around Dipka Project Area

### 1.17 Slope Map

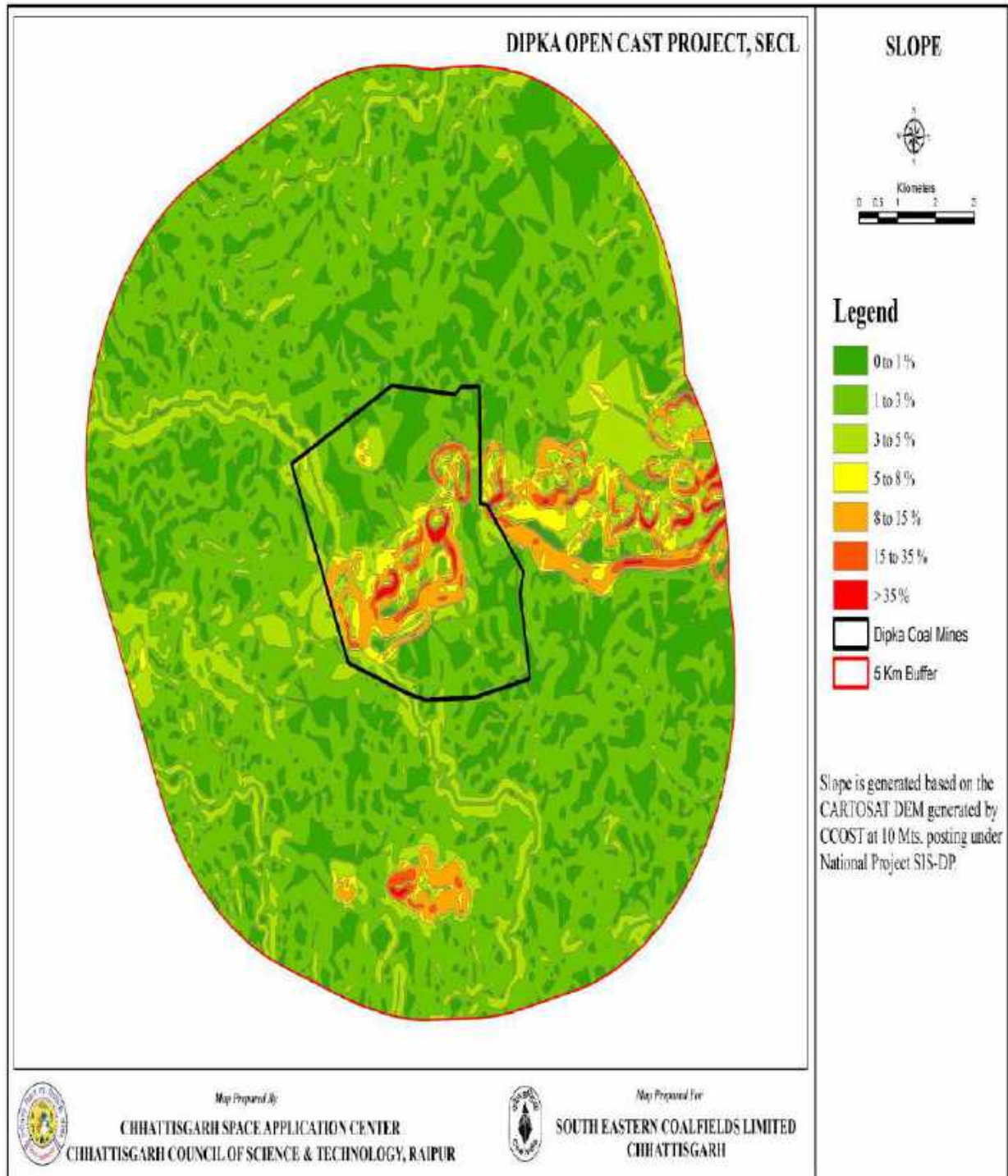


Figure 17 : Slope map



1.18 watershed regions

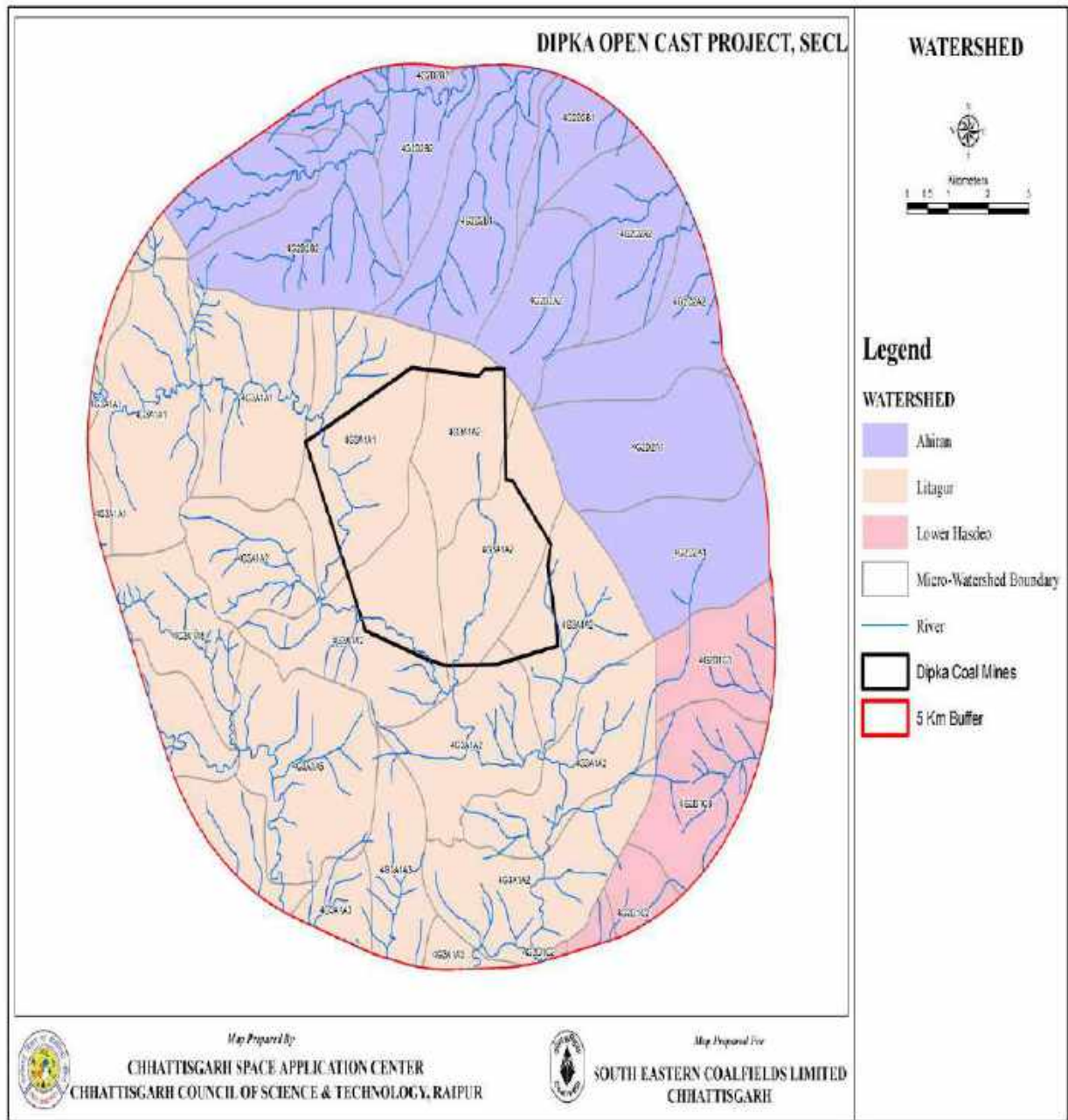


Figure – 18 : Watershed region map

## Chapter 2: Drainage line treatment work selection

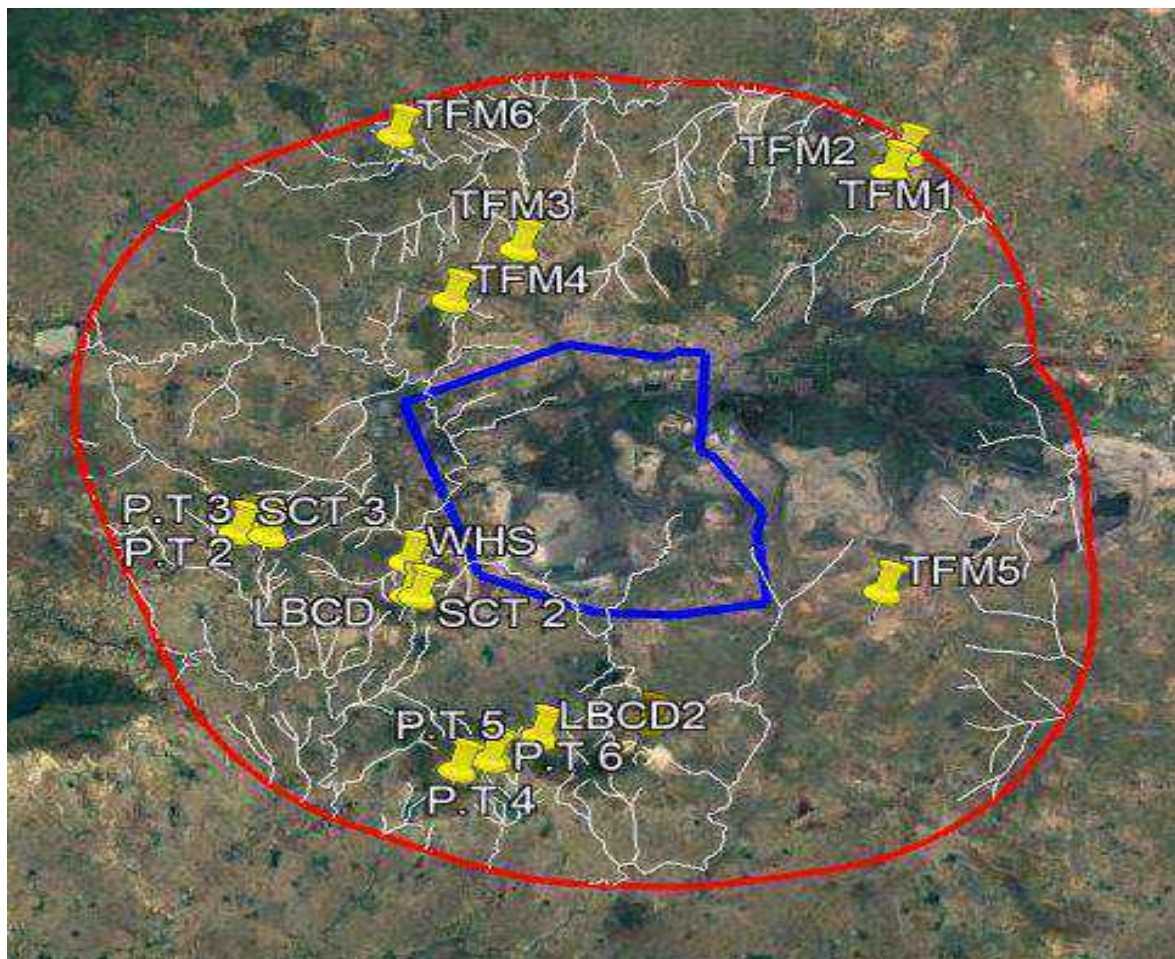
Based on the information interpreted from open source maps and field visit conducted in projected area, drainage line treatment works are identified. This section highlights the major natural management works (NRM) that particularly addresses two components. Firstly, to reduce the soil erosion and to increase the irrigation potential of the area through ridge to valley area treatment approaches.

### Focus for the work selection –

1. Reduce the extent of soil erosion in the upper catchment
2. Drainage line treatment to increase the recharge potential

### 2.1 Detailed cluster wise plan

Based on GIS layer interpretation and after ground truthing, possible NRM work has been identified and finalized.



**Figure 19:** Natural resource management works in drainage line treatment





### 3.2 Details of Loose boulder checkdam

#### 3.2.1 Details of Loose boulder checkdam – 3m

<b>Design data for Proposed Loose Boulder Check Dam</b>		
<b>Division</b>	<b>KATGHORA</b>	
<b>Range</b>	<b>PALI</b>	
<b>Compartment</b>	<b>OA-603 , OA 599</b>	
<b>Particular</b>	<b>Quantity</b>	<b>Unit</b>
Total Length	3	m
Max. height	1	m
U/S Slope 1:	1	
D/S Slope 1:	3	
Top Width (0.3 m to 0.5M)	0.5	m
Chainage	Height of X-section	
0	0	
0.5	0.6	
1.0	0.8	
1.5	1	
2.0	0.8	
2.5	0.6	
3	0	
Reading interval of nala X-Sec.	0.5	
<p>Note: 1. No LBC to be taken up in isolation, to be taken in series with catchment of individual LBC less than 2 ha..</p> <p>2. LBC to be proposed only on smaller streams having catchment less than 50 ha.</p> <p>3. Spacing of Two LBC should be in between 10m-30m, so that the submergence of lower LBC should not submerge the toe of upper LBC.</p>		

#### Loose Boulder check Quantity Calculation

Chainage	Height	Area of X-Section	Av.area of x-Section	Length	Quantity in Cum	width of stripping	Av. Width of stripping	Area of stripping in Sqm
		$A = \frac{(TW+BW)}{2} \times Ht$	$Av = \frac{(A1+A2)}{2}$	L	Av X L	BW of sec.	$Bav = \frac{(Bw1+Bw2)}{2}$	LX Bav.
0.00	0	0				0.5		
0.50	0.6	1.02	0.51	0.50	0.255	2.9	1.7	0.85
1.00	0.8	1.68	1.35	0.50	0.68	3.7	3.3	1.65
1.50	1	2.5	2.09	0.50	1.05	4.5	4.1	2.05
2.00	0.8	1.68	2.09	0.50	1.05	3.7	4.1	2.05
2.50	0.6	1.02	1.35	0.50	0.68	2.9	3.3	1.65
3.00	0	0	0.51	0.50	0.26	0.5	1.7	0.85
				3	3.95			9.10
Add 15% for keying & exit weir					0.59			1.37
Add extra stone for filling up the space created by stripping					1.57			
<b>Total Quantity</b>					<b>6.11</b>			<b>10.47</b>



### 3.2.2 Details of Loose boulder checkdam – 4m

Design data for Proposed Loose Boulder Check Dam		
Division	KATGHORA	
Range	PALI	
Compartment	OA-603 OA 599	
Particular	Quantity	Unit
Total Length	4	m
Max. height	1	m
U/S Slope 1:	1	
D/S Slope 1:	3	
Top Width (0.3 m to 0.5M)	0.5	m
Chainage	Height of X-section	
	0	0
	0.7	0.6
	1.3	0.8
	2.0	1
	2.7	0.8
	3.3	0.6
	4	0
Reading interval of nala X-Sec.		0.7
<p>Note: 1. No LBC to be taken up in isolation, to be taken in series with catchment of individual LBC less than 2 ha..</p> <p>2. LBC to be proposed only on smaller streams having catchment less than 50 ha.</p> <p>3. Spacing of Two LBC should be in between 10m-30m, so that the submergence of lower LBC should not submerge the toe of upper LBC.</p>		

Loose Boulder check Quantity Calculation								
Chainage	Height	Area of X-Section	Av.area of x-Section	Length	Quantity in Cum	width of stripping	Av. Width of stripping	Area of stripping in Sqm
		$A = \frac{(TW+BW)}{2} \times Ht$	$Av = \frac{(A1+A2)}{2}$	L	Av X L	BW of sec.	$Bav = \frac{(Bw1+Bw2)}{2}$	LX Bav.
0.00	0	0				0.5		
0.67	0.6	1.02	0.51	0.67	0.34	2.9	1.7	1.13
1.33	0.8	1.68	1.35	0.67	0.90	3.7	3.3	2.20
2.00	1	2.5	2.09	0.67	1.39	4.5	4.1	2.73
2.67	0.8	1.68	2.09	0.67	1.39	3.7	4.1	2.73
3.33	0.6	1.02	1.35	0.67	0.90	2.9	3.3	2.20
4.00	0	0	0.51	0.67	0.34	0.5	1.7	1.13
				4	5.27			12.13
Add 15% for keying & exit weir					0.79			1.82
Add extra stone for filling up the space created by stripping					2.09			
Total Quantity					8.15			13.95





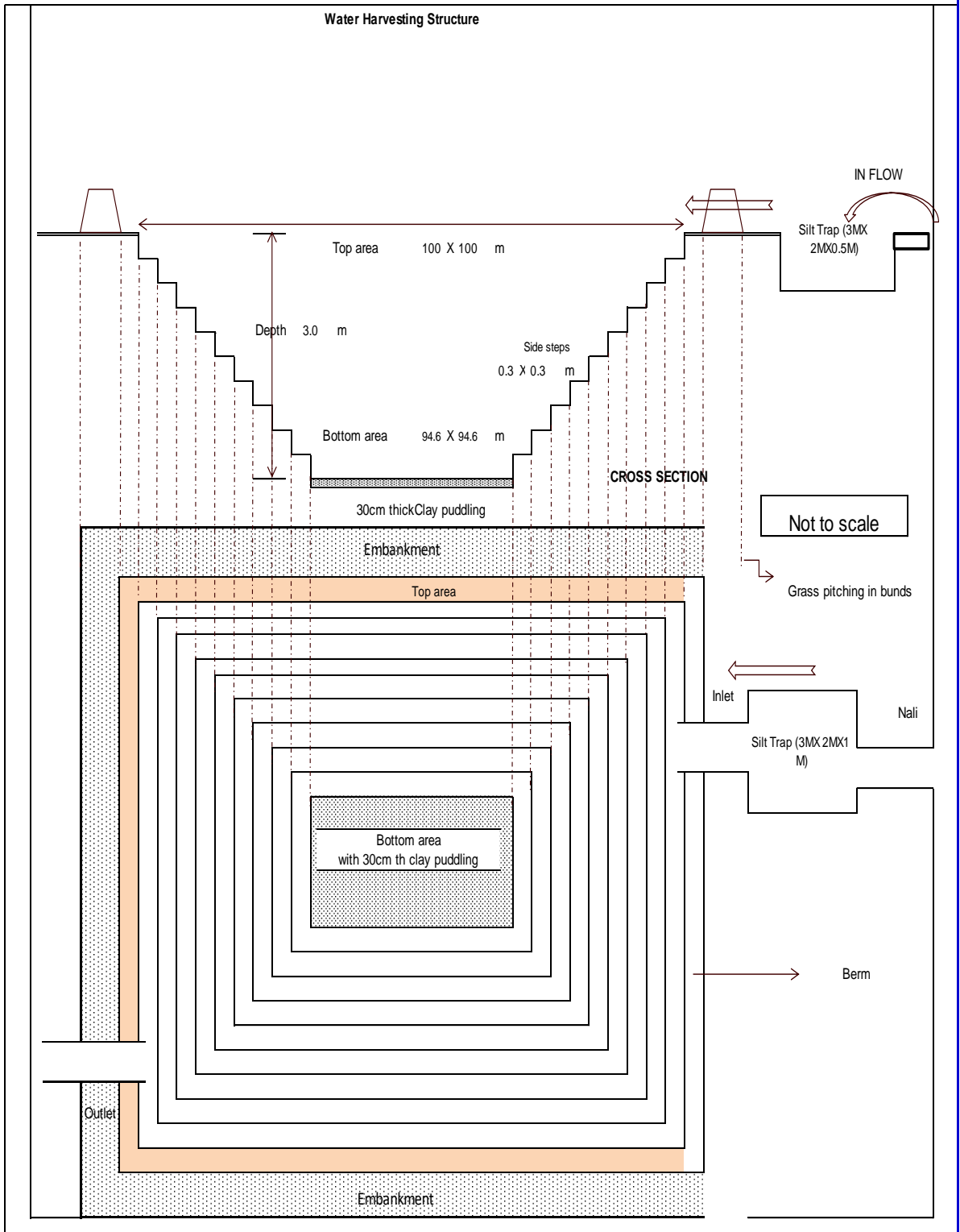
विस्तृत प्राक्कलन (कार्यस्थल पर बोल्डर की अनुपलब्धता हो एवं 0.6 से 1.25 मीटर ऊंचाई तक के लिए)											
कार्य का नाम :- बोल्डर बण्ड/बोल्डर चेक निर्माण								लम्बाई	4	m	
स.क्र.	एस.ओ. आर. आइटम क्रमांक	कार्य विवरण	संख्या	लम्बाई	चौड़ाई	उंचाई/गहराई	मात्रा	इकाई	दर	कुल लागत राशि	
1	2	3	4	5	6	7	8	9	10	11	
1	4.16.6.2	पत्थर को बोल्डर बांध निर्माण स्थल पर 30 से.मी. नीव खोदकर 20 से.मी. बजरी रेत से स्लोप तैयार करना एवं ऊपर 1:1/2 स्लोप एवं नीचे 1:1 बनाते हुए बांध निर्माण करना एवं निर्मित संरचना को पास के वृक्ष/पत्थर पर लिखना एवं माप पुस्तिका को इंद्रज करना। 0.6 से 1.25 मीटर ऊंचाई तक									
	PCCF Rate	<b>307</b>	1	4.00	As per PCCF letter	8.15	घनमी.	<b>230.25</b>		1876	
			कुल योग								1876
			समग्र कुल राशि								1876
						<b>48</b>	नग हेतु			<b>90070</b>	

### 3.3 Details of Water Harvesting Structur – 100m

WHS with Clay Puddling			
	Division	KATGHORA	
	Range	PALI	
	Compartment	OA 599	
	Name of Nala		
Sl.No	Particulars	Quantity	Unit
1	Catchment area in Ha	2.5	Ha
2	Average Seasonal Rainfall (historical-June, July, August, September in m	0.927	m
3	Average Seasonal Rainfall ( Projected -June, July, August, September in m	1.099	m
4	Type to Catchment Area	forest	
5	Runoff Coefficient (refer table 2.2)	0.4	constant
6	Runoff Volume (70%) in m3	6489.00	cum
7	Storage capacity assuming 30% loss in seepage and evaporation losses in m3	4542.30	cum
8	Max. Possible poundage capacity in m3 (actual yield from the catchment)	4542.30	cum
9	Depth of pond	3	m
10	Length of pond	100.00	m
11	Width of Pond	100.00	m
12	Depth of clay puddling in case of pervious strata in the bed	0.30	m
13	Capacity of pond	28410.8	cum
14	possible Command area ( for single protective irrigation)	284107.8	Sqm
15	Area in ha	28.41	Ha

Earthwork Calculation				
Step	Length m	Width m	Depth m	Volume m3
Step 1	100.00	100.00	0.30	3000.00
Step 2	99.40	99.40	0.30	2964.11
Step 3	98.80	98.80	0.30	2928.43
Step 4	98.20	98.20	0.30	2892.97
Step 5	97.60	97.60	0.30	2857.73
Step 6	97.00	97.00	0.30	2822.70
Step 7	96.40	96.40	0.30	2787.89
Step 8	95.80	95.80	0.30	2753.29
Step 9	95.20	95.20	0.30	2718.91
Step 10	94.60	94.60	0.30	2684.75
Total Earthwork in Cum				28410.8
Quantity of earth puddling in the bottom of pond	94.6	94.60	0.30	2684.75





PLAN

### 3.4 Details of Percolation Tank

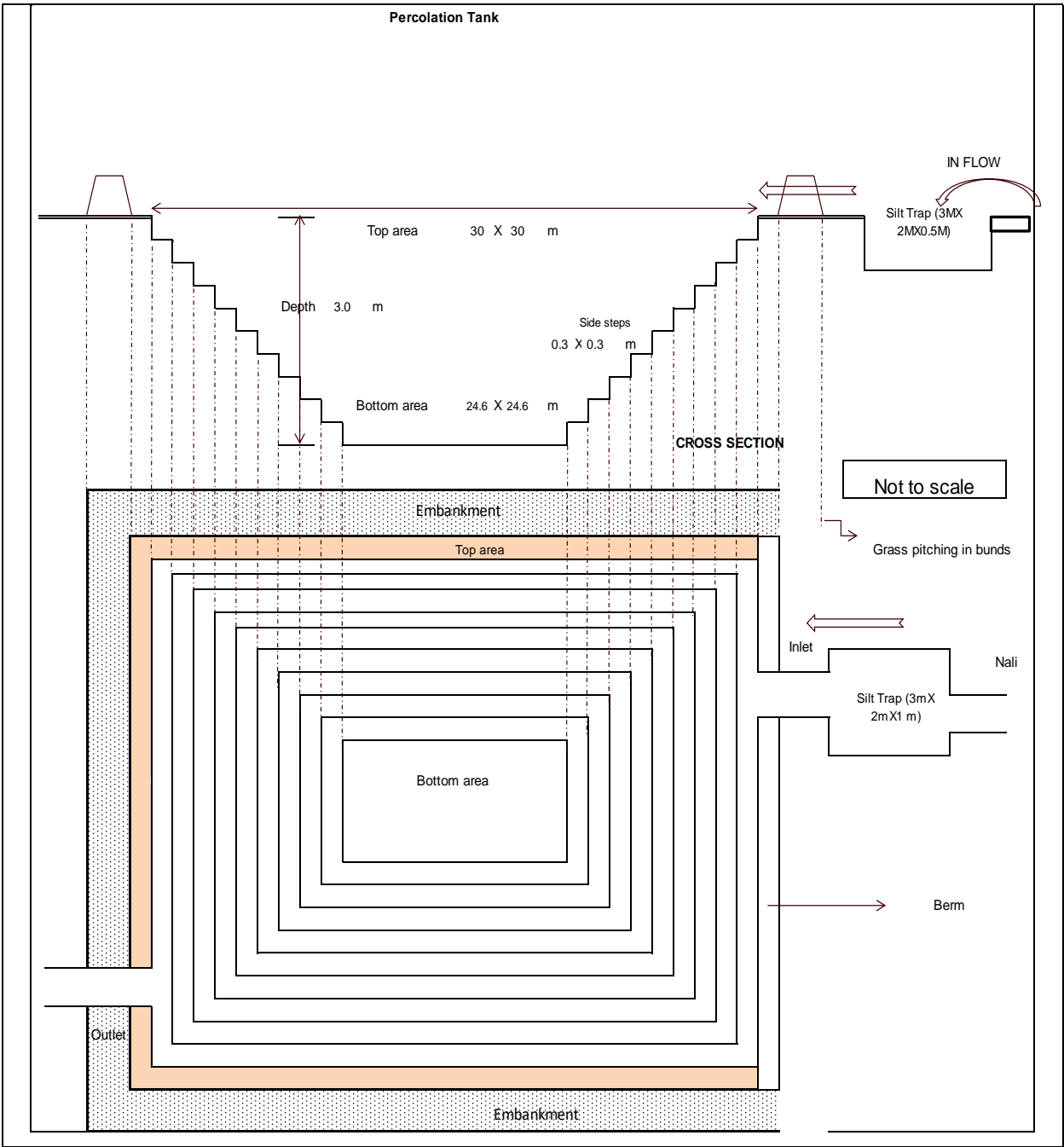
#### 3.4.1 Details of Percolation Tank – 30M

Input Data - Percolation Tank			
	Division	katghora	
	Range	pali	
	Compartment	oa 599	
	Name of Nala		
Sl No	Particulars	Quantity	Unit
1	Catchment area in Ha	1	Ha
2	Average Seasonal Rainfall (historical-June, July, August, September in m	1.2	m
3	Average Seasonal Rainfall ( Projected -June, July, August, September in m	1.099	m
4	Type to Catchment Area	forest	
5	Runoff Coefficient (refer table 2.2)	0.4	Constant
6	Runoff Volume (70%) in m3	3077.20	cum
7	Storage capacity assuming 30% loss in seepage and evaporation losses in m3	2154.04	cum
8	Max. Possible poundage capacity in m3 (actual yield from the catchment)	2154.04	cum
9	Depth of pond in m	3	m
10	Length of pond in m	30.00	m
11	Width of Pond in m	30.00	m
12	Capacity of pond	2244.8	cum
13	possible Command area in sqm ( for single protective irrigation)	22447.8	cum
14	Area in ha	2.24	Ha

Earthwork Calculation				
Step	Length m	Width m	Depth m	Volume m3
Step 1	30.00	30.00	0.30	270.00
Step 2	29.40	29.40	0.30	259.31
Step 3	28.80	28.80	0.30	248.83
Step 4	28.20	28.20	0.30	238.57
Step 5	27.60	27.60	0.30	228.53
Step 6	27.00	27.00	0.30	218.70
Step 7	26.40	26.40	0.30	209.09
Step 8	25.80	25.80	0.30	199.69
Step 9	25.20	25.20	0.30	190.51
Step 10	24.60	24.60	0.30	181.55
Total Earthwork in Cum				2244.8

**विस्तृत प्राक्कलन**

Name of Structure :-		Percolation Tank								
क्र	एस.ओ.आर. क्रमांक	कार्य का विवरण	संख्या	लम्बाई	चौड़ाई	उचाई/गहराई	मात्रा	इकाई	दर	कुल राशि
1	2	3	4	5	6	7	8	9	10	11
1	101	कार्य स्थल की सफाई, घास काटना, उसे इकट्ठा करके ढेर बनाना और परिसर से हटाना	1	50.00	50.00		1875.00	वर्गमी.	2.50	4688
2	317	दाग बेल लगाना								
	(क)	इकहरे फावड़े की लाइन (कम से कम 75 से.मी. गहरी)	4	50.00	-	-	200.00	रमी	0.40	80
3	303	मिट्टी का काम, मोटी खुदाई में और खोदी हुई मिट्टी की 20सेमी से अनधिक मोटी परतों में बंध भराई, ढेले तुड़ाई, पानी सिंचाई 1/2 टन रोलर या लकड़ी या लोहे के दुरमुठोंसे हर एक परत की, और कम से कम 8टन वाले शक्ति चालित रोलर से प्रत्येक तीसरी और सबसे ऊपरी परतों की कुटाई, और दरेसी करके जमीन के गड्डे भरना, 50 मी तक की ऊंचाई में ढुलाई सहित। सभी प्रकार के मिट्टी के लिए								
	(ख)	सघन या कठोर मिट्टी में/कठोर मुरुम में (तालाब बेड से)								
		1 परत	1	30.00	30.00	0.30	270.00	घनमी		
		2 परत	1	29.40	29.40	0.30	259.31	घनमी		
		3 परत	1	28.80	28.80	0.30	248.83	घनमी		
		4 परत	1	28.20	28.20	0.30	238.57	घनमी		
		5 परत	1	27.60	27.60	0.30	228.53	घनमी		
		6 परत	1	27.00	27.00	0.30	218.70	घनमी		
		7 परत	1	26.40	26.40	0.30	209.09	घनमी		
		8 परत	1	25.80	25.80	0.30	199.69	घनमी		
		9 परत	1	25.20	25.20	0.30	190.51	घनमी		
		10 परत	1	24.60	24.60	0.30	181.55	घनमी		
		Inlet (Nali)	1	10.00	1.00	1.00	10.00	घनमी		
		Silt trap Chamber	1	3.00	2.00	1.50	9.00	घनमी		
		Outlet	1	10.00	1.00	1.00	10.00	घनमी		
						योग	2273.78	घनमी	158.60	360622
4	322	1.50 मीटर से नीचे मिट्टी की खुदाई कार्य के लिए अतिरिक्त लिफ्ट की दर को लिया जाना								
	(ख)	मिट्टी के काम 1.50 मीटर से नीचे की खुदाई के लिए अतिरिक्त भुगतान (छठवीं से दसवीं परत तक) (ख) सघन और कठोर मिट्टी में					999.54	घन मी	15.80	15793
5	Stone Pitching in -Chamber and inlet (Nali)									
	2310 (क)	मिट्टी के बांध में पत्थरों के किनारे का निर्माण पत्थरों को बिछाने एवं हाथ से जमाने घड़ाई करने एवं सतह तैयार करने के साथ (क) बोल्टर		23.00	1.5	0.45	31.05	घन मी	489.70	15205
						योग				396387
							कुल योग रुपये			396387
						1	नग नया डबरी हेतु			396387



PLAN

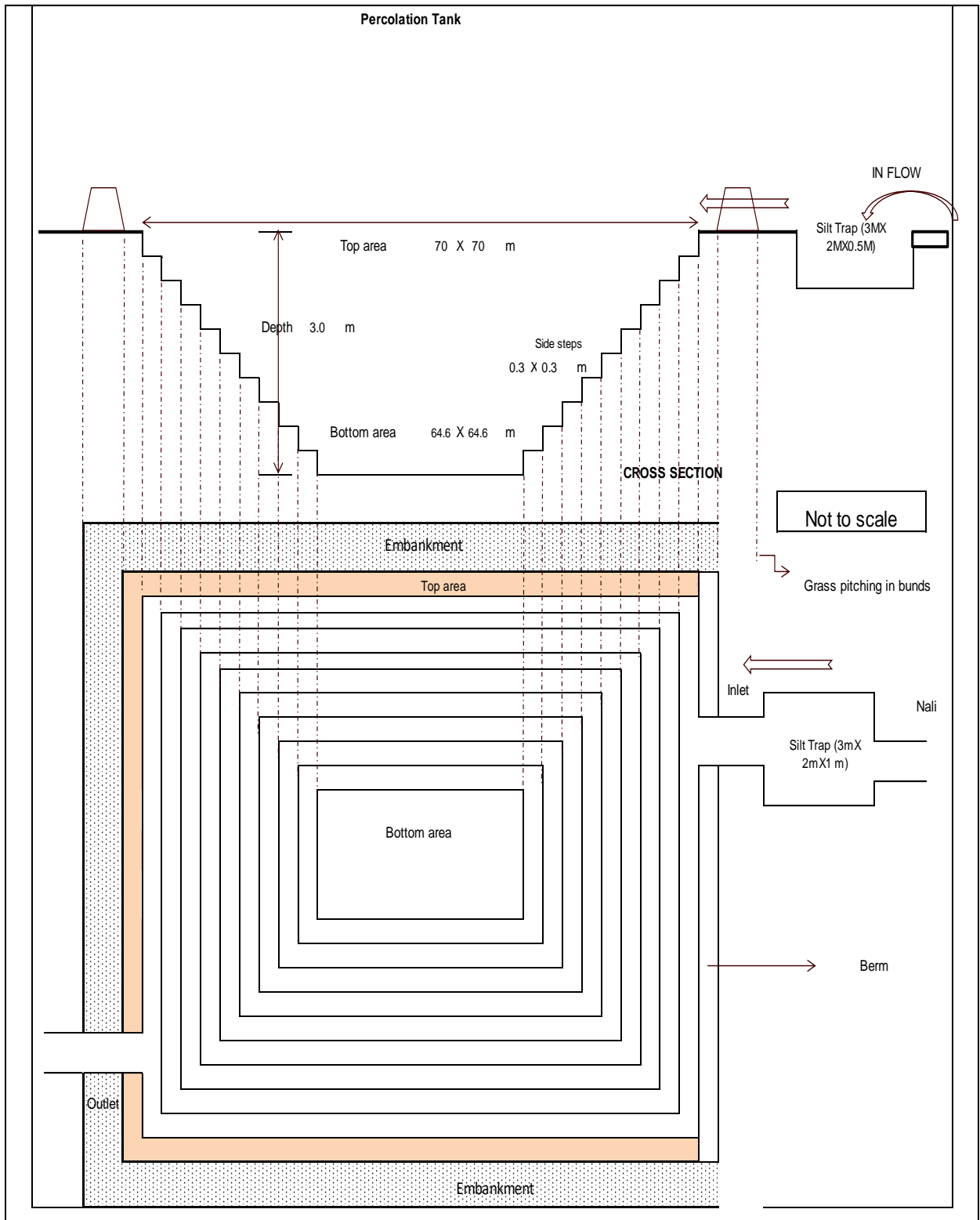
### 3.4.2 Details of Percolation Tank – 70M

Input Data - Percolation Tank			
	Division	katghora	
	Range	pali	
	Compartment	oa 599	
	Name of Nala		
Sl No	Particulars	Quantity	Unit
1	Catchment area in Ha	1	Ha
2	Average Seasonal Rainfall (historical-June, July, August, September in m	1.2	m
3	Average Seasonal Rainfall ( Projected -June, July, August, September in m	1.099	m
4	Type to Catchment Area	forest	
5	Runoff Coefficient (refer table 2.2)	0.4	Constant
6	Runoff Volume (70%) in m3	3077.20	cum
7	Storage capacity assuming 30% loss in seepage and evaporation losses in m3	2154.04	cum
8	Max. Possible poundage capacity in m3 (actual yield from the catchment)	2154.04	cum
9	Depth of pond in m	3	m
10	Length of pond in m	70.00	m
11	Width of Pond in m	70.00	m
12	Capacity of pond	13596.8	cum
13	possible Command area in sqm ( for single protective irrigation)	135967.8	cum
14	Area in ha	13.60	Ha

Earthwork Calculation				
Step	Length m	Width m	Depth m	Volume m3
Step 1	70.00	70.00	0.30	1470.00
Step 2	69.40	69.40	0.30	1444.91
Step 3	68.80	68.80	0.30	1420.03
Step 4	68.20	68.20	0.30	1395.37
Step 5	67.60	67.60	0.30	1370.93
Step 6	67.00	67.00	0.30	1346.70
Step 7	66.40	66.40	0.30	1322.69
Step 8	65.80	65.80	0.30	1298.89
Step 9	65.20	65.20	0.30	1275.31
Step 10	64.60	64.60	0.30	1251.95
Total Earthwork in Cum				13596.8



विस्तृत प्राक्कलन										
Name of Structure :-			Percolation Tank							
क्र	एस.ओ.आर. क्रमांक	कार्य का विवरण	संख्या	लम्बाई	चौड़ाई	उचाई/गहराई	मात्रा	इकाई	दर	कुल राशि
1	2	3	4	5	6	7	8	9	10	11
1	101	कार्य स्थल की सफाई, घास काटना, उसे इकट्ठा करके ढेर बनाना और परिसर से हटाना								
			1	90.00	90.00		6075.00	वर्गमी.	2.50	15188
2	317	दाग बेल लगाना								
	(क)	इकहरे फावड़े की लाइन(कम से कम 75 से.मी. गहरी )								
			4	90.00	-	-	360.00	रमी	0.40	144
3	303	मिट्टी का काम, मोटी खुदाई में और खोदी हुई मिट्टी की 20सेमी से अनधिक मोटी परतों में बंध भराई, ढेले तुड़ाई, पानी सिंचाई 1/2 टन रोलर या लकड़ी या लोहे के दुरमुठोंसे हर एक परत की, और कम से कम 8टन वाले शक्ति चालित रोलर से प्रत्येक तीसरी और सबसे ऊपरी परतों की कुटाई, और दरेसी करके जमीन के गड्डे भरना, 50 मी तक की ऊंचाई में ढुलाई सहित। सभी प्रकार के मिट्टी के लिए								
	(ख)	सघन या कठोर मिट्टी में/कठोर मुरुम में (तालाब बेड से)								
		1 परत	1	70.00	70.00	0.30	1470.00	घनमी		
		2 परत	1	69.40	69.40	0.30	1444.91	घनमी		
		3 परत	1	68.80	68.80	0.30	1420.03	घनमी		
		4 परत	1	68.20	68.20	0.30	1395.37	घनमी		
		5 परत	1	67.60	67.60	0.30	1370.93	घनमी		
		6 परत	1	67.00	67.00	0.30	1346.70	घनमी		
		7 परत	1	66.40	66.40	0.30	1322.69	घनमी		
		8 परत	1	65.80	65.80	0.30	1298.89	घनमी		
		9 परत	1	65.20	65.20	0.30	1275.31	घनमी		
		10 परत	1	64.60	64.60	0.30	1251.95	घनमी		
		Inlet (Nali)	1	10.00	1.00	1.00	10.00	घनमी		
		Silt trap Chamber	1	3.00	2.00	1.50	9.00	घनमी		
		Outlet	1	10.00	1.00	1.00	10.00	घनमी		
						योग	13625.78	घनमी	158.60	2161049
4	322	1.50 मीटर से नीचे मिट्टी की खुदाई कार्य के लिए अतिरिक्त लिफ्ट की दर को लिया जाना								
	(ख)	मिट्टी के काम 1.50 मीटर से नीचे की खुदाई के लिए अतिरिक्त भुगतान (छठवीं से दसवीं परत तक) (ख) सघन और कठोर मिट्टी में								
							6495.54	घन मी	15.80	102630
5	Stone Pitching in -Chamber and inlet (Nali)									
	2310 (क)	मिट्टी के बांध में पत्थरों के किनारे का निर्माण पत्थरों को बिछाने एवं हाथ से जमाने		23.00	1.5	0.45	31.05	घन मी	489.70	15205
		घड़ाई करने एवं सतह तैयार करने के साथ (क) बोल्टर								
						योग				2294215
							कुल योग रुपये			2294215
						<b>1</b>	नग नया डबरी हेतु			<b>2294215</b>



**PLAN**

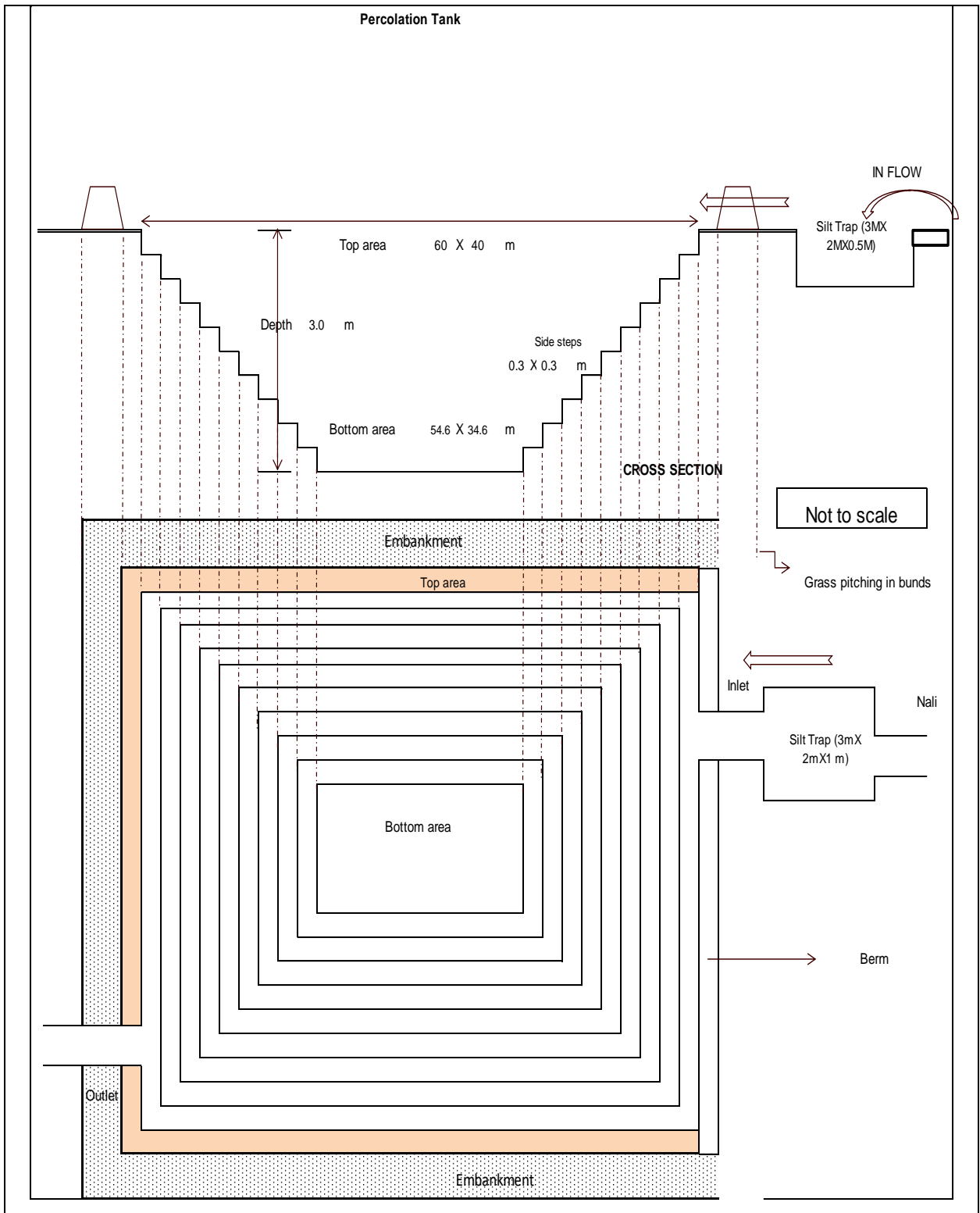
### 3.4.3 Details of Percolation Tank – 60M

Input Data - Percolation Tank			
	Division	katghora	
	Range	pali	
	Compartment	oa 602 ( 2)	
	Name of Nala		
Sl No	Particulars	Quantity	Unit
1	Catchment area in Ha	1	Ha
2	Average Seasonal Rainfall (historical-June, July, August, September in m	1.2	m
3	Average Seasonal Rainfall ( Projected -June, July, August, September in m	1.099	m
4	Type to Catchment Area	forest	
5	Runoff Coefficient (refer table 2.2)	0.4	Constant
6	Runoff Volume (70%) in m3	3077.20	cum
7	Storage capacity assuming 30% loss in seepage and evaporation losses in m3	2154.04	cum
8	Max. Possible poundage capacity in m3 (actual yield from the catchment)	2154.04	cum
9	Depth of pond in m	3	m
10	Length of pond in m	60.00	m
11	Width of Pond in m	40.00	m
12	Capacity of pond	6420.8	cum
13	possible Command area in sqm ( for single protective irrigation)	64207.8	cum
14	Area in ha	6.42	Ha

Earthwork Calculation				
Step	Length m	Width m	Depth m	Volume m3
Step 1	60.00	40.00	0.30	720.00
Step 2	59.40	39.40	0.30	702.11
Step 3	58.80	38.80	0.30	684.43
Step 4	58.20	38.20	0.30	666.97
Step 5	57.60	37.60	0.30	649.73
Step 6	57.00	37.00	0.30	632.70
Step 7	56.40	36.40	0.30	615.89
Step 8	55.80	35.80	0.30	599.29
Step 9	55.20	35.20	0.30	582.91
Step 10	54.60	34.60	0.30	566.75
Total Earthwork in Cum				6420.8

**विस्तृत प्राक्कलन**

Name of Structure :-			Percolation Tank							
क्र	एस.ओ.आर. क्रमांक	कार्य का विवरण	संख्या	लम्बाई	चौड़ाई	उचाई/गहराई	मात्रा	इकाई	दर	कुल राशि
1	2	3	4	5	6	7	8	9	10	11
1	101	कार्य स्थल की सफाई ,घास काटना,उसे इकट्ठा करके ढेर बनाना और परिसर से हटाना	1	80.00	60.00		3600.00	वर्गमी.	2.50	9000
2	317	दाग बेल लगाना								
	(क)	इकहरे फावड़े की लाइन(कम से कम 75 से.मी. गहरी )	4	80.00	-	-	320.00	रमी	0.40	128
3	303	मिट्टी का काम, मोटी खुदाई में और खोदी हुई मिट्टी की 20सेमी से अनधिक मोटी परतों में बंध भराई, ढेले तुड़ाई, पानी सिंचाई 1/2 टन रोलर या लकड़ी या लोहे के दुरमुठोंसे हर एक परत की, और कम से कम 8टन वाले शक्ति चालित रोलर से प्रत्येक तीसरी और सबसे ऊपरी परतों की कूटाई, और दरेसी करके जमीन के गड्डे भरना, 50 मी तक की ऊंचाई में ढुलाई सहित। सभी प्रकार के मिट्टी के लिए								
	(ख)	सघन या कठोर मिट्टी में/कठोर मुरुम में (तालाब बेड से)								
		1 परत	1	60.00	40.00	0.30	720.00	घनमी		
		2 परत	1	59.40	39.40	0.30	702.11	घनमी		
		3 परत	1	58.80	38.80	0.30	684.43	घनमी		
		4 परत	1	58.20	38.20	0.30	666.97	घनमी		
		5 परत	1	57.60	37.60	0.30	649.73	घनमी		
		6 परत	1	57.00	37.00	0.30	632.70	घनमी		
		7 परत	1	56.40	36.40	0.30	615.89	घनमी		
		8 परत	1	55.80	35.80	0.30	599.29	घनमी		
		9 परत	1	55.20	35.20	0.30	582.91	घनमी		
		10 परत	1	54.60	34.60	0.30	566.75	घनमी		
		Inlet (Nali)	1	10.00	1.00	1.00	10.00	घनमी		
		Silt trap Chamber	1	3.00	2.00	1.50	9.00	घनमी		
		Outlet	1	10.00	1.00	1.00	10.00	घनमी		
						योग	6449.78	घनमी	158.60	1022935
4	322	1.50 मीटर से नीचे मिट्टी की खुदाई कार्य के लिए अतिरिक्त लिफ्ट की दर को लिया जाना								
	(ख)	मिट्टी के काम 1.50 मीटर से नीचे की खुदाई के लिए अतिरिक्त भुगतान (छठवीं से दसवीं परत तक) (ख) सघन और कठोर मिट्टी में					2997.54	घन मी	15.80	47361
5	Stone Pitching in -Chamber and inlet (Nali)									
	2310 (क)	मिट्टी के बांध में पत्थरों के किनारे का निर्माण पत्थरों को बिछाने एवं हाथ से जमाने घड़ाई करने एवं सतह तैयार करने के साथ (क) बोल्टर	23.00	1.5	0.45	31.05	घन मी	489.70	15205	
						योग				1094629
							कुल योग रुपये		1094629	
						2	नग नया डबरी हेतु		2189259	



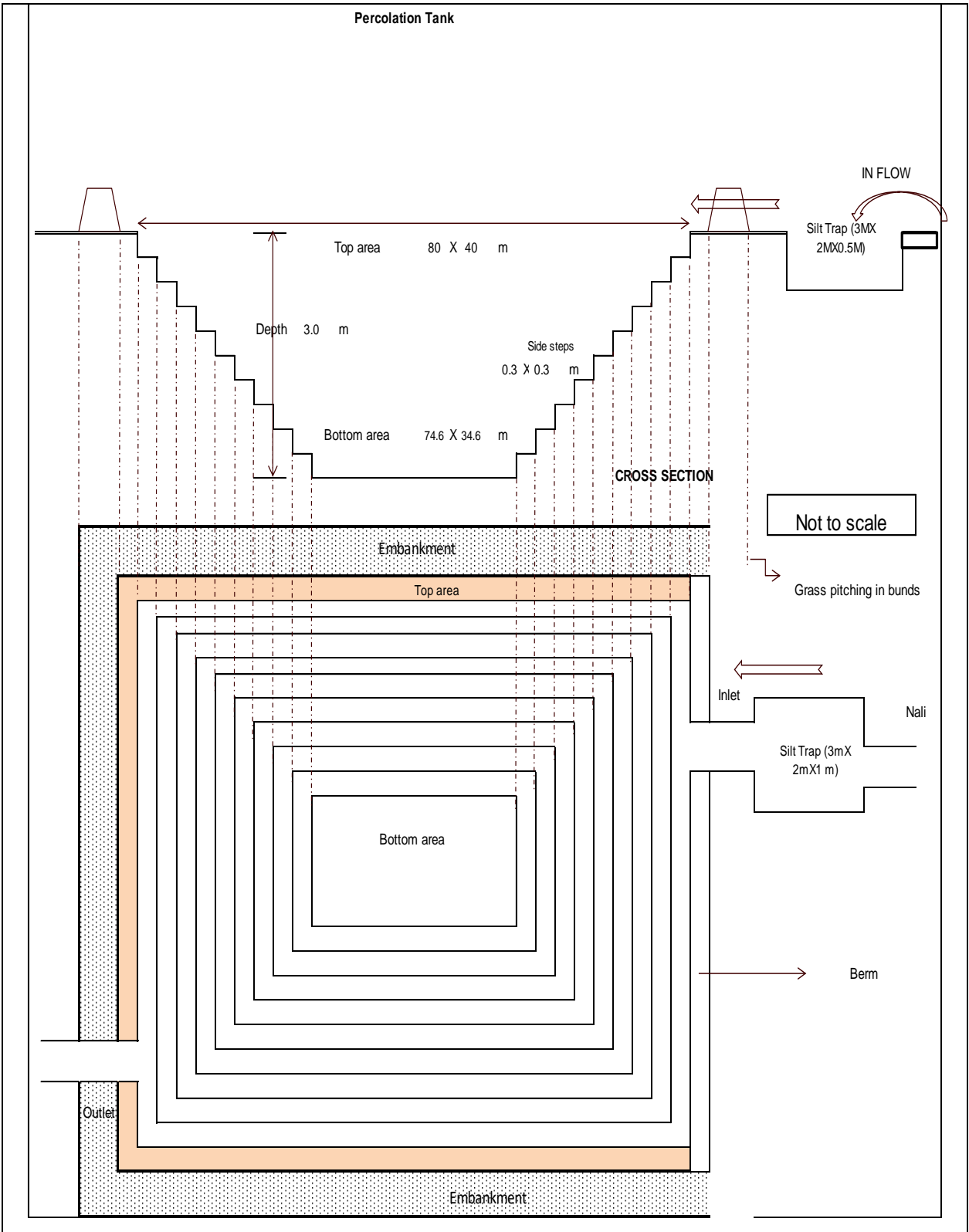
**PLAN**

### 3.4.4 Details of Percolation Tank – 80M

Input Data - Percolation Tank			
	Division	katghora	
	Range	pali	
	Compartment	oa 603 , oa 599	
	Name of Nala		
Sl No	Particulars	Quantity	Unit
1	Catchment area in Ha	1	Ha
2	Average Seasonal Rainfall (historical-June, July, August, September in m	1.2	m
3	Average Seasonal Rainfall ( Projected -June, July, August, September in m	1.099	m
4	Type to Catchment Area	forest	
5	Runoff Coefficient (refer table 2.2)	0.4	Constant
6	Runoff Volume (70%) in m3	3077.20	cum
7	Storage capacity assuming 30% loss in seepage and evaporation losses in m3	2154.04	cum
8	Max. Possible poundage capacity in m3 (actual yield from the catchment)	2154.04	cum
9	Depth of pond in m	3	m
10	Length of pond in m	80.00	m
11	Width of Pond in m	40.00	m
12	Capacity of pond	8658.8	cum
13	possible Command area in sqm ( for single protective irrigation)	86587.8	cum
14	Area in ha	8.66	Ha

Earthwork Calculation				
Step	Length m	Width m	Depth m	Volume m3
Step 1	80.00	40.00	0.30	960.00
Step 2	79.40	39.40	0.30	938.51
Step 3	78.80	38.80	0.30	917.23
Step 4	78.20	38.20	0.30	896.17
Step 5	77.60	37.60	0.30	875.33
Step 6	77.00	37.00	0.30	854.70
Step 7	76.40	36.40	0.30	834.29
Step 8	75.80	35.80	0.30	814.09
Step 9	75.20	35.20	0.30	794.11
Step 10	74.60	34.60	0.30	774.35
Total Earthwork in Cum				8658.8

विस्तृत प्राक्कलन										
Name of Structure :-			Percolation Tank							
क्र	एस.ओ.आर. क्रमांक	कार्य का विवरण	संख्या	लम्बाई	चौड़ाई	उचाई/गहराई	मात्रा	इकाई	दर	कुल राशि
1	2	3	4	5	6	7	8	9	10	11
1	101	कार्य स्थल की सफाई, घास काटना, उसे इकट्ठा करके ढेर बनाना और परिसर से हटाना								
			1	100.00	60.00		4500.00	वर्गमी.	2.50	11250
2	317	दाग बेल लगाना								
	(क)	इकहरे फावड़े की लाइन(कम से कम 75 से.मी. गहरी )								
			4	100.00	-	-	400.00	रमी	0.40	160
3	303	मिट्टी का काम, मोटी खुदाई में और खोदी हुई मिट्टी की 20सेमी से अनधिक मोटी परतों में बंध भराई, ढेले तुड़ाई, पानी सिंचाई 1/2 टन रोलर या लकड़ी या लोहे के दुरमुठोंसे हर एक परत की, और कम से कम 8टन वाले शक्ति चालित रोलर से प्रत्येक तीसरी और सबसे ऊपरी परतों की कुटाई, और दरेसी करके जमीन के गड्डे भरना, 50 मी तक की ऊंचाई में ढुलाई सहित। सभी प्रकार के मिट्टी के लिए								
	(ख)	सघन या कठोर मिट्टी में/कठोर मुरुम में (तालाब बेड से)								
		1 परत	1	80.00	40.00	0.30	960.00	घनमी		
		2 परत	1	79.40	39.40	0.30	938.51	घनमी		
		3 परत	1	78.80	38.80	0.30	917.23	घनमी		
		4 परत	1	78.20	38.20	0.30	896.17	घनमी		
		5 परत	1	77.60	37.60	0.30	875.33	घनमी		
		6 परत	1	77.00	37.00	0.30	854.70	घनमी		
		7 परत	1	76.40	36.40	0.30	834.29	घनमी		
		8 परत	1	75.80	35.80	0.30	814.09	घनमी		
		9 परत	1	75.20	35.20	0.30	794.11	घनमी		
		10 परत	1	74.60	34.60	0.30	774.35	घनमी		
		Inlet (Nali)	1	10.00	1.00	1.00	10.00	घनमी		
		Silt trap Chamber	1	3.00	2.00	1.50	9.00	घनमी		
		Outlet	1	10.00	1.00	1.00	10.00	घनमी		
						योग	8687.78	घनमी	158.60	1377882
4	322	1.50 मीटर से नीचे मिट्टी की खुदाई कार्य के लिए अतिरिक्त लिफ्ट की दर को लिया जाना								
	(ख)	मिट्टी के काम 1.50 मीटर से नीचे की खुदाई के लिए अतिरिक्त भुगतान (छठवीं से दसवीं परत तक) (ख) सघन और कठोर मिट्टी में								
							4071.54	घन मी	15.80	64330
5	Stone Pitching in - Chamber and inlet (Nali)									
	2310 (क)	मिट्टी के बांध में पत्थरों के किनारे का निर्माण पत्थरों को बिछाने एवं हाथ से जमाने घड़ाई करने एवं सतह तैयार करने के साथ (क) बोल्टर								
			23.00	1.5	0.45	31.05	घन मी	489.70		15205
						योग				1468827
							कुल योग रुपये			1468827
						2	नग नया डबरी हेतु			2937655



PLAN



### 3.5 Details of SCT

#### 3.5.1 Details of SCT – 50 Hac.

Input data for Design & Estimation of Staggered Contour Trench		
Division	KATGHORA	
Range	PALI	
Compartment	OA601	
Particular	Quantity	Unit
Plot Area	50	Ha
Length of Plot (across the slope)	1000	m
Width of plot (along the slope)	500	m
Type of soil	FINE LOAMY	
Land use/ Land cover	Forest land	
Average Slope	12%	%
Top Width of Staggered Contour Trench	1	m
Bottom Width of Staggered Contour Trench	0.45	m
Depth of Staggered Contour Trench	0.45	m
Length of one trench	3	m
Coefficient of runoff (as per table 2.2)	0.5	Constant
Peak intensity of rainfall (as per peak rainfall data maps)	0.1	m/hr
% of run off to be harvested	100	%
Size of SCT	$3X(1+0.45)/2X0.45$	m

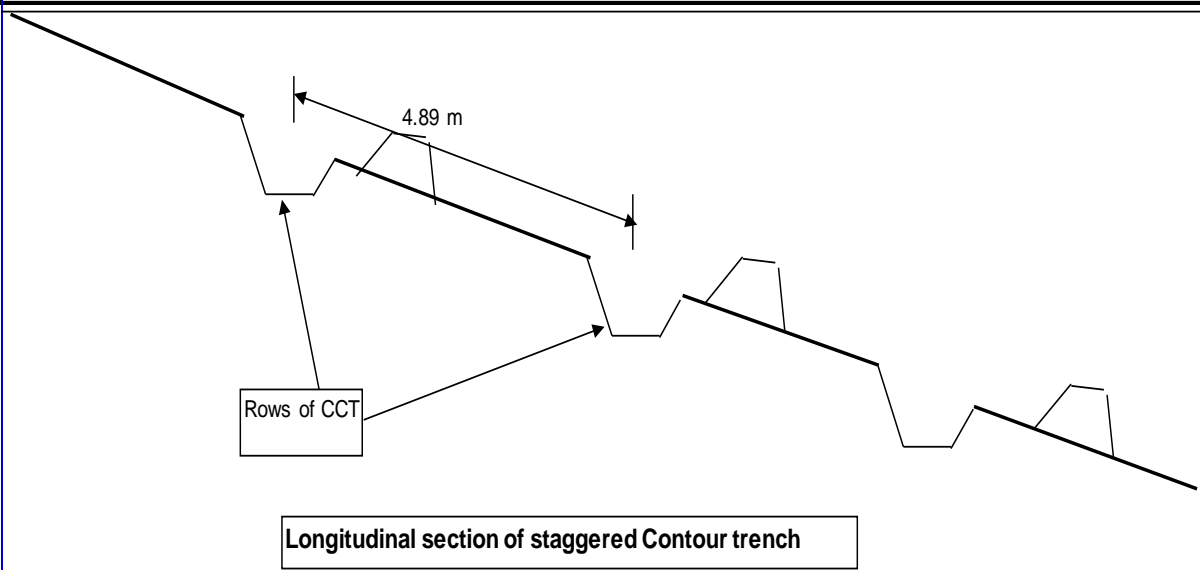
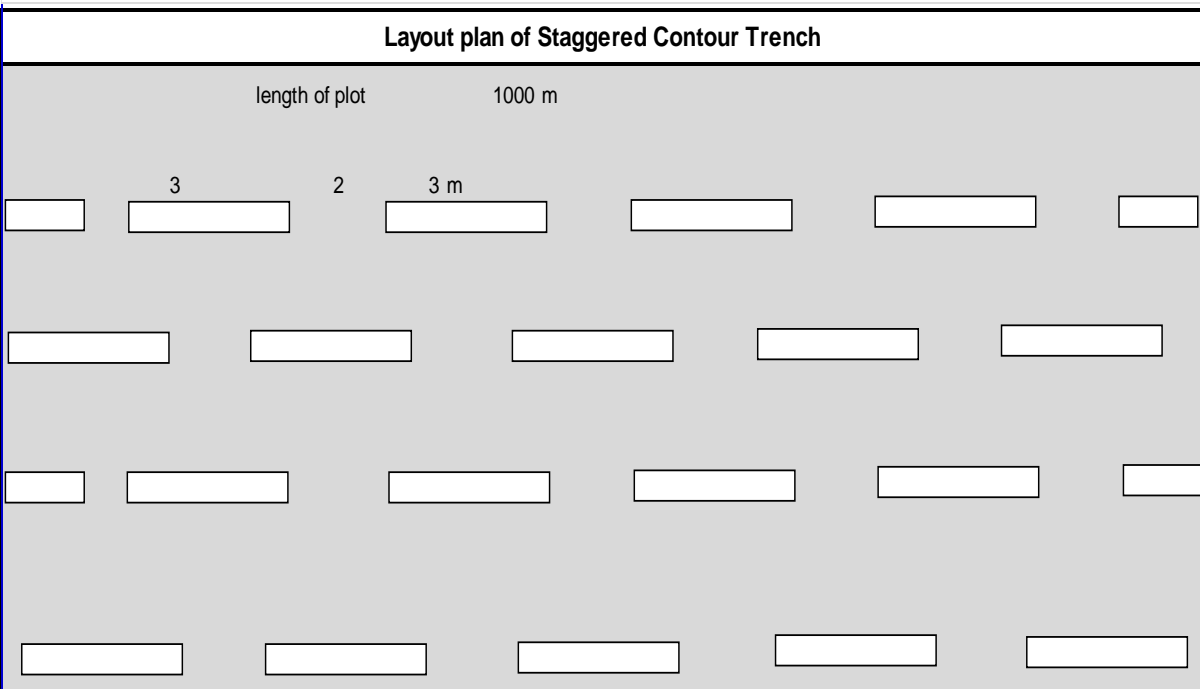
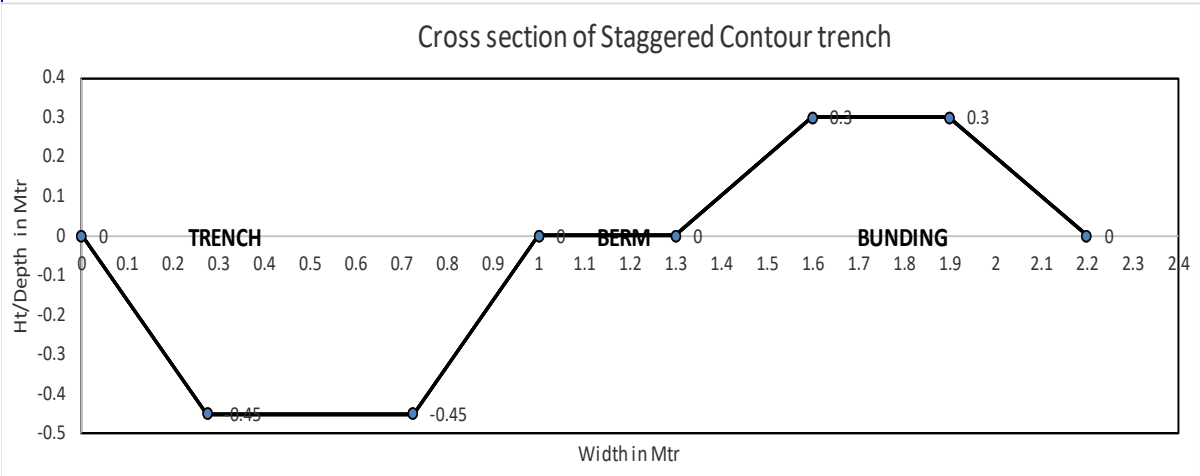
**Table 2-2: Coefficient for Estimating Run-off**

Land Use & Slope	Sandy Loams	Clay/Silty Loams	Silty Clay
Cultivated Land			
0- 5%	0.30	0.50	0.60
5- 10%	0.40	0.60	0.70
10 - 30%	0.52	0.72	0.82
Pasture Land			
0- 5%	0.10	0.30	0.40
5- 10%	0.16	0.36	0.55
10 - 30%	0.22	0.42	0.60
Forest Land			
0- 5%	0.10	0.30	0.40
5- 10%	0.25	0.35	0.50
10 -30%	0.30	0.50	0.60

(Source: Dhruv narayana, 1993)

### Design and Cost Estimate of Staggered Contour Trench

Particular	Quantity	Unit
Plot Area	500000	Sqm
Top Width of Staggered counter Trench	1	m
Bottom Width of Staggered counter Trench	0.45	m
Depth of Staggered counter Trench	0.45	m
Length of one trench	3	m
Spacing between two trench	2	m
Coefficient of runoff	0.5	Constant
Peak intensity of rainfall	0.1	m/hr
Discharge	25000	Cum/ hr
Water harvested (100%)	25000	cum
Storage capacity of one trench	0.97875	cum
Effective Storage capacity of one trench @ 125%	1.2234375	cum
No. of trench required for 100%water harvesting	<b>20434</b>	nos
Length of plot (across the slope)	1000	m
NO.of trench in one row	<b>200.00</b>	
No. of rows required for 100%water harvesting	<b>102.17</b>	
Width of plot (along the slope)	500	m
Spcing between two rows	<b>4.89</b>	m
Total length of Staggered CT in the plot	61303	m
Earth work in Excavation	<b>20000.00</b>	cum



**विस्तृत प्राक्कलन**

Name of Sstructure		Staggered Contour Trenching for							50	Ha		
		Size of CT	3	1	0.45	0.45	m	Size of plot	1000	500		
क	एस.ओ.आर. क	कार्य का विवरण	संख्या	लम्बाई	चौड़ाई	उचाई/गहराई	मात्रा	इकाई	कुल दर	कुल राशि		
1	2	3	4	5	6	7	8	9	10	11	12	
1	101	कार्य स्थल की सफाई, घास काटना, उसे इकट्ठा करके ढेर बनाना और										
		1	1	1000.00	500.00	20%	100000.00	वर्गमी.	2.50	250000		
2	317	दाग बेल लगाना										
	(क)	इकहरे फावड़े की लाइन(कम से कम 75 मिमी गहरी)										
		2	102.17	1000.00	-	-	204342.27	रमी	0.40	81737		
3	301	मिट्टी का काम(गहराई में 30से.मी., चौड़ाई में 1.50 मी. और क्षेत्रफल में 10.00वर्गमी.से अधिक) क्षेत्रों की खुदाई में, 50 मी. की दूरी तथा 1.50 मी. तक उंचाई में खोदी हुई मिट्टी के निपटान और फेंकी हुई मिट्टी समतल करने तथा सफाई से दरेसी करने के सहित										
	(ख)	सघन या कठोर मिट्टी में/कठोर मुरुम में										
	Qty as per the BoQ						20000.00	घनमी				
							20000.00	घनमी	154.70	3094000		
						योग				3425737		
								<b>कुल योग रुपये</b>		<b>3425737</b>		

### 3.5.2 Details of SCT – 5 Hac.

Input data for Design & Estimation of Staggered Contour Trench		
Division	KATGHORA	
Range	PALI	
Compartment	OA601	
Particular	Quantity	Unit
Plot Area	5	Ha
Length of Plot (across the slope)	250	m
Width of plot (along the slope)	200	m
Type of soil	FINE LOAMY	
Land use/ Land cover	Forest land	
Average Slope	15%	%
Top Width of Staggered Contour Trench	1	m
Bottom Width of Staggered Contour Trench	0.45	m
Depth of Staggered Contour Trench	0.45	m
Length of one trench	3	m
Coefficient of runoff (as per table 2.2)	0.5	Constant
Peak intensity of rainfall (as per peak rainfall data maps)	0.1	m/hr
% of run off to be harvested	100	%
Size of SCT	3X(1+0.45)/2X0.45	

**Table 2-2: Coefficient for Estimating Run-off**

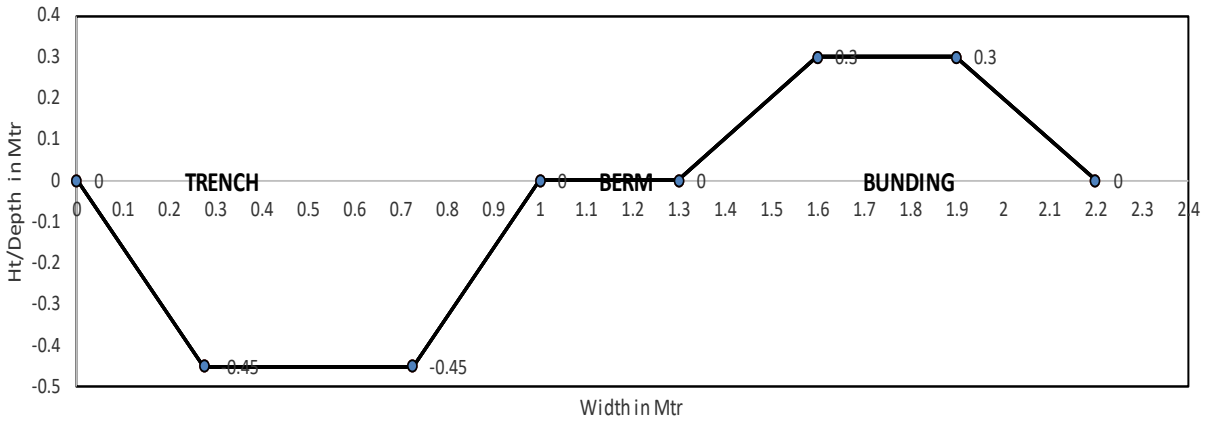
Land Use & Slope	Sandy Loams	Clay/Silty Loams	Silty Clay
Cultivated Land			
0- 5%	0.30	0.50	0.60
5- 10%	0.40	0.60	0.70
10 - 30%	0.52	0.72	0.82
Pasture Land			
0- 5%	0.10	0.30	0.40
5- 10%	0.16	0.36	0.55
10 - 30%	0.22	0.42	0.60
Forest Land			
0- 5%	0.10	0.30	0.40
5- 10%	0.25	0.35	0.50
10 -30%	0.30	0.50	0.60

(Source: Dhruv narayana, 1993)

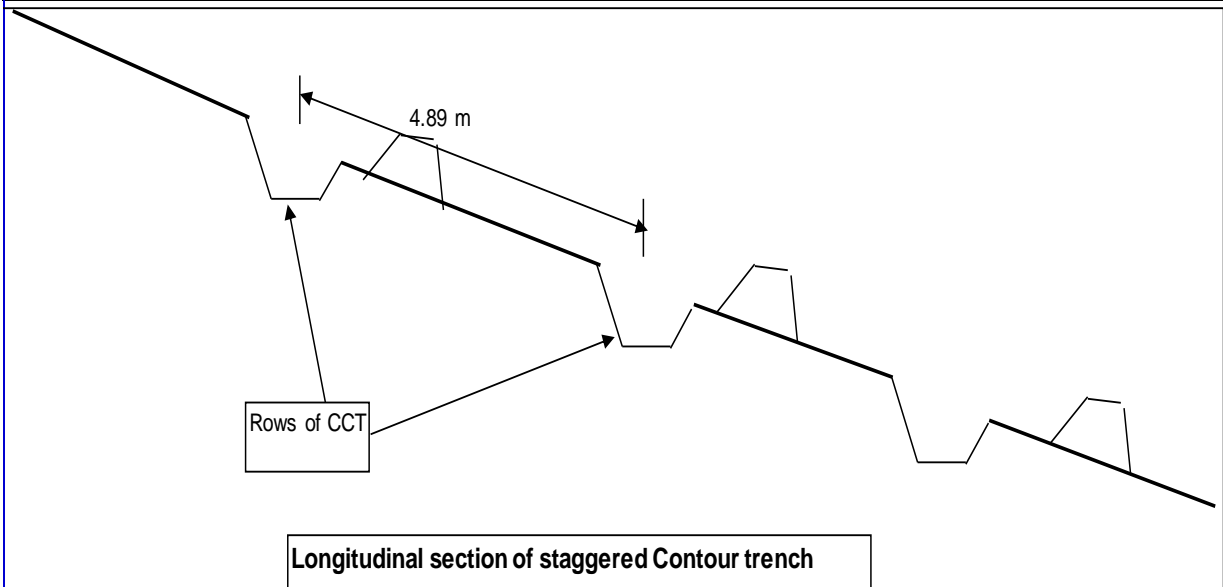
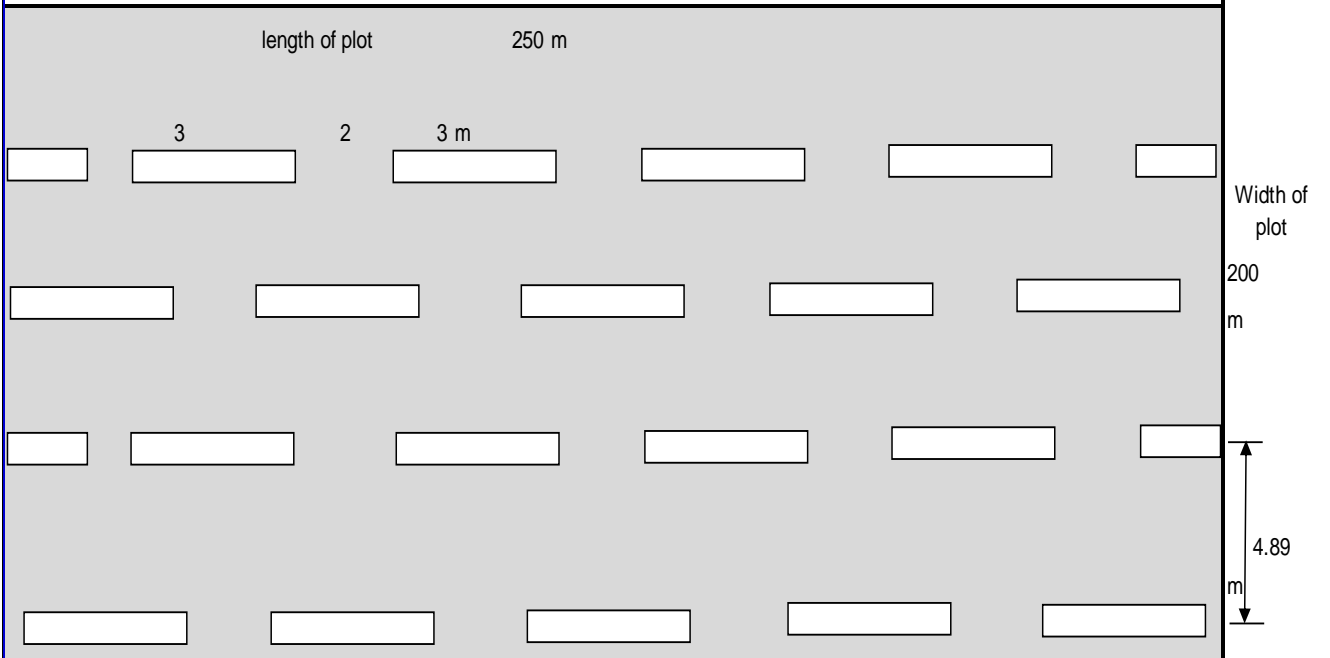
### Design and Cost Estimate of Staggered Contour Trench

Particular	Quantity	Unit
Plot Area	50000	Sqm
Top Width of Staggered counter Trench	1	m
Bottom Width of Staggered counter Trench	0.45	m
Depth of Staggered counter Trench	0.45	m
Length of one trench	3	m
Spacing between two trench	2	m
Coefficient of runoff	0.5	Constant
Peak intensity of rainfall	0.1	m/hr
Discharge	2500	Cum/ hr
Water harvested (100%)	2500	cum
Storage capacity of one trench	0.97875	cum
Effective Storage capacity of one trench @ 125%	1.2234375	cum
No. of trench required for 100%water harvesting	<b>2043</b>	nos
Length of plot (across the slope)	250	m
NO.of trench in one row	<b>50.00</b>	
No. of rows required for 100%water harvesting	<b>40.87</b>	
Width of plot (along the slope)	200	m
Spcing between two rows	<b>4.89</b>	m
Total length of Staggered CT in the plot	6130	m
Earth work in Excavation	<b>2000.00</b>	cum

Cross section of Staggered Contour trench



Layout plan of Staggered Contour Trench



**विस्तृत प्राक्कलन**

Name of Srtructure		Staggered Contour Trenching for							5	Ha	
		Size of CT	3	1	0.45	0.45	m	Size of plot	250	200	
क	एस.ओ.आर. क्र	कार्य का विवरण	संख्या	लम्बाई	चौड़ाई	उचाई/गहराई	मात्रा	इकाई	कुल दर	कुल राशि	
1	2	3	4	5	6	7	8	9	10	11	12
1	101	कार्य स्थल की सफाई ,घास काटना,उसे इकट्ठा करके ढेर बनाना									
			1	1	250.00	200.00	20%	10000.00	वर्गमी.	2.50	25000
2	317	दाग बेल लगाना									
	(क)	इकहरे फावड़े की लाइन(कम से कम 75 मिमी									
			2	40.87	250.00	-	-	20434.23	रमी	0.40	8174
3	301	मिट्टी का काम(गहराई में 30से.मी.,चौड़ाई में 1.50 मी. और क्षेत्रफल में 10.00वर्गमी.से अधिक) क्षेत्रों की खुदाई में,50 मी. की दूरी तथा 1.50 मी. तक उंचाई में खोदी हुई मिट्टी के निपटान और फेंकी हुई मिट्टी समतल करने तथा सफाई से दरेसी करने के सहित									
	(ख)	सघन या कठोर मिट्टी में/कठोर मुरुम में									
	Qty as per the BoQ							2000.00	घनमी		
								2000.00	घनमी	154.70	309400
							योग				342574
									<b>कुल योग रुपये</b>		<b>342574</b>



### 3.5.3 Details of SCT – 10 Hac.

Input data for Design & Estimation of Staggered Contour Trench		
Division	KATGHORA	
Range	PALI	
Compartment	OA603	
Particular	Quantity	Unit
Plot Area	10	Ha
Length of Plot (across the slope)	500	m
Width of plot (along the slope)	200	m
Type of soil	COURSE LOAMY	
Land use/ Land cover	Forest land	
Average Slope	10%	%
Top Width of Staggered Contour Trench	1	m
Bottom Width of Staggered Contour Trench	0.45	m
Depth of Staggered Contour Trench	0.45	m
Length of one trench	3	m
Coefficient of runoff (as per table 2.2)	0.25	Constant
Peak intensity of rainfall (as per peak rainfall data maps)	0.1	m/hr
% of run off to be harvested	100	%
Size of SCT	$3X(1+0.45)/2X0.45$	m

**Table 2-2: Coefficient for Estimating Run-off**

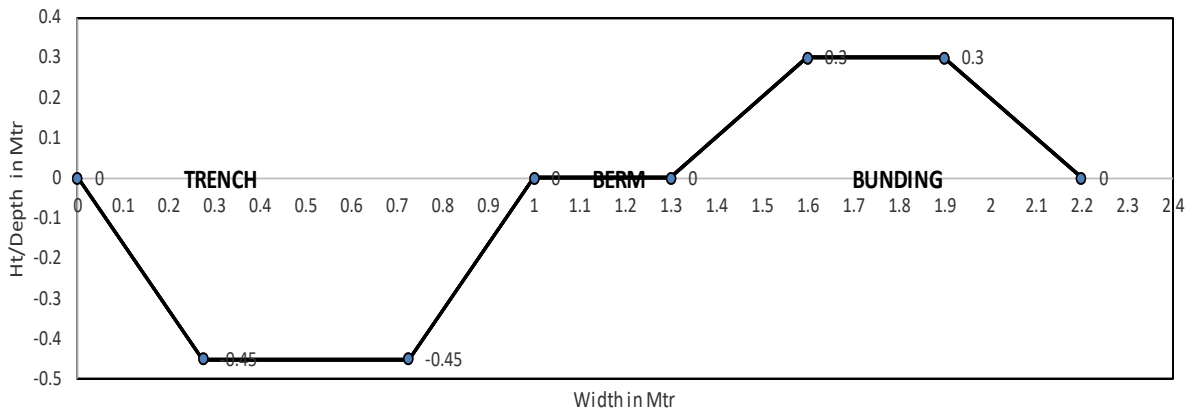
Land Use & Slope	Sandy Loams	Clay/Silty Loams	Silty Clay
Cultivated Land			
0- 5%	0.30	0.50	0.60
5- 10%	0.40	0.60	0.70
10 - 30%	0.52	0.72	0.82
Pasture Land			
0- 5%	0.10	0.30	0.40
5- 10%	0.16	0.36	0.55
10 - 30%	0.22	0.42	0.60
Forest Land			
0- 5%	0.10	0.30	0.40
5- 10%	0.25	0.35	0.50
10 -30%	0.30	0.50	0.60

(Source: Dhruv narayana, 1993)

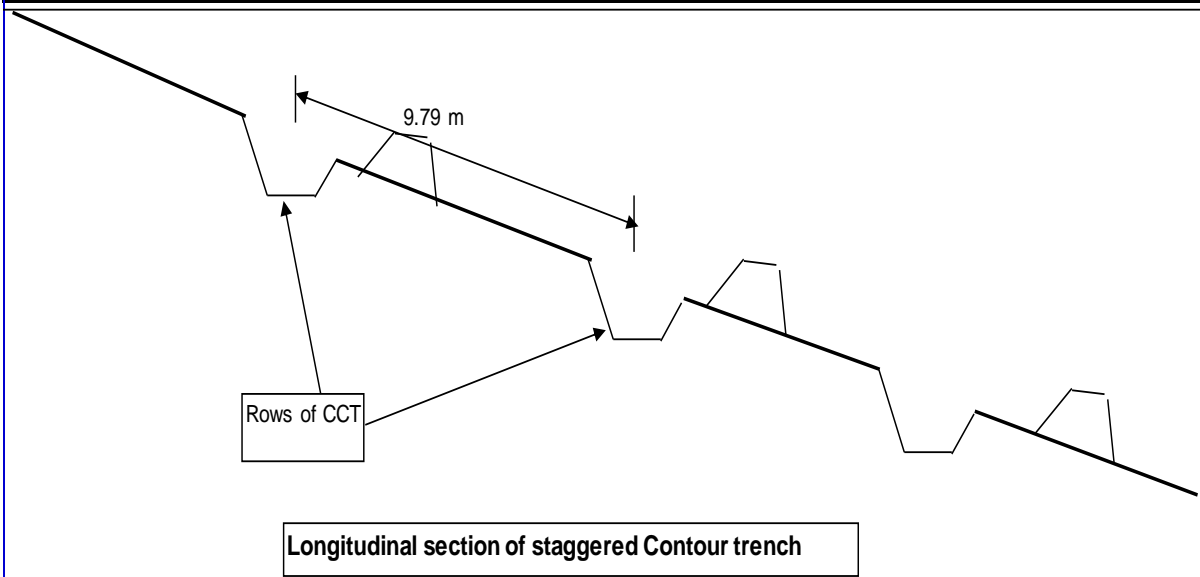
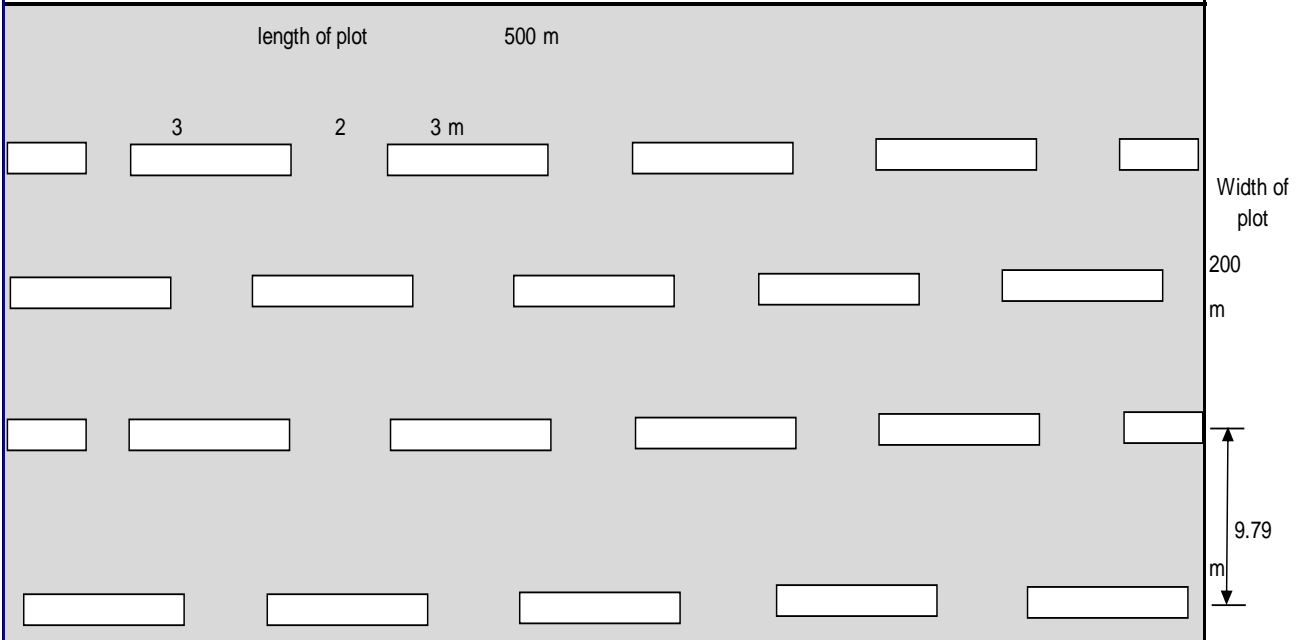
### Design and Cost Estimate of Staggered Contour Trench

Particular	Quantity	Unit
Plot Area	100000	Sqm
Top Width of Staggered counter Trench	1	m
Bottom Width of Staggered counter Trench	0.45	m
Depth of Staggered counter Trench	0.45	m
Length of one trench	3	m
Spacing between two trench	2	m
Coefficient of runoff	0.25	Constant
Peak intensity of rainfall	0.1	m/hr
Discharge	2500	Cum/ hr
Water harvested (100%)	2500	cum
Storage capacity of one trench	0.97875	cum
Effective Storage capacity of one trench @ 125%	1.2234375	cum
No. of trench required for 100%water harvesting	<b>2043</b>	nos
Length of plot (across the slope)	500	m
NO.of trench in one row	<b>100.00</b>	
No. of rows required for 100%water harvesting	<b>20.43</b>	
Width of plot (along the slope)	200	m
Spcing between two rows	<b>9.79</b>	m
Total length of Staggered CT in the plot	6130	m
Earth work in Excavation	<b>2000.00</b>	cum

Cross section of Staggered Contour trench



Layout plan of Staggered Contour Trench



**विस्तृत प्राक्कलन**

Name of Srtructure		Staggered Contour Trenching for							10	Ha	
		Size of CT	3	1	0.45	0.45	m	Size of plot	500	200	
क्र	एस.ओ.आर. क्र	कार्य का विवरण	संख्या	लम्बाई	चौड़ाई	उचाई/गहराई	मात्रा	इकाई	कुल दर	कुल राशि	
1	2	3	4	5	6	7	8	9	10	11	12
1	101	कार्य स्थल की सफाई ,घास काटना,उसे इकट्ठा करके ढेर बनाना									
			1	1	500.00	200.00	20%	20000.00	वर्गमी.	2.50	50000
2	317	दाग बेल लगाना									
	(क)	इकहरे फावड़े की लाइन(कम से कम 75 मिमी									
			2	20.43	500.00	-	-	20434.23	रमी	0.40	8174
3	301	मिट्टी का काम(गहराई में 30से.मी.,चौड़ाई में 1.50 मी. और क्षेत्रफल में 10.00वर्गमी.से अधिक) क्षेत्रों की खुदाई में,50 मी. की दूरी तथा 1.50 मी. तक उंचाई में खोदी हुई मिट्टी के निपटान और फेंकी हुई मिट्टी समतल करने तथा सफाई से दरेसी करने के सहित									
	(ख)	सघन या कठोर मिट्टी में/कठोर मुरुम में									
		Qty as per the BoQ						2000.00	घनमी		
								2000.00	घनमी	154.70	309400
							योग				367574
										<b>कुल योग रुपये</b>	<b>367574</b>

### 3.6 Details of 30-40 Model

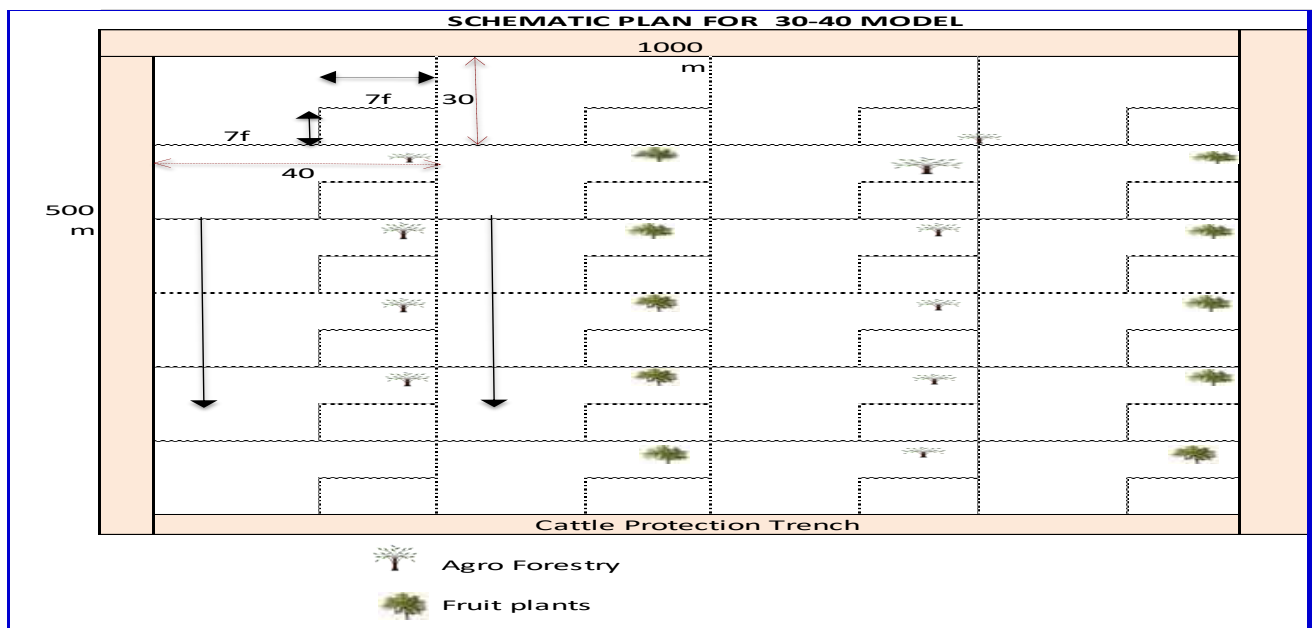
Input Data Design of 30-40 Model			
	Division	KATGHORA	
	Range	KATGHORA	
	Compartment	OA774,OA775,OA776,OA778,OA779,OA787	
30-40 model Quantity Calculation and recharge potential			
Sl No	Particulars	Measurement	Unit
1	Length of plot across the slope in m	1000	m
2	Length of plot along the slope in m	500	m
3	Maximum rainfall intensity I in m/day (Convert from mm/Day to m/day)	0.15	m/day
4	Land use	Forest land	
5	Runoff Coefficient (refer table 2.2) on the basis of conditions of the plot	0.3	Constant number
Total cost of work in Rs.		6169090	100%

**Table 2-2: Coefficient for Estimating Run-off**

Land Use & Slope	Sandy Loams	Clay/Silty Loams	Silty Clay
Cultivated Land			
0- 5%	0.30	0.50	0.60
5- 10%	0.40	0.60	0.70
10 - 30%	0.52	0.72	0.82
Pasture Land			
0- 5%	0.10	0.30	0.40
5- 10%	0.16	0.36	0.55
10 - 30%	0.22	0.42	0.60
Forest Land			
0- 5%	0.10	0.30	0.40
5- 10%	0.25	0.35	0.50
10 -30%	0.30	0.50	0.60

(Source: Dhruv narayana, 1993)

30-40 model With Plantation Quantity Calculation and recharge potential			
SINo	Particulars	Measure	Unit
1	Sections of 40 feet	82.00	Numbers
2	Sections of 30 feet	54.67	Numbers
3	Number of 30-40 model units	4482.67	Numbers
4	Number of 30-40 model units to nearest value	4483.00	Numbers
5	Excavated Volome at top (LXWXD)=(7ftX7ftX1ft) of 1 pit in m3	1.39	m3
6	Excavated Volome at middle (LXWXD)=(6ftX6ftX1ft) of 1 pit in m3	1.02	m3
7	Excavated Volome at bottom (LXWXD)=(5ftX5ftX1ft) of 1 pit in m3	0.71	m3
8	Total Excavated volume of 1 pit in m3	3.12	m3
9	Total Excavated Volume of all the pits in m3	13974.62	m3
10	Catchment area in Ha	500000	
11	Peak intensity of Rainfall in m/day (Convert from mm/Day to m/day)	0.15	m/day
12	Type to Catchment Area	Forest land	Land type
13	Runoff Volume (70%) in m3	15750	m3
14	Total Volume of water recharged in m3	15750	m3
15	Number of plants in each 30-40 segment	17932	Number
16	Length of Cattle protection Tench as per site	3000.0	m
17	Top Width of Cattle protection trenche	1.5	m
18	Bottom Width of Cattle protection trenche	0.9	m
19	Depth of cattle protection trenche	1	m
20	Voulme of earthwork for cattle protection trench	3600	m3



## विस्तृत प्राक्कलन

Name of Structure:-		30-40 Model							50.00	Ha	
क	एस.ओ.आर. क्रमांक	कार्य का विवरण		लम्बाई	चौड़ाई	उचाई/ गहराई	मात्रा	इकाई	कुल दर	कुल राशि	
1	2	3	4	5	6	7	8	9	10	11	
1	101	कार्य स्थल की सफाई, घास काटना, उसे इकट्ठा करके ढेर बनाना और परिसर से हटाना									
			1	1000	500		500000	वर्गमी.	2.50	1250000	
2	317	दाग बेल लगाना									
	(क)	इकहरे फावड़े की लाइन(कम से कम 75 से.मी. गहरी )									
			1	1000	500	-	500000	रमी	0.40	200000	
3	301	मिट्टी का काम(गहराई में 30से.मी., चौड़ाई में 1.50 मी. और क्षेत्रफल में 10.00वर्गमी.से अधिक) क्षेत्रों की खुदाई में, 50 मी. की दूरी तथा 1.50 मी. तक उंचाई में खोदी हुई मिट्टी के निपटान और फेंकी हुई मिट्टी समतल करने तथा सफाई से दरेसी करने के सहित									
	(क)	सघन या कठोर मिट्टी में/कठोर मुरुम में (30 -40 model)									
		1 परत	4483	2.13	2.13	0.30	6225	घनमी			
		2 परत	4483	1.83	1.83	0.30	4574	घनमी			
		3 परत	4483	1.52	1.52	0.30	3176	घनमी			
		नाली	4483	36.92	0.30	0.30	14896	घनमी			
		पौधरोपण के लिए गढढा खुदाई	17932	0.45	0.45	0.45	1634	घनमी			
						योग	30505	घनमी	154.70	4719090	
						योग				6169090	
									कुल योग रु.	<b>6169090</b>	

## Chapter - 4: Consolidated Budget and Expected Outcomes

### 4.1 Consolidated budget –

Proposed In Forest Area					
Division- katghora , Distt. Korba					
Name of range : pali, katghora					
SN	Name of Work	Number of Work		Dimensions	Estimated Cost
1	BWCD 3 mt.	Total Number of BWCD of the same dimensions	35	3m x 1m x 1 m	20,953
2	BWCD 4 mt.	Total Number of BWCD of the same dimensions	30	4m x 1m x 1 m	23,946
<b>Total</b>			<b>65</b>		<b>44,899</b>
1	LBCD 3 mt.	Total Number of LBCS of the same dimensions	48	3m x 1m x 0.5m	67,553
2	LBCD 4 mt.	Total Number of LBCS of the same dimensions	48	4m x 1m x 0.5m	90,070
<b>Total</b>			<b>96</b>		<b>1,57,623</b>
SN	Name of Work	Latitude	Longitude	Dimensions	Estimated Cost
1	30- 40 MODEL ( OA 778 )	22.382457	82.566809	8 HAC.	
2	30- 40 MODEL ( OA 787 )	22.379472	82.564920	10 HAC.	
3	30- 40 MODEL ( OA 774 )	22.309446	82.568274	10 HAC.	
4	30- 40 MODEL ( OA 776 )	22.363240	82.510728	12 HAC.	
5	30- 40 MODEL ( OA 775 )	22.354123	82.501242	5 HAC.	
6	30- 40 MODEL ( OA 779 )	22.381233	82.491174	5 HAC.	
<b>Total</b>				<b>50 HAC.</b>	<b>6169090</b>
1	WHS ( OA 599 )	22.310297	82.497888	100 m X 100 m	6295518
1	P.T(OA 602 )	22.278172	82.512067	60m X 40 m	1094629
2	P.T(OA 602 )	22.276288	82.507555	60m X 40 m	1094629
3	P.T(OA 599 )	22.313542	82.476964	80m X 40 m	1468827
4	P.T(OA 603 )	22.278488	82.512733	80m X 40 m	1468827
5	P.T(OA 599 )	22.314927	82.473394	70m X 70 m	2294215
6	P.T(OA 599 )	22.314394	82.476675	30m X 30 m	396387
1	SCT( OA 603 )	22.285555	82.535000	10 HAC.	367574
2	SCT( OA 601 )	22.304722	82.499722	5 HAC.	342574
3	SCT( OA 599 )	22.313763	82.472455	50 HAC.	3425737
<b>Total</b>					<b>24620529</b>
<b>G. Total</b>					<b>2,46,20,529</b>
contingancy charge @2% of total budget				<b>2%</b>	<b>4,92,411</b>
Sub total of project cost					<b>2,51,12,939</b>
Project formulation and supervision charges				<b>1%</b>	<b>2,51,129</b>
<b>Total cost of project</b>					<b>2,53,64,069</b>
उपवनमण्डलाधिकारी		वन परिक्षेत्र अधिकारी		वन परिक्षेत्र अधिकारी	
कटघोरा उपवनमण्डल		कटघोरा परिक्षेत्र		पाली परिक्षेत्र	
वनमण्डलाधिकारी					
कटघोरा वनमण्डल कटघोरा					









साउथ ईस्टर्न कोलफिल्ड्स लिमिटेड  
**South Eastern Coalfields Limited**  
 (कोल इंडिया का एक अंश/A Subsidiary Of Coal India Ltd)  
 कार्यालय:- महाप्रबंधक, दीपिका क्षेत्र  
**OFFICE OF THE GENERAL MANAGER, DIPKA AREA**  
 P.O.: Dipka, Distt - Korba (CG) 495452  
 Tel: 07815-239011,263300,263301 Fax 07815239002  
 e-mail: gmdpk.secl@coalindia.in



क्रमांक: एस.ई.सी.एल/दी.क्षे./पर्या./2023/ 3067

दिनांक: 20.07.2023

To,

Divisional Forest Officer,  
 Katghora Division, Katghora.

**Subject:** - Submission of DD of Rs.2,53,64,000/- for implementation of Catchment Area Treatment Plan for Dipka Expansion Project, SECL-Reg.

**Ref:** - Your letter no: तक.अधि./2023/3864, dated:04.07.2023.

Dear Sir,

Kindly refer to your above demand letter regarding the subject matter wherein it was directed to deposit Rs. 2,53,64,000/- in the form of DD drawn in favour of DFO Katghora for implementation of Catchment Area Treatment Plan prepared for Dipka Expansion Project.

In this regard, we are hereby submitting DD of Rs. 2,53,64,000/- (Rupees Two Crores Fifty Three Lakhs Sixty Four Thousand Only), DD No: 945316, dated: 20.07.2023 drawn in favour of Divisional Forest Officer, Katghora.

This is for your kind information and further necessary action please.

*Enclosed: As above*

Yours Sincerely,

General manager (O),  
 SECL, Dipka Area

Copy, for kind attention:

1. General Manager, SECL, Dipka Area
2. General Manager (Forest), SECL HQ, Bilaspur.
3. Nodal Officer (Envt./Forest), SECL, Dipka Area



आपको करने वाली भारतीय स्टेट बैंक  
 Branch / State Bank of India  
 कोड अथवा C.O.D.E. No. 00343  
 Tel No. 07815-275205

मांगद्राफ्ट  
**DEMAND DRAFT**

Key: QUBBEO  
 Sr. No. 676602

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 D D M M Y Y Y Y

नामो जामेपर DIVISIONAL FOREST OFFICER KATG HORA

या अको अदेशा पर  
 OR ORDER

ON DEMAND PAY Two Crore Fifty Three Lakh Sixty Four Thousand Only

रुपये RUPEES

₹ 25364000.00

IOI 000545945316  
 Name of Applicant  
 Key: QUBBEO Sr. No. 676602  
 S E C L DIPIKA AREA

अको करे  
 ₹ 25364000.00

₹ 25364000.00  
 अको जामे / VALUE RECEIVED

भारतीय स्टेट बैंक  
 STATE BANK OF INDIA  
 अको जामे / DRAWING BRANCH: KATG HORA  
 कोड अथवा C.O.D.E. No. 00343

*(Signature)*  
 NITESH KUMAR  
 BRANCH MANAGER  
 PF ID-1009808  
 SS No: N6114

अको 3 महिने के लिए वैध  
 VALID FOR 3 MONTHS ONLY  
 अको जामे पर कम्प्युटर प्रिंटर  
 VALID ONLY IF COMPUTER PRINTED

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**SCHEME FOR ENHANCEMENT OF PRODUCTION  
(INCLUDING MINING PLAN)**

**FOR**

**DIPKA OPENCAST PROJECT  
DIPKA AREA**

**FROM 35.00 MTY TO 37.50 MTY  
(APPROVED EC CLEARANCE FOR 35.00 MTY)**



**JUNE, 2022**

**SOUTH EASTERN COALFIELDS LIMITED**  
**(A MINI RATNA COMPANY)**  
*(A Subsidiary of Coal India Limited)*  
SECL COMPLEX, SEEPAT ROAD  
BILASPUR - (C.G.) 495006



# South Eastern Coalfields Limited

(A MINIRATNA PSU)

CIN: U10102CT1985GOI003161

Regd. Office: SEEPAT ROAD, BILASPUR (CG) 495 006

## CORPORATE AFFAIRS DEPARTMENT

Phone: 07752-246340, 417666 Fax: 07752-246412 Cell: 09425531303

Website: [www.secl-cil.in](http://www.secl-cil.in) E mail: [compsecy.secl@coalindia.in](mailto:compsecy.secl@coalindia.in)



Ref. No. SECL/BSP/CAD/128<sup>th</sup> CoFD EXT/22-23/371

Date: 12.07.2022

The subject item mentioned below was discussed in the 128<sup>th</sup> Meeting of the Committee of Functional Directors (CoFD) of South Eastern Coalfields Limited held on 07.07.2022 vide Item No.128.11. The extract of the approved Minutes of Meeting are quoted below:

### QUOTE

#### Item No. 128.11

Sub: Approval of Mining Plan for Dipka OC Expansion (37.50 MTY), to obtain enhanced Environmental Clearance of 37.50 MTY from MoEF&CC for enhancing coal production from 35.00 MTY to 37.50 MTY.

Ref: GM (P&P)-HOD's e-Office Noting (e-790327) Dtd. 28.06.2022.

The Committee of Functional Directors (CoFD) discussed on the subject proposal and GM (P&P) apprised the CoFD that:

- The PR of Dipka OC Expansion (20-25 MTY) was approved by CIL Board on 22.12.2009 and the project was completed on 31.12.2015. Further, a Scheme (including Mining Plan for enhancement of coal production from 25 MTY to 35 MTY) was approved by SECL Board at its 245<sup>th</sup> meeting held on 13.05.2016. CIL Board approved the PR for Dipka Expansion OC Project (40 MTY) on 24.12.2020.
- Presently, the Dipka Expansion Opencast Project is having Environmental Clearance (EC) for coal production of 35 MTY only. GM, Dipka Area has submitted the subject Mining Plan for enhancement of coal production from 35.00 MTY to 37.50 MTY which is within the 25 MTY Project boundary in order to obtain enhanced EC of 37.50 MTY under the latest MoEF&CC OM vide F.No. IA3-22/10/2022-IA-III (E177258) dated 11.04.2022.
- As per the Mine Plan submitted by the Dipka Area, as on 01.04.2022 the balance coal is 164.93 MT and the balance OB is 295.86 M cum, within the quarry boundary of approved PR of Dipka OC Expansion (20-25 MTY). The balance life of project is 5 years calculated based on the balance coal in order to produce 37.5 MTY of coal.
- The subject Mining Plan has been recommended by GM, Dipka Area and further examined and recommended by RD, CMPDIL, RI-V, Project & Planning, Environment and Finance Departments, SECL HQ for approval.

The CoFD noted the appraisal and after detailed deliberations, approved the subject Mining Plan of Dipka OC Expansion Project (37.50 MTY), for obtaining enhanced Environmental Clearance of 37.50 MTY from MoEF&CC as per OM dtd. 11.04.2022, for enhancement of coal production from 35.00 MTY to 37.50 MTY of Dipka OC Expansion Project, as recommended by GM, Dipka Area, further vetted by RD, CMPDIL, RI-V, Project & Planning Environment and Finance Departments, SECL HQ, as detailed and brought out in the Agenda.

### UNQUOTE

Accordingly, the case file relating to the subject item is being returned herewith.

  
COMPANY SECRETARY

Director (Tech.) P&P

Encl: as above

Copy for kind information to:

Director (Tech.) Opm. / Director (Pers.) / Director (Fin.)

**Distribution for action:** 1) GM (P&P); 2) GM (ENVT.); 3) Dy. GM (FIN)-HOD & 4) GM, Dipka Area

## 5.0 MINECLOSURE PLAN

### 5.1 CLOSURE PLANNING DETAILS OF MINE:

Dipka OCP is an operating mine under Dipka Area, SECL and comprises a total land of 1999.293 Ha, out of which mostly tenancy & govt. land. The project has EC of 35.0 Mty. The project has been planned for expansion of its capacity from 35.0 Mty to 37.5 Mty, to meet power grade coal.

### 5.2 LAND USE

Present land use of the project as mentioned in prevailing EC is given below:

**Table – 5.1 Present Land use details (Area in Ha.)**

S. No.	Activity	Types of land (Ha)			Total land area (Ha)
		Forest	Tenancy/ Agricultural	Govt.	
1	Quarry Area*	52.889	858.314	90.850	<b>1002.053</b>
2	External OB dump	54.718	125.212	26.070	<b>206.000</b>
3	Infrastructure, workshop, Administration building etc.,	279.242	313.518	41.114	<b>633.874</b>
4	Roads	0.000	4.000	0.000	<b>4.000</b>
5	Green belt	0.000	23.000	0.000	<b>23.000</b>
6	Safety Zone	22.207	85.200	22.959	<b>130.366</b>
	<b>Total Land</b>	<b>409.056</b>	<b>1409.244</b>	<b>180.993</b>	<b>1999.293</b>
	<b>% of Total land</b>	<b>20.460</b>	<b>70.487</b>	<b>9.053</b>	<b>100.000</b>

**Table – 5.2 Post-mining Land use details (Area in Ha.)**

Sl. No	Land use during Mining	Land Use (ha)				Total
		Plantation	Water body	Public use	Undis-turbed	
1	External OB dump	206.000	0.000	0.000	0.000	<b>206.000</b>
2	Top soil dump	24.000	0.000	0.000	0.000	<b>24.000</b>
3	Excavation	756.000	222.053	0.000	0.000	<b>978.053</b>
4	Roads	4.000	0.000	0.000	0.000	<b>4.000</b>
5	Built up area	633.874	0.000	0.000	0.000	<b>633.874</b>
6	Green belt	23.000	0.000	0.000	0.000	<b>23.000</b>
7	Undisturbed area	130.366	0.000	0.000	0.000	<b>130.366</b>
	<b>Total</b>	<b>1777.240</b>	<b>222.053</b>	<b>0.000</b>	<b>0.000</b>	<b>1999.293</b>

### 5.3 DETAILS OF RESERVES

As on 01.04.2022, the balance coal within the approved quarry boundary is 164.93 Mt and balance OB within the approved quarry boundary is 295.86 Mcum. Based on this balance coal and OB the revised production programme is calculated to estimate the required OB quantity to produce 37.5 Mty of coal. As per the revised production programme the balance life of the project will be 05 years for peak coal production of 37.5 Mty.

### **5.3.1 OB dumps and their status-**

External dump area of 182 Ha. & Internal dump area of 192 Ha. has already been reclaimed.

### **5.3.2 Water bodies and their status –**

The balance left mined out area would be 222.053 Ha. which will act as water body after mine closure. The maximum depth of the water body would be 30.00 metre.

### **5.3.3 Maximum depth of the quarry 250.00 Metre.**

## **5.4 INFRASTRUCTURE DETAILS**

### **a) CHP**

Crushing, Inpit Coal Transportation & Coal Handling Plant:-

Necessary arrangements for coal crushing and inpit transport will be provided for coal produced in eastern sector and western sector of the project. The proposed expansion is for production of 25 Mty with revised linkage as given below:

-NTPC Seepat Power Plant	-	15.0 Mty
-STCLI Coal Washery	-	6.25 Mty
-Other Customers	-	3.75 Mty

In the expansion report (25 Mty) an option was worked out to introduce surface miners for coal winning which can produce (-) 100 mm size coal. In that case the semi-mobile crushing units may not be required for crushing of coal to (-) 100 mm size coal. Further there is a change in the linkage pattern, mode of transportation of coal by some of the consumers. In view of the above reasons the provisions made for inpit



crushing, transport and CHP in the approved expansion report (20 Mty) reports needs some revision. The revision may include some additions, some deletions etc.

Details of the proposed changes in the provisions of 20 Mty report are as given below:-

- i) Modification due to the introduction of surface miner Procurement action of 13 nos. semi mobile crushing units (9 nos inside the mine, 4 nos. on the surface) need not be procured as the surface miners will produce (- ) 100 mm size coal. Addition of 10 nos. Trucks receiving stations (8 nos. inside the mine, 2 nos. on surface) for receiving coal from the dump trucks and feeding to the inpit conveyors. Each receiving station will consist of 3 nos. of 40 Te capacity steel hoppers, vibratory feeders, below the hoppers, associated belt conveyors, other equipment, civil and structural works. This addition is due to the absence of semi-mobile crushing units.
- ii) Inpit belt conveyors P3/Q3/R3 with associated items will be installed in future.
- iii) Truck loading station (consisting of 4 x 100 Te capacity steel hoppers) vibratory feeders below them, associated belt conveyors, other equipment, civil and structural works for despatch of coal by trucks to meet the local customers demand is existing in the project.
- iv) 02 Nos. of surface bunkers of 10,000 Te capacity each in place of 20,000 Te capacity bunker due to the change in linkage pattern and to have reliable arrangement. Reclamation arrangement has also modified. Out of the two bunkers proposed one will be used exclusively for despatch of coal to NTPC and the second will be used to meet despatch needs of other customers. Flexibility has been provided for feeding of coal to both the bunkers by the 03 nos. in feed inpit conveyors.
- v) Increased in no. of surface belt conveyors due to change in the CHP system.
- vi) Additional 04 nos. of small belt conveyors in the stacker-cum-reclaimer circuits for smooth flow of coal.
- vii) Additional electronic road weigh bridges for weighing raw coal and finished coal as per the directives of CIL.

**b) Workshop**

Dipka OC Expansion will be provided with unit workshop for repair and maintenance of excavation and E&M equipment. Two tier facility has been envisaged.

- (i) Project workshop for daily maintenance, scheduled maintenance.

- (ii) Central workshop for capital repair and major over hauling

**c) Railway Siding**

The nearest railway station from where rakes will be supplied to this project is Gevra Road Railway Station. The Gevra Road railway station is serving the needs of Kusmunda OCP, Gevra OCP and Dipka OCP. In order to meet the demand of rail despatches from these projects doubling of rail line between Korba and Gevra Road railway station was completed by Indian railways. Doubling of rail line between Gevra Road Railway station and Gevra OCP (Junadih) is already completed. A single line between Gevra OCP and Dipka OCP has already been commissioned. ST-CLI coal washeries are loading coal at Dipka OCP in the rake of Wagons by means of pay loaders at ST-CLI wharf wall siding. ST-CLI is contemplating to load coal in the rake of wagons under a silo (to be constructed by them) by means of rapid loading system.

In order to meet the immediate requirements of rail despatches, a wharf wall at Dipka OCP siding has been constructed for loading of coal into rail wagon by name of hired pay loaders.

**d) Colony (no. and type of quarters), water supply arrangements (facilities available like treatment plant and its capacity) :-**

**Different type of quarters and water supply arrangement.**

Quarter Type	Number of Quarter
MQ	781
A	31
B	411
C	168
D	18
Hostel Type	50
<b>Total</b>	<b>1459</b>

Capacity of pressure filter 10000 gallon per hrs.

Water treatment plant of 2 Nos:-

1. MQ filter plant of capacity:- 500 KLD
2. C Type filter plant of capacity:- 500 KLD

Source of water:- Bore hole /tube well (100% from tube well)

Daily withdraw of water from tube well is 1000 KLD.

**e) Details of non-residential building :-**

1. Excavation work shop.
  - a. Machine shop.

- b. Dumper repair shop.
  - c. Shovel repair shed.
  - d. Office building
  - e. Canteen.
  - f. Diesel filling station.
  - g. Dumper washing plant.
- 2. Field Excavation work shop
    - a. Dozer repair shed.
    - b. Drill repair shed.
    - c. Loader repair shed.
    - d. Equipment washing plant.
  - 3. Auto section.
    - a. LMV repair shop.
    - b. LMC washing plant.
    - c. Motor repair shop.
  - 4. Main Office building.
  - 5. Water treatment plant CHP.
  - 6. Sub-Stations.
- f) **Other facilities (ETP/STP) – with capacities: -**  
One no. at excavation work shop 110KL /day

## **5.5 MEASURES FOR CONTROL OF POLLUTION**

Mitigation measures w.r.t air included in environment chapter.

### **5.5.1 Management of surface water drainage:**

The pumping system at Dipka Expansion Project has been designed to dewater the inflow of water due to precipitation falling within the active pit limit during the monsoon season to enable the mining activity to continue round the year.

General topography of the project shows that the surface drainage is not likely to pose any major problem. The surface within the mine intake area is gently undulating and local drainage pattern is towards the Lilagarh River. Pumped out water will ultimately, flow down to the Lilagarh River. The planning of dewatering of the mine has been done in such a way that the working places, haul road remains dry as far as

possible. The layout of the quarry provides suitable gradients along the quarry floors and the benches to facilitate self-drainage of water to the lowest level of the quarry.

Garland drains will be provided around the mine to keep the surface runoff water away from the quarry. Fresh drains will be made as mine advances. The drains will be connected to natural drainage of the area. The drains will be cleaned periodically to avoid over flow of the same. At present pumps operating on 3.3kv/415 V are dewatering water collected in the sump and these pumps cannot meet the future requirements.

#### **5.5.2 Mine water Discharge**

The mine water (from sump of 29, 17,500 M<sup>3</sup>/ capacity) is pumped to the settling tank where suspended solids will get settled. The clear water after sedimentation is being reused for water sprinkling, plantation, ground water recharge etc.

Workshop effluents, if any Nil capacity. - 110 KL.

#### **5.5.3 Domestic Effluent Treatment:-**

Treatment of domestic effluent, if any, capacity. - 3 MGLD.

#### **5.5.4 Water Conservation:-**

Water Storage arrangement, if any capacity. - 6.51 Crore Gallon.

#### **5.5.5 Details of surface structures proposed for dismantling (brief description)**

As per existing balance reserve i.e 164.93 Mte as on 01.04.2022 the mining activities will last at least 5 years further. Final closure plan and dismantling programme of the following structures is to be prepared 5 years before the actual closure time of the mine:

- a) Industrial / Mine structures
- b) Residential Buildings
- c) Service Buildings
- d) Telephone Cables
- e) Sub-Stations
- f) Transformers
- g) Community services
- h) Water line

- i) Water treatment plants
- j) Rly. Siding
- k) ETP/STP
- l) Power line

**5.5.6 Disposal of Plants & Machineries**

- a) Disposal or reuse of existing HEMM, Workshop and railway siding for OC:- To be decided at the time of closure.
- b) Disposal or reuse of haulage system, ventilation, CHP, workshop, and railway siding for UG - N.A.
- c) Disposal or reuse of transmission and Sub-station:-To be decided at the time of closure.

**5.5.7 Safety and security arrangement**

- a) Details of fencing around abandoned quarry indicating the length of the fencing:-  
Total length along the periphery of the quarry, will be 3.5 Km.(Approx) fencing is to be provided at the time of abandonment / closer of the mine.
- b) Providing One Time Lighting Arrangement:-  
Action for provision of lighting arrangement will be taken at the time of mine closure.
- c) Slope stability arrangement for high wall and back filled dumps:-  
Expert opinion in this respect is to be explored.

**5.6.0 Economic Repercussions of closure of mine**

Sl.No.	Particular	Proposed Disposal practice
A	Number of local employees redeployed in other projects of the company till their superannuation	As per requirement of other projects, when our mine shall be proposed for closure.
B	Approximate no. of people engaged in indirect employment/ancillary activities.	575
C	Resettlement/ redeployment of a & b.	N.A at present.
D	If no redeployment is possible then sustenance plan. a)Compensation for losing employment or income. b)Vocational training for continuance/sustenance of income level.	As there is shortage of manpower in SECL, the manpower will be re-deployed in other projects/new projects.
E	Views of society and expectation on society and	Re-deployment at nearby

expectation on closure of mine.	mines as per choice.
---------------------------------	----------------------

### 5.7.0 Time Schedule

The closure of mines involves environmental, technical, social aspect and financial assurance for implementing the post closure activities as per guidelines of Ministry of Coal. The post closure implementing activities will run for three years. The following activities will be implemented as per bar chart:

Sl. No.	Activities	Time Frame	Half Yearly					
			1	2	3	4	5	6
1.	Preparation of Survey & Disposal Report	One month						
2.	Slope Stability study for high walls and internal backfilled dumps	One month						
3.	Disposal of P&M including HEMM, CHP, W/S, Siding	2 and half years						
4.	Backfilling of mined out Area ( OC )	2 years						
5.	Dismantling of Industrial structure	2 years						
6.	Grading & dozing of high walls for OC	2 years						
7.	Fencing of quarry	2 years						
8.	Clearing of Coal Stock and Infrastructural Area.	2 years						
9.	Disposal / Dismantling of Residential colony	2 & 1/2 years						
10.	Plantation & landscaping on backfilled area.	3 years						
11.	Plantation over cleaned land of Infrastructure.	from 2 <sup>nd</sup> year						
12.	Sealing of mine entries for UG mine	from 2 <sup>nd</sup> year	Not Applicable					
13.	Environmental Monitoring	3 years						
14.	Subsidence Management for U/G	3 years	Not Applicable					
15.	Post closure subsidence monitoring for UG	3 years	Not Applicable					
16.	Any project specific activities	Nil	Not Applicable					

The manpower for implementing the above activities with time bound manner would be provided.

#### 5.7.1 Progressive closure activities:

The time scheduling is being provided on the basis of time interval of five year as required in the MoC guidelines. This period of 5 years is considered as one phase of five years and reclamation of one phase must be taken-up before commencement of

mining activity in the subsequent phase. The action plan for progressive closure activities has been provided in following figure.

**NOTE:** The reclamation activities for the Dipka concerned will be followed as per the given schedule for the balance life of the mine. The balance life of the mine is 5 years (as on 1.4.2022) and has been indicated in the 1<sup>st</sup> row of the above figure for reference.

### 5.8.0 MINE CLOSURE COST

#### 5.8.1 Existing Mine Closure Cost as per approved MCP

**Table-5.8.1: Existing Fund deposit & Reimbursement Schedule**

Sl. No.	Year	Fund Deposited in Escrow Fund	Fund to be Reimbursed (Maximum)
1	1	701.13	Nil
2	2	736.19	Nil
3	3	773.00	Nil
4	4	811.65	Nil
5	5	852.23	Nil
<b>Phase 1</b>	<b>Total</b>	<b>3874.19</b>	<b>3099.35</b>
6	6	894.84	Nil
7	7	939.58	Nil
8	8	986.56	Nil
9	9	1035.89	Nil
10	10	1087.68	Nil
<b>Phase 2</b>	<b>Total</b>	<b>4944.55</b>	<b>3955.64</b>
11	11	1142.07	Nil
12	12	1199.17	Nil
13	13	1259.13	Nil
14	14	1322.09	Nil
15	15	1388.19	Nil
<b>Phase 3</b>	<b>Total</b>	<b>6310.64</b>	<b>5048.51</b>
16	16	1457.60	Nil
17	17	1530.48	Nil
18	18	1607.00	Nil
<b>Phase 4</b>	<b>Total</b>	<b>4595.08</b>	<b>7620.96</b>
<b>TOTAL</b>		<b>19724.46</b>	<b>19724.46</b>

(+) accrued intrest as applicable

**5.8.2 Tentative Final Mine Closure Activities & Cost Break-up:**

The break-up of some major mine closure activities alongwith their tentative estimation of cost in terms of percentages of the total final mine closure cost has been indicated in Table-5.8.2 below. The detailed activity schedule for the 'Final Mine Closure Plan' would be prepared at least five years before the intended final closure of the mine along with the detailed mine closure cost break-up.

**Table 5.8.2  
TENTATIVE MINE CLOSURE ACTIVITIES & COST BREAK-UP**

Sl. No.	Activity	Mine Closure Cost (Percentage Weightage)	Remarks
A	<b>Dismantling of Structures</b>		To be included in final mine closure plan
	- Service Buildings	0.20	
	- Residential Buildings,	2.67	
	- Industrial Structures like CHP, workshop, Field Sub -Station etc.	0.30	
B	<b>Permanent Fencing of mine void and other dangerous area</b>		To be included in final mine closure plan
	• Random rubble masonry of height 1.2 metre including levelling up in cement concrete 1:6:12 in mud mortar.	1.50	
C	<b>Grading of highwall Slopes</b>		To be included in final mine closure plan.
	• Levelling & Grading of highwall slopes.	1.77	
D	<b>OB Dump Reclamation</b>		71% for progressive & 17.66% for Final mine closure.
	• Handling/Dozing of external OB dump into mine void.	88.66	
	• Bio-reclamation including soil spreading, plantation & maintenance.	0.40	
E	<b>Landscaping</b>		To be included in final mine closure plan.
	• Landscaping of the cleared land for improving its esthetic.	0.30	
F	<b>Plantation</b>		To be included in final mine closure plan.
	- Plantation over area obtained after dismantling.	0.50	
	- Plantation around fencing.	0.20	



SI. No.	Activity	Mine Closure Cost (Percentage Weightage)	Remarks
			in progressive mine closure plan.
	- Plantation over the cleared off external OB dump	0.00	To be included in progressive mine closure plan.
G	<b>Monitoring / testing of environmental parameters for three years.</b>		For three years after mine closure.
	- Air quality	0.22	
	- Water quality.	0.20	
H	<b>Entrepreneurship development (vocational and skill development training for sustainable income of affected people).</b>	0.26	Equal Weightage throughout the life of the mine
I	<b>Miscellaneous &amp; other mitigative measures.</b>	2.02	Equal Weightage throughout the life of the mine
J	<b>Manpower cost for Supervision</b>	0.80	To be included in final mine closure plan.
	<b>Total</b>	<b>100</b>	

### 5.8.3 Mine Closure Cost for OC mine

Mine closure cost will cover the following activities for which a corpus escrow account @ Rs. 9.0 lakhs per Ha. for OCP & @ Rs. 1.5 lakh per Ha for UG mine of the project area shall be opened with the coal controller organization. In case of mines having acid mine drainage, post closure acid mine drainage management cost shall also be included in the total closure cost.

The amount that has to be deposited in Escrow account acts as a security against the mine activities to be carried out for the closure of the mine is based on the project area. The Mining plan is planned for a target capacity of 37.50 MTPA with 05 years of life.

As per para 2.6 (**Escrow Account Calculation**) of MOC guideline no. F. No. 34011/28/2019-CPAM, Ministry of Coal dt 16th December 2019 & 29th May 2020, in case of the mine where escrow account is already open, the annual closure cost

is to be computed considering the total project area at the above mentioned rates minus the amount already deposited and dividing the same by the balance life of the mine in years and annual cost as arrived should be compounded @5% annually.

The total Mining lease Area as per the existing EC is 1999.293 Ha

As per the latest guidelines of MOC, the amount to be deposited in Escrow account is evaluated as per detailed below:

**TABLE-5.8.3: EVALUATION OF REVISED MINE CLOSURE AMOUNT**

A	BASE RATE/HA IN LAKH RS AS ON 1st APR 2019	9
B	WPI AS ON 01.04.2019	121.1
C	MCP LAND IN HA	1999.293
D	WPI AS ON Feb 2022*	145.3
E	ESCALATION FACTOR (D/B)	1.1998348
F	RATE/HA IN LAKH Rs (E * A)	10.799
G	Total Corpus in Lakh Rs (F * C)	21589.3927
H	Balance life in years as on 01.04.2022	5
I	Amount Deposited till 31.03.2022-lakh Rs	11159.98
J	Final corpus amount in lakh Rs (G-I)	10429.4127
K	First Year amount in lakh Rs(J/H)	2085.88254
L	Total amount to be deposited in balance years in <b>Lakh Rs.</b>	<b>11525.818</b>
	• WPI of Mar 2022 & Apr 2022 are provisional	

Year	Year No	Fund Schedule in Lakh Rs	Fund to be Reimbursed (Maximum) in lakh Rs
<b>EXISTING MCP DEPOSIT SCHEDULE UPTO 2021-22</b>			
2020-21		1142.07	
2021-22		1199.17	
<b>REVISED MCP DEPOSIT SCHEDULE W.E.F 2022-23</b>			
2022-23	1	2085.883	
2023-24	2	2190.177	
2024-25	3	2299.686	
<b>Progressive</b>	<b>Phase-1</b>	<b>6575.745</b>	50% of balance amount at the end of Phase-1
2025-26	4	2414.670	
2026-27	5	2535.403	
<b>MC1</b>			
<b>MC2</b>			
<b>MC3</b>			
<b>Final Phase</b>		<b>4950.073</b>	100% of balance amount at the end of final Phase
<b>Grand TOTAL</b>		<b>11525.818</b>	

**5.8.4 Tentative Final Mine Closure Activities & Cost Break-up:**

The break-up of some major mine closure activities alongwith their tentative estimation of cost in terms of percentages of the total final mine closure cost has been indicated below. The detailed activity schedule for the 'Final Mine Closure Plan' would be prepared at least five years before the intended final closure of the mine along with the detailed mine closure cost break-up.

**TENTATIVE MINE CLOSURE ACTIVITIES & COST BREAK-UP****Type of mine:** Open cast**Production Capacity:** 37.5 MTY**Project area to be acquired:** 1999.293 Ha.

<b>COST OF ACTIVITIES TO BE TAKEN UP FOR PROGRESSIVE CLOSURE OF MINE</b>			
<b>Head</b>	<b>PARAMETERS</b>	<b>Unit</b>	<b>Amount "Rs. Cr"</b>
Progressive closure	Water quality management	LS	0.99
	Air quality management	LS	1.78
	*Waste Management	LS	0.79
	Barbed wire fencing	LS	0.21
	Barbed wire fencing around the Pit	LS	0.21
	Filling of Void - Rehandling of Crown Dump	LS	1.99
	Top Soil management	LS	2.47
	Technical I Reclamation of Mined out of land and OB Dump	LS	16.91
	Biological Reclamation of Mined out of land and OB Dump , Plantation over virgin area including green belt	LS	2.22
	Manpower Cost and supervision	LS	1.98
	Toe Wall around the dump	LS	0.32
	Garland drain	LS	0.39
	Garland Drain around the dump	LS	0.26
	Any other Activity	LS	0.33
Dismantling of Infrastructure & Disposal/ rehabilitation of Mining machinery	Dismantling of workshop	LS	7.00
	Rehabilitation of the dismantled Facilities	LS	
	Dismantling of pumps and Pipes/ other facilities	LS	
	Dismantling of stowing bunker, provisioning of pumps for bore well pumping arrangement	LS	
	Dismantling of UG equipment	LS	
	Rearranging water pipeline to dump top park/ Agricultural land	LS	
	Dismantling of Power lines	LS	
Safety and security	Barbed wire fencing	LS	0.21
	Barbed wire fencing around the Pit	LS	0.40
	Barbed wire fencing with masonry pillars	LS	0.13
	Concrete wall with Masonry pillars around the pit	LS	
	Securing air shaft and installation of bore well pump	LS	
	Securing of Incline	LS	
	Concrete wall fencing around the water body	LS	1.70
	Boundary wall around the water body		
	Stabilisation! viz benching, pitching etc) of side walls of the water body		
Toe Wall around the dump	LS	0.74	

<b>COST OF ACTIVITIES TO BE TAKEN UP FOR PROGRESSIVE CLOSURE OF MINE</b>			
Head	PARAMETERS	Unit	Amount "Rs. Cr"
	Garland drain	LS	1.81
	Garland Drain around the dump		
	MISC SAFETY WORKS	LS	0.63
Technical and Biological Reclamation of Mined out of land and OB Dump	Drainage Channel from main Ob dump	LS	1.17
	Filling of Void	LS	24.92
	Top Soil management	LS	3.86
	OB Rehandling for backfilling	LS	24.92
	Terracing, blanketing with soil and vegetation of External OB Dump	LS	2.89
	Peripheral road, gates, view point, cemented steps on bank	LS	0.94
	Expenditure on development of Agricultural land	LS	0.45
	Landscaping and Plantation	LS	3.57
Post Closure management and supervision	Power Cost	LS	0.39
	Post Mining Water quality management	LS	0.77
	Post Mining Air quality management	LS	1.55
	Subsidence monitoring for 5 years	LS	0.00
	Waste Management	LS	0.77
	Manpower Cost and supervision	LS	0.39
Others	Entrepreneurship development (vocational/skill development training for sustainable income of affected people	LS	0.74
	Golden Handshake / Retrenchment benefits to 100 employees of OC	LS	4.45
	Golden Handshake / Retrenchment benefits to 200 employees of UG	LS	
	Onetime financial grant to societies / institutions /organisations which is dependent upon the project;	LS	
	Provide jobs in other mines of the company	LS	
Continuation of other services like running of schools etc.	LS		
Total	COST FOR THE ENTIRE LIFE (Prog & Final)		115.26
Total	TOTAL ANNUAL COST		19.21
Total	PROGRESSIVE COST FOR THE ENTIRE LIFE		32.88
Total	ANNUAL PROGRESSIVE COST		5.48

## 5.9 COMMITMENT

The project proponent i.e SECL is committed to comply with the Mine closure guidelines.

**STATUS OF TECHNICAL & BIOLOGICAL LAND RECLAMATION DETAILS OF DIPKA EXPANSION PROJECT, DIPKA AREA, SECL (As on 30.09.2023)**

(A) Area: Dipka  
 (B) Unit/OCP: Dipka Expansion Project  
 (C) Approved EC Capacity (MTY): 37.5 MTY

**TECHNICAL & BIOLOGICAL RECLAMATION (As on 30.09.2023)**

Total quarriable area of the project as per approved EMP D	INTERNAL DUMP/ BACKFILLED AREA DETAILS (HA)					EXTERNAL OB DUMP DETAILS (HA)				TOTAL RECLAIMED AREA (HA)				
	Void to be left at the closure of the project as per EMP E	Total area excavated F	Project area not required to be backfilled G-(E*F)/D	Total area technically reclaimed/ha ckkilled H	Balance area to be technically reclaimed/ha ckkilled I+*F-G-H	Area already biologically reclaimed J	Balance area to be biologically reclaimed K-F-G-I	Total area of external OB dump L	Area of External OB dump technically reclaimed M	Balance area of External OB dump to be technically reclaimed N-L-M	Area already biologically reclaimed O	Balance area to be biologically reclaimed P+I-O	Total technically reclaimed area H+M	Total biologically reclaimed area J+O
1002.053	222.053	751.87	166.613	223	362.257	127.66	457.592	206	204.26	1.74	204.26	1.74	427.26	331.92

*[Signature]*  
 Coillery Manager,  
 Dipka Expansion Project

*[Signature]*  
 Area Survey Officer,  
 Dipka Area

*[Signature]*  
 Project Survey Officer,  
 Dipka Expansion Project

*[Signature]*  
 General Manager (M)  
 Dipka Expansion Project

## Details of Plantation in respect of Dipka OCP

Year	Plain	Avenue	Outside Mine lease	Internal Dump		External Dump		Total dump	Total plantation	Grass beds
				Dump No.	Plantation	Dump No.	Plantation			
1992	19000	0	0	-	0	0	0	0	19000	0
1993	25800	0	0	-	0	-	0	0	25800	0
1994	10000	0	0	-	0	-	0	0	10000	0
1995	78500	6000	0	-	0	-	0	0	84500	0
1996	154000	16500	0	DN 4	22000	DN 6&7	3000	25000	195500	0
1997	101000	0	0	-	0	-	0	-	101000	0
1998	64400	20600	0	DN 4	7000	DN 3	8000	15000	100000	0
1999	6675	21325	0	-	0	DN 3	28000	28000	56000	7000
2000	32550	0	0	DN 4	10000	-	0	10000	42550	15000
2001	0	0	0	DN 4	4000	DN 6&7	40000	64000	64000	7000
						DN 5	20000			
2002	5000	0	0	DN 4	4000	DN 1&2	36000	40000	45000	6671
2003	7200	2800	0	DN 4	1000	DN 1&2	45000	49000	59000	15000
						DN 3	3000			
2004	16500	0	0	-	0	DN 1&2	83500	83500	100000	25000
2005	24000	0	0	-	0	DN 1&2	6500	10500	34500	10500
						Coal Stock Slope	4000			
2006	44500	0	0	-	0	DN 6&7	42500	42500	87000	30375
2007	50500	10000	0	-	0	-	0	0	60500	0
2008	66000	0	0	-	0	-	0	0	66000	0
2009	23000	0	0	IDNFB	30000	-	0	30000	53000	0
2010	200	0	0	-	0	-	0	0	200	0
2011	0	0	0	IDNFB	9350	DN 1&2	4600	13950	13950	7000
2012	2375	0	0	-	0	DN 1&2	11625	11625	14000	6000
2013	11000	0	0	IDNFB	16106	DN 1&2	30985	95100	106100	19500
						DN 6&7	48009			
2014-15	47250	0	0	IDNFB	23000	DN 6&7	66500	99000	146250	0
						DN 1&2	9500			
2015-16	54000	0	0	-	0	DN 6&7	80000	125000	179000	0
						DN 1&2	45000			
2016-17	42250	0	0	-	0	-	0	-	42250	0
2017-18	53272	0	0	-	54400	-	19050	73450	126722	20000
2018-19	19350	0	0	IDNCS & IDNFB	30800	DN 6&7	58410	89210	108560	33812
2019-20	1,27,625	0	0	IDNCS-1 & old Dipka Dump Slope	23,040	-	0	23,040	1,50,665	10,320
2020-21	0	0	0	Jingathpur In-pit Dump & Old Dipka Dump Slope	35,500	DN 6&7	10,000	45,500	45,500	11,000
2021-22	23,800	0	0	Jingathpur Dump, Saini k Dump	52,325	Beltikiri Dump, DN1&2	24,587	76,912	1,00,712	44,100
2022-23	24700	0	0	-	41000	-	14300	55300	80000	62700
2023-24	0	0	190000	-	0	-	30000	30000	220000	50000
<b>TOTAL</b>	<b>1134447</b>	<b>77225</b>	<b>190000</b>		<b>363521</b>		<b>772066</b>	<b>1135587</b>	<b>2537259</b>	

[See rules 115 (2)]

**Pollution Under Control Certificate**Authorised By  
Government of ChhattisgarhDate : 06/04/2022  
Time : 12:27:45 PM  
Validity upto : 05/04/2023Certificate SL No. :  
Registration No. : CG01100020000277  
Date of Registration : CG12AR0401  
Month & Year of Manufacturing : 30/Mar/2017  
Valid Mobile Number : March-2017  
Emission Norms : \*\*\*\*\*4770  
Fuel : BHARAT STAGE IV  
PUC Code : DIESEL  
GSTIN : CG0110002  
Fees : Rs.80.00  
MIL observation : (GST to be paid extra as applicable)  
NoVehicle Photo with Registration plate  
60 mm x 30 mm

Sr. No.	Pollutant (as applicable)	Units (as applicable)	Emission limits	Measured Value (upto 2 decimal places)
1	2	3	4	5
Idling Emissions	Carbon Monoxide (CO)	percentage (%)		
	Hydrocarbon, (THC/HC)	ppm		
High idling emissions	CO	percentage (%)		
	RPM	RPM	2500 ± 200	
	Lambda	-	1 ± 0.03	
Smoke Density	Light absorption coefficient	1/metre	1.62	1.32

This PUC certificate is system generated through the national register of motor vehicles and does not require any signature.

Note : 1. Vehicle owners to link their mobile numbers to registered vehicle by logging to <https://puc.parivahan.gov.in>

Authorised Signature with stamp of PUC operator  
60mm x 20 mm

## Under Control Certificate

[See rules 115 (2)]

Issued By :  
Government of ChhattisgarhDate : 06/04/2022  
Time : 13:37:00 PM  
Validity upto : 05/10/2022

Certificate SL. No. :  
 Registration No. : CG01100020000283  
 Date of Registration : CG12AR0403  
 Month & Year of Manufacturing : 30/Mar/2017  
 Valid Mobile Number : March-2017  
 Emission Norms : \*\*\*\*\*4770  
 Fuel : BHARAT STAGE III  
 PUC Code : DIESEL  
 GSTIN : CG0110002  
 Fees :  
 Rs.80.00  
 (GST to be paid extra as applicable)  
 MIL observation : No

Vehicle Photo with Registration plate  
 60 mm x 30 mm



Sr. No.	Pollutant (as applicable)	Units (as applicable)	Emission limits	Measured Value (upto 2 decimal places)
1	2	3	4	5
Idling Emissions	Carbon Monoxide (CO)	percentage (%)		
	Hydrocarbon, (THC/HC)	ppm		
High idling emissions	CO	percentage (%)		
	RPM	RPM	2500 ± 200	
	Lambda	-	1 ± 0.03	
Smoke Density	Light absorption coefficient	1/metre	2.45	1.41

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Note : 1. Vehicle owners to link their mobile numbers to registered vehicle by logging to <https://puc.parivahan.gov.in>

Authorised Signature with stamp of PUC operator  
 60mm x 20 mm



## Under Control Certificate

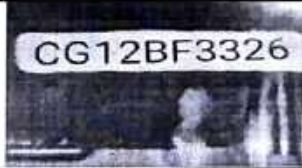
Issued By :  
Department of Chhattisgarh

Date : 24/05/2023  
Time : 18:58:12 PM  
Validity upto : 23/05/2024



Certificate SL. No. :  
Registration No. : CG01100020005411  
Date of Registration : CG12BF3326  
Month & Year of Manufacturing : 27/Nov/2021  
Valid Mobile Number : August-2021  
Emission Norms : \*\*\*\*\*2484  
Fuel : BHARAT STAGE VI  
PUC Code : DIESEL  
GSTIN : CG0110002  
Fees :  
Rs.150.00  
(GST to be paid extra as applicable)  
MIL observation : No

Vehicle Photo with Registration plate  
60 mm x 30 mm



Sr. No.	Pollutant (as applicable)	Units (as applicable)	Emission limits	Measured Value (upto 2 decimal places)
1	2	3	4	5
Idling Emissions	Carbon Monoxide (CO)	percentage (%)		
	Hydrocarbon, (THC/HC)	ppm		
High idling emissions	CO	percentage (%)		
	RPM	RPM	2500 ± 200	
	Lambda	-	1 ± 0.03	
Smoke Density	Light absorption coefficient	1/metre	0.7	0.42

This PUC certificate is system generated through the national register of motor vehicles and does not require any signature.

Note : 1. Vehicle owners to link their mobile numbers to registered vehicle by logging to <https://puc.parivahan.gov.in>

Authorised Signature with stamp of PUC operator  
60mm x 20 mm

## Under Control Certificate

Issued by :  
Department of Chhattisgarh

Issue Date : 24/05/2023  
Time : 18:57:13 PM  
Validity upto : 23/05/2024



Certificate SL. No. : CG01100020005410  
Registration No. : CG12BB1872  
Date of Registration : 02/Mar/2020  
Month & Year of Manufacturing : December-2019  
Valid Mobile Number : \*\*\*\*\*2484  
Emission Norms : BHARAT STAGE IV  
Fuel : DIESEL  
PUC Code : CG0110002  
GSTIN :  
Fees : Rs.150.00  
(GST to be paid extra as applicable)  
NIL observation : No

Vehicle Photo with Registration plate  
60 mm x 30 mm



Sr. No.	Pollutant (as applicable)	Units (as applicable)	Emission limits	Measured Value (upto 2 decimal places)
1	2	3	4	5
Idling Emissions	Carbon Monoxide (CO)	percentage (%)		
	Hydrocarbon, (THC/HC)	ppm		
High idling emissions	CO	percentage (%)		
	RPM	RPM	2500 ± 200	
	Lambda	-	1 ± 0.03	
Smoke Density	Light absorption coefficient	1/metre	1.62	1.09

This PUC certificate is system generated through the national register of motor vehicles and does not require any signature.

Note : 1. Vehicle owners to link their mobile numbers to registered vehicle by logging to <https://puc.parivahan.gov.in>

Authorised Signature with stamp of PUC operator  
60mm x 20 mm

## Under Control Certificate

Issued By :  
Department of Chhattisgarh

Date : 06/04/2022  
Time : 14:16:45 PM  
Validity upto : 05/04/2023



Certificate SL. No. :  
Registration No. : CG01100020000296  
Date of Registration : CG10AS2916  
Month & Year of Manufacturing : 05/Apr/2019  
Valid Mobile Number : January-2019  
Emission Norms : \*\*\*\*\*4770  
Fuel : BHARAT STAGE IV  
PUC Code : DIESEL  
GSTIN : CG0110002  
Fees :  
MIL observation : Rs.150.00  
(GST to be paid extra as applicable)  
No

Vehicle Photo with Registration plate  
60 mm x 30 mm



Sr. No.	Pollutant (as applicable)	Units (as applicable)	Emission limits	Measured Value (upto 2 decimal places)
1	2	3	4	5
Idling Emissions	Carbon Monoxide (CO)	percentage (%)		
	Hydrocarbon, (THC/HC)	ppm		
High idling emissions	CO	percentage (%)		
	RPM	RPM	2500 ± 200	
	Lambda	-	1 ± 0.03	
Smoke Density	Light absorption coefficient	1/metre	1.62	1.18

This PUC certificate is system generated through the national register of motor vehicles and does not require any signature.

Note : 1. Vehicle owners to link their mobile numbers to registered vehicle by logging to <https://puc.parivahan.gov.in>

Authorised Signature with stamp of PUC operator  
60mm x 20 mm

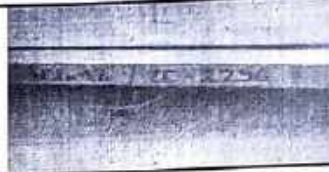
## Under Control Certificate

Date : 02/06/2022  
 Time : 14:27:12 PM  
 Validity upto : 01/12/2022



Certificate SL. No. : CG01100020000875  
 Registration No. : CG12ZC2296  
 Date of Registration : 12/Aug/1998  
 Month & Year of Manufacturing : -1998  
 Valid Mobile Number : \*\*\*\*\*2484  
 Emission Norms : BHARAT STAGE I  
 Fuel : DIESEL  
 PUC Code : CG0110002  
 GSTIN :  
 Fees : Rs.150.00  
 (GST to be paid extra as applicable)  
 MIL observation : No

Vehicle Photo with Registration plate  
 60 mm x 30 mm



Sr. No.	Pollutant (as applicable)	Units (as applicable)	Emission limits	Measured Value (upto 2 decimal places)
1	2	3	4	5
Idling Emissions	Carbon Monoxide (CO)	percentage (%)		
	Hydrocarbon, (THC/HC)	ppm		
High Idling emissions	CO	percentage (%)		
	RPM	RPM	2500 ± 200	
	Lambda	-	1 ± 0.03	
Smoke Density	Light absorption coefficient	1/metre	2.45	2.17

This PUC certificate is system generated through the national register of motor vehicles and does not require any signature.

Note : 1. Vehicle owners to link their mobile numbers to registered vehicle by logging to <https://puc.parivahan.gov.in>

Authorised Signature with stamp of PUC operator  
 60mm x 20 mm

## Pollution Control Certificate

Date : 24/05/2023  
 Time : 18:59:48 PM  
 Validity upto : 23/11/2023



Certificate SL. No. : CG01100020005412  
 Registration No. : CG12C0357  
 Date of Registration : 07/Jun/2003  
 Month & Year of Manufacturing : -2003  
 Valid Mobile Number : \*\*\*\*\*2484  
 Emission Norms : EURO 3  
 Fuel : DIESEL  
 PUC Code : CG0110002  
 GSTIN :  
 Fees : Rs.150.00  
 (GST to be paid extra as applicable)  
 MIL observation : No

Vehicle Photo with Registration plate  
 60 mm x 30 mm



Sr. No.	Pollutant (as applicable)	Units (as applicable)	Emission limits	Measured Value (upto 2 decimal places)
1	2	3	4	5
Idling Emissions	Carbon Monoxide (CO)	percentage (%)		
	Hydrocarbon, (THC/HC)	ppm		
High idling emissions	CO	percentage (%)		
	RPM	RPM	2500 ± 200	
Smoke Density	Lambda		1 ± 0.03	
	Light absorption coefficient	l/metre	2.45	2.02

This PUC certificate is system generated through the national register of motor vehicles and does not require any signature.

Note : 1. Vehicle owners to link their mobile numbers to registered vehicle by logging to <https://puc.parivahan.gov.in>

Authorised Signature with stamp of PUC operator  
 60mm x 20 mm

South Eastern Coalfields Limited (A Mini Ratna Company)

कार्यालय, महाप्रबंधक दीपका क्षेत्र

पो. आ. - दीपका, जिला - कोरबा, छग

पिन - 495452

फोन: 07815 - 239011, 263300, 263301

फैक्स: 07815-239002



South Eastern Coalfields Limited

(A Mini Ratna Company)

Office of the General Manager, Dipka Area

PO - DIPKA, DIST- KORBA (C.G.)

Pin - 495452

Phone : 07815- 239011, 263300, 263301

Fax: 07815-239002

Ref. No. SECL/GM/DA/DGM(C)/LOA/23/ 03

प्रति,

Dated: 04/04/23

Sasa Enterprises PAN No. JZLPK5675Q

Laxman VanSanjay Nagar, Ward-11 Nai Basti, Sai Enclave, Korba

Mobl. No. : 7898594988

Email : ak7808688@gmail.com

Dist. - Korba(CG)

विषय:- Letter of acceptance for the work "Assistance required for manual cleaning of drain and other misc. works during monsoon period at Railway Siding of Dipka Expn. Project of Dipka Area."

संदर्भ:- (1). NIT No. SECL/GM/DA/DGM(C)/e-tender/22-23/127 dt. 26/01/23

(2). Tender ID : 2023\_SECL\_269102\_1

महोदय,

With reference to your above quotation offer, this is to inform you that your offer has been accepted by the management for a total value of {Rs. 2,39,880.00 + Rs. 43,178.40 (GST to be paid by bidder)} = Rs. 2,83,058.40 (Rupees Two lakh eighty three thousand fifty eight & paise forty) only.

An amount of Rs. 7 100.00 (Rupees Seven thousand one hundred) deposited by you vide Ref. No. 278574915334, towards Earnest money is being adjusted in performance security. Further you have to deposit a sum of Rs. 1,392.00 only within 21 (Twenty one) days from the issuance of LOA to make total performance security deposit 3% of the award value/contract value Rs. 8,492.00 only as per security deposit clause No. 4.2 & 4.8 of tender, so that detailed work order may be issued otherwise this shall constitute sufficient ground for cancellation of the award of work and forfeiture of the bid security. All items are identified as ALR item and shall be operated during execution as per tender condition of ALR clause no. 5.6. & no AHR item.

That as per clause no. 1 titled as 'Definition' and sub clause (vii) of GENERAL TERMS & CONDITIONS of contract, the Engineer in charge for this work will be C. Manager(C)/C, Dipka Expn. Project. You are requested to contact him for commencing the work. The work will have to be completed within a period of 120 Days from the date of commencement as per clause no. 6 of conditions of contract.

You are requested to submit the GST registration certificate, GST clearance certificate, PAN No. & partnership deed (if required), power of attorney, Site handover, Bar chart/program Labour Licence as per contract labour certificate, bar chart Group Insurance policy as per clause No. 13(xxvi) of General Terms & Conditions of NIT, CMPF/EPF registration certificate etc.

भवदीय,

*[Signature]*  
उप महाप्रबंधक (सिविल) 4/4  
दीपका क्षेत्र

प्रतिलिपी:-

1) GM/Dipka Area.

2) SO(M)/Dipka Area

3) AFM/Dipka Area- BC No. RV/Cv/OCW/32/311/9311/22-23 dt. 06/03/23 for Rs. 35,000.00

RV/Cv/OCW/32/311/9311/A/23-24 dt. 06/03/23 for Rs. 2,48,058.00

4) APM/Dipka Area

5) C. Manager(C)/C, TC, Dipka Area

6) C. Manager(C)/C, Dipka Expn.

→ You are advised to ensure that the contractor should submit the balance PSD within due time.

7) ALC/Bilaspur, Torwa Naka, Bilaspur.

8) Labour Enforcement Officer (Central), Torwa Naka, Main road, Bilaspur

9) D. A.(C), Dipka Area.

Name of work:- Assistance required for manual cleaning of drain and other misc. works during monsoon period at Railway Siding of Dipka Expn. Project of Dipka Area ✓

SI No	Item Code	Description	Unit	Quantity	Rate	Amount
1		Manual cleaning of drain and other misc. day to day work near railway siding including tools and plants during monsoon period as per instruction of Engineer in charge (Contractor has to engage 06 nos. (Six) unskilled labours per day).	day	120.00	1999.00	239880.00
		Total				239880.00
		GST payable by the bidder				43178.40
		Total Award value				283058.40
		GST payable by the SECL				0.00
		Total				283058.40

(Rupees Two lakh eighty three thousand fifty eight & paisa forty) only.

  
Dy. General Manager (Civil) 4/4  
SECL: Dipka Area

साउथ ईस्टर्न कोलफील्ड्स लिमिटेड

(एक मिनिरतल कम्पनी)

कार्यालय, महाप्रबंधक दीपका क्षेत्र

पो. आ - दीपका, जिला - कोरबा, छग

पिन - 495452

फोन: 07815 - 239011, 263300, 263301

फैक्स: 07815-239002



South Eastern Coalfields Limited

(A Mini Ratna Company)

Office of the General Manager, Dipka Area

PO - DIPKA, DIST- KORBA (C.G.)

Pin - 495452

Phone : 07815- 239011, 263300, 263301

Fax: 07815-239002

Ref. No. SECL /GM/DA/DGM(C)/LOA/23/ 32

Dated: 20/04/23

प्रति,

Rakesh Kumar Enterprises PAN No. AMOPA1046L ✓

Katghora Road Dipka ✓

Mobl. : 7898594988 ✓

Email: rakeshkumarenterprises2011@gmail.com ✓

Dist. - Korba(CG)

विषय:—Letter of acceptance for the work "Removal of earth/slush/muck from old CHP to feeder breaker no. 3/4 and from WB no. 4 to WB No. 10 of Dipka Expn. Project of Dipka Area." ✓

संदर्भ:— (1). NIT No. SECL/GM/DA/DGM(C)/e-tender/22-23/137 dt. 22/02/23 ✓

(2). Tender ID : 2023\_SECL\_272369\_1 ✓

महोदय,

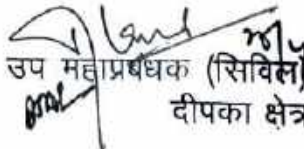
With reference to your above quotation offer, this is to inform you that your offer has been accepted by the management for a total value of {Rs. 2,02,824.75 + Rs. 36,508.45(GST to be paid by bidder)}= Rs. 2,39,333.20 (Rupees Two lakh thirty nine thousand three hundred thirty three & paisa twenty) only.

An amount of Rs. 3,800.00 (Rupees Three thousand eight hundred) deposited by you vide Ref. No. 281924925161, towards Earnest money is being adjusted in performance security. Further you have to deposit a sum of Rs. 3,380.00 only within 21 (Twenty one) days from the issuance of LOA to make total performance security deposit 3% of the award value/contract value Rs. 7,180.00 only as per security deposit clause No. 4.2 & 4.8 of tender, so that detailed work order may be issued otherwise this shall constitute sufficient ground for cancellation of the award of work and forfeiture of the bid security. All items are identified as ALR item and shall be operated during execution as per tender condition of ALR clause no. 5.6. & no AHR item. ✓

That as per clause no. 1 titled as 'Definition' and sub clause (vii) of GENERAL TERMS & CONDITIONS of contract, the Engineer in charge for this work will be C. Manager(C)/I/C, Dipka Expn. Project. You are requested to contact him for commencing the work. The work will have to be completed within a period of 07 Days from the date of commencement as per clause no. 6 of conditions of contract. ✓

You are requested to submit the GST registration certificate, GST clearance certificate, PAN No. & partnership deed (if required), power of attorney, Site handover, Bar chart/program Labour Licence as per contract labour certificate, bar chart Group Insurance policy as per clause No. 13(xxvi) of General Terms & Conditions of NIT, CMPF/EPF registration certificate etc. ✓

भवदीय,

  
उप महाप्रबंधक (सिविल)  
दीपका क्षेत्र

प्रतिलिपी:—

- 1) GM/Dipka Area.
- 2) SO(M)/Dipka Area
- 3) AFM/Dipka Area- BC No. RV/Cv/OCW/05/03/903/23-24 dt. 17/04/23 for Rs. 2,39,333.00
- 4) APM/Dipka Area
- 5) C. Manager(C)/I/C, TC, Dipka Area
- 6) C. Manager(C)/I/C, Dipka Expn. → You are advised to ensure that the contractor should submit the balance PSD within due time.
- 7) ALC/Bilaspur, Torwa Naka, Bilaspur
- 8) Labour Enforcement Officer (Central), Torwa Naka, Main road, Bilaspur.
- 9) D A (C), Dipka Area.



Name of work:- Removal of earth/slush/muck from old CHP to feeder breaker no. 3/4 and from WB no. 4 to WB No. 10 of Dipka  
Expn. Project of Dipka Area

Sl No	Item Code	Description	Unit	Quantity	Rate	Amount
1		Earth work in excavation over area cutting in foundation by mechanical means i.e. disposal of excavated earth within lead up to 1.00Km and all lift as per instruction of Engineer in charge.	cum	5481.75	37.00	202824.75
		Total				202824.75
		GST payable by the bidder				36508.48
		Total Award value				239333.23
		GST payable by the SECL				0.00
		Total				239333.23

(Rupees Two lakh thirty nine thousand three hundred thirty three & paisa twenty) only.

  
Dy. General Manager (Civil)  
SECL: Dipka Area

साउथ ईस्टर्न कोलफील्ड्स लिमिटेड  
(एक मिनिरल कम्पनी)

कार्यालय, महाप्रबंधक दीपका क्षेत्र  
पो आ - दीपका, जिला-कोरबा, छग

पिन - 495452

फोन: 07815 - 239011, 263300, 263301

फैक्स: 07815-239002



South Eastern Coalfields Limited

(A Mini Ratna Company)

Office of the General Manager, Dipka Area

PO - DIPKA, DIST- KORBA (C.G.)

Pin - 495452

Phone : 07815- 239011, 263300, 263301

Fax: 07815-239002

Ref. No. SECL/GM/DA/DGM(C)/LOA/23/ 33

Dated: 20/04/23

प्रति,

B. B. Rai & Construction PAN No. AGCPR5034R

LIG-166, Maharana Pratap Nagar Korba

Mobil: 9425548882

Email: bbrai888@gmail.com

Dist. - Korba (CG)

विषय:- Letter of acceptance for the work "Contractual assistance required for manual cleaning of culverts at different locations of Dipka Expn. project of Dipka Area."

संदर्भ:- (1). NIT No. SECL/GM/DA/DGM(C)/e-tender/22-23/126 dt. 22/01/23

(2). Tender ID : 2023\_SECL\_268666\_1

महोदय,

With reference to your above quotation offer, this is to inform you that your offer has been accepted by the management for a total value of {Rs. 3,94,800.00 + Rs. 71,064.00 (GST to be paid by bidder)}= Rs. 4,65,864.00 (Rupees Four lakh sixty five thousand eight hundred sixty four) only.

An amount of Rs. 11,800.00 (Rupees Eleven thousand eight hundred) deposited by you vide Ref. No. 277946913572, towards Earnest money is being adjusted in performance security. Further you have to deposit a sum of Rs. 2,175.00 only within 21 (Twenty one) days from the issuance of LOA to make total performance security deposit 3% of the award value/contract value Rs. 13,975.00 only as per security deposit clause No. 4.2 & 4.8 of tender, so that detailed work order may be issued otherwise this shall constitute sufficient ground for cancellation of the award of work and forfeiture of the bid security. All items are identified as ALR item and shall be operated during execution as per tender condition of ALR clause no. 5.6. & no AHR item.

That as per clause no. 1 titled as 'Definition' and sub clause (vii) of GENERAL TERMS & CONDITIONS of contract, the Engineer in charge for this work will be C. Manager(C)/C, Dipka Expn. Project. You are requested to contact him for commencing the work. The work will have to be completed within a period of 120 Days from the date of commencement as per clause no. 6 of conditions of contract.

You are requested to submit the GST registration certificate, GST clearance certificate, PAN No. & partnership deed (if required), power of attorney, Site handover, Bar chart/program Labour Licence as per contract labour certificate, bar chart Group Insurance policy as per clause No. 13(xxvi) of General Terms & Conditions of NIT, CMPF/EPF registration certificate etc.

भवदीय,

उप महाप्रबंधक (सिविल)  
दीपका क्षेत्र

प्रतिलिपी:-

- 1) GM/Dipka Area.
- 2) SO(M)/Dipka Area
- 3) AFM/Dipka Area- BC No. RV/Cv/OCW/06/12/912/23-24 dt. 17/04/23 for Rs. 4,65,864.00
- 4) APM/Dipka Area
- 5) C. Manager(C), I/C, TC, Dipka Area
- 6) C. Manager(C)/C, Dipka Expn. → You are advised to ensure that the contractor should submit the balance PSD within due time.
- 7) ALC/Bilaspur, Torwa Naka, Bilaspur.
- 8) Labour Enforcement Officer (Central), Torwa Naka, Main road, Bilaspur.
- 9) D.A.(C), Dipka Area.

Name of work:- Contractual assistance required for manual cleaning of culverts at different locations of Dipka Expn.  
Project of Dipka Area.

Sl No	Item Code	Description	Unit	Quantity	Rate	Amount
1		Manual cleaning of culverts across main nallah and coal transportation road of mine as per instruction of Engineer in charge at Dipka Expn. Project of DA. (Contractor has to engage 10(Ten) Nos. unskilled labour per day)	Day	120.00	3290.00	394800.00
		Total				394800.00
		GST payable by the bidder				71064.00
		Total Award value				465864.00
		GST payable by the SECL				0.00
		Total				465864.00

(Rupees Four lakh sixty five thousand eight hundred sixty four) only.

*[Signature]*  
Dy. General Manager (Civil) 20/07  
SECL, Dipka Area

सुभाष ईस्टर्न कोलफील्ड्स लिमिटेड  
(एक मिनिरत्न कम्पनी)  
कार्यालय, महाप्रबंधकदीपका क्षेत्र  
पो आ - दीपका, जिला-कोरबा, छग  
पिन - 495452  
फोन: 07815 - 239011, 263300, 263301  
फैक्स: 07815-239002



South Eastern Coalfields Limited  
(A Mini Ratna Company)  
Office of the General Manager, Dipka Area  
PO - DIPKA, DIST- KORBA (C.G.)  
Pin - 495452  
Phone : 07815- 239011, 263300, 263301  
Fax: 07815-239002

Ref. No. SECL/GM/DA/DGM(C)/LOA/WO/23/ 34

Dated: 20/04/23

प्रति,

Rakesh Kumar Enterprises ✓

Katghora Road Dipka ✓

Mobl. : 7898594988 ✓

Email: rakeshkumarenterprises2011@gmail.com ✓

Dist. - Korba (CG)

Sub: - LOA/WO for the work "Desilting as well as deepening of Pragati Nagar pond at Pragati Nagar colony of Dipka Area." ✓

Ref: - (1). NIT No. SECL/GM/DA/DGM(C)/e-tender/22-23/131 dt. 03/02/2023 ✓

(2). Tender ID: 2023\_SECL\_269899\_1 ✓

Dear Sir,

In pursuance of the above referred tender notice and your offer, we are pleased to award the subject work in your favour for a total value of Rs. 39,50,336.35 + Rs. 7,11,060.53 (GST to be paid by bidder) = Rs. 46,61,396.78 (Rupees Forty six lakh sixty one thousand three hundred ninety six & paisa seventy eight), only as per enclosed bill of quantities as Annexure-A, subject to the following terms and conditions

1. All the tender terms and conditions shall govern the award of this work & will form the part of this work order. ✓
2. That as per clause no. 1 titled as 'Definition' and sub clause (vii) of GENERAL TERMS & CONDITIONS of contract, the Engineer in charge for this work will be C. Manager(C)/C. TA, Dipka Area. You are requested to contact him for commencing the work. The work will have to be completed within a period of 45 Days from the date of commencement as per clause no. 6 of conditions of contract.
3. Income Tax @ 2% of the gross value of the work done plus surcharge shall be recovered as per rule from running and final bills. ✓
4. An amount of Rs. 1,06,000.00 (Rupees One lakh six thousand) deposited by you vide Ref. No. 279411919559, towards Earnest money is being adjusted in performance security. Further you have to deposit a sum of Rs. 33,842.00 only within 21 (Twenty one) days from the issuance of LOA to make total performance security deposit 3% of the award value/contract value Rs. 1,39,842.00 only as per security deposit clause No. 4.2 & 4.8 of tender, so that detailed work order may be issued otherwise this shall constitute sufficient ground for cancellation of the award of work and forfeiture of the bid security. All Items are identified as ALR item and shall be operated during execution as per tender condition of ALR clause no. 5.6. & No. AHR item. ✓
5. All running on account bills shall be paid at 95% (Ninety five percent) of work Value this 5% (Five percent) deduction towards retention money will be the second part of security deposit. 3% Performance Security should be refunded within 14 days of the issue of defect liability certificate (taking over certificate with a list of defects). retention money should be refunded after issue of no defect certificate. ✓

Contd.....2

*Handwritten signature and date 20/4*

6. You will have to obtain labour licenced under contract Labour (Regulation & Abolition) Act 1970, if you engage more than 19 labours in this work on any day. The necessary records under Contract Labour and minimum Wages Acts are to be maintained by you at site of work & are to be presented to the department's authorized representative or the inspecting authority as and when asked for checking. You will have to make payment to the workmen engaged by you for this work as per minimum wages Act in the presence of the authorized representative of the Personnel Department who will issue labour payment certificate (LPC) after issuing labour payment and verification of record. Necessary payment certificate shall be obtained. ✓
7. The bill of contractor shall be accompanied by an attested copy of wages sheet with a certificate given on the wages sheet by authorized officials witnessing the payment of wages to labourers/ workmen engaged by the contractor for the subject work of the effect that the payment indicated in the prescribed column of wages sheet has been disbursed to the labourers/ workmen in their presence. In addition to above, a certificate shall be issued by the concerned Personnel Head that contractor has deducted the amount of CMPF/EPF and pension and deposited along with the matching share with the concerned Regional Commissioner, CMPF/EPF and a copy of the certificate shall be attached with the bill of contractor where applicable. ✓
8. As per building & other construction workers (RE & CS) Act 1996, if you engage 10 or more workers, you have to obtain registration certificate from A.L.C. under the Act. ✓
9. No Escalation shall be payable for this work. ✓
10. The items of work may be read in conjunction with 'relevant SOR' 18/CG, PWD'18/ Analysis based on as per specification and NBO, 2018. ✓
11. No works shall be started before then workmen are trained at VTC of Gevra/Dipka if applicable. ✓
12. All the materials required for the work shall be arranged by the contractor and department shall not issue any materials. ✓
13. The Royalty clearance certificate for the minerals incorporated in this work should be submitted by you from the appropriate State Govt. authority prior to payment of final bill. ✓
14. The contractor will submit the work programme in the form of bar chart before starting the work. ✓
15. The matters relating to any dispute or differences arising out of this work order shall be subjected to the jurisdiction of District Court, Korba (CG) only. ✓
16. The work order is being sent in duplicate for your acceptance, duplicate copy duly signed/accepted may please be returned to this office within seven days after receipt of this order. ✓
17. That you will have to maintain L-1 status throughout the contract period. ✓
18. Contractors PAN No a). AMOPA1046L ✓ b). GST No. 22AMOPA1046L1ZB ✓

*Handwritten signature*  
25/11

- 19 An amount of 1%(One percent) of the work value payable to the contractors will be deducted from all bills towards the workers welfare under Chhattishgarh building & other construction workers welfare cess rules 1998 and building and other construction workers welfare cess Act. 1996, as per directive of SECL, HQ, Bilaspur.
- 20 The contractor has to submit Rs. 7,11,060.53 against (GST as per Govt. of India notification). Payment of GST would be made to the contractor only on submission of bill/invoice in accordance with the provision of relevant GST Act & rules and after filing of return online on the GST portal.
- 21 **SAFETY PROVISIONS:** That the precautions shall be exercised at all times by you for the protection of persons (including employees) and property. The safety required or recommended by all applicable laws, codes, statutes and regulations shall be observed by you. In case of accident, you will be responsible for compliance with all the requirements imposed by the Workmen's Compensation act, or any other similar laws enforce and indemnify the company against any claim on this account.
- 22 Time is the essence of the work and therefore the bidder should deploy minimum two nos. chain mounted hydraulic excavator (P.C. Machine) of capacity 210 or higher capacity and four nos. dumpers/tippers per day.
- 23 The contractor is responsible for arranging levels prior to the work as well as after the work. The levels should be taken jointly by the contractor and department and accordingly payment shall be made.

You are requested to submit the non-judicial stamp paper worth Rs.100.00 along with duly attested copy of latest Income Tax return of current validity, GST registration certificate, PAN No. & partnership deed, power of attorney, Site handover and takeover certificate jointly signed by Engineer Incharge and contractor, Labour Licence as per contract labour certificate, Insurance certificate as per clause No. 13(xviii) of General Terms & Conditions of NIT, CMPF/EPF registration certificate etc. if required for execution of agreement within 30 days of receipt of this letter and attend the office of the undersigned for signing the agreement

You will have to execute the agreement within 30 days of issue of this letter. In case you fail to execute agreement within 30 days, the work order may be cancelled forfeiting earnest money deposited by you.

Please contact Manager(Civil), TA, Dipka Area for further assignment.

Encl: - Bill of quantity. (01 page)

Yours faithfully,

  
Dy. General Manager (Civil),  
SECL: Dipka Area.

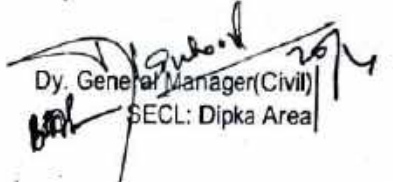
Copy to :-

- 1) GM/Dipka Area.
- 2) SO(M)/Dipka Area
- 3) AFM/Dipka Area- BC No. RV/Cvl/OCW/05/04/904/23-24 dt. 17/04/23, for Rs. 46,61,398.00
- 4) APM/Dipka Area
- 5) C. Manager(C), I/C, TC, Dipka Area
- 6) Manager(C), TA, Dipka Area
- 7) ALC/Bilaspur, Torwa Naka, Bilaspur.
- 8) Labour Enforcement Officer (Central), Torwa Naka, Main road, Bilaspur.
- 9) D.A.(C), Dipka Area. 10) Work Order file

Name of work:- Desilting as well as deepening of Pragati Nagar pond at Pragati Nagar colony of Dipka Area

Sl No	Item Code	Description	Unit	Quantity	Rate	Amount
1		Excavation work by mechanical means over area or in foundation with all lift and lead upto 1Km	cum	67375.00	57.51	3874736.25
2		Pumping out water caused by springs tidal or river seepage broken water mains or drains and the like	Kilo litre	1500.00	40.00	60000.00
3		Excavation work by mechanical means over area or in foundation with all lift and lead upto 3Km	cum	390.00	40.00	15600.00
<b>NOTE:-</b> The contractor has to deploy minimum two nos. chain mounted hydraulic excavator (P.C. Machine) of capacity 210 or higher capacity and four nos. dumpers/tippers per day.						
		Total				3950336.25
		GST payable by the bidder				711060.53
		Total Award value				4661396.78
		GST payable by the SECL				0.00
		Total				4661396.78

(Rupees Forty six lakh sixty one thousand three hundred ninety six & paisa seventy eight) only.

  
 Dy. General Manager (Civil)  
 SECL: Dipka Area

साउथ ईस्टर्न कोलफील्ड्स लिमिटेड  
(एक मिनि रतना कंपनी)

कार्यालय, महाप्रबंधकदीपका क्षेत्र  
पो. आ. - दीपका, जिला-कोरबा, छग

पिन - 495452

फोन: 07815 - 239011, 263300, 263301

फैक्स: 07815-239002



South Eastern Coalfields Limited

(A Mini Ratna Company)

Office of the General Manager, Dipka Area  
PO - DIPKA, DIST- KORBA (C.G.)

Pin - 495452

Phone : 07815- 239011, 263300, 263301

Fax: 07815-239002

Ref. No. SECL/GM/DA/DGM(C)/LOA/23/ 52

Dated: 24/04/23

प्रति,

Sasa Enterprises PAN No. JZLPK5675Q

Laxman VanSanjay Nagar, Ward-11 Nai Basti, Sai Enclave, Korba

Mobl. No. 7898594988

Email : ak7808688@gmail.com

Dist. - Korba(CG)

विषय:- Letter of acceptance for the work "Cleaning of nallah/drain from Pragati Nagar pond to  
Lilaghar river of Dipka Expn. Project of Dipka Area."

संदर्भ:- (1). NIT No. SECL/GM/DA/DGM(C)/e-tender/22-23/151 dt. 18/03/23

(2). Tender ID : 2023\_SECL\_275841\_1

महोदय,

With reference to your above quotation offer, this is to inform you that your offer has been accepted by the management for a total value of {Rs. 7,98,873.60 + Rs. 1,43,797.25(GST to be paid by bidder)}= Rs. 9,42,670.85 (Rupees Nine lakh forty two thousand six hundred seventy & paisa eighty five) only.

An amount of Rs. 42,300.00 (Rupees Forty two thousand three hundred) deposited by you vide Ref. No. 285658938703, towards Earnest money is being adjusted in performance security. Balance performance security NIL to make total performance security deposit 3% of the award value/contract value value Rs. 28,280.00 only as per security deposit clause-No. 4.2 & 4.8 of tender, so that detailed work order may be issued otherwise this shall constitute sufficient ground for cancellation of the award of work and forfeiture of the bid security. All items are identified as ALR item and shall be operated during execution as per tender condition of ALR clause no. 5.6. & no AHR item.

That as per clause no. 1 titled as 'Definition' and sub clause (vii) of GENERAL TERMS & CONDITIONS of contract, the Engineer in charge for this work will be C. Manager(C)/C, Dipka Expn. Project. You are requested to contact him for commencing the work. The work will have to be completed within a period of 150 Days from the date of commencement as per clause no. 6 of conditions of contract.

You are requested to submit the GST registration certificate, GST clearance certificate, PAN No. & partnership deed (if required), power of attorney, Site handover, Bar chart/program Labour Licence as per contract labour certificate, bar chart Group Insurance policy as per clause No. 13(xxvi) of General Terms & Conditions of NIT, CMPF/EPF registration certificate etc.

भवदीय,

रूप महाप्रबंधक (सिविल)  
दीपका क्षेत्र

प्रतिलिपी:-

- 1) GM/Dipka Area.
- 2) SO(M)/Dipka Area
- 3) AFM/Dipka Area- BC No. RV/CV/OCW/08/19/915/23 24 dt. 22/04/23 for Rs. 9,42,671.00
- 4) APM/Dipka Area
- 5) C. Manager(C), I/C, TC, Dipka Area
- 6) C. Manager(C)/C, Dipka Expn. → You are advised to ensure that the contractor should submit the balance PSD within due time.
- 7) ALC/Bilaspur, Torwa Naka, Bilaspur.
- 8) Labour Enforcement Officer (Central), Torwa Naka, Main road, Bilaspur.
- 9) D.A (C), Dipka Area.



Name of work:- Cleaning of nallah/drain from Pragati Nagar pond to Llaghar river of Dipka Expn. Project of Dipka Area.

SI No	Item Code	Description	Unit	Quantity	Rate	Amount
1		Earth work in excavation over area or in foundation by mechanical means PC 200 or above with all lift, transportation and lead upto 01 Km.	cum	15360.00	26.51	407193.60
2		Earth work in excavation over area or in foundation by mechanical means PC 200 or above with all lift, transportation and lead upto 25 m complete.	cum	23040.00	17.00	391680.00
		Total				
		GST payable by the bidder				798873.60
		Total Award value				143797.25
		GST payable by the SECL				942670.85
		Total				0.00
						942670.85

(Rupees Nine lakh forty two thousand six hundred seventy & paisa eighty five) only.

  
Dy. General Manager (Civil)  
SECL: Dipka Area

साउथ ईस्टर्न कोलफील्ड्स लिमिटेड

(एक मिनि रत्ना कम्पनी)

कार्यालय, महाप्रबंधक दीपका क्षेत्र

पो. आ. - दीपका, जिला - कोरबा, छग

पिन - 495452

फोन: 07815 - 239011, 263300, 263301

फैक्स: 07815-239002



South Eastern Coalfields Limited

(A Mini Ratna Company)

Office of the General Manager, Dipka Area

PO - DIPKA, DIST- KORBA (C.G.)

Pin - 495452

Phone : 07815- 239011, 263300, 263301

Fax: 07815-239002

Ref. No. SECL /GM/DA/DGM(C)/LOA/23/ 61

Dated: 26/04/23

प्रति,

M/s Sharma Construction PAN No. AADFC8756E

Katghora Road Dipka

Mobl. : 9827948533

Email: bimlesh65@gmail.com

Distt. - Korba(CG)

विषय:- Letter of acceptance for the work "Cutting and cleaning of drain at the toe of Jhingatpur OB dump from old Dipka dam to culvert no. 8 of old Dipka mine of Dipka Expn. Project of Dipka Area."

संदर्भ:- (1). NIT No. SECL/GM/DA/DGM(C)/e-tender/22-23/145 dt. 01/03/23  
(2). Tender ID : 2023\_SECL\_273292\_1

महोदय,

With reference to your above quotation offer, this is to inform you that your offer has been accepted by the management for a total value of (Rs. 5,74,961.20 + Rs. 1,03,493.02 (GST to be paid by bidder))= Rs. 6,78,454.22 (Rupees Six lakh seventy eight thousand four hundred fifty four & paisa twenty two) only.

An amount of Rs. 29,200.00 (Rupees Twenty nine thousand two hundred) deposited by you vide Ref. No. 283089928459, towards Earnest money is being adjusted in performance security. Balance performance security NIL to make total performance security deposit 3% of the award value/contract value value Rs. 20,354.00 only as per security deposit clause No. 4.2 & 4.8 of tender, so that detailed work order may be issued otherwise this shall constitute sufficient ground for cancellation of the award of work and forfeiture of the bid security. Item no. 1.01 is identified as ALR item and shall be operated during execution as per tender condition of ALR clause no. 5.6. & no AHR item.

That as per clause no. 1 titled as 'Definition' and sub clause (vii) of GENERAL TERMS & CONDITIONS of contract, the Engineer in charge for this work will be C. Manager(C)/C, Dipka Expn. Project. You are requested to contact him for commencing the work. The work will have to be completed within a period of 120 Days from the date of commencement as per clause no. 6 of conditions of contract.

You are requested to submit the GST registration certificate, GST clearance certificate, PAN No. & partnership deed (if required), power of attorney, Site handover, Bar chart/program Labour Licence as per contract labour certificate, bar chart Group Insurance policy as per clause No. 13(xxvi) of General Terms & Conditions of NIT, CMPF/EPF registration certificate etc.

भवदीय,

स्टाफ ऑफिसर (सिविल)  
दीपका क्षेत्र

प्रतिलिपी:-

- 1) GM/Dipka Area.
- 2) SO(M)/Dipka Area
- 3) AFM/Dipka Area- BC No. RV/Cvl/OCW/09/27/927/23-24 dt. 24/04/23 for Rs. 6,78,454.00
- 4) APM/Dipka Area
- 5) C. Manager(C), I/C, TC, Dipka Area
- 6) C. Manager(C)/C, Dipka Expn. → You are advised to ensure that the contractor should submit the balance PSD within due time.
- 7) ALC/Bilaspur, Torwa Naka, Bilaspur.
- 8) Labour Enforcement Officer (Central), Torwa Naka, Main road, Bilaspur.
- 9) D.A.(C), Dipka Area.

Name of work:-Cutting and cleaning of drain at the toe of Jhingapur OB dump from old Dipka dam to culvert no. 8 of old Dipka mine of Dipka Expn. Project of Dipka Area.

Sl No	Item Code	Description	Unit	Quantity	Rate	Amount
1.01		Excavation of earth by hydraulic excavator within lead 1 Km.	cum	19294.00	29.80	574961.20
		Total				574961.20
		GST payable by the bidder				103493.02
		Total Award value				678454.22
		GST payable by the SECL				0.00
		Total				678454.22

(Rupees Six lakh seventy eight thousand four hundred fifty four & paisa twenty two) only.

*Sulendra*  
Staff Officer (Civil)

SECL: Dipka Area

*Ball*

22/14

साउथ ईस्टर्न कोलफील्ड्स लिमिटेड  
(एक मिनिरत्न कम्पनी)

कार्यालय, महाप्रबंधक दीपका क्षेत्र  
पो आ - दीपका, जिला - कोरबा, छग  
पिन - 495452

फोन: 07815 - 239011, 263300, 263301  
फैक्स: 07815-239002



South Eastern Coalfields Limited  
(A Mini Ratna Company)

Office of the General Manager, Dipka Area  
PO - DIPKA, DIST- KORBA (C.G.)  
Pin - 495452  
Phone : 07815- 239011, 263300, 263301  
Fax: 07815-239002

Ref. No. SECL /GM/DA/DGM(C)/LOA/23/ 62

Dated: 26/04/23

प्रति,

M/s Bhagwan Saran & Associates PAN No. AAGFB5931R

Manikpur Dadarkhurd Korba

Mobl. : 9425178520

Email: bhagwan.korba@gmail.com

Distt. - Korba (CG)

विषय: - Letter of acceptance for the work "Manual cleaning of box culverts/ hume pipe culvert from Pragati Nagar pond to liaghar river of Dipka Expn. Project of Dipka Area."

संदर्भ: - (1). NIT No. SECL/GM/DA/DGM(C)/e-tender/22-23/152 dt. 18/03/23  
(2). Tender ID : 2023\_SECL\_275842\_1

महोदय,

With reference to your above quotation offer, this is to inform you that your offer has been accepted by the management for a total value of (Rs. 6,90,000.00 + Rs. 1,24,200.00 (GST to be paid by bidder)) = Rs. 8,14,200.00 (Rupees Eight lakh fourteen thousand two hundred) only.

An amount of Rs. 20,800.00 (Rupees Twenty thousand eight hundred) deposited by you vide Ref. No. 285660935657, towards Earnest money is being adjusted in performance security. Further you have to deposit a sum of Rs. 3,626.00 only within 21 (Twenty one) days from the issuance of LOA to make total performance security deposit 3% of the award value/contract value Rs. 24,426.00 only as per security deposit clause No. 4.2 & 4.8 of tender, so that detailed work order may be issued otherwise this shall constitute sufficient ground for cancellation of the award of work and forfeiture of the bid security. All items are identified as ALR item and shall be operated during execution as per tender condition of ALR clause no. 5.6. & no AHR item.

That as per clause no. 1 titled as 'Definition' and sub clause (vii) of GENERAL TERMS & CONDITIONS of contract, the Engineer in charge for this work will be C. Manager(C)/C, Dipka Expn. Project. You are requested to contact him for commencing the work. The work will have to be completed within a period of 120 Days from the date of commencement as per clause no. 6 of conditions of contract.

You are requested to submit the GST registration certificate, GST clearance certificate, PAN No. & partnership deed (if required), power of attorney, Site handover, Bar chart/program Labour Licence as per contract labour certificate, bar chart Group Insurance policy as per clause No. 13(xxvi) of General Terms & Conditions of NIT, CMPF/EPF registration certificate etc.

भवदीय,

स्टाफ ऑफिसर (सिविल)  
दीपका क्षेत्र


प्रतिलिपी:-

- 1) GM/Dipka Area.
- 2) SO(M)/Dipka Area
- 3) AFM/Dipka Area- BC No. RV/Cv/OCW/09/26/926/23-24 dt. 24/04/23 for Rs. 8,14,200.00
- 4) APM/Dipka Area
- 5) C. Manager(C)/C, TC, Dipka Area
- 6) C. Manager(C)/C, Dipka Expn. → You are advised to ensure that the contractor should submit the balance PSD within due time..
- 7) ALC/Bilaspur, Torwa Naka, Bilaspur.
- 8) Labour Enforcement Officer (Central), Torwa Naka, Main road, Bilaspur.
- 9) D.A.(C), Dipka Area.

Name of work: Manual cleaning of box culverts/ Hume pipe culvert from Pragati Nagar pond to liaghar river of Dipka Expn. Project of Dipka Area.

Sl No	Item Code	Description	Unit	Quantity	Rate	Amount
1.01		Cleaning of box culvert/ Hume pipe culvert by deploying unskilled manpower by earth work in excavation by mechanical means (minimum two metre length has be cleaned nad insposing the cleaned earth upto a lead 50 mtrs. From culvert as per instruction of Engineer in charge (minimum 15 nos unskilled labour to be provided daily)	day	120.00	4950.00	594000.00
1.02		Earth work in excavation over area in foundation by mechanical means with all lift lead of 1 Km.	cum	1500.00	48.00	72000.00
1.03		Pumping out water caused by spring tidal or river seepage broken water mains of drains and like for this work in addition to be provided also including the cost of disel, maintenance etc.	KL	500.00	48.00	24000.00
		Total				690000.00
		GST payable by the bidder				124200.00
		Total Award value				814200.00
		GST payable by the SECL				0.00
		Total				814200.00

(Rupees Eight lakh fourteen thousand two hundred) only.

  
 Staff Officer (Civil)  
 SECL: Dipka Area  
 26/7  
 B.P.

सारथ इस्टन कोलफिल्ड्स लिमिटेड

(एक मिनिरतन कम्पनी)

कार्यालय, महाप्रबंधक दीपका क्षेत्र

पो.आ. - दीपका, जिला-कोरबा, छग

पिन - 495452

फोन: 07815 - 239011, 263300, 263301

फैक्स: 07815-239002



South Eastern Coalfields Limited

(A Mini Ratna Company)

Office of the General Manager, Dipka Area

PO - DIPKA, DIST- KORBA (C.G.)

Pin - 495452

Phone : 07815- 239011, 263300, 263301

Fax: 07815-239002

Ref. No. SECL /GM/DA/DGM(C)/LOA/23/ 131

Dated: 19/05/23

प्रति,

Sasa Enterprises PAN No. JZLPK5675Q

Laxman Van Sanjay Nagar, Ward-11 Nai Basti, Sai Enclave, Korba

Mobl. No. : 7898594988

Email : ak7808688@gmail.com

Dist. - Korba(CG)

विषय:- Letter of acceptance for the work "Providing and placing OB/earth filled bages including its stacking during monsoon at mine no. 2 of Dipka Expn. Project of Dipka Area."

संदर्भ:- (1). NIT No. SECL/GM/DA/DGM(C)/e-tender/22-23/138 dt. 22/02/23

(2). Tender ID : 2023\_SECL\_272371\_1

महोदय,

With reference to your above quotation offer, this is to inform you that your offer has been accepted by the management for a total value of (Rs. 2,24,700.00 + Rs. 40,446.00 (GST to be paid by bidder)) = Rs. 2,65,146.00 (Rupees Two lakh sixty five thousand one hundred forty six) only.

An amount of Rs. 7,600.00 (Rupees Seven thousand six hundred) deposited by you vide Ref. No. 281933927963, towards Earnest money is being adjusted in performance security. Balance performance security NIL to make total performance security deposit 3% of the award value/contract value Rs. 7,954.00 only as per security deposit clause No. 4.2 & 4.8 of tender, so that detailed work order may be issued otherwise this shall constitute sufficient ground for cancellation of the award of work and forfeiture of the bid security. All items are identified as ALR item and shall be operated during execution as per tender condition of ALR clause no. 5.6. & no AHR item.

That as per clause no. 1 titled as 'Definition' and sub clause (vi) of GENERAL TERMS & CONDITIONS of contract, the Engineer in charge for this work will be C. Manager(C)/C, Dipka Expn Project. You are requested to contact him for commencing the work. The work will have to be completed within a period of 60 Days from the date of commencement as per clause no. 6 of conditions of contract.

You are requested to submit the GST registration certificate, GST clearance certificate, PAN No. & partnership deed (if required), power of attorney, Site handover, Bar chart/program Labour Licence as per contract labour certificate, bar chart Group Insurance policy as per clause No. 13(xxvi) of General Terms & Conditions of NIT, CMPF/EPF registration certificate etc.

भवदीय,

स्टाफ अधिकारी (सिविल)  
दीपका क्षेत्र

प्रतिलिपी:-

1) GM/Dipka Area.

2) SO(M)/Dipka Area

3) AFM/Dipka Area- BC No. RV/CVI/OCW/13/53/953/23-24 dt. 17/05/23 for Rs. 2,65,146.00

4) APM/Dipka Area

5) C. Manager(C), I/C, TC, Dipka Area

6) C. Manager(C)/C, Dipka Expn.

→ You are advised to ensure that the contractor should submit the balance PSD within due time.

7) ALC/Bilaspur, Torwa Naka, Bilaspur.

8) Labour Enforcement Officer (Central), Torwa Naka, Main road, Bilaspur.

9) D A (C) Dipka Area.

Name of work:- Providing and placing OB/earth filled bages including its stacking during monsoon at mine no. 2 of Dipka Exprn. Project of Dipka Area.

Sl No	Item Code	Description	Unit	Quantity	Rate	Amount
1	Analysi s	Providing and placing OB/earth filled bages including stiching and placing in position and transportation at work site within all leads and lift including cost of materials and labour etc. all complete as per instruction of Engineer in charge.	each	30000.00	7.49	224700.00
		Total				224700.00
		GST payable by the bidder				40448.00
		Total Award value				265148.00
		GST payable by the SECL				0.00
		Total				265148.00

(Rupees Two lakh sixty five thousand one hundred forty six) only.

  
Staff Officer (Civil) 19/5  
SECL: Dipka Area  


साउथ ईस्टर्न कोलफील्ड्स लिमिटेड  
(एक मिनिरतना कम्पनी)

कार्यालय, महाबलेश्वरदीपका क्षेत्र  
पो.आ - दीपका, जिला-कोरबा, छग  
पिन - 495452  
फोन: 07815 - 239011, 263300, 263301  
फैक्स: 07815-239002



South Eastern Coalfields Limited  
(A Mini Ratna Company)  
Office of the General Manager, Dipka Area  
PO - DIPKA, DIST- KORBA (C.G.)  
Pin - 495452  
Phone : 07815- 239011, 263300, 263301  
Fax: 07815-239002

Ref. No. SECL/GM/DA/DGM(C)/LOA/23/ 132  
प्रति,

Dated: 19/05/23

Sasa Enterprises PAN No. JZLPK5675Q

Laxman VanSanjay Nagar, Ward-11 Nai Basti, Sai Enclave, Korba

Mobl. No. : 7898594988

Email : ak7808688@gmail.com

Dist. - Korba(CG)

विषय:- Letter of acceptance for the work "Providing and placing OB/earth filled cement bages for protection of nallah/hume pipe culverts from Pragati Nagar pond to Lilaghar river of Dipka Expn. Project of Dipka Area."

संदर्भ:- (1). NIT No. SECL/GM/DA/DGM(C)/e-tender/22-23/150 dt. 18/03/23  
(2). Tender ID : 2023\_SECL\_275840\_1

महोदय,

With reference to your above quotation offer, this is to inform you that your offer has been accepted by the management for a total value of (Rs. 2,09,700.00 + Rs. 37,746.00 (GST to be paid by bidder))= Rs. 2,47,446.00 (Rupees Two lakh forty seven thousand four hundred forty six) only.

An amount of Rs. 7,600.00 (Rupees Seven thousand six hundred) deposited by you vide Ref. No. 285550930016, towards Earnest money is being adjusted in performance security. Further you have to deposit a sum of Rs. 177.00 only within 21 (Twenty one) days from the issuance of LOA to make total performance security deposit 3% of the award value/contract value Rs. 7,423.00 only as per security deposit clause No. 4.2 & 4.8 of tender, so that detailed work order may be issued otherwise this shall constitute sufficient ground for cancellation of the award of work and forfeiture of the bid security. All items are identified as ALR item and shall be operated during execution as per tender condition of ALR clause no. 5.6. & no AHR item.

That as per clause no. 1 titled as 'Definition' and sub clause (vii) of GENERAL TERMS & CONDITIONS of contract, the Engineer in charge for this work will be C. Manager(C)/C, Dipka Expn. Project. You are requested to contact him for commencing the work. The work will have to be completed within a period of 120 Days from the date of commencement as per clause no. 6 of conditions of contract.

You are requested to submit the GST registration certificate, GST clearance certificate, PAN No. & partnership deed (if required), power of attorney, Site handover, Bar chart/program Labour Licence as per contract, labour certificate, bar chart Group Insurance policy as per clause No. 13(xxvi) of General Terms & Conditions of NIT, CMPF/EPF registration certificate etc.

भवदीय,

स्टाफ अधिकारी (सिविल) 19/5  
दीपका क्षेत्र

प्रतिलिपी:-

- 1) GM/Dipka Area.
- 2) SO(M)/Dipka Area
- 3) AFM/Dipka Area- BC No. RV/Cv/OCW/13/52/952/23-24 dt. 17/05/23 for Rs. 2,47,446.00
- 4) APM/Dipka Area
- 5) C. Manager(C)/C, TC, Dipka Area
- 6) C. Manager(C)/C, Dipka Expn. → You are advised to ensure that the contractor should submit the balance PSD within due time.
- 7) ALC/Bilaspur, Torwa Naka, Bilaspur.
- 8) Labour Enforcement Officer (Central), Torwa Naka, Main road, Bilaspur
- 9) D.A (C), Dipka Area.



Name of work:- Providing and placing OB/eath filled cement bages for protection of nallah/hume pipe culverts from Pragati Nagar pond to Lilaghar river of Dipka Expn. Project of Dipka Area.

Sl No	Item Code	Description	Unit	Quantity	Rate	Amount
1	Analys	Providing and placing OB/eath filled cement bages including stiching and placing in position and transportation in mine area with all leads lift, labour and materials complete as per instruction of engineer in charge.	each	30000.00	6.99	209700.00
		Total				209700.00
		GST payable by the bidder				37746.00
		Total Award value				247446.00
		GST payable by the SECL				0.00
		Total				247446.00

(Rupees Two lakh forty seven thousand four hundred forty six) only.

*Handwritten signature*  
 Staff Officer (Civil)  
 SECL: Dipka Area  
 19/11

साउथ ईस्टर्न कोलफील्ड्स लिमिटेड  
(एक मिनिस्ट्रल कम्पनी)  
कार्यालय, महाप्रबंधक दीपका क्षेत्र  
पो आ - दीपका, जिला-कोरबा, छग  
पिन - 495452  
फोन: 07815 - 239011, 263300, 263301  
फैक्स: 07815-239002



South Eastern Coalfields Limited  
(A Mini Ratna Company)  
Office of the General Manager, Dipka Area  
PO - DIPKA, DIST- KORBA (C.G.)  
Pin - 495452  
Phone : 07815- 239011, 263300, 263301  
Fax:07815-239002

Ref. No. SECL /GM/DA/DGM(C)/LOA/WO/23/147

Dated: 22/05/23

प्रति,

Rakesh Kumar Enterprises

Katghora Road Dipka

Mobl. : 7898594988

Email: rakeshkumarenterprises2011@gmail.com

Dist. - Korba (CG)

विषय:- LOA/WO for the work "Cutting, deepening, widening and cleaning of drain including removal of slush/muck in and around mine no. 1 of Dipka Expn. project of Dipka Area."

संदर्भ:- (1). NIT No. SECL/GM/DA/DGM(C)/e-tender/22-23/142 dt. 25/02/2023

(2). Tender ID: 2023\_SECL\_272726\_1

महोदय,

In pursuance of the above referred tender notice and your offer, we are pleased to award the subject work in your favour for a total value of Rs. 16,82,949.83 + Rs. 3,02,930.97 (GST to be paid by bidder) = Rs. 19,85,880.80 (Rupees Nineteen lakh eighty five thousand eight hundred eighty & paise eighty) only as per enclosed bill of quantities as Annexure-A, subject to the following terms and conditions

1. All the tender terms and conditions shall govern the award of this work & will form the part of this work order.
2. That as per clause no. 1 titled as 'Definition' and sub clause (vii) of GENERAL TERMS & CONDITIONS of contract, the Engineer in charge for this work will be C. Manager(C)/C, Dipka Expn. project. You are requested to contact him for commencing the work. The work will have to be completed within a period of 150 Days from the date of commencement as per clause no. 6 of conditions of contract.
3. Income Tax @ 2% of the gross value of the work done plus surcharge shall be recovered as per rule from running and final bills.
4. An amount of Rs. 83,000.00 (Rupees Eighty three thousand) deposited by you vide Ref. No. 282364931866, towards Earnest money is being adjusted in performance security. Balance performance security NIL to make total performance security deposit 3% of the award value/contract value Rs. 59,576.00 only as per security deposit clause No. 4.2 & 4.8 of tender, so that detailed work order may be issued otherwise this shall constitute sufficient ground for cancellation of the award of work and forfeiture of the bid security. All Items are identified as ALR item and shall be operated during execution as per tender condition of ALR clause no. 5.6. & No. AHR item.
5. All running on account bills shall be paid at 95% (Ninety five percent) of work Value this 5% (Five percent) deduction towards retention money will be the second part of security deposit 3% Performance Security should be refunded within 14 days of the issue of defect liability certificate (taking over certificate with a list of defects). retention money should be refunded after issue of no defect certificate.

Contd.....2

Handwritten signature and date: 22/5

6. You will have to obtain labour licenced under contract Labour (Regulation & Abolition) Act 1970, if you engage more than 19 labours in this work on any day. The necessary records under Contract Labour and minimum Wages Acts are to be maintained by you at site of work & are to be presented to the department's authorized representative or the inspecting authority as and when asked for checking. You will have to make payment to the workmen engaged by you for this work as per minimum wages Act in the presence of the authorized representative of the Personnel Department who will issue labour payment certificate (LPC after issuing labour payment and verification of record. Necessary payment certificate shall be obtained ✓
7. The bill of contractor shall be accompanied by an attested copy of wages sheet with a certificate given on the wages sheet by authorized officials witnessing the payment of wages to labourers/ workmen engaged by the contractor for the subject work of the effect that the payment indicated in the prescribed column of wages sheet has been disbursed to the labourers/ workmen in their presence. In addition to above, a certificate shall be issued by the concerned Personnel Head that contractor has deducted the amount of CMPF/EPF and pension and deposited along with the matching share with the concerned Regional Commissioner, CMPF/EPF and a copy of the certificate shall be attached with the bill of contractor where applicable. ✓
8. As per building & other construction workers (RE & CS) Act 1996, if you engage 10 or more workers, you have to obtain registration certificate from A.L.C. under the Act. ✓
9. No Escalation shall be payable for this work. ✓
10. The items of work may be read in conjunction with relevant SOR' 18/CG, PWD'18/ Analysis based on as per specification and NBO, 2018. ✓
11. No works shall be started before then workmen are trained at VTC of Gevra/Dipka if applicable. ✓
12. All the materials required for the work shall be arranged by the contractor and department shall not issue any materials. ✓
13. The Royalty clearance certificate for the minerals incorporated in this work should be submitted by you from the appropriate State Govt. authority prior to payment of final bill. ✓
14. The contractor will submit the work programme in the form of bar chart before starting the work. ✓
15. The matters relating to any dispute or differences arising out of this work order shall be subjected to the jurisdiction of District Court, Korba (CG) only. ✓
16. The work order is being sent in duplicate for your acceptance, duplicate copy duly signed/accepted may please be returned to this office within seven days after receipt of this order. ✓
17. That you will have to maintain L-1 status throughout the contract period. ✓
18. Contractors PAN No a). AMOPA1046L ✓ b). GST No. 22AMOPA1046L1ZB ✓

*Place*  
29/11

- 19 An amount of 1%(One percent) of the work value payable to the contractors will be deducted from all bills towards the workers welfare under Chhattishgarh building & other construction workers welfare cess rules 1998 and building and other construction workers welfare cess Act. 1996, as per directive of SECL, HQ, Bilaspur.
- 20 The contractor has to submit Rs. 3,02,930.97 against (GST as per Govt. of India notification). Payment of GST would be made to the contractor only on submission of bill/invoice in accordance with the provision of relevant GST Act & rules and after filing of return online on the GST portal.
- 21 **SAFETY PROVISIONS:** That the precautions shall be exercised at all times by you for the protection of persons (including employees) and property. The safety required or recommended by all applicable laws, codes, statutes and regulations shall be observed by you. In case of accident, you will be responsible for compliance with all the requirements imposed by the Workmen's Compensation act, or any other similar laws enforce and indemnify the company against any claim on this account.


You are requested to submit the non-judicial stamp paper worth Rs.100.00 along with duly attested copy of latest Income Tax return of current validity. GST registration certificate, PAN No. & partnership deed, power of attorney, Site handover and takeover certificate jointly signed by Engineer Incharge and contractor, Labour Licence as per contract labour certificate, Insurance certificate as per clause No. 13(xviii) of General Terms & Conditions of NIT, CMPF/EPF registration certificate etc. if required for execution of agreement within 30 days of receipt of this letter and attend the office of the undersigned for signing the agreement.

You will have to execute the agreement within 30 days of issue of this letter. In case you fail to execute agreement within 30 days, the work order may be cancelled forfeiting earnest money deposited by you.

Please contact Manager(Civil), Dipka Expn. project for further assignment.

End: - Bill of quantity. (01 page)

भवदीय,

  
स्टाफ अधिकारी(सिविल) 28/5  
800  
दीपका क्षेत्र

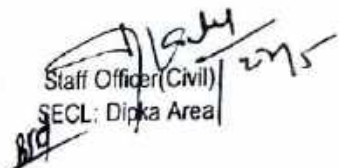
प्रतिलिपी:-

- 1) GM/Dipka Area.
- 2) SO(M)/Dipka Area
- 3) AFM/Dipka Area- BC No. RV/Cv/OCW/81/04/904/23-24 dt. 22/05/23, for Rs. 19,85,880.80
- 4) APM/Dipka Area
- 5) C. Manager(C), I/C, TC, Dipka Area
- 6) C. Manager(C), I/C, Dipka Expn. project
- 7) ALC/Bilaspur, Torwa Naka, Bilaspur.
- 8) Labour Enforcement Officer (Central), Torwa Naka, Main road, Bilaspur.
- 9) D.A.(C), Dipka Area. 10) Work Order file

Name of work:- Cutting, deepening, widening and cleaning of drain including removal of slush/muck in and around mine no. 1 of Dipka Expn. project of Dipka Area.

SI No	Item Code	Description	Unit	Quantity	Rate	Amount
1		Earth work in excavation by mechanical means over area or in foundation including transportation of excavated earth with all lift and lead upto 3.0Km as per instruction of Engineer in charge.	cum	35992.00	27.99	1007416.08
2		Earth work in excavation by mechanical means over area or in foundation including transportation of excavated earth with all lift and lead upto 0.50 mtrs. as per instruction of Engineer in charge.	cum	34625.00	19.51	675533.75
		Total				1682949.83
		GST payable by the bidder				302930.97
		Total Award value				1985880.80
		GST payable by the SECL				0.00
		Total				1985880.80

(Rupees Nineteen lakh eighty five thousand eight hundred eighty & paisa eighty) only.

  
 Staff Officer (Civil)  
 SECL, Dipka Area  
 27/5

साउथ ईस्टर्न कोलफील्ड्स लिमिटेड  
(एक मिनिरत्न कम्पनी)  
कार्यालय, महाप्रबंधक दीपका क्षेत्र  
पो आ - दीपका, जिला-कोरबा, छग  
पिन - 495452  
फोन: 07815 - 239011, 263300, 263301  
फैक्स: 07815-239002



South Eastern Coalfields Limited  
(A Mini-Ratna Company)  
Office of the General Manager, Dipka Area  
PO - DIPKA, DIST- KORBA (C.G.)  
Pin - 495452  
Phone : 07815- 239011, 263300, 263301  
Fax: 07815-239002

Ref. No. SECL /GM/DA/GM(C)/LOA/23/ 307  
प्रति,

Date: 18/07/23

Rakesh Kumar Enterprises ✓  
Katghora Road Dipka ✓  
Dist. - Korba (CG) ✓  
Mobl. No : 7898594988 ✓  
Email : rakeshkumarenterprises2011@gmail.com ✓

PAN No. AMOPA1046L  
GST No. 22AMOPA1046L1ZB

विषय:- Letter of acceptance for the work "Cutting, deepening, widening and cleaning of main drain including removal of slush/muck in and around mine no. 2 and old CHP of Dipka Expansion Project of Dipka Area." ✓

संदर्भ:- (1) NIT No. SECL/GM/DA/DGM(C)/e-tender/22-23/156 dt. 31/03/23  
(2) Tender ID : 2023\_SECL\_277001\_1 ✓

महोदय,

In pursuance of the above referred tender notice and your offer, we are pleased to award the subject work in your favour for a total value of Rs. 9,84,060.00 + Rs. 1,77,130.80 (GST to be paid by bidder) = Rs. 11,61,190.80 (Rupees Eleven Lakh Sixty One Thousand One Hundred Ninety & Paise Eighty) only as per enclosed Bill of Quantities as Annexure-A, subject to the following terms and conditions:

1. All the tender terms and conditions shall govern this work & will form the part of this contract. ✓
2. That as per clause no. 1 titled as 'Definition' and sub clause (vii) of GENERAL TERMS & CONDITIONS of contract, the Engineer in Charge for this work will be Project Engineer (C)/I/C, Dipka Expn. Project. You are requested to contact him for commencing the work. The work will have to be completed within a period of 150 Days from the date of commencement as per clause no. 6 of conditions of contract.
3. Income Tax @ 2% of the gross value of the work done plus surcharge shall be recovered as per rules from running and final bills. ✓
4. An amount of Rs. 36,500.00 (Rupees Three Six Thousand Five Hundred) deposited by you vide Ref. No. 286761942044, towards Earnest Money is being adjusted in Performance Security. Balance performance security NIL to make total performance security deposit 3% of the award value/contract value which amounts to Rs. 34,836.00 only as per Security Deposit clause No. 4.2 & 4.8 of tender, so that formal work order may be issued otherwise this shall constitute sufficient ground for cancellation of the award of work and forfeiture of the bid security/EMD. All items are identified as ALR clause no. 5.6 & No AHR item which shall be operated during execution as per clause no. 5.6. of Conditions of Contract. ✓
5. All running on account bills shall be paid at 95% (Ninety five percent) of work value. This 5% (Five percent) deduction towards retention money will be the second part of security deposit. 3% Performance Security will be refunded within 14 days of the issue of defect liability certificate (taking over certificate with a list of defects). Retention money will be refunded after issue of no defect certificate. ✓

J.S.

6. You will have to obtain Labour Licenced under Contract Labour (Regulation & Abolition) Act 1970, if you engage more than 19 labours in this work on any day. The necessary records under Contract Labour (R&A Act and Minimum Wages Acts are to be maintained by you at site of work & are to be presented to the department's authorized representative or the inspecting authority as and when asked for checking. You will have to make payment to the workmen engaged by you for this work as per Minimum Wages Act in the presence of the authorized representative of the Personnel Department who will issue Labour Payment Certificate (LPC) after labour payment and verification of records. ✓
7. The bill of contractor shall be accompanied by an attested copy of wages sheet with a certificate given on the wages sheet by authorized officials witnessing the payment of wages to labourers/ workmen engaged by the contractor for the subject work to the effect that the payment indicated in the prescribed column of wages sheet has been disbursed to the labourers/ workmen in their presence. In addition to above, a certificate shall be issued by the concerned Personnel Head that contractor has deducted the amount of CMPF/EPF and pension and deposited, along with the matching share, with the concerned Regional Commissioner, CMPF/EPF and a copy of the certificate shall be attached with the bill of contractor where applicable. ✓
8. As per Building & Other Construction Workers (RE & CS) Act 1996, if you engage 10 or more workers, you have to obtain registration certificate from ALC under the Act. ✓
9. No Escalation shall be payable for this work. ✓
10. The items of work may be read in conjunction with relevant DSR 2018/Analysis based on as per CPWD/MORTH specification and NBO, 2018. ✓
11. No works shall be started before the workmen are trained at VTC of Gevra/Dipka. ✓
12. All the materials and equipment required for the work shall be arranged by the contractor and department shall not issue any materials. ✓
13. The Royalty Clearance Certificate for the minerals incorporated in this work should be submitted by you from the appropriate State Govt. authority prior to payment of final bill. ✓
14. The contractor will submit the work programme in the form of bar chart before starting the work. ✓
15. The matters relating to any dispute or differences arising out of this work order shall be subjected to the jurisdiction of District Court, Korba (CG) only. ✓
16. That you will have to maintain L-1 status throughout the contract period. ✓
17. An amount of 1%(One percent) of the work value payable to the contractor will be deducted from all bills towards the workers welfare under Chhattishgarh Building & Other Construction Workers Welfare Cess Rules 1998 and Building and Other Construction Workers Welfare Cess Act, 1996. ✓

*JAE*

18. **SAFETY PROVISIONS:** All precautions shall be exercised at all times by you for the protection of persons (including employees) and property. The safety required or recommended by all applicable laws, codes, statutes and regulations shall be observed by you. In case of accident, you will be responsible for compliance with all the requirements imposed by the Workmen's Compensation Act, or any other similar laws enforce and indemnify the company against any claim on this account. ✓

Please contact Project Engineer (Civil)/I/C, Dipka Expn. Project for further instructions regarding the work.

Encl: - Bill of quantity. (01 page) ✓

भवदीय,  
18/7/23  
स्टाफ अधिकारी (सिविल)  
दीपका क्षेत्र

प्रतिलिपी:-

- 1) GM/Dipka Area.
- 2) GM(M)/SAM, Dipka Expn. Project
- 3) SO(M)/Dipka Area
- 4) AFM/Dipka Area- In Ref. to BC No. RV/Cv/OCW/24/112/9112/23-24 dt. 17/07/23 for Rs. 11,61,191.00 ✓
- 5) APM/Dipka Area
- 6) Project Engineer(C), Dipka Expn. Project → With advise to ensure that the contractor should submit the balance PSD within due time.
- 7) ALC(C)/Bilaspur, Torwa Naka, Bilaspur.
- 8) Labour Enforcement Officer (Central), Torwa Naka, Main Road, Bilaspur.
- 9) DA(C), Dipka Area.



Name of work:- "Cutting, deepening, widening and cleaning of main drain including removal of slush/muck in and around mine no. 2 and old CHP of Dipka Expansion Project of Dipka Area."

Sl No	Item Code	Description	Unit	Quantity	Rate	Amount
1		Earth work in excavation by mechanical means over area or in foundation including transportation of excavated earth with all lift and lead up to 1.00km as per instruction of Engineer in charge.	cum	15620.00	39.00	609180.00
2		Earth work in excavation by mechanical means over area or in foundation including transportation of excavated earth with all lift and lead up to 50.00 mtr. as per instruction of Engineer in charge.	cum	15620.00	24.00	374880.00
		Total				984060.00
		GST				177130.80
		Total Award value				1161190.80

Rupees Eleven lakh sixty one thousand one hundred ninety & paisa eighty) only.

  
 Staff Officer (Civil)  
 SECL, Dipka Area  


## Illumination Survey

Month of April-2023

S.NO. & Date	LOCATION.	Std. of Illumination		Intensity of Lux.	
		H. LUX.	V. LUX.	H. LUX.	V. LUX.
1. 1/4/2023	TRB-1 North Side.	15	15	28.1	54.8
		15	15	27.2	58.1
2. 2/4/2023	in P.R.R. Shed Near Switch.	40		21.2	45.9.
3- 3/4/2023	Dogor Section work Shop.	100	50	101.8	22.6
4. 4/4/2023	Hard Stand Dumper yard.	50		25.2	20.8
5- 8/4/2023	Crane Grader Section w/s.	100	50	35.2	84.7
6. 9/4/2023	240 T. Dumper Section. w/s.	150	50	28.8	44.2
7- 13/4/2023	11-12 Coal Stock Road.	10		7.8	11.2
8- 16/4/2023	KCC OB Bench/Face.	15	25	10.2	18.1
9- 16/4/2023	Shi Ram OB Bench/Face	15	25	7.8	10.2
10- 18/4/2023	OB D. yard (KCC)	15	15	8.7	10.3
11- 23/4/2023	33 KV. Sub. Sth.	100	50	46.3	57.8
12- 23/4/2023	old Erection yard. w/s.	100	50	17.9	33.5
13- 26/4/2023	Diesel Pump w/s.	100	50	35.9	61.8
14- 27/4/2023	19 NO. Coal Stock Rd. SW.	10		6.9	11.4

20/4/23

30/4/23

W.I. (E/M)

30/4/2023  
W.I. (Exec)

30/4/2023

मानपुरवा अधिकारी  
एच.डी.सी. एल.टी.पका परियोजना

# Illumination Survey

Month of May-2023

SNO.	Date	LOCATION	Std. of Illumination		Intensity of Illumination	
			H. LUX	V. LUX	H. LUX	V. LUX
1	11/5/23	TRB-II North Side.	15	15	22.7	38.2
		TRB-I South Side.	15	15	31.2	56.1
2	2/5/23	19 NO. Coal St. Road.	10	1	8.2	10.3
3	4/5/23	240 T. Dumper Hard Stand	0.50		25.8	21.1
4	5/5/23	Diesel Pump w/s.	100	50	35.2	48.6
5	6/5/23	OB 240 T. Dumping	15	15	8.2	12.6
6	7/5/23	old Erection yard w/s.	100	50	18.9	35.2
7	8/5/23	240 T. Dumper sec.	100	50	32.4	46.8
8	9/5/23	KCC OB Bench/Face.	15	25	10.1	17.8
9	25/5/23	33 KV. Sub. Stn.	100	50	45.8	56.7
10	26/5/23	Grader Sec. w/s.	100	50	38.6	77.3
11	27/5/23	P. Q. R. Shed (Near Switch)	40		22.6	46.7
12	28/5/23	Shrawan Ch. Junction.	10		20.2	13.7
13	29/5/23	11-12 Coal St. Road.	10		7.9	12.2
14	30/5/23	132 KV. Sub. Stn. (Near Trans.)	100	50	6.9	9.4

W.I. (M)  
31/5/23

W.I. (M)  
31/5/23

W.I. (E/M)  
31/5/23

W.I. (E/M)  
31.05.23

31/5/23  
 ध्यान सुरक्षा अधिकारी  
 एस. ई. टी. एल. वी. एम. परिषद

Illumination Survey

Date: \_\_\_\_\_  
Page: \_\_\_\_\_

Month of June 2023.

Date: \_\_\_\_\_  
Page: \_\_\_\_\_

SN.	Date	LOCATION.
1	01/6/2023	TRB I. North Side. TRB I. South Side.
2	03/6/2023	240T./100T. Dum. H. Stand.
3	5/6/2023	11-12. Coal Stock Rd.
4	8/6/2023	Diesel Pump w/s.
5	9/6/2023	Haul Rd Near Elec. yard
6	10/6/2023	314 Shovel Face OB.
7	11/6/2023	Dog. sec. w/s.
8	12/6/2023	Belt line Pathway
9	13/6/2023	OB Bench 229 Face
10	14/6/2023	P, R, R, Shed.
11	15/6/2023	U.C.C. OB Bench/ Face
12	17/6/2023	240T. OB Dump
13	18/6/23	Old Elec. yard Drill Sec w/s.

Std. of Illumination		Intensity of Illumination	
H. LUX	V. LUX	H. LUX	V. LUX
15	15	36.6	65.2
15	15	31.2	62.4
50	-	25.3	21.1
10	-	7.6	10.8
100	50	34.4	60.8
10	-	11.1	
15	25	4.8	8.7
100	50	80.7	38.2
20	-	5.8	
15	25	18.7	22.8
40	-	21.2	46.5
15	25	10.3	18.7
15	15	7.6	11.5
100	50	16.2	33.

*[Signature]*  
S.O.M.

*[Signature]*  
W.I.(M)

*[Signature]*  
W.I.(P.M)

*[Signature]*  
W.I.(E/M)

*[Signature]*  
जन सुरक्षा अधिकारी  
राज्य सरकार

# Illumination Survey

Month of July - 2023.

S.N. - Date	LOCATION	Std. of Illumination		Intensity of Illumination	
		H. LUX	V. LUX.	H. LUX	V. LUX.
1 - 08/7/23.	TRs 1. North Side.	15	15	35.2	62.3
	TRs 2 South Side.	15	15	30.4	60.1
2 - 09/7/2023	240T/100T. Dumper Hard Stand	50		23.6	20.2
3 - 10/7/2023	11-12 Coal Store Road.	10		6.8	10.2
4 - 11/7/2023	314 Face OB Bench.	15	25	5.7	7.9
5 - 13/7/2023	Belt Line Path way	20		5.2	
6 - 15/7/2023	KCC OB Bench Face.	15	25	10.2	17.6
7 - 16/7/2023	old Erection Yard w/s.	100	50	18.8	34.7
8 - 18/7/2023	OB Bench 229 face OB			8.7	21.8
9 - 20/7/2023	Doger Section w/s.	100	50	78.7	35.4
10 - 23/7/2023	240 T. Dump OB	15	15	7.5	10.1
11 - 24/7/2023	Diezel Pump. w/s.	100	50	32.6	58.7
12 - 26/7/2023	Pi & R <sub>2</sub> Shed	40		20.3	42.5

*[Signature]*  
31/7/23.

*[Signature]*  
31/7/23  
W.I.(M)

*[Signature]*  
31/7/23  
W.I.(Execv)

*[Signature]*  
31/07/23  
W.I.(Edm)

मिनिस्टर ऑफ़ मिन  
एनर्जी अणु शक्ति, प्र. वि. वि. वि.

**मान संस्था अधिकारी**  
**एन.ई.सी.एन.डी.एन. एन.डी.एन.**

# Illumination Survey


Month of Aug. 2023.

S.No.	Date	LOCATION.	Std. of Illumination		Intensity of Illumination	
			H. Lux.	V. Lux.	H. Lux.	V. Lux.
1.	01/8/2023	TR & II (North Side)	15	15	36.4	59.2
		—  — (South Side)	15	15	32.2	61.5
2.	03/8/2023	240 T. Dump yard OB.	15	15	8.2	11.3.
3.	05/8/2023	Haul Rd. Near Erection yd.	10		11.2	
4.	07/08/2023	Diesel pump w/s.	100	50	33.2	57.3.
5.	08/08/2023	P. & R. Shed	40		21.2	43.6.
6.	12/8/2023	314 OB face	15	25	5.2	7.3
7.	13/8/2023	11-12 Coal Stock Rd.	10		6.4	10.1
8.	16/8/2023	Dumper hand stand	50		24.2	21.1
9.	19/8/2023	Belt line Pathway	20		5.3	
10.	20/8/2023	33 k.v. Sub Stn.	100	50	45.7	56.5
11.	24/8/2023	Grader Sec. w/s.	100	50	39.4	75.7
12.	26/8/2023	kec OB face	15	25	11.2	13.3.

S.D. on 31/8/23
Jyoti Kumar 31/8/23
S. Singh 31/8/23
V. Singh 31/8/23

SR. O/A.
w/s (M)
w/s (Ency)
w/s (E/A)

Ministry of Coal  
 Government of India  
 New Delhi

  
 9/9/23  
 आन चरमा अधिकारी  
 एस.ई.सी.एन.डी.एन. परिव्याजका

Illumination Survey

SN.	Date	LOCATION N.
1	01/9/23	TR 5 2 North Side. South Side.
2	02/9/23	229 Shovel OB Face
3	03/9/23	Pi Q1 R1 Shed Near Switch
4	05/9/23	33 kv. Sub Stn.
5	06/9/23	<del>38</del> Grader Sec. w/s.
6	09/9/23	K.C.C. OB Face.
7	10/9/23	Belt Line Path way
8	11/9/23	11-12 Coal Stock Rd.
9	15/9/23	Dumper Hard Stand
10	16/9/23	132 kv Sub. Stn.
11	19/9/23	240 T. Dumi Sec. w/s.
12	21/9/23	Shramik Ch. Jn.
13	23/9/23	Diesel Pump w/s.
14	24/9/23	19 NO. C-Stock Rd.
15	28/9/23	Belt Line Pathway

Std. Ob Illumination		Intensity of Illumination	
H. LUX	V. LUX	H. LUX	V. LUX.
75	15	32.8	55.4
15	15	30.2	58.6
15	25	5.5	7.2
40		20.8	41.3
100	50	42.8	52.9
100	50	38.7	72.8
15	25	10.8	12.9
20		5.8	
10		7.2	10.4
50		22.8	19.7
100	50	10.8	13.2
100	50	31.8	45.2
10		20.1	14.2
100	50	37.3	46.2
10		7.8	10.2
20		6.8	

30/9/23  
 30/9/23

30/09/23

ज्ञान सुरेश अधिकारी  
 एल.इ.सी.एल.टी.पका परियोजना

## Month of April 2023

Date	Vibration Readings in PPV				
	1	2	3	4	5
01.04.2023	0.635	0.460	1.175	0.683	0.540
02.04.2023	0.841	1.175	1.080	0.857	0.857
03.04.2023	1.048	0.810	0.905	0.587	0.937
04.04.2023	1.667	0.540	0.810	1.080	1.365
05.04.2023	0.778	0.619	1.048	0.508	1.207
06.04.2023	0.968	0.556	0.968	0.778	0.508
07.04.2023	1.064	0.635	0.556	0.714	1.762
08.04.2023	0.953	0.905	0.857	1.286	0.921
09.04.2023	0.492	1.016	0.619	0.794	2.731
10.04.2023	0.810	0.968	0.699	0.540	0.984
11.04.2023	0.841	0.413	0.826	0.857	0.905
12.04.2023	0.556	1.238	0.873	1.111	0.683
13.04.2023	1.270	0.587	0.413	0.318	0.714
14.04.2023	0.984	0.762	0.540	0.635	1.619
15.04.2023	0.778	0.905	0.587	1.286	0.730
16.04.2023	0.683	0.730	0.603	0.778	0.651
17.04.2023	0.540	0.937	0.905	1.207	0.587
18.04.2023	0.540	0.762	0.492	0.905	1.080
19.04.2023	0.810	0.921	0.968	0.762	1.111
20.04.2023	0.635	0.905	0.968	0.508	0.683
21.04.2023	0.492	0.714	0.857	0.635	0.857
22.04.2023	0.857	0.651	0.460	0.603	0.730
23.04.2023	1.302	0.746	0.889	0.492	1.048
24.04.2023	0.635	1.127	1.191	0.572	0.524
25.04.2023	1.222	0.968	0.746	0.318	0.683
26.04.2023	0.968	0.984	1.143	0.476	0.651
27.04.2023	0.984	0.857	1.349	0.953	0.826
28.04.2023	1.175	0.905	0.587	0.984	1.207
29.04.2023	0.651	0.619	0.841	0.953	0.572
30.04.2023	0.556	0.968	0.984	0.572	0.651

  
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## Month of May 2023

Date	Vibration Readings in PPV				
	1	2	3	4	5
01.05.2023	1.286	1.191	1.873		
02.05.2023	0.857	0.476	0.746	0.857	
03.05.2023	0.762	1.397	1.334	0.635	
04.05.2023	0.603	1.810	0.841	0.810	2.302
05.05.2023	0.349	1.334	0.619	1.492	0.413
06.05.2023	1.222	0.572	0.699	1.143	
07.05.2023	1.222	0.318	0.651	0.572	0.953
	0.476				
08.05.2023	1.270	1.048	0.730	0.730	1.032
09.05.2023	1.619	0.365	0.857	0.826	
10.05.2023	0.318	1.334	0.889	0.635	
11.05.2023	0.460	0.826	1.429	0.318	
12.05.2023	0.778	0.714	0.540	1.508	0.587
13.05.2023	0.746	0.683	1.080	0.905	
14.05.2023	0.508	1.222	1.556	0.937	0.413
15.05.2023	0.651	1.286	0.603	1.254	1.080
16.05.2023	0.540	0.841	0.857	1.032	0.746
17.05.2023	5.159	1.254	2.254	1.842	
18.05.2023	1.175	0.730	1.397	0.746	
19.05.2023	0.603	1.445	0.524	1.476	
20.05.2023	0.603	0.508	1.873	1.064	
21.05.2023	0.841	1.683	0.953	0.540	0.746
22.05.2023	0.540	1.286	1.286	0.572	0.746
23.05.2023	0.603	0.730	1.461	1.762	2.413
24.05.2023	3.302	4.842			
25.05.2023	4.255	4.382			
26.05.2023	1.064	1.445	1.175	1.222	1.048
27.05.2023	1.095	0.746	1.048	0.572	0.730
28.05.2023	0.794	0.413	0.683	0.762	1.508
29.05.2023	0.778	1.794	1.397	1.381	0.540
30.05.2023	1.699	2.096	1.937	2.556	
31.05.2023	1.238	2.238	3.096	2.794	1.873

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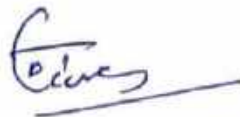
## Month of June 2023

Date	Vibration Readings in PPV				
	1	2	3	4	5
01.06.2023	4.874	1.302	1.508	1.318	0.953
02.06.2023	1.207	0.540	1.794	0.492	0.683
03.06.2023	1.111	0.587	1.619	0.445	0.921
04.06.2023	1.302	0.857	0.318	0.572	0.810
05.06.2023	0.524	0.762	5.525	3.334	1.191
06.06.2023	2.175	1.921	0.778		
07.06.2023	1.080	0.937	0.635	0.318	
08.06.2023	1.492	0.572	0.778	0.762	
09.06.2023	0.953	0.635	1.349	0.460	0.889
10.06.2023	0.635	0.540	1.111	0.699	1.207
11.06.2023	0.857	0.810	0.603	1.238	
12.06.2023	1.334	1.397	1.127		
13.06.2023	0.905	1.461	0.508	0.572	0.603
14.06.2023	1.540	0.460	1.207		
15.06.2023	0.413	2.000	0.905	0.572	
16.06.2023	1.222	1.159	0.905		
17.06.2023	0.762	0.572	0.333	0.714	1.873
18.06.2023	1.238	1.143	0.460	1.159	
19.06.2023	0.349	1.334	0.953	0.397	
20.06.2023	1.222	0.683	0.460	0.460	0.349
21.06.2023	0.572	0.572	1.429	1.334	0.762
22.06.2023	0.572	1.032	1.461	1.730	
23.06.2023	0.699	0.968	0.683	1.619	
24.06.2023	0.587	0.429	1.286	0.889	
25.06.2023	0.905	0.841	1.746		
26.06.2023	2.016	0.778	1.238	1.334	
27.06.2023	0.826	0.349	1.095	1.429	
28.06.2023	1.540	1.095	0.603	1.524	
29.06.2023	0.889	1.032	0.429	1.000	1.238
30.06.2023	1.095	0.524	0.730	1.080	0.587

  
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## Month of July 2023

Date	Vibration Readings in PPV				
	1	2	3	4	5
01.07.2023	0.921				
02.07.2023	1.191	0.429	0.651	0.651	
03.07.2023	1.746	1.397	0.857	1.191	
04.07.2023	1.302	1.064	0.730		
05.07.2023	0.826	0.714	1.445	0.746	
06.07.2023	2.080	0.810			
07.07.2023	1.397	1.492			
08.07.2023	0.984				
09.07.2023	1.588				
10.07.2023	1.095	1.175	1.715	0.953	
11.07.2023	1.175	0.889	1.254	1.064	0.968
12.07.2023	0.921	1.730			
13.07.2023	1.429	1.334	0.762	1.334	0.714
14.07.2023	1.302				
15.07.2023	1.921	1.715	1.381	0.937	
16.07.2023					
17.07.2023	1.175	1.873	1.588	0.857	
18.07.2023	1.302	1.588	1.222		
19.07.2023	1.286	0.937	1.095		
20.07.2023	1.191	1.762	0.889	0.397	1.588
21.07.2023	1.127	1.572	0.937	1.016	2.318
22.07.2023	1.540	0.937	1.334	0.953	0.794
23.07.2023	1.334	0.953	1.603	0.603	0.905
24.07.2023	1.715	1.207	0.968	1.016	1.286
25.07.2023	1.461	0.730	1.429	1.143	1.000
26.07.2023	1.000	1.254	0.683	0.826	0.746
27.07.2023	1.032	1.143	0.587	1.048	0.810
28.07.2023	0.667	1.048	0.857	0.984	0.794
29.07.2023	0.508	1.143	1.032	1.302	0.762
30.07.2023	1.080	1.905	0.572	0.572	1.032
31.07.2023	1.619	1.238	1.016	1.127	1.889



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## Month of August 2023

Date	Vibration Readings in PPV				
	1	2	3	4	5
01.08.2023	2.191	1.318	0.683	0.556	0.762
02.08.2023	1.762	0.905	1.207	1.334	1.270
03.08.2023					
04.08.2023	1.080	1.476	0.540		
05.08.2023	0.953	1.349	0.794		
06.08.2023	1.207	1.159	0.841	1.715	1.873
07.08.2023	0.889	1.461	1.826	0.492	1.461
08.08.2023	0.905	1.603	1.127	1.175	0.905
09.08.2023	0.857	0.937	0.699	2.477	0.921
10.08.2023	1.080	1.730	2.143	1.429	1.969
11.08.2023	1.048	1.302	1.032	1.365	1.000
12.08.2023	0.889	1.318	1.461	0.603	1.048
13.08.2023	1.143	0.556	1.016	0.778	0.587
14.08.2023	1.238	1.048	0.730	0.460	0.429
15.08.2023	1.715	1.492	1.175	1.080	
16.08.2023	0.968	1.508	0.651	0.603	1.064
17.08.2023	0.953	1.286	0.889	1.445	0.841
18.08.2023	1.286	0.651	1.524	1.365	0.683
19.08.2023	1.365	0.587	0.968	1.302	0.953
20.08.2023	1.080	1.000	0.683	0.492	0.953
21.08.2023	1.207	0.587	0.572	1.254	1.365
22.08.2023	0.572	1.334	0.635	1.127	0.524
23.08.2023	0.984	0.984	0.683	1.572	1.175
24.08.2023	0.762	0.699	0.889	0.905	1.254
25.08.2023	1.302	1.159	0.714	0.841	1.461
26.08.2023	0.778	0.683	1.588	2.048	
27.08.2023	1.651	1.080	1.111	0.841	0.984
28.08.2023	1.953	0.873	1.111	1.286	1.953
29.08.2023	0.762	0.730	1.826	1.238	0.968
30.08.2023	1.905	0.826	1.334	0.826	1.032
31.08.2023	1.730	0.683	0.730	1.318	1.603



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## Month of September 2023

Date	Vibration Readings in PPV				
	1	2	3	4	5
01.09.2023	1.397	1.080	0.953	0.968	
02.09.2023	0.556	0.905	0.841	1.127	1.159
03.09.2023	0.460	1.000	2.080	1.588	0.953
04.09.2023	0.889	0.953	1.032	0.651	1.603
05.09.2023	0.460	0.905	1.286	0.778	1.270
06.09.2023	0.857	0.619	1.254	1.016	
07.09.2023	1.159	0.572	0.968	0.778	0.968
08.09.2023	0.905	0.730	0.905	1.794	1.032
09.09.2023	1.080	1.143	1.397	1.254	1.651
10.09.2023	1.810	0.921	1.334		
11.09.2023	1.095	2.238	0.476	1.238	0.984
12.09.2023	0.953	0.746	1.603	1.445	
13.09.2023	1.080	1.175	1.635	1.715	1.000
14.09.2023	1.095	0.857	2.619	0.587	0.937
15.09.2023	1.143	1.032	1.286	0.699	1.032
16.09.2023	1.286	1.095	1.286	2.508	1.080
17.09.2023	0.730	1.238	0.826	0.699	0.524
18.09.2023	0.524	0.603	1.254	2.238	0.857
19.09.2023	0.714	1.334	0.667	2.350	1.080
20.09.2023	0.826	1.413	0.953		
21.09.2023	1.317	0.169	2.707	1.087	0.639
22.0.2023	1.742	1.055	1.129	0.195	1.600
23.09.2023	0.957	0.746	1.430	1.014	1.303
24.09.2023	0.876	1.147	1.425	0.175	2.591
25.09.2023	3.352	1.416			
26.09.2023	3.774	3.764			
27.09.2023	1.647	1.180	1.008	2.736	0.766
28.09.2023	3.579	0.394	3.463		
29.09.2023	1.973				
30.09.2023	2.164	2.242	2.523	1.358	0.976

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**DIPKA EXPANSION PROJECT**

# Wildlife Conservation Plan for Dipka Expansion Project



*Prepared by*



**Tropical Forest Research Institute**

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Environment, Forest and Climate Change)  
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# WILDLIFE CONSERVATION PLAN FOR DIPKA EXPANSION PROJECT

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Tropical Forest Research Institute



South Eastern Coalfields Limited

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## ***LIST OF ACRONYMS AND ABBREVIATIONS***

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DFO	Divisional Forest Officer
DBH	Diameter at Breast Height
SECL	South Eastern Coalfields Limited
FSI	Forest Survey of India
GIS	Geographical Information System
IUCN	International Union for Conservation of Nature and Natural Resources
KM	Kilometre
M	Metre
mm	Millimetre
MSL	Mean Sea Level
NTCA	National Tiger Conservation Authority
SFR	State of Forest Report
Sp.	Species
VDF	Very Dense Forest
MDF	Moderate Dense Forest
WPA	Wildlife Protection Act

## EXECUTIVE SUMMARY

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- Dipka Expansion Opencast Coal Mining Project (31 MTY) is an expansion project of SECL, Dipka Area.
- The project area proposed for diversion falls beyond a distance of 10 Km from the areas of high conservation value ie. Achanakmar Amarkantak Biosphere Reserve.
- Southern Dry Mixed Deciduous Forest, Moist Peninsular High Level Sal Forest, Dry Peninsular Sal Forest and Northern Dry Mixed Deciduous Forest are the predominant forest types found in the region.
- A total of 83 species distributed in 72 genera and 38 families of higher plants were recorded from the proposed project area and its 10 km buffer.
- The plant community is dominated by *Shorea robusta*, with *Diospyros melanoxylon* and *Madhuca indica* as codominants.
- *Lantana camara* dominates the shrub layer. Saplings of *Butea monosperma* and *Diospyros melanoxylon* were present in high densities.
- Within the sampled list, it was found that, there were 24 species of medicinal plants, 6 species of fodder plants, 14 species of food plants and 20 species of timber trees.
- Among the surveyed list of plants, there were two species which appears in the IUCN Red List of Threatened Species *Dalbergia latifolia* (Vulnerable) and *Pterocarpus marsupium* (Near Threatened).
- Except sightings of few groups of langurs, butterflies and birds, no other carnivores or herbivores could be recorded directly in the surveyed area. But the larger landscape of Umaria Forest Division has records of many fauna (carnivores and herbivores) such as Tiger, Leopard, Sloth bear, Spotted deer, Sambar deer, Barking deer, Wild dogs, Common Jungle Cat, Jacka and Striped Hyaena.
- Smaller mammals (nocturnal and diurnal) and birds are bound to face displacement due to opencast mining pit.
- Coal seams are invariably found beneath *Sal* forests. Hence, there will be many *Sal* trees (*Shorea robusta*) that will be cut resulting in crucial changes to the habitat.
- It is suggested that, within a period of five years, an area of 900.12 ha falling under the category of scrub/degraded forest within 10 km buffer of the Dipka OCP may be afforested in a phased manner within the 10 km buffer.
- Potential Conservation Areas (PCA) are identified for the possibility of carrying out conservation and mitigation measures for wildlife.
- Creation of Green belt and Herbal garden are suggested.
- An indicative budget for Rs. 1132 Lakhs is proposed for various activities to be undertaken based on the proposed mitigative measures for five years. The DFO, Katghora will work out the actual costing and monitor the implementation of the prescriptions.

## **Introduction**

Coal continues to remain as the principal source of energy in India, and the coal reserves are abundant in the country. Coal mining has inevitable impacts on forests and forest soils. The risks posed by forest diversion during land clearing activities in coal mining are significant. Because forests, apart from being source of timber and non-timber forest products, they also provide critical environmental/ecosystem services that are crucial for all life forms locally as well as regionally.

In order to strike a balance between development and conservation, it has to be ensured that any activity involving diversion of forest land may be considered only after thorough investigation. It should take into account its impending impact on the biodiversity of the area and consequently on the management of the ecosystem.

A critical part of this balanced approach is to spell out the possible impact and possible mitigation measures to address such impacts. Any activities which would be taken up in the project area need to comply with the statutory requirements as provided in the Wildlife (Protection) Act, 1972 and subsequent amendments.

In this regard, MoEF&CC guidelines warrants preparation of a project specific Conservation Plan for endangered/Schedule-I faunal species reported in the study area. While the project authorities shall also participate in the Conservation Plan through budgetary support over the life of the project. The plan will be implemented in consultation with the State Forest and Wildlife Departments.

## **The current project**

Dipka Opencast Coal Mining Project (from 25 MTY-normative to 30 MTY-peak) is an upcoming project of SECL, Dipka Area. The MoEF has considered its application for enhancement of production capacity from 25 MTPA to 33.75 MTPA in an existing area of 1999.417 ha. The mine is situated in one of the critically polluted areas of the country. Environmental Clearance for 31 MTY from the ministry was accorded on in February 2015.

Under the EC, the user agency is required to prepare a Wildlife Conservation Plan as a compliance condition (Condition no. 13) which reads "A programme for conservation of the wildlife particularly the rare and endangered species schedule fauna and endangered flora and species of medicinal important found in the study area shall be formulated and implemented in consultation with the forest and wildlife department in the state government separate funds shall be earmarked for implementation of the various activities than there under and the status thereof shall be earmarked for implementation of the various activities and regularly reported to the ministry"

Of the total project area of 1999.417 ha, 409.180 ha is revenue forestland. 1409.244 ha is agriculture land and 180.993 ha is Government land.

Staff Officer (Envt./Forest), SECL, Dipka Area vide his letter No. SECL/GM SECL/GM/DA/ENVT/16/660 Dt. 23.07.2016 referring the above mentioned facts, has approached Tropical Forest Research Institute, Jabalpur for preparation of wildlife conservation plan.

Thereby, SECL, Dipka Area awarded the work to Tropical Forest Research Institute, Jabalpur through its Work Order No. SECL/GM SECL/DA/ENV/17/840 Dt. 12.03.2017 and the same was accepted in its form on 27.03.2017.

The current wildlife conservation plan is for Dipka Opencast Coal Mine Project which lies in Korba District of Chhattisgarh. The details of Mine Lease (ML) area is given below:

The proposed area does not form part of National Park, Biosphere Reserve, Tiger Reserve, Elephant Corridor etc. The project area proposed for diversion falls beyond a aerial distance of 37 Km from the Achanakmar Amarkantak Biosphere Reserve (AABR) (**Map 1**).

### **Approach**

The Korba Coalfield is located in the basin of the Hasdeo River, a tributary of the Mahanadi in Korba district of Chhattisgarh.

Korba Coalfield is located between latitudes 22° 15' N and 22° 30' N and longitudes 82° 15' E and 82° 55' E. Korba Coalfield covers an area of about 530 square kilometres (200 sq mi). According to Geological Survey of India, total reserves (including proved, indicated and inferred reserves) of non-coking coal (as on 1.1.2004) in Korba Coalfield was 10,074.77 million tonnes, out of which 7,732.87 was up to a depth of 300 m and 2,341.90 million tonnes was at a depth of 300–600 m.

### **Proposed methods for over burden dumping and management**

The project authorities aim that; the top soil from top bench of OB will be stacked and stored separately. The spoil dump benches in the internally backfilled OB will be in the form of benches. With the sufficient advance of coal production bench, the backfilled OB will be leveled with dozer. Dumper/Tipper will transport soil/alluvium OB from the top OB bench and will dump the soil directly on the leveled backfilled OB.

Initial external OB are proposed to be dumped within quarry area to keep the land requirement bare minimum. The OB so dumped is proposed to be rehandled back to the internal dump. Site of external dump has been proposed within the quarry boundary area to save forest land as well as tenancy land beyond quarry excavation area.

### **Geology**

Physiographically, the structural land forms of Korba region is represented by plateau, hills and valleys. The northern part of this region is represented by hilly terrain, which is northern part of Amarkantak hills extending in East-west direction.

Total mineable reserve is 617.00 MT and balance mineable reserve 479.512 MT. Average grade of coal is E grade (4000-4300 kcal/kg), ultimate working depth of the quarry is 250 m.

### **Soil**

The Korba district is covered by various rock types viz Basaltic, Sedimentary and Granitic terrains. Soil is also depending upon lithology of the area.

Soils of Late rite Terrain, which are commonly found in undulating land are slightly deep, well-drained loamy skeleton to loamy soils with moderate erosion.

Soils of Basaltic Rocks, which are commonly found in hills and hill ranges, are very thin stony with moderate erosion, moderately well drained clayey soils on gently sloping plateau.

Soils of Sedimentary Rocks (Gondwanas), which are commonly found in the undulated plateau, are deep, moderately well drained clayey soils on foothills slopes with moderate erosion.

### **Drainage**

There are number of rivers and nallas such as Lilagarh nadi, Kholar nala and channels flowing within and in the vicinity of the mine lease area and ultimately joining Hasdeo river which is at the distance of 8 km. Water table is in the range of 6.57-8.21 m bgl during pre-monsoon and 3.78-4.49 bgl during post-monsoon. **Map 2.**

### **Climate**

The Climate of this region is characterized by a hot summer and general dryness, except during southwest monsoon season. The year may be divided into four seasons. The cold season, December to February is followed by the hot season from March to about the middle of June. The period from the middle June to September is the southwest monsoon season. October and November from the post monsoon or transition period. There is one IMD meteorological observatory located at district headquarters Umaria.

### **Rainfall**

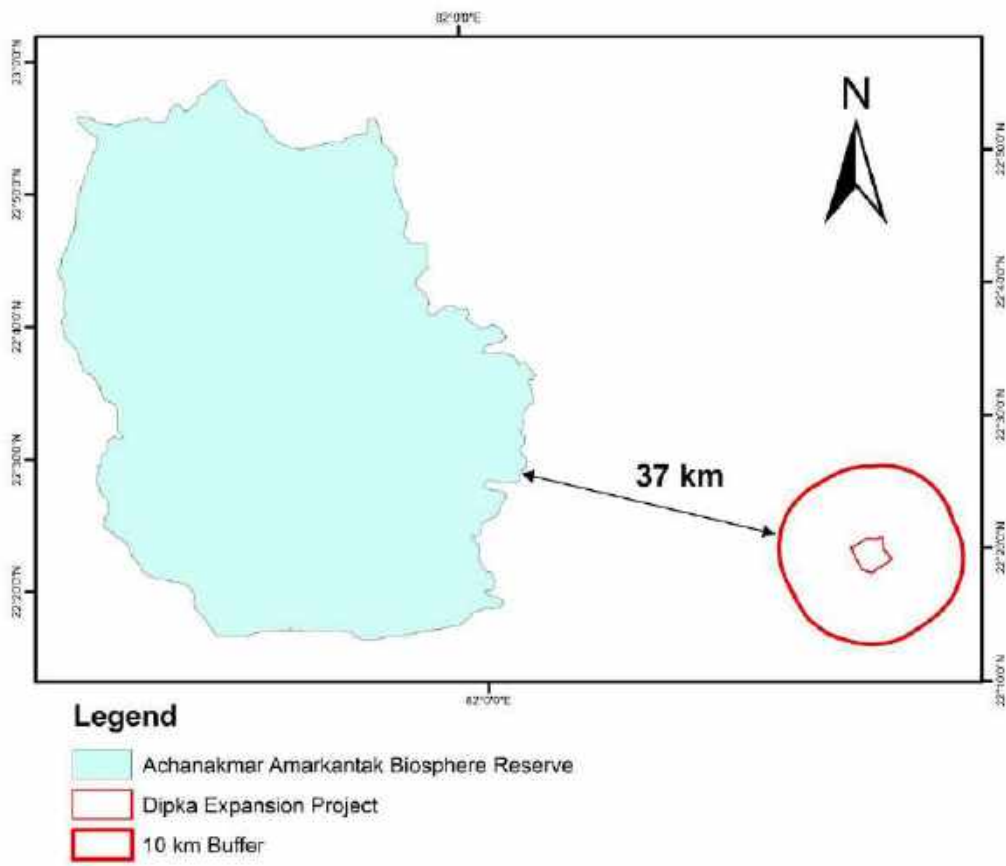
The average annual rainfall of Korba district is about 1208.8 mm. The maximum rainfall takes place during the south-west monsoon period i.e. from June to September. The August month is the wettest month of the year and about 30% of the annual rainfall takes place only during this month. During winter & summer season about 10% & 3% of respectively rainfall takes place. From October to May, only 13% of the annual rainfall takes place.

### **Hydrogeology**

The main source of ground water recharge in Korba district is rainfall. The major part of the district is underlain by Gondwana sedimentary formations, which are potential aquifers in the area. the other geological formation occurring in the districts are Archaeans lower vindhyans. Granular zones govern occurrence and movement of ground water in semi consolidated Gondwana formations.

Within these formations and impervious horizons like coal seams trapped in between this rock occurrence and movement of ground water in hard rocks is essentially by development and nature of secondary joints and fractures while priming vesicular in basalt also plays on important role. Ground water in general in hard rocks areas occurs under unconfined to semi confined conditions while in Gondwana rocks it is also found under confined conditions.

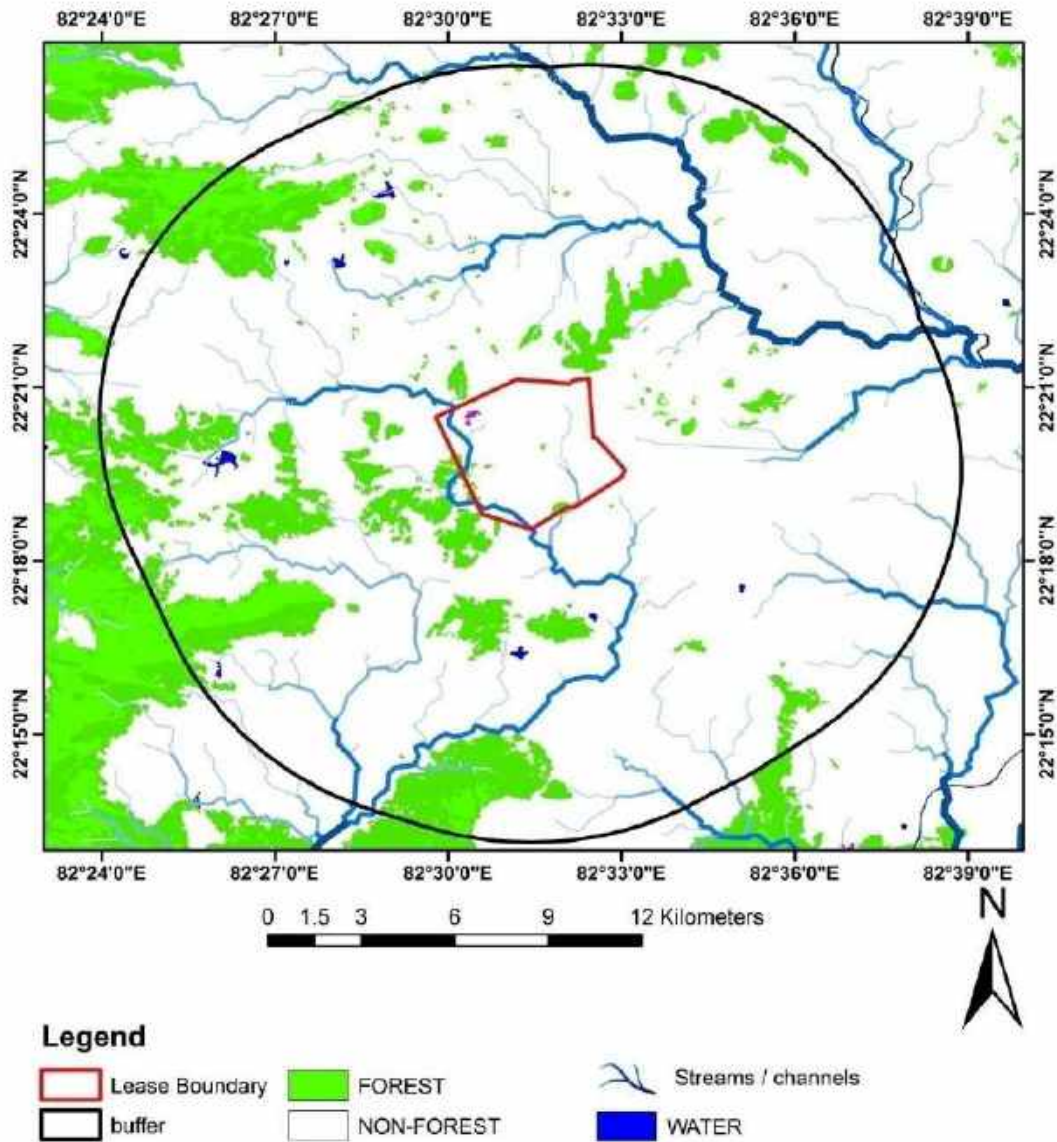
**Map 1:** Map showing the outer boundary of Achanakmar Amarkantak Biosphere Reserve (AABR) and 10 km buffer boundary of Dipka OCP.





Map 2:

### Streams & Channel within 10 km buffer area of Dipka Expansion Project



## **Objectives and Methodology**

Following are the three main objectives of this wildlife conservation plan:

(i) **Assess the flora** (trees, shrubs and herbs) **and fauna** (terrestrial mammals and birds) **within 10 km buffer of the proposed opencast mine in order to take stock of the forest, plant species and habitat conditions for wildlife.**

(ii) **Predict the probable impacts caused due to the mining activities**

(iii) **Suggest measures to mitigate the anticipated impacts.**

Various aspects covered within these objectives include the following:

### ***Flora – vegetation status***

1. Characterization of forest types (as per Champion and Seth classification) in the study area.
2. Inventory of plant communities including trees and ground flora.
3. Phyto-sociology of plant communities with respect to dominance, density, frequency, abundance, diversity index, importance value index (IVI) of the study area based on sampling through Quadrat methods.
4. Listing out economically important species like medicinal plants, timber, fuel wood, fodder, etc.
5. Details of endemic and endangered/Schedule-I species found in the project area.
6. Flora under RET categories as per IUCN and Botanical Survey of India's Red Data list.
7. Determining the distance and existence of areas of high conservation priority such as National park, Sanctuary, Biosphere Reserve etc in the study area.

### ***Terrestrial Fauna***

1. Conducting occupancy surveys for mammals by walking line transects.
2. Documenting the "presence-absence" of important wildlife through existing secondary information.
3. Status of avifauna and assessing their threat.
4. Documentation of important pollinators (butterflies and bees) found in the area.
5. Endemic and Endangered/Schedule-I species found/recorded from the study area.
6. RET species as per different schedule of Indian Wildlife (Protection) Act, 1972 and IUCN Red Data list.
7. Determining the existence of habitat and corridors for important wildlife.

### **Preparation of maps using GIS and Remote Sensing**

1. Land Use Land Cover (LULC) data/map are used to give inputs on the land use pattern.
2. Maps for Forest Density and Vegetation Types are prepared for ascertaining the different forest types and its density.
3. Location of villages within 10 km buffer will be mapped.
4. Streams/Channel/Natural drainage within the study area and its 10 km buffer will be mapped.

### **Methodology**

#### *Rapid study*

The study in terms of duration is characterised as a rapid study. This kind of rapid study for understanding biodiversity and wildlife of the region could give ample idea to formulate policies. The current study has tried to explore various biological aspects of the project area to understand the structure and function of the forest ecosystem present.

#### *Study of forest type*

The forest type of the project area was studied using Champion and Seth (1968). Additionally, secondary information such as Working Plan of the State Forest Department was used to understand the forest type and its species.

#### *Sampling technique*

Random sampling technique was used to study the various ecological factors in order to understand the species composition, density and abundance. Studies in the proposed location were carried out both pre-monsoon and post-monsoon.

#### *Quadrat method and Importance Value Index (IVI)*

Quadrat sampling was done in (a) core project area which will be mined out in future (b) the adjacent 10 km buffer area. In each of the sampling site, a square quadrat of 10 m × 10 m size was laid out for trees and 1 m × 1 m small quadrat within each quadrat was laid for herbs and shrubs.

**Table 1:** The geographical locations of the quadrats laid for the study in and around Dipka OCP.

Sl. No.	Latitude N	Longitude E	Nearest Village	Habitat type
1	22° 18' 36.4"	82° 31' 31.7"	Near Suabundi village	Revenue Forest
2	22° 18' 46.4"	82° 31' 47.4"	-	Revenue Forest
3	22° 19' 41.8"	82° 30' 22.9"	-	Degraded land
4	22° 18' 44.8"	82° 30' 35.7"	Dipka	Revenue Forest

5	22° 18' 35.8"	82° 30' 36.6"	Dipka	Revenue Forest
6	22° 19' 41.6"	82° 30' 05.1"	Dipka	Revenue Forest
7	22° 21' 25.9"	82° 32' 00.8"	Gevra	Revenue Forest
8	22° 21' 24.9"	82° 32' 07.3"	Gevra	Revenue Forest
9	22° 20' 34.8"	82° 37' 42.4"	Gevra	Revenue Land
10	22° 19' 49.6"	82° 24' 41.1"	Near Forest Rest House	Scrub forest
11	22° 20' 00.7"	82° 23' 50.5"	Near Forest Rest House	Scrub forest
12	22° 20' 03.4"	82° 24' 21.8"	Near Forest Rest House	Scrub forest

The Importance Value Index (IVI) is used to determine the overall importance of each species in a community. The dominance of the plant species is also determined by IVI of species. The value of IVI was computed by summation of the values of the relative frequency, relative density and relative dominance (Curtis and McIntosh, 1950, 1951; Mishra, 1968) of each plant species in the survey area. Basal cover is considered as the portion of ground surface occupied by a species (Greig-Smith, 1964). Basal area was calculated by using following formula; basal area =  $\pi r^2$ , Where 'r' is the radius of the species.

Data for tree-saplings and tree-seedlings were compiled with the shrubs and herbs respectively. In case of trees categories viz. seedling (height < 20cm), sapling (20-150cm and DBH < 10cm), and tree (DBH > 10cm) were used following Muller-Dombis and Ellenberg (1974).

The plant, which is woody perennial, differing from a perennial herb in its persistent and woody stem, and less definite from a tree in its low stature and has habit of branching at ground level is considered as shrub. The plant whose stem is always green and tender and height is usually not more than one metre was considered as herb. According to the life span, the herb may be annual, biennial or perennial.

The formulae used to calculate importance value index are:

$$\text{Density} = \frac{\text{Total number of individuals of a species}}{\text{Total number of quadrats studied}}$$

$$\% \text{ Frequency} = \frac{\text{Total number of quadrat of occurrence of species}}{\text{Total number of quadrats studied}} \times 100$$

$$\text{Relative Frequency} = \frac{\text{Frequency of a species}}{\text{Frequency of all the species}} \times 100$$

$$\text{Relative Density} = \frac{\text{Density of a species}}{\text{Density of all the species}} \times 100$$

$$\text{Relative Dominance} = \frac{\text{Basal area of a Species}}{\text{Basal area of all species}} \times 100$$

$$\text{Importance Value Index (IVI)} = \text{Relative Frequency} + \text{Relative Density} + \text{Relative Dominance}$$

### *Species diversity*

Shannon-Wiener diversity index (Shannon and Wiener, 1963) was calculated from the IVI values using the formula as given in Magurran (1988):

$$H' = - \sum_{i=1}^s p_i \ln p_i$$

Where,  $H'$  is Shannon-Wiener index of species diversity,  $p_i$  is the proportion of  $i$ th species and  $s$  is the number of individuals of all the species.

Simpson index of dominance was calculated from IVI values using the formula suggested by Muller-Dombis and Ellenberg (1974).

$$D' = \sum_{i=1}^s p_i^2$$

Where,  $D'$  is Simpson index of dominance,  $p_i$  is the proportion of  $i$ th species and  $s$  is the number of individuals of all the species.

Evenness, for the community was determined by index of evenness Pielou's (1975).

$$J' = \frac{H'}{\ln(S)}$$

Where,  $J'$  is Pielou index of evenness,  $H'$  is Index of diversity for the community and  $S$  is the number of species in the community.

### Forest cover classification

The project area and its 10 km buffer has forest cover over 4320.41 ha. As per the State of Forest Report (SFR), 2011; Forest Survey of India, Dehradun, the density of forest cover within 10 km zone of influence around the project is shown in **Map 3**. The forest density class-wise composition in the area is mostly Non Forest (approx 80% of project area) followed by Open Forest (approx 10% of forest area) and moderately dense forest (approx 8% of forest area).

**Table 2:** Forest cover classification in the project area and its 10 km buffer:

Dipka OCP and its 10 km buffer	Area (ha)
Non forest	46224.82
Deciduous forest	3383.38
Scrub/Degraded	900.12
Wasteland	4094.06
Scrubland	36.90
Waterbodies	583.17

The 10 km buffer area of the OCP, there is 900.12 ha of Scrub/degraded forest and 4094.06 ha of wasteland which can potentially be enriched with plantations or gap plantations.

### Forest type

The forest types prevailing in its 10 km buffer area as per the Champion and Seth Classification (1968) is Southern Dry Mixed Deciduous Forest (5A/C3), Moist Peninsular High Level Sal Forest (3C/2e I), , Dry Peninsular Sal Forest (5B/C1c), Northern Dry Mixed Deciduous Forest (5B/C2) and Plantation (TOF). (**Map 4**)

### Status of Plant diversity

An inventory of plant species was carried out. The vegetation comprises of 49 species of trees, 6 shrub, 14 herbs, 3 climbers and 9 grasses. A total of 85 species distributed in 68 genera and 31 families of higher plants were recorded from the proposed project area (**Table 3**).

### Species Importance Value Index (IVI)

The phytosociological studies (**Table 4**) were carried out to identify the species and communities of conservation importance. The plant community is dominated by *Shorea robusta*, with *Diospyros melanoxylon* and *Madhuca indica* as codominants. On the basis of dominance, *Shorea robusta* – *Diospyros melanoxylon* – *Madhuca indica* community was found in the study area. *Lagerstroemia parviflora*, *Boswellia serrata*, *Buchanania lanzan*, and *Anogeissus pendula* were the common trees in the community, while *Butea monosperma*, *Ougenia dalbergioides* and *Schleichera oleosa* were encountered occasionally. The forest community shows typical composition of Sal forest.

The shrub layer was composed of 13 species. Saplings (having height 20-150 cm and DBH < 10 cm) of 11 tree species along with 2 shrub species were recorded from the shrub layer. *Lantana camara*, a forest invasive species dominates the shrub layer with highest IVI. Saplings of *Butea monosperma*, *Diospyros melanoxylon*, *Gardenia gummifera*, *Shorea robusta*, *Madhuca indica* and *Anogeissus latifolia* were frequently found in the study area (**Table 5**).

The herb layer in the community is composed of 27 species, out of which seedlings of 2 tree species and 23 herbaceous species were recorded from the forest floor. Among the tree regeneration, the highest IVI was recorded for *Shorea robusta* (14.03) indicating regeneration of the tree species. Seedlings of *Shorea robusta* were also recorded in the forest floor with IVI value of 5.07, (**Table 6**). Highest IVI was recorded for *Hyptis suaveolens* which is an invasive species.

*Shorea robusta* dominates the site and is the major canopy species. However, the species is poorly represented in shrub layer indicating poor regeneration. Saplings of *Butea monosperma* and *Diospyros melanoxylon* were present in high densities in the study area, which shows that these species are very hardy and are easily established in the new sites.

### **Dominant species**

A dominance-diversity curve (**Figure 1**) was used to depict the distribution and dominance of the species. *Shorea robusta* dominates the tree layer and have access to majority of the available resources. The other associates are sparsely distributed in the community. It can be said that the distribution of other species in the community is largely regulated by the density of dominant species. *Lantana camara* dominates the shrub layer. However, saplings of *Butea monosperma* and *Diospyros melanoxylon* are also found in the community. Both species are hardy and regenerate and establish successfully in the new areas. The herb layer shows log normal distribution, which is common in tropical forests. It indicates that the niche space occupied by the species is determined by the number of conditions such as food, space, microclimate and other variables that affect the success of one species in competition with another.

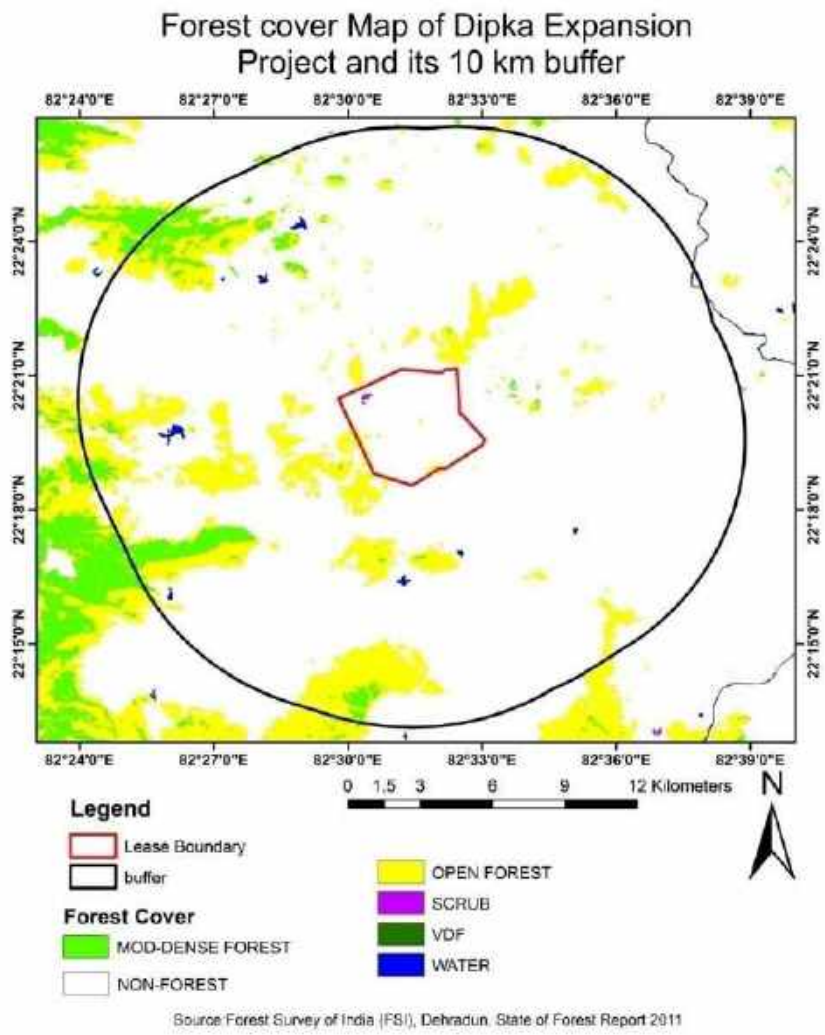
### **Species and their uses**

Within the enumerated list, we found that, there were 24 species of medicinal plants (**Table 7**), 6 species of fodder plants (**Table 8**), 14 species of food plants (**Table 9**), and 20 species of timber trees (**Table 10**) were present in and around the Dipka OCP.

### **RET species**

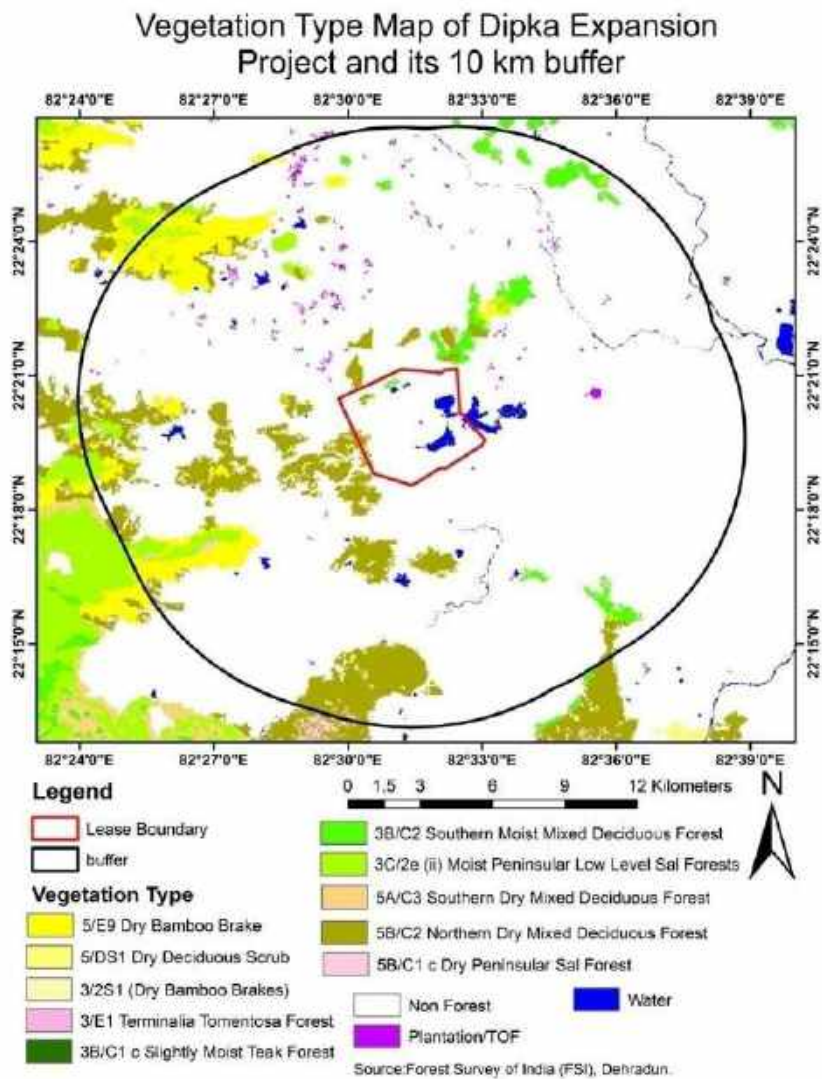
Among the surveyed list of plants, there were two species which appears in the RET category according to IUCN Redlist (The IUCN Red List of Threatened Species. Version 2017-3. Accessed on 28.01.2018). They are *Dalbergia latifolia* (Vulnerable) and *Pterocarpus marsupium* (Near Threatened) **Table 3**.

Map 3:





Map 4:



## Wildlife

The outer boundary of Achanakmar Amarkantak Biosphere Reserve (AABR) is situated about 37 kms (aerial distance) away from the boundary of Dipka OCP (**Map 1**). Although the Dipka mine area is situated considerably far from the AABR boundary, but the larger landscape has records of many fauna (carnivores and herbivores) such as leopard, sloth bear, spotted deer, sambar deer, barking deer, wild dogs, Common Jungle Cat, Jackal, Striped Hyaena, Langur, reptiles and birds.

Faunal survey was conducted by a team from Tropical Forest Research Institute, Jabalpur in the month of May 2017 and December 2017 in and around proposed project area as per methodological prescriptions of the “*Field Guide for Monitoring Tigers, Co-Predators, Prey and their Habitats*”, (National Tiger Conservation Authority & Wildlife Institute of India, 2009). Sampling was done in the forest area in and around the proposed site by walking 1 km line transects perpendicular to the forest road. Except sightings of few groups of langurs, butterflies, birds and cattle, no other carnivores or herbivores could be recorded directly in the surveyed area. Indirect signs (faecal droppings, pellets, dung etc) for presence of spotted deer, Wild Pigs and cattle have been recorded in the surveyed area.

Working Plan of Katghora Division also refers to the following list of Wildlife found in the Katghora Division:

Sl. No.	Order	Common name	Scientific name
1	Carnivora	Tiger	<i>Panthera tigris</i>
2		Leopard	<i>P. pardus</i>
3		Common Jungle Cat	<i>Felis chaus</i>
4		Sloth Bear	<i>Melursus ursinus</i>
5		Wild Dog or Dhole	<i>Cuon alpinus</i>
6		Common Jackal	<i>Canis aureus</i>
7		Striped Hyena	<i>Hyaena hyaena</i>
8		Indian Fox	<i>Vulpes bengalensis</i>
9		Indian Ratel or Honey Badger	<i>Mellivora capensis</i>
10	Primates	Common Langur	<i>Semnopithecus entellus</i>
11		Rhesus macaque	<i>Macaca mulatta</i>
12	Ungulata	Blue Bull or Nilgai	<i>Boselaphus tragocamelus</i>
13		Indian Gazelle or Chinkara	<i>Gazella bennettii</i>
14		Indian Muntjac or Barking deer	<i>Muntiacus muntjak</i>
15		Spotted Deer	<i>Axis axis</i>
16		Sambhar Deer	<i>Rusa unicolor</i>
17		Mouse Deer	-
18		Indian Wild Boar	<i>Sus scrofa</i>
19	Indian Bison	<i>Bos gaurus</i>	
20	Rodentia	Common Indian Hare	<i>Lepus nigricollis</i>
21		Porcupine	-

There were around 8 species of spiders (**Table 11**) and 9 species of butterflies (**Table 12**) sighted during the field survey of the forest adjoining (core and buffer zone) of the proposed OCP.

## **Impact of the proposed project on wildlife**

The likely impacts of the proposed expansion of Dipka opencast coal mine project are being described below:

### *a) Impact on the wildlife within core area of project*

All though the identified location for opencast may not have flagship animal species such as Tiger and Leopard because of its proximity to villages and distance from its territory. But, there are definitely smaller mammals (nocturnal and diurnal), birds and tree species which would face the impact of the proposed project and may also result in displacement or readjustment to various degrees.

### *b) Impacts on the wildlife of the surrounding area due to activities involved in mining*

It is foreseen that, the environment within 5 km radius from the proposed mine boundary will be the zone of influence because of the mining activities. The adjacent forest areas protected/reserve/village forest will be influenced by the mining activities. Many wildlife with inherent limitation to surpass the barrier, those with limited flight / slow land movement would be fragmented due to opencast mine pit. In due course of time, some animal species may learn to adapt to the opencast pit through avoidance.

### *c) Direct loss of habitat*

Opencast mining will cause direct loss to a number of trees of different age groups. In these regions, coal seams are invariably found beneath *Sal* forests. Hence, there will be many *Sal* trees (*Shorea robusta*) that will be cut resulting in crucial changes to the habitat. Those areas comprising of travel roads / gravel roads for trucks meant for transportation of coal are greatly affected by pollution and reduces the scope for the moment of any wildlife.

### *d) Habitat and population fragmentation*

Mining pit will break the already existing continuous habitat patches which would gradually result in creation of smaller patch sizes and higher edge to interior ratio. The loss of interior habitat is of concern for edge-sensitive species.

### *e) Avoidance and reduced access to vital habitats*

Some wildlife species might avoid areas adjacent to mine area due to noise and human activity associated with it. This reduces the access to vital habitats of wildlife found in the area.

The above mentioned impacts are bound to happen with the mining activities. Therefore, appropriate mitigation measures are needed to be executed during the mining operations as well as after the mine closure.

## Habitat management

The following section deals with species-specific suggestions/measures for some important animals in order to improve and better manage their habitat:

### 1. Sloth Bear

*Site specific prescriptions for Sloth Bear (Melursus ursinus)*

Sloth Bear (*Bhalu* in Hindi) is listed in Schedule I of the Indian Wildlife Protection Act and Vulnerable under IUCN Red list which necessitates legal protection of the animal.

#### *Behaviour and biology*

Sloth Bear is a nocturnal insect eating mammal found throughout Indian Subcontinent. Sloth bears subsist primarily on termites, ants, and fruits. This is the only species of bear adapted specifically for ant and termite-eating. In areas where forest cover is less, and where daytime temperatures are high, the bear is largely nocturnal and usually shelters in rock outcrops, thickets, and tree cavities during the heat of the day. Although sloth bears may be active during the day in protected areas, they tend to be almost exclusively nocturnal in disturbed and fragmented forests interspersed with human habitations (Akhtar *et al.* 2004).

Sloth bears typically breed during June-July, and females give birth, usually to one or two cubs, during November –January (Joshi *et al.* 1999, Chauhan *et al.* 2003).

Studies in Nepal and Sri Lanka suggest that sloth bears avoid areas where human disturbance is high, so crop depredation by sloth bears is typically rare (Joshi *et al.* 1995). On the contrary, in some parts of India, sloth bears routinely raid peanut, maize, and fruit crops (e.g., Changani 2002). Chauhan (2006) suggests that such crop depredations may occur because these habitats are severely affected by human exploitation, including the extraction of several food sources for bears.

The most important threat for sloth bear is largely related to deteriorating habitat, which increases the chance of interaction between people and bears. Thus, habitat improvements would be helpful in alleviating such conflicts.

### Manual monitoring

Date, time and place of direct sighting of the animals should be recorded by the field staff. Photographs if possible should be taken to make the sightings more prudent. The data gathered over time, will help in identifying the frequently visited sites and timings. This data would be significant in order to take appropriate course of action for the field staff and villagers to avoid such sites to minimize the bear-human conflicts.

### Habitat enrichment

Extensive reforestation programme should be carried out for fruiting trees such as, *Syzigium cumini* (Jamun), *Madhuca indica* (Mahua), *Ficus glomerata* (Gular) and *Ziziphus* spp. (Jungli baer or Van baer) in order to make more fruiting trees available for the bear. Termite mounds should not be disturbed and Extensive awareness programme should be initiated to

make people of the area understand the importance of wildlife and linkage with the forest area. Any efforts on the part of the villagers to protect and conserve the sloth bear should be incentivized occasionally in the form of rewards as well.

## **2. Leopard**

### *Site specific prescriptions for Leopard (Panthera pardus fusca)*

Leopard (*Panthera pardus fusca*) is listed in Schedule I of the Indian Wildlife Protection Act and Vulnerable under IUCN Red list which necessitates legal protection of the animal.

### *Behaviour and biology*

Leopards occur in the widest range of habitats. They thrive in arid region to rainforests. Leopard subpopulations also occur in suburban and urban environments in India. Leopards have survived outside protected areas in many parts of India since historical times (Daniel 1999) and even today high density of Leopards do occur among high human densities (Singh 2005, Athreya *et al.* 2013), although associated levels of conflict can also be high (Athreya *et al.* 2011).

Leopard diet is related to prey availability and presence of larger competitors. Generally, Leopards prefer medium-sized ungulate prey (10- 40 kgs). They have a highly varied diet, however, feeding on insects, reptiles, birds and small mammals up to large ungulates.

Though the Leopard as a species has the reputation of being a generalist, often individuals will become adept specialists for a particular prey item. These individuals will feed almost exclusively on that prey, occasionally supplementing their diet with other food items when necessary. There are records which state that dogs, goats and cattle forms a large proportion of their diet.

Where competitors are present Leopards will catch their kills under thick vegetation or hoist their prey into the branches of a tree. In the absence of larger competitors, leopards feed on larger prey (Ramakrishnan *et al.* 1999).

### *Habitat enrichment*

Leopards mostly inhabit terrains such as rocky ridges, ravines and grasslands, which would provide them den, protection and escape ways. Areas which are moderately to very steep (>40-50° slopes) with good vegetation cover is a good habitat for them. Specific topographic features and landforms are preferred for their cover requirements. Because of its large range, estimating their density has always been varying.

As human encroachment into leopard habitat increases, the value of secure escape, denning and hiding cover which offers concealment from humans also increases. Secluded rocky areas with a readily available food supply are critical during the first few months after birth of the cubs. Cubs venture from the den at 5-6 weeks, and consume small quantities of meat when 6-8 weeks old.

## *Monitoring*

The primary threats to Leopards are anthropogenic. Habitat fragmentation, reduced prey base and conflict with livestock have reduced Leopard populations throughout most of its range. Diversion of forest habitats may have significant impact on Leopard range.

### *Factors to be considered in conservation efforts of Leopard*

Isolation: The degree of buffering of the core area under consideration is important in terms of leopard behaviour and ecology. Efforts should be made in order to curtail human disturbances

Habitat connectivity: Adjacent, sparsely inhabited or protected areas, particularly national parks and wildlife sanctuaries should be connected through corridors for easy ranging of leopard population.

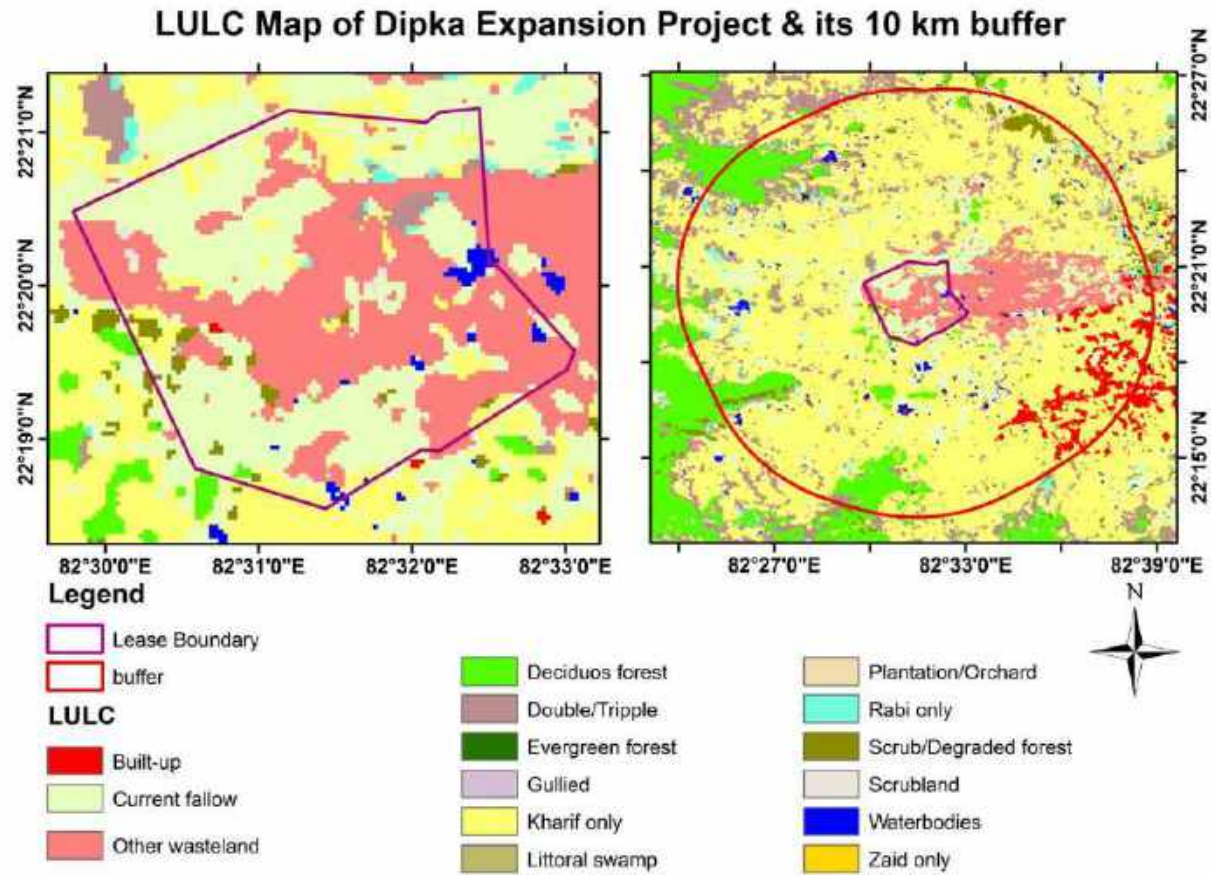
Identify Hotspot and Protection: Hunting is an important factor for their reduced population and fragmentation. Hence, efforts should be made to give protection at key locations where they have been known to frequent.

Community based conflict alleviation initiatives: Awareness needs to be created with villagers to avoid direct conflicts with leopards and the livestock population and pattern should be regulated.

Guarding: Problem predators needs to be controlled through trapping and other traditional control methods and if needed may be relocated to other nearby parks or wildlife sanctuaries.

Monitoring: Stakeholders should employ simple but realistic manual monitoring. Expertise from wildlife biologist should be blended with local knowledge, whenever conflicts arise.

Map 5:



## Mitigation measures and restoration strategies

Keeping in view the analysis of the ground situation, following mitigation measures and restoration strategies are proposed to tackle the adverse impacts of mining operations:

### *Catchment area and channel treatment*

To ensure water availability to flora and fauna during pinch period, channels most affected due to erosion and gullies formation would be treated as per the standard soil and moisture conservation measures being practiced, under the supervision of the forest department. Katghora Forest Division will identify the locations for catchment area treatment and thereafter water harvesting structures may be created as and when funds will be made available by the user agency.

### *Habitat improvement through enrichment plantation*

Since many species of fauna frequent the area, enrichment plantation is proposed in open forest of the 10 km buffer area of the proposed mine boundary, so that canopy cover is improved and enough food plants are available for birds and animals. The choice of species as food plants for Sloth bear may be *Ficus* sp., *Cordia myxa*, *Zizyphus jujuba*, *Mangifera indica*, *Syzygium cimini*, *Casia fistula* etc (Schaller, 2004) and *Diospyros melanoxylon*, *Zizyphus mauritiana* (Yoganand et.al., 2005). Additionally, the area-wise choice of species may also be decided by the DFO, Katghora while preparing annual plan of operation every year.

It is suggested that, within a period of five years, an area 900.12 ha around Dipka OCP ie. may be afforested in a phased manner within the 10 km buffer.

### *Green belt*

A green belt along the outer periphery of the proposed OCP would be beneficial in many ways leading to conservation of biodiversity, retention of soil moisture, recharge of ground water and maintaining pleasant micro climate of the region. In addition, vegetation cover can also absorb pollutants from the environment and helps in effective pollution control. Green belts in and around mining areas are important to the ecological health of any given region. Caution has to be ensured while selecting the species for green belt plantation. Plantation species should be indigenous and those that are already available in the landscape. A land use land cover (LULC) map is given in this report so as to facilitate identifying the locations for green belt locations (**Map 5**).

### *Topsoil conservation*

The soil profile is made up of a number of layers, including the topsoil and overburden layers. The topsoil layer contains a large store of seed and nutrients that are vital to the success of the future mine rehabilitation. Using topsoil during the restoration process can improve the productivity and rate of revegetation. To achieve improved rates, the topsoil must retain its chemical, physical, and biological properties (Visser et al. 1984).

The soil is adversely affected by the removal and storage. Several researchers have shown that stockpiling also has adverse effects on biological properties. Anaerobic conditions are



created in the deeper depths. Decrease in microbial activity and mycorrhizal infection potential of stockpiled soil are common. The number of bacteria, fungi, actinomycetes, and algae are found to be comparatively less in the stored soil than in the undisturbed sites. All this can lead to reduced nutrient cycling and lower availability of nutrients, having adverse effects on the establishment and production of plants when revegetating (Stark and Redente 1987).

In view of the above the stock pile of the topsoil should be inoculated with Vesicular arbuscular mycorrhizal fungi (VAM). To increase the fertility the stock pile will be seeded with various species of leguminous plants. All care should be undertaken to select stockpile location to avoid slopes, natural drainage ways and traffic routes. The above suggestions are to be followed regarding the top soil during the process of mining till the date of back filling.

#### *Potential Conservation Areas (PCA)*

Habitat conservation/ improvement is being suggested to carry out in some of the below identified areas in a phased manner. The list of areas mentioned here are minimal, there can be more areas which can be identified by the DFO, Katghora in due course to execute the works related to habitat improvement. The work needs to be started after getting final forest clearance and other clearances and commencement of mining activities. Within the 10 km buffer of the proposed OCP, there are many areas which are Reserved Forest. All such works are needed to be conducted within the prescriptions of Forest Working Plan and in consultation with DFO, Katghora.

Habitat improvement/development by *ex-situ* conservation through plantation, soil conservation, and development of water bodies is suggested in the following locations, which were surveyed to identify the possibility of carrying out conservation and mitigation measures for wildlife. Activities such as compensatory plantation, plantation of fruiting trees and desilting of ponds may be carried out in the below mentioned locations and forest compartments.

<b>Sl. No.</b>	<b>Potential conservation areas</b>	<b>Latitude/Longitude</b>	<b>Comp. No.</b>	<b>Habitat Type</b>
1	Gevra	N 22° 20' 03.4", E 082° 24' 21.8"		Foot hill
2	Inside mine area	N 22° 19' 41.8", E 082° 30' 22.9"	-	Overburden areas
3	Devpahari Range	N 22° 36' 06.6", E 082° 51' 18.2"	-	Hill forest
4	Hasdeo valley	N 22° 37' 03.3", E 082° 30' 24.3"	-	Foot hills Scrub

The open forest areas within the 10 km buffer of proposed OCP are found to have less than 10% canopy cover. Therefore, these are ideal places for undertaking plantation work. The choice of species for plantation has to be indigenous and should resemble the natural species composition of the area (which can also be referred from the species list given in this plan).

#### *Raising of plantations in and around villages*

Plantation is proposed in the degraded land of the villages (**Map 6**) of buffer area so as to enrich biodiversity in consultation with the forest department. The preferred list of the species to be planted and the area may be decided through village level consultative meetings by the officials of Forest Department and villagers.

The seedlings to be planted needs to be tall saplings of atleast two years old and should follow the standard planting practises of State Forest Department or Forest Corporations. It is suggested that the selected species should atleast consists of 40% fodder species for herbivores, 30 % timber species, 20 % fuel wood species and 10 % NTFP species. Furthermore, it has to be ensured that, there is atleast 80% survival rate at the end of 3<sup>rd</sup> year.

#### *Grass layer for erosion reduction*

Grasses are drought tolerant and can colonize fast in low nutrient soil due to the presence of fibrous roots and helps to reduce soil erosion as they are the best sand binders. The grasses available locally in abundance can be used for biological treatment. For stabilization of loose material and steep slopes, clumps of grasses can be collected from adjacent and nearby areas without destroying the grass cover of the adjacent areas. The grass species suggested for planting in the form of slips and root stocks are given in **Table 13**, which may be grown and multiplied in the nursery.

#### *Hydroseeding*

In order to avoid erosion and to achieve quick seed broadcasting in relatively large area hydro seeding can be a suitable method. This method is very effective on slopes. The results This method results in quick and is with high germination rates .In this method grasses and seeds of herb species especially seeds of legume species along with mulch, AM fungi and bio fertilizers are mixed in water with a consistency of slurry and the slurry is sprayed with the help of a pump. The process of Hydro seeding must be carried out at least two months before the onset of monsoon. Hydro seeding during monsoon may wash away the slurry along with the seed material and nutrients. The species suggested for seed broadcasting/hydro seeding is given in the **Table 14** and these species will get established in disturbed areas, in due course of time.

### **Conservation Education**

#### *Sensitization/Awareness programme for the villagers and school children*

For effective implementation of the conservation strategies, active co-operation of the all villagers of the buffer area and other stakeholders is required. Meetings and seminars are needed to be organised in villages on regular basis to keep people actively involved. The training and awareness programme may include the forest and its utility, Forest and wildlife interaction, man-animal conflict, Forest and water regime of the area, Conservation and Development, habitat degradation etc.

#### *Training for the officials of SECL, Dipka Area*

Sensitization programme are needed to be organised for the officials of SECL, Dipka area regarding forest, wildlife and environmental conservation.

*Training for minimising the man-animal conflict*

It is imperative to train the villagers on the ways to avoid/minimise the interface with wild animals whenever they come in direct contact with them. Do's and don'ts for villagers must be widely circulated either formally or informally to avoid conflicts with wildlife and especially during *Mahua* flowering months of December and January when bear cubs are born in order to minimise the conflict.

*Immediate compensation to villagers for crop damage/human injury*

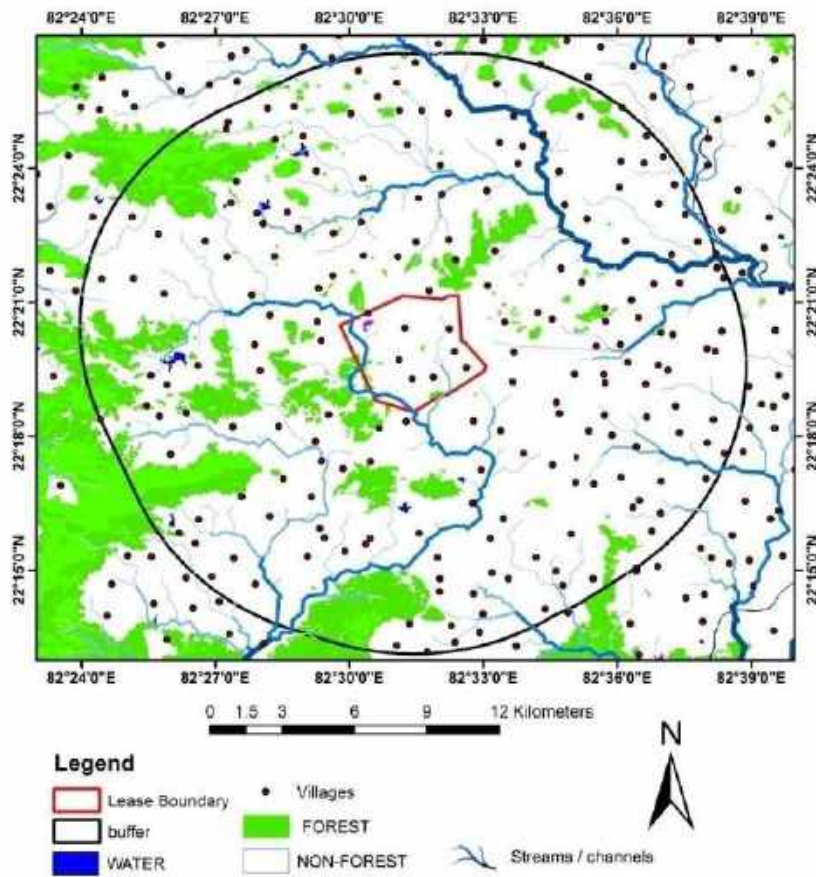
Immediate compensation to villagers should be given in case of injuries/death of human, crop raiding and damages to property caused by any wild animals as per the rates notified by the state forest department and after assessment of damage in consultation with the local forest officers.

*Development of herbal garden*

SECL, Dipka Area must undertake development of an herbal garden at an appropriate place in consultation with DFO, Katghora preferably in the undisturbed area in atleast 2 ha area to rehabilitate vulnerable species and species of medicinal importance. The common medicinal plants found in this region are enlisted in **Table 7**. This would serve the purpose of conservation, awareness as well as improve the aesthetics of the area.

Map 6:

### Location of Villages within proposed Dipka Expansion Project & its 10 km buffer.



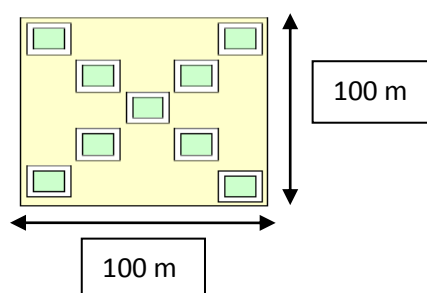
## Research and Monitoring

### *Biodiversity monitoring*

With a view to closely observe and analyse any changes in biodiversity, a baseline study needs to be carried out in the first year of the plan and re-survey will be done in 3<sup>rd</sup> and 5<sup>th</sup> and year. The findings will be entered in the Biodiversity register of the Biodiversity Management Committee at Gram Panchayat level maintained under the provisions of the Biological Diversity Act, 2002.

### *Habitat Monitoring*

Habitat monitoring in forested areas will be done using hectare plots (100m X 100m) in which 9 plots of 10m X 10m will be nested on diagonals. Further, 2m X 2m plots will be sub-nested in the centre of the 10m X 10m plot.



Recording within these plots will be done in the following manner:

Vegetation over 5 m height: In Hectare plot

Vegetation from 0.5m to 5m height: Nested plot

Vegetation less than 0.5m height: Sub-nested plot

Habitat use by different animals may be recorded through indirect signs within above nested plots.

### *Ecological Monitoring*

For ecological monitoring of the vegetation, following format will be used by the protection squad/frontline staffs of the range office and a register will be maintained:-

Particulars of Patrolling			Phenology			
Date	Place & Compartment No.	Time	Flowering Trees/ Plants	Fruiting Trees/ Plants	Leaf Fall	New Leaves
1	2	3	4	5	6	7

Following indices will be prepared for each species of plants:

**Frequency** = Number of plots in which species Occur/Total number of plots surveyed x 100

**Density** = Total number of individuals of the species/Total number of plots surveyed x 100

**Relative frequency** = Frequency of a species /Sum of frequency of all the species x 100

**Relative density** = Density of a species / Sum of density of all species x 100

**Species Richness Index**  $d = S-1/\log N$

Where S = Number of species tallied over all Plots

N = Number of individuals tallied over all Plots

**Shanon Index of general density:**

$H = \sum (n_i / N) \times \log (n_i/N)$

Where  $n_i$  = Importance value of each species

N = Total of importance values of all species

$n_i/N$  = Importance probability of each species (Importance value is based on number of basal area)

The data collected during various phases for sampling for Vegetation, Human disturbance will be collated and put in GIS Domain. This can be correlated with animal base presence. Any change in the habitat can be monitored by time-series data analysis in GIS over the years.

#### *Water quality monitoring*

Quality testing of water in the water bodies to assess their content with regard to silt, heavy metals, toxins etc will be done from a certified laboratory and the report will be submitted to the DFO, Katghora every year.

#### *Wildlife Monitoring of the Area*

To maintain and preserve the wild animals for maintaining ecological processes of the area, periodic monitoring of major species has to be carried out based on standard protocols using line transect, road transect for monitoring herbivores and carnivores, block count for elephant and point counts for monitoring birds during different seasons in different habitats.

All tree species being used by the birds for nesting must be retained as such and these species should be included in the plantation of the adjoining area. Snags should also be allowed to remain as such that are likely to be utilised by many bird species for nesting and perching.

#### *Vigil and Fire Protection*

Apprehending increase in biotic pressure on forest resources due to upcoming mining activities in the region, there would be need for heightened vigil. Measures such as,

enhanced patrolling and creation of fire lines are being suggested. Few observation towers / watch towers are also needed to be created at vulnerable locations to help monitoring wildlife movements as well as incidence of fire.

### **Structure and Responsibilities**

#### *Contingency Corpus Fund*

A corpus fund with an initial corpus of Rs. 50 lakh (for 5 years) will be maintained with DFO, Katghora in a separate account to which contribution will be made by SECL, Dipka Area to meet the requirement of immediate ex-gratia payment (for damages caused by wild animals) to the people of the zone of influence area.

#### *Plan period*

The plan is for a Plan period 05 year period from 2020-21 to 2025-26. Intermediate revision may be undertaken if felt necessary by the forest department.

#### *Monitoring Committee*

A monitoring committee under the Chairmanship of the DFO Karghora needs be formed with one representative from SECL Dipka Area, village representatives and Range officer as members. The committee will oversee the smooth implementation of plan. The committee will assess the progress of implementation twice in a year based on the annual plan of operations and Budget. The committee will also ensure that the adherence to conditions imposed under statutory clearances is complied with in letter and spirit.

#### *Funding*

The plan will be fully funded by the South Eastern Coalfields Limited, Dipka Area. A separate account shall be maintained for this purpose with DFO, Katghora who shall be implementing agency.

**The budget**

An indicative budget for Rs. 1132 Lakhs is proposed for various activities to be undertaken based on the proposed mitigative measures for five years. The DFO, Katghora will work out the actual costing and monitor the implementation of the prescriptions. The details of the items are listed in the **Table 15**.



**Table 3:** List of plant species recorded during the field survey of the forest in and around Dipka OCP

S. No	Species name	Family	Local name	Life form	IUCN Threat status
1.	<i>Acacia Arabica</i>	Mimosaceae	Babool	Tree	-
2.	<i>Acacia mangium</i>	Mimosaceae		Tree	-
3.	<i>Aegle marmelos</i>	Rutaceae	Bhel	Tree	-
4.	<i>Alangium salvifolium</i>	Alangiaceae	Ankol	Shrub	-
5.	<i>Alternanthera sessilis</i>	Acanthaceae		Herb	Least Concern
6.	<i>Anogeissus latifolia</i>	Combretaceae	Dhawda	Tree	-
7.	<i>Anogeissus pendula</i>	Combretaceae	Kardhai	Tree	-
8.	<i>Anthocephalus chinensis</i>	Rubiaceae	Kadam	Tree	-
9.	<i>Atylosia scarabaeoides</i>	Fabaceae	Van Arhar	Herb	Least Concern
10.	<i>Azadirachta indica</i>	Meliaceae	Neem	Tree	-
11.	<i>Bauhinia vahlii</i>	Caesalpiniaceae	Maloo	Climber	-
12.	<i>Bombax cieba</i>	Malvaceae	Semal	Tree	-
13.	<i>Boswellia serrata</i>	Burseraceae	Salai	Tree	-
14.	<i>Bridelia retusa</i>	Phyllanthaceae		Tree	-
15.	<i>Buchanania lanzan</i>	Anacardiaceae	Chiraunji	Tree	-
16.	<i>Butea monosperma</i>	Fabaceae	Palas	Tree	-
17.	<i>Carea arborea</i>	Lecythidaceae	Kumhi	Tree	-
18.	<i>Cassia fistula</i>	Caesalpiniaceae	Dhanbaheer	Tree	-
19.	<i>Cassia siamea</i>	Caesalpiniaceae		Tree	-
20.	<i>Chloroxylon swietenia</i>	Rutaceae	Bhirra	Tree	-
21.	<i>Cynadon dactylon</i>	Poaceae	Duba	Grass	-
22.	<i>Apluda mutica</i>	Cyperaceae		Grass	Least Concern
23.	<i>Dactyloctenium aegyptium</i>	Poaceae		Grass	-
24.	<i>Dalbergia latifolia</i>	Fabaceae	Sisuan	Tree	Vulnerable
25.	<i>Dalbergia sisso</i>	Fabaceae	Sisso	Tree	-
26.	<i>Delonix regia</i>	Caesalpiniaceae	Gulmohar	Tree	Least Concern
27.	<i>Dendrocalamus strictus</i>	Poaceae	Baans	Grass	-
28.	<i>Desmodium triflorum</i>	Fabaceae	Teenpatiya	Herb	Least Concern
29.	<i>Dichanthium annulatum</i>	Poaceae		Grass	-
30.	<i>Diospyros melanoxylon</i>	Ebenaceae	Tendu	Tree	-
31.	<i>Elaeodendron glaucum</i>	Celastraceae		Tree	-
32.	<i>Elephantopus scaber</i>	Asteraceae		Herb	Least Concern
33.	<i>Embelia tsjeriam-cottam</i>	Mysinaceae	Baibiring	Climber	-
34.	<i>Phyllanthus emblica</i>	Phyllanthaceae	Aonla	Tree	-
35.	<i>Eragrostis minima</i>	Poaceae		Grass	-
36.	<i>Eucalyptus tereticornis</i>	Myrtaceae	Eucalyptus	Tree	-
37.	<i>Evolvulus alsinoides</i>	Convolvulaceae	Neelkanthi	Herb	-
38.	<i>Evolvulus nummularis</i>	Convolvulaceae	Musakani	Herb	-
39.	<i>Ficus benghalensis</i>	Moraceae	Barh	Tree	-
40.	<i>Ficus virens</i>	Moraceae	Pakar	Tree	-
41.	<i>Ficus religiosa</i>	Moraceae	Peepal	Tree	-
42.	<i>Flacourtia indica</i>	Flacourtiaceae	Salicaceae	Tree	-
43.	<i>Gardenia gummifera</i>	Rubiaceae	Dekamali	Tree	Least Concern
44.	<i>Gmelina arborea</i>	Verbenaceae	Khamer	Tree	-

S. No	Species name	Family	Local name	Life form	IUCN Threat status
45.	<i>Haldiana cordifolia</i>	Rubiaceae	Haldu	Tree	-
46.	<i>Helictres isora</i>	Tiliaceae	Ainthe	Shrub	-
47.	<i>Hemidesmus indicus</i>	Asclepiadaceae	Anantmul	Herb	-
48.	<i>Holarrhena antidysenterica</i>	Apocynaceae	Kurchi	Tree	-
49.	<i>Hymenodictyon orixens</i>	Rubiaceae	Bhowrmal	Tree	-
50.	<i>Hyptis suaveolens</i>	Lamiaceae	Van-tulsi	Herb	-
51.	<i>Ipomoea carnea</i>	Convolvulaceae	Besharam	Shrub	-
52.	<i>Jatropha curcas</i>	Euphorbiaceae	Jatropha	Tree	-
53.	<i>Lagerstroemia parviflora</i>	Lythraceae	Lendia	Tree	-
54.	<i>Lagerstroemia reginae</i>	Lythraceae		Tree	-
55.	<i>Lannea coromandelica</i>	Anacardiaceae	Goonja	Tree	-
56.	<i>Lantana camara</i>	Verbenaceae	Lantana	Shrub	-
57.	<i>Leucas aspera</i>	Lamiaceae	Gumma	Herb	-
58.	<i>Madhuca longifolia</i>	Sapotaceae	Mahua	Tree	-
59.	<i>Mangifera indica</i>	Anacardiaceae	Aam	Tree	Data deficient
60.	<i>Melia azadirachta</i>	Meliaceae	Bakain	Tree	-
61.	<i>Melia dubia</i>	Meliaceae		Tree	-
62.	<i>Mitragyna parviflora</i>	Rubiaceae	Mundi	Tree	-
63.	<i>Olax scandens</i>	Olacaceae		Climber	-
64.	<i>Oplismenus burmannii</i>	Poaceae	Venupatrika	Grass	-
65.	<i>Peltophorum pterocarpum</i>	Fabaceae	Peela gulmohar	Tree	-
66.	<i>Phoenix acaulis</i>	Arecaceae	Chinnd	Shrub	-
67.	<i>Pongamia pinnata</i>	Fabaceae	Karanj	Tree	Least Concern
68.	<i>Pterocarpus marsupium</i>	Fabaceae	Bija sal	Tree	Vulnerable
69.	<i>Rungia pectinata</i>	Acanthaceae	Sut	Herb	-
70.	<i>Schleichera oleosa</i>	Sapindaceae	Kusum	Tree	-
71.	<i>Semecarpus anacardium</i>	Anacardiaceae	Bhilwa	Tree	-
72.	<i>Setaria pumila</i>	Poaceae		Grass	-
73.	<i>Shorea robusta</i>	Dipterocarpaceae	Sal	Tree	Least Concern
74.	<i>Sida acuta</i>	Malvaceae		Herb	-
75.	<i>Sida rhombifolia</i>	Malvaceae	Bala	Herb	-
76.	<i>Sterculia urens</i>	Sterculiaceae	Kullu	Tree	-
77.	<i>Syzygium cumini</i>	Myrtaceae	Jamun	Tree	-
78.	<i>Terminalia arjuna</i>	Combretaceae	Arjun	Tree	-
79.	<i>Terminalia bellerica</i>	Combretaceae	Bahera	Tree	-
80.	<i>Terminalia tomentosa</i>	Combretaceae	Saja	Tree	-
81.	<i>Vernonia cinerea</i>	Asteraceae		Herb	-
82.	<i>Woodfordia fruticosa</i>	Lythraceae	Dhawai	Shrub	-

**Table 4:** Phyto-sociological attributes of tree species in and around Dipka OCP

S. No.	Tree species	Density (Stems/ha)	Abundance	Frequency (%)	Basal cover (m <sup>2</sup> /ha)	Relative Density	Relative Freq.	Relative Dom.	IVI
1.	<i>Shorea robusta</i>	41.11	5.29	77.78	1.55	40.66	21.21	54.35	116.22
2.	<i>Diospyros melanoxylon</i>	21.11	3.80	55.56	0.32	20.88	15.15	11.04	47.08
3.	<i>Madhuca indica</i>	6.67	1.20	55.56	0.32	6.59	15.15	11.20	32.94
4.	<i>Lagerstroemia parviflora</i>	14.44	4.33	33.33	0.15	14.29	9.09	5.27	28.64
5.	<i>Boswellia serrata</i>	2.22	1.00	22.22	0.09	2.20	6.06	3.13	11.39
6.	<i>Buchanania lanzan</i>	3.33	1.50	22.22	0.02	3.30	6.06	0.75	10.10
7.	<i>Anogeissus pendula</i>	2.22	1.00	22.22	0.05	2.20	6.06	1.60	9.85
8.	<i>Terminalia tomentosa</i>	2.22	1.00	22.22	0.02	2.20	6.06	0.77	9.03
9.	<i>Haldiana cordifolia</i>	2.22	2.00	11.11	0.10	2.20	3.03	3.59	8.82
10.	<i>Lannea coromandelica</i>	2.22	2.00	11.11	0.09	2.20	3.03	3.19	8.42
11.	<i>Schleichera oleosa</i>	1.11	1.00	11.11	0.10	1.10	3.03	3.60	7.73
12.	<i>Ougenia dalbergioides</i>	1.11	1.00	11.11	0.03	1.10	3.03	0.95	5.08
13.	<i>Butea monosperma</i>	1.11	1.00	11.11	0.02	1.10	3.03	0.56	4.69
14.	<b>Grand Total</b>	<b>101.11</b>		<b>366.67</b>	<b>2.86</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>300.00</b>

Simpson Index of dominance =0.20

Shannon Weiner index of diversity=0.87

Plieou index of evenness= 0.34

**Table 5:** Phyto-sociological attributes of tree saplings and shrubs in and around Dipka OCP

S. No	Tree species	Density (Stems/ha)	Abundance	Frequency (%)	Basal cover (m <sup>2</sup> /ha)	Relative Density	Relative Freq.	Relative Dom.	IVI
<b>Saplings</b>									
1.	<i>Anogeissus latifolia</i>	246.91	2.00	11.11	0.02	0.59	4.55	0.98	6.12
2.	<i>Azadirachta indica</i>	123.46	1.00	11.11	0.02	0.29	4.55	0.87	5.71
3.	<i>Buchanania lanzan</i>	123.46	1.00	11.11	0.03	0.29	4.55	1.11	5.95
4.	<i>Butea monosperma</i>	3580.25	14.50	22.22	0.77	8.53	9.09	32.08	49.70
5.	<i>Diospyros melanoxylon</i>	3209.88	13.00	22.22	0.42	7.65	9.09	17.40	34.14
6.	<i>Gardenia gummifera</i>	987.65	8.00	11.11	0.09	2.35	4.55	3.93	10.83
7.	<i>Haldiana cordifolia</i>	123.46	1.00	11.11	0.03	0.29	4.55	1.11	5.95
8.	<i>Lagerstroemia parviflora</i>	123.46	1.00	11.11	0.03	0.29	4.55	1.11	5.95
9.	<i>Madhuca indica</i>	246.91	2.00	11.11	0.05	0.59	4.55	2.21	7.35
10.	<i>Shorea robusta</i>	1481.48	6.00	22.22	0.14	3.53	9.09	5.90	18.52
<b>Shrubs</b>									
11.	<i>Phoenix acaulis</i>	123.46	1.00	11.11	0.03	0.29	4.55	1.11	5.95
12.	<i>Lantana camara</i>	31358.02	36.29	77.78	0.75	74.71	31.82	31.22	137.74
13.	<i>Holarhena antidysentrica</i>	246.91	2.00	11.11	0.02	0.59	4.55	0.98	6.12
		<b>41975.31</b>		<b>244.44</b>	<b>2.40</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>300.00</b>

Simpson Index of dominance =0.26

Shannon Weiner index of diversity=0.79

Plieou index of evenness= 0.31

**Table 6:** Phyto-sociological attributes of seedlings (trees and shrubs) and herbs in and around Dipka OCP

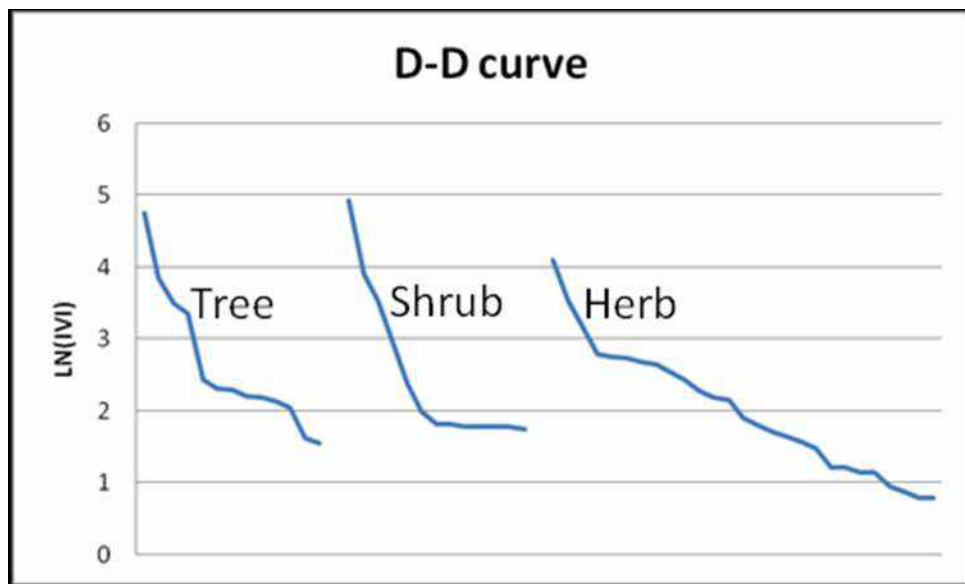
S. No	Tree species	Density (Stems/unit area)	Abundance	Freq- uency (%)	Basal cover (m <sup>2</sup> /ha)	Rel- ative Density	Rel- ative Freq.	Rel- ative Dom.	IVI
<b>Herbs</b>									
	<i>Alternanthera sessilis</i>	0.89	4.00	22.22	0.001	1.67	3.64	1.40	6.70
	<i>Bothrichola ischaemum</i>	0.44	4.00	11.11	0.000	0.84	1.82	0.70	3.35
	<i>Atylosia scarabaeoides</i>	0.11	1.00	11.11	0.000	0.21	1.82	0.17	2.20
	<i>Cynadon dactylon</i>	0.44	4.00	11.11	0.000	0.84	1.82	0.70	3.35
	<i>Cyperus compressus</i>	3.44	15.50	22.22	0.004	6.47	3.64	5.41	15.52
	<i>Dactyloctenium aegyptium</i>	0.89	2.67	33.33	0.001	1.67	5.45	1.40	8.52
	<i>Desmodium trifolium</i>	2.11	4.75	44.44	0.002	3.97	7.27	3.32	14.56
	<i>Elephantopus scaber</i>	0.78	7.00	11.11	0.002	1.46	1.82	2.75	6.03
	<i>Eragrostis cilianensis</i>	0.11	1.00	11.11	0.000	0.21	1.82	0.39	2.42
	<i>Evolvulus alsinoides</i>	2.78	25.00	11.11	0.003	5.22	1.82	4.36	11.40
	<i>Hemidesus indicus</i>	0.33	1.50	22.22	0.000	0.63	3.64	0.52	4.79
	<i>Hyptis suaveolens</i>	15.78	47.33	33.33	0.017	29.65	5.45	24.78	59.88
	<i>Dichanthium annulatum</i>	0.22	2.00	11.11	0.000	0.42	1.82	0.35	2.58
	<i>Leucas aspera</i>	2.89	8.67	33.33	0.003	5.43	5.45	4.54	15.42
	<i>Evolvulus nummularis</i>	3.78	5.67	66.67	0.004	7.10	10.91	5.93	23.94
	<i>Oplismenus burmannii</i>	2.11	6.33	33.33	0.002	3.97	5.45	3.32	12.74
	<i>Rungia pectinata</i>	0.11	1.00	11.11	0.000	0.21	1.82	0.17	2.20
	<i>Setaria viridis</i>	0.56	2.50	22.22	0.001	1.04	3.64	0.87	5.55
	<i>Sida acuta</i>	8.89	40.00	22.22	0.009	16.70	3.64	13.96	34.30
	<i>Sida cordifolia</i>	1.22	3.67	33.33	0.001	2.30	5.45	1.92	9.67
	<i>Spermacoce hispida</i>	3.11	9.33	33.33	0.003	5.85	5.45	4.89	16.19
	<i>Vernonia cinerea</i>	0.44	2.00	22.22	0.000	0.84	3.64	0.70	5.17
	<i>Holarhena antidysentrica</i>	0.44	2.00	22.22	0.003	0.84	3.64	4.36	8.83
<b>Seedlings (shrubs/ trees)</b>									
	<i>Lantana camara</i>	0.22	2.00	11.11	0.001	0.42	1.82	2.18	4.42
	<i>Diospyros melanoxylon</i>	0.11	1.00	11.11	0.001	0.21	1.82	1.09	3.12
	<i>Lagerstroemia parviflora</i>	0.11	1.00	11.11	0.001	0.21	1.82	1.09	3.12
	<i>Shorea robusta</i>	0.89	4.00	22.22	0.006	1.67	3.64	8.73	14.03
		<b>53.22</b>	<b>208.92</b>	<b>611.11</b>	<b>0.07</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>300.00</b>

Simpson Index of dominance =0.08

Shannon Weiner index of diversity=1.25

Plieou index of evenness= 0.38

**Figure 1:** Dominance Diversity Curve for Tree Shrubs and Herb species in the studied community



**Table 7:** List of medicinal plants recorded from the sampled list of species in and around Dipka OCP.

S. No	Species name	Local name	Life form
1	<i>Aegle marmelos</i>	Bhel	Tree
2	<i>Bombax cieba</i>	Semal	Tree
3	<i>Cassia fistula</i>	Dhanbaher	Tree
4	<i>Chloroxylon swietiena</i>	Bhirra	Tree
5	<i>Elephantopus scaber</i>		Herb
6	<i>Embelia tsjeriam-cottam</i>	Baibiring	Climber
7	<i>Evolvulus alsinoides</i>	Neelkanthi	Herb
8	<i>Gmelina arborea</i>	Khamer	Tree
9	<i>Helictres isora</i>	Ainthe	Shrub
10	<i>Hemidesmus indicus</i>	Anantmul	Herb
11	<i>Holarrhena antidysenterica</i>	Kurchi	Tree
12	<i>Melia azadirachta</i>	Bakain	Tree
13	<i>Phyllanthus emblica</i>	Aonla	Tree
14	<i>Pongamia pinnata</i>	Karanj	Tree
15	<i>Pterocarpus marsupium</i>	Bija sal	Tree
16	<i>Schleichera oleosa</i>	Kusum	Tree
17	<i>Semecarpus anacardium</i>	Bhilwa	Tree
18	<i>Shorea robusta</i>	Sal	Tree
19	<i>Sida rhombifolia</i>	Bala	Herb
20	<i>Syzygium cumini</i>	Jamun	Tree
21	<i>Terminalia bellerica</i>	Bahera	Tree
22	<i>Terminalia tomentosa</i>	Saja	Tree
23	<i>Vernonia cinerea</i>		Herb
24	<i>Woodfordia fruticosa</i>	Dhawai	Shrub

**Table 8:** List of fodder plants recorded from the sampled list of species in and around Dipka OCP.

S. No	Species name	Local name	Life form
1	<i>Cynadon dactylon</i>	Duba	Grass
2	<i>Apluda mutica</i>		Grass
3	<i>Dactyloctenium aegyptium</i>		Grass
4	<i>Dendrocalamus strictus</i>	Baans	Grass
5	<i>Dichanthium annulatum</i>		Grass
6	<i>Ficus benghalensis</i>	Barh	Tree

**Table 9:** List of food plants recorded from the sampled list of species in and around Dipka OCP.

S. No	Species name	Local name	Life form
1	<i>Aegle marmelos</i>	Bhel	Tree
2	<i>Alangium salvifolium</i>	Ankol	Shrub
3	<i>Bauhinia vahlii</i>	Maloo	Climber
4	<i>Bombax cieba</i>	Semal	Tree
5	<i>Buchanania lanzan</i>	Chiraunji	Tree
6	<i>Dendrocalamus strictus</i>	Baans	Grass
7	<i>Diospyros melanoxydon</i>	Tendu	Tree
8	<i>Madhuca longifolia</i>	Mahua	Tree
9	<i>Mangifera indica</i>	Aam	Tree
10	<i>Phoenix acaulis</i>	Chinnd	Shrub
11	<i>Phyllanthus emblica</i>	Aonla	Tree
12	<i>Semecarpus anacardium</i>	Bhilwa	Tree
13	<i>Sterculia urens</i>	Kullu	Tree
14	<i>Syzygium cumini</i>	Jamun	Tree



**Table 10:** List of timber trees recorded from the sampled list of species in and around Dipka OCP.

S. No	Species name	Local name	Life form
1	<i>Anogeissus latifolia</i>	Dhawda	Tree
2	<i>Bridelia retusa</i>	-	Tree
3	<i>Cassia fistula</i>	Dhanbaher	Tree
4	<i>Chloroxylon swietenia</i>	Bhirra	Tree
5	<i>Dalbergia latifolia</i>	Sisuan	Tree
6	<i>Dalbergia sisso</i>	Sisso	Tree
7	<i>Gmelina arborea</i>	Khamer	Tree
8	<i>Haldiana cordifolia</i>	Haldu	Tree
9	<i>Lagerstroemia parviflora</i>	Lendia	Tree
10	<i>Lannea coromandelica</i>	Goonja	Tree
11	<i>Madhuca longifolia</i>	Mahua	Tree
12	<i>Mangifera indica</i>	Aam	Tree
13	<i>Mitragyna parviflora</i>	Mundi	Tree
14	<i>Ougeinia dalbergioides</i>	Tinsa	Tree
15	<i>Pterocarpus marsupium</i>	Bija sal	Tree
16	<i>Schleichera oleosa</i>	Kusum	Tree
17	<i>Setaria pumila</i>	-	Grass
18	<i>Shorea robusta</i>	Sal	Tree
19	<i>Syzygium cumini</i>	Jamun	Tree
20	<i>Terminalia arjuna</i>	Arjun	Tree

**Table 11:** List of spider species recorded in and around Dipka OCP.

Sl. No.	Common name	Scientific name
1	Silvery Garden Spider	<i>Leucauge decorata</i>
2	Lynx Spider	<i>Peucetia latikae</i>
3	Signature Spider	<i>Argiope aemula</i>
4	Giant Wood spider	<i>Nephila pilipes</i>
5	Two Tailed Spider	<i>Hersilia savigny</i>
6	Ghost spider Female	<i>Neoscona punctigera</i>
7	Four Jawed Spider	<i>Tetragnatha javana</i>
8	Tent Web Spider	<i>Cyrtophora cicatrosa</i>

**Table 12:** List of butterflies recorded in and around Dipka OCP.

Sl. No.	Common name	Scientific name	Family
1	Baronet	<i>Symphaedra nais</i>	Nymphalidae
2	Three-spot Grass Yellow	<i>Eurema blanda</i>	Pieridae
3	Common leopard	<i>Phalanta phalantha</i>	Nymphalidae
4	Oriental great eggfly	<i>Hypolimnas bolina</i>	Nymphalidae
5	Danaid Eggfly	<i>Hypolimnas misippus</i>	Nymphalidae
6	Tawny coster	<i>Acraea terpsicore</i>	Nymphalidae
7	Continental Common Pierrot	<i>Castalius rosimon rosimon</i>	Lycaenidae
8	Oriental Common Evening Brown	<i>Melanitis leda leda</i>	Satyridae
9	Oriental Plain Tiger	<i>Danaus chrysippus chrysippus</i>	Nymphalidae

**Table 13:** Grass species recommended for Soil Moisture Conservation (SMC) and stabilization of loose material and steep slopes of over burden dumps in and around Dipka OCP

Sl. No.	Species	Propagation method
1	<i>Cymbopogon martinii</i>	Slips
2	<i>Cynodon dactylon</i>	Rhizome/Seeds
3	<i>Chrysopogon fulvus</i>	Slips
4	<i>Dichanthium annulatum</i>	Seeds
5	<i>Chloris virgata</i>	Seeds
6	<i>Dichanthium caricosum</i>	Seeds/Clumps
7	<i>Echinochloa crusgalli</i>	Seeds/Clumps
8	<i>Heteropogon contortus</i>	Slips/Seeds
9	<i>Panicum psilopodium</i>	Seeds/Slips
10	<i>Saccharum spontaneum</i>	Slips
11	<i>Themeda quadrivalvis</i>	Slips
12	<i>Vertiveria zizanoides</i>	Slips

**Table 14: Species recommended for Hydro seeding**

<b>Sl. No.</b>	<b>Species</b>	<b>Family</b>	<b>Habit</b>
1	<i>Chrysopogon fulvus</i>	Poaceae	Grass
2	<i>Chloris virgata</i>	Poaceae	Grass
3	<i>Dichanthium annulatum</i>	Poaceae	Grass
4	<i>Cymbopogon martinii</i>	Poaceae	Grass
5	<i>Cynodon dactylon</i>	Poaceae	Grass
6	<i>Heteropogon contortus</i>	Poaceae	Grass
7	<i>Panicum psilopodium</i>	Poaceae	Grass
8	<i>Saccharum spontaneum</i>	Poaceae	Grass
9	<i>Themeda quadrivalvis</i>	Poaceae	Grass
10	<i>Vertiveria zizanoides</i>	Poaceae	Grass
11	<i>Cassia auriculata</i>	Caesalpiniaceae	Legume
12	<i>Cassia occidentalis</i>	Caesalpiniaceae	Legume
13	<i>Cassia tora</i>	Caesalpiniaceae	Legume
14	<i>Crotalaria albida</i>	Fabaceae	Legume
15	<i>Crotalaria retusa</i>	Fabaceae	Legume
16	<i>Crotalaria juncea</i>	Fabaceae	Legume
17	<i>Stylosanthes fruticosa</i>	Fabaceae	Legume
18	<i>Tephrosia purpurea</i>	Fabaceae	Legume

**Table 13:** An Indicative budget

Sl. No.	Category	Items of work	Year 1	Year 2	Year 3	Year 4	Year 5	Total amount in Rs. (in Lakhs)
1	<b>Biodiversity monitoring</b>	a. Habitat survey of the proposed site	10.00	10.00	05.00	-	-	25.00
		b. Ecological/Environmental monitoring	03.20	03.20	03.20	03.20	03.20	16.00
		c. Monitoring of physicochemical properties of water bodies near site	1.00	1.00	1.00	1.00	1.00	5.00
		d. Creation of biodiversity park / herbal garden	50.00	25.00	-	-	-	75.00
2	<b>Habitat improvement</b>	a. Enrichment plantation of suitable species	20.00	20.00	10.00	-	-	50.00
		b. Raising of plantations in and around villages	40.00	40.00	20.00	-	-	100.00
		c. Protection work (Fencing of boundaries, fields and villages)	20.00	20.00	20.00	20.00	20.00	100.00
		d. Weed/Invasive species eradication works	10.00	10.00	10.00	10.00	10.00	50.00
		e. Green belt	20.00	20.00	20.00	20.00	20.00	100.00
3	<b>Catchment area and channel treatment</b>	a. Soil and moisture conservation works	10.00	10.00	10.00	10.00	10.00	50.00
		b. Existing watershed development	10.00	10.00	10.00	10.00	10.00	50.00
		c. Reclamation of streams	3.00	3.00	3.00	3.00	3.00	15.00
4	<b>Training and awareness</b>	Empowering and sensitizing villagers for protection of wildlife	40.00	20.00	10.00	-	-	70.00
5	<b>Compensation</b>	Provision for compensation for loss/damage/injury to crop, property, human and livestock	20.00	20.00	20.00	20.00	20.00	100.00
6	<b>Protection</b>	a. Fire protection, watch towers	30.00	30.00	15.00	-	-	75.00
		b. Protection work like CPT, Fencing of boundaries, fields and villages, wherever necessary	30.00	30.00	25.00	18.00	18.00	121.00
		c. Patrolling vehicles for wildlife monitoring	30.00	-	-	-	-	30.00
7	<b>Contingency corpus fund</b>	Corpus fund to remain with concerned DFO Khatgora to meet any contingency and miscellaneous work as approved by concerned authorities	50.00	-	50.00	-	-	100.00
<b>Total</b>			<b>397.20</b>	<b>272.20</b>	<b>232.20</b>	<b>115.20</b>	<b>115.20</b>	<b>1132.00</b>

## REFERENCES

1. Akhtar, N., Bargali, H. S. and Chauhan, N. P. S. 2004. Sloth bear habitat use in disturbed and unprotected areas of Madhya Pradesh, India. *Ursus* 15: 203-211.
2. Athreya, V., Odden, M., Linnell, J.D.C., and Karanth, U. 2011. Translocation as a tool for mitigating conflict with leopards in human-dominated landscapes of India. *Conservation Biology* 25: 133-141.
3. Athreya, V., Odden, M., Linnell, J.D.C., Krishnaswamy, J. and Karanth, U. 2013. Big cats in our backyards: Persistence of large carnivores in a human dominated landscape in India. *Plos-One* 8(3): 1-8.
4. Champion H. G. and S. K. Seth. 1968. A Revised Survey of the Forest Types of India. Published by Govt. of India Press.
5. Chauhan, N. P. S., Bargali, H. S. and Akhtar, N. 2003. Ecology and management of problematic sloth bear in North Bilaspur forest division Madhya Pradesh. Wildlife Institute of India, Dehradun, India.
6. Chauhan, N. S. 2006. The status of sloth bears in India. Understanding Asian bears to secure their future, pp. 26-34. Japan Bear Network, Ibaraki, Japan.
7. Chhangani, A. K. 2002. Food and feeding of sloth bear (*Melursus ursinus*) in Aravalli Hills of Rajasthan, India. Tiger Paper 29(2): 1-6.
8. Curtis, J. T. and McIntosh, R. P. (1950) The inter-relations of certain analytical and synthetic phytosociological character. *Ecology* 31: 434-455.
9. Curtis, J. T. and McIntosh, R. P. (1951) An upland forest continuum in the Prairie-forest border region of Wisconsin. *Ecology* 32: 476-496
10. Daniel, J.C. 1999. *The Leopard in India: A Natural History*. Natraj Publishers, Duhradun, India.
11. Dookia, S., Rawat, M., Jakher, G.R. and Dookia, B.R., 2009. Status of the Indian Gazelle (*Gazella bennettii* Sykes, 1831) in the Thar Desert of Rajasthan, India. In *Faunal Ecology and Conservation of the Great Indian Desert* (pp. 193-207).
12. Field Guide for Monitoring Tigers, Co-Predators, Prey and their Habitats (2009). National Tiger Conservation Authority & Wildlife Institute of India.
13. Greig-Smith (1964) Quantitative plant ecology. 2<sup>nd</sup> Edition Butterworth, London.
14. IUCN (2017), retrieved on 24.01.2018 [www.iucnredlist.org](http://www.iucnredlist.org)
15. Joshi, A. R., Garshelis, D. L. and Smith, L. D. 1995. Home ranges of sloth bears to Nepal: Implications for conservation. *Journal of Wildlife Management* 59: 204-214.
16. Joshi, A. R., Smith, J. L. D. and Garshelis, D. L. 1999. Sociobiology of the myrmecophagous sloth bear in Nepal. *Canadian Journal of Zoology* 77: 1690-1704.
17. Magurran, A. E. (2005) Measuring biological diversity. Oxford, U. K. Blackwell Science.
18. Mishra (1968) Ecology Workbook, Oxford & IBH Co. New Delhi. pp. 244.

19. Muller-Dombois and Ellenberg (1974) Aims and methods of vegetation ecology, John Wiley and Sons, New York.
20. Pielou, E. C. (1975) Ecological Diversity, New York: Wiley.
21. Quantum Geographical Information System. Version 1.7.4., [www.qgis.com](http://www.qgis.com)
22. Ramakrishnan, U., Coss, R.G., and Pelkey, N.W. 1999. Tiger decline caused by the reduction of large ungulate prey: evidence from a study of leopard diets in southern India. *Biological Conservation* 89: 113-120.
23. Schaller, G. B. (2004). The Deer and The Tiger- A study of wildlife in India, Nataraj Publishers, Dehradun, 312.
24. Shannon, C. E. and Wiener, W. (1963) The mathematical theory of communication. University of Illinois Press, Urbana, pp 117.
25. Singh, H. S. 2005. Status of the leopard *P. p. fusca* in India. *Cat News* 42: 15-17.
26. State of Forest Report (SFR), 2011; Forest Survey of India, Dehradun
27. Working plan of Umaria Forest Division (2010-11 to 2019-2020), Chhattisgarh Forest Department.
28. Yoganand, K., Rice C.G. & Johnsingh A.J.T. (2005). Evaluating Panna National Park with special reference to ecology of Sloth Bear, Wildlife Institute of India, Dehradun.



**Team of Researchers from TFR, Staff of Forest Department and staff of SECL jointly surveying the the overburden dumps**



**Team of researchers from TFR team conducting vegetation survey**



**Team of researchers from TFR and Staff of SECL jointly surveying the demarcated boundary of proposed mine lease (ML) area**



**Team of researchers from TFR carrying out avifaunal survey**



**During bird survey**



**Survey of water birds in a nearby waterbody**



**During a early morning bird survey in the agricultural mabrics adjacent to the proposed mine**



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क्रमांक / तक.अधि. / 2022 / 5185

कटघोरा, दिनांक 08.12.2022

प्रति,

महाप्रबंधक,  
एस.ई.सी.एल. दीपका क्षेत्र  
जिला कोरबा (छ.ग.)

विषय :

Wildlife Conservation plan for Dipka Expansion Project, SECL.

संदर्भ :

प्रधान मुख्य वन संरक्षक (वन्यप्राणी एवं जैव विधिता संरक्षण) रायपुर का आदेश क्र./व.प्रा.  
/प्रबंध-578/187 दिनांक 04.11.2022

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उपरोक्त संदर्भित विषयांतर्गत लेख है कि मेसर्स एस.ई.सी.एल. दीपका प्रोजेक्ट के विस्तार हेतु भारत सरकार, पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय द्वारा जारी टी.ओ.आर. दिनांक 12.02.2013 में अधिरोपित शर्तों के पालनार्थ वन्यप्राणी संरक्षण योजना की स्वीकृति जारी की गई है।

अतः वन्यप्राणी संरक्षण योजना हेतु स्वीकृत राशि रु. 1547.00 लाख अक्षरांश (पंद्रह करोड़ सैतालिस लाख रुपये का ई - बालान जनरेट कर राशि कौम्या मद में जमा कर पावती इस कार्यालय में प्रस्तुत करें ताकि अग्रिम कार्यवाही की जा सकें।

संलग्न : स्वीकृत आदेश की छायाप्रति।

क्रमांक / तक.अधि. / 2022 / 5185

प्रतिलिपि,

1. अपर प्रधान मुख्य वन संरक्षक (भू-प्रबंध) रायपुर की ओर सूचनार्थ संप्रेषित।
2. अपर प्रधान मुख्य वन संरक्षक (वन्यप्राणी) रायपुर की ओर सूचनार्थ संप्रेषित।
3. मुख्य वन संरक्षक (वन्यप्राणी) बिलासपुर की ओर सूचनार्थ संप्रेषित।
4. मुख्य वन संरक्षक बिलासपुर वृत्त, बिलासपुर की ओर सूचनार्थ संप्रेषित।

वन मण्डलाधिकारी  
कटघोरा-वनमण्डल कटघोरा  
कटघोरा, दिनांक 08.12.2022

वन मण्डलाधिकारी  
कटघोरा-वनमण्डल कटघोरा





आदेश द्वारा पी.वी. नरसिंग राव, भा.व.से. प्रधान मुख्य वन संरक्षक,  
(वन्यप्राणी एवं जैव विविधता संरक्षण) सह मुख्य वन्यप्राणी  
अभिरक्षक, छत्तीसगढ़

सेक्टर-19, नार्थ ब्लॉक, अरण्य भवन, प्रथम तल, अटल नगर, नवा रायपुर

✉ cwlweg@gmail.com

(☎0771-2512880, 📠 0771-2512881)

// आदेश //

आदेश क्रमांक/व.प्रा./प्रबंध-578/185

नवा रायपुर, दिनांक - 04.11.2022

मुख्य वन संरक्षक, विलासपुर वृत्त विलासपुर का पत्र क्रमांक/त.अ./1845 दिनांक 20.07.2022 द्वारा मेसर्स एस.ई.सी.एल. ने दीपका प्रोजेक्ट के विस्तार हेतु भारत सरकार, पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय द्वारा जारी टी.ओ.आर. दिनांक 12.02.2013 में अधिरोपित शर्तों के पालनार्थ वन्यप्राणी संरक्षण योजना तैयार कर इस कार्यालय को प्रस्तुत किया गया है।

प्रस्तुत वन्यप्राणी संरक्षण योजना का गहन परीक्षण किया गया। आवेदक संस्थान द्वारा प्रस्तुत वन्यप्राणी संरक्षण योजना का क्रियान्वयन हेतु प्रावधानित राशि कुल 05 वर्षों में उपयोग करते हुये वर्षवार आवंटन किया गया है। अनुमोदित योजना में जल स्रोत निर्माण, मृदा संरक्षण, अग्नि सुरक्षा, वृक्षारोपण, रहवास विकास इत्यादि संबंधित राशि का विवरण निम्नानुसार है :-

S.No.	Category	Item of Work	Identificative Budget Proposed by TFRI (5 Year)	Actual Budget Proposed as per site Requirement					Total Ammount (in lakhs)
				1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year	
1	Biodiversity Monitoring	a. Habitat survey of the proposed site	25	10	10	5	0	0	25
		b. Ecological/Environmental Monitoring	16	4	4	4	4	4	20
		c. Monitoring of physicochemical properties of water bodies near site	5	1	1	1	1	1	5
		d. Creation of biodiversity park/herbal garden	75	75	25	0	0	0	100
2	Habitat Improvement	a. Enrichment plantation of suitable species (50 Ha. Plantation)	50	175	90	75	25	12	377
		b. Raising of Plantation in and around villages	100	0	0	0	0	0	0
		c. Protection work (Fencing of boundaries, fields and villages)	100	0	0	0	0	0	0
		d. Weed/Invasive species eradication works	50	50	50	0	0	0	100
		e. Green belt	100	0	0	0	0	0	0

3	Catchment area and channel treatment	a. Soil and moisture conservation works	50	150	100	50	0	0	300
		b. Existing watershed development	50	0	0	0	0	0	0
		c. Reclamation of streams	15	100	50	50			200
4	Training and awareness	Empowering and sensitizing villagers for protection of Wildlife	70	10	10	10	10	10	50
5	Compensation	provision for compensation for loss/damage/injury to crop, property, human and livestock	100	0	0	0	0	0	0
6	Protection	a. Fire protection, watch towers (03 watch towers)	75	20	10	10	0	0	40
		b. protection work like CPT, Fencing of boundaries, fields and villages, wherever necessary	121	200	0	0	0	0	200
		c. Patrolling vehicles for wildlife monitoring	30	30	0	0	0	0	30
7	Contingency cropus fund	Cropus fund to remain with concerned DFO katghora to meet any contingency and miscellaneous work as approved by concerned authorities	100	50	0	50	0	0	100
Total			1132	875	350	255	40	27	1547


उक्त वन्यप्राणी संरक्षण योजना की लागत राशि 1547.00 लाख वर्तमान दरों पर है। परियोजना में देरी होने से समय लागत बढ़ेगी, जिसमें प्राईस इन्डेक्स के हिसाब से वृद्धि होगी। परियोजना के क्रियान्वयन के समय जो भी लागत आयेगी वह प्रस्तावकों को वन विभाग में एकमुश्त जमा करानी होगी, जिससे मूल्य वृद्धि के प्रभाव को समाप्त किया जा सके। वन विभाग इस प्रकार जमा की गई राशि से वन्यप्राणी संरक्षण योजना में दशायी समय सारणी के अनुसार क्रियान्वित करेगा।

अनुमोदित वन्यप्राणी संरक्षण योजना में दशायी गये उपरोक्त घटकों के संगत फील्ड में किये जाने वाले कार्यों का कार्यवार/स्थलवार प्रोजेक्ट संबंधित वनमण्डलाधिकारी के द्वारा तत्समय प्रचलित मार्गदर्शी सिद्धांतों (व्यय नार्मस, कार्य की प्रकृति, वन्यप्राणी प्रबंधन के संबंध में लागू होने वाले अन्य तकनीकी तथ्यों व निर्देशों) के अनुरूप तैयार कर सक्षमतानुसार तकनीकी स्वीकृति/अनुमोदन हेतु अनुशंसा सहित संबंधित मुख्य वन संरक्षक को प्रेषित किया जावेगा। संबंधित मुख्य वन संरक्षक द्वारा प्रोजेक्ट की तकनीकी स्वीकृति/अनुमोदन की अनुशंसा के साथ मुख्य वन्यप्राणी अभिरक्षक छत्तीसगढ़ को प्रेषित किया जावेगा। प्रोजेक्ट का परीक्षण वन्यप्राणी संरक्षण योजना की उपयुक्तता की दृष्टि से किया जाकर मुख्य वन्यप्राणी अभिरक्षक के द्वारा कार्य हेतु प्रशासकीय स्वीकृति जारी किये जाने के साथ

// 3 //

प्रोजेक्ट, प्रशासकीय स्वीकृति/बजट आवंटन करने हेतु सक्षम अधिकारी को प्रेषित किया जावेगा। प्रशासकीय स्वीकृति आदेश जारी किये जाने के पश्चात् ही कार्यों का क्रियान्वयन वनमंडलाधिकारी द्वारा किया जावेगा।

वन्यप्राणी संरक्षण योजना के कार्यों की मॉनिटरिंग का कार्य संबंधित मुख्य वन संरक्षक व मुख्य वन्यप्राणी अभिरक्षक छ.ग. द्वारा किया जावेगा। किये जा रहे कार्यों की भौतिक व आर्थिक प्रगति से मुख्य वन्यप्राणी अभिरक्षक को प्रतिमाह वनमंडलाधिकारी द्वारा अवगत कराया जावेगा।


  
प्रधान मुख्य वन संरक्षक (व.प्रा.) सह मुख्य वन्यप्राणी  
अभिरक्षक, छत्तीसगढ़, नवा रायपुर

पृ.क्रमांक/व.प्रा./प्रबंध-578/ 4088

नवा रायपुर, दिनांक - 04.11.2022




प्रतिलिपि सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित :-

1. अपर प्रधान मुख्य वन संरक्षक (भू-प्रबंध) नवा रायपुर। कृपया वन्यप्राणी संरक्षण योजना में प्रावधानित राशि 1547.00 लाख एकमुश्त जमा करने हेतु परियोजना प्रस्तावकों को आदेशित करें।
2. मुख्य वन संरक्षक, विलासपुर वृत्त विलासपुर।
3. मुख्य वन संरक्षक वन्यजीवन और क्षेत्रीय निदेशक, अचानकमार टायगर रिजर्व विलासपुर।
4. वनमंडलाधिकारी, कटघोरा वनमण्डल कटघोरा।
5. मेसर्स एस.ई.सी.एल. दीपका क्षेत्र कोरवा।

  
प्रधान मुख्य वन संरक्षक (व.प्रा.) सह मुख्य वन्यप्राणी  
अभिरक्षक, छत्तीसगढ़, नवा रायपुर

**Online payment history made by User Agency under CAMPA**

 **Help**

Sno.	Proposal Detail	Application_No	Application No (New)	Date of IN-PRINCIPLE	Amount to be Paid/Amount Paid (in Rs.)	Payment Status	Payment Detail	Demand Letter
1	FP/CG/MIN/1452/2006 (../viewreport.aspx?pid=FP/CG/MIN/1452/2006)  DIPKA EXPANSION OPEN CAST MINING PROJECT IN FAVOUR OF M/S. SOUTH EASTERN COALFIELDS LIMITED (SECL) (COAL MINING)	MIN14522006445	5814520445	20 Oct 2006	CA: 0/- , Addl CA : 0/- PCA: 0/- , CAT : 0/- Safety Zone: 0/- , Addl PA : 0/-  NPV: 0/- , Wildlife conservation 154700000/- CAMPA payment :  Other Charges1 0/- : Other Charges2 0/- : Other Charges3 0/- : Total : 154700000/-	 Paid	Fund Demand Verified by Nodal Officer On : 29 Dec 2022 Bank Name : Union Bank Of India Mode of Payment : NEFT/RTGS (Challan) Challan Generated On : 27 Feb 2023 Transaction Date : 01 Mar 2023	Demand Letter (../writereaddata/Fundp Generated Challan (../US
2	FP/CG/MIN/1454/2006 (../viewreport.aspx?pid=FP/CG/MIN/1454/2006)  DIPKA EXPANSION OPENCAST COAL MINE PROJECT IN KATGHORA FOREST DIVISION (GEVRA AREA) IN FAVOUR OF SECL (COAL MINING)	MIN14542006629	5814540629	20 Oct 2006	CA: 0/- , Addl CA : 0/- PCA: 0/- , CAT : 0/- Safety Zone: 0/- , Addl PA : 0/- NPV: 55332039/- , 0 : 0/- 0 : 0/- 0 : 0/- 0 : 0/- Total : 55332039/-	 Paid	Fund Demand Verified by Nodal Officer On : 29 Mar 2022 Bank Name : Union Bank Of India Mode of Payment : NEFT/RTGS (Challan) Challan Generated On : 29 Mar 2022 Transaction Date : 04 Apr 2022	Demand Letter (../writereaddata/Fundp Generated Challan (../US
3	FP/CG/MIN/1452/2006 (../viewreport.aspx?pid=FP/CG/MIN/1452/2006)  DIPKA EXPANSION OPEN CAST MINING PROJECT IN FAVOUR OF M/S. SOUTH EASTERN COALFIELDS LIMITED (SECL) (COAL MINING)	MIN14522006534	5814520534	20 Oct 2006	CA: 6737218/- , Addl CA : 0/- PCA: 1737482/- , CAT : 0/- Safety Zone: 0/- , Addl PA : 0/- NPV: 0/- , nil : 0/- nil : 0/- nil : 0/- Total : 8474700/-	 Paid	Fund Demand Verified by Nodal Officer On : 06 Jul 2018 Bank Name : Corporation Bank Mode of Payment : NEFT/RTGS (Challan) Challan Generated On : 10 Sep 2018 Transaction Date : 25 Sep 2018	Demand Letter (../writereaddata/Fundp Generated Challan (../US

4	FP/CG/MIN/1461/2006 (../viewreport.aspx? pid=FP/CG/MIN/1461/2006)	MIN14612006739	5814610739	03 Mar 2010	<b>CA:</b> 1155772/- , <b>Addl CA :</b> 0/- <b>PCA:</b> 1155772/- , <b>CAT :</b> 0/- <b>Safety Zone:</b> 0/- , <b>Addl PA :</b> 0/- <b>NPV:</b> 0/- , <b>Other Charges :</b> 0/- <b>Other Charges1 :</b> 0/- <b>Other Charges2 :</b> 0/- <b>Other Charges3 :</b> 0/- <b>Total :</b> 2311544/-		<b>Fund Demand</b> <b>Verified by</b> :06 Jul 2018 <b>Nodal Officer On</b> <b>Bank Name</b> : Corporation Bank <b>Mode of Payment</b> : NEFT/RTGS (Challan) <b>Challan Generated On</b> :07 Jul 2018 <b>Transaction Date</b> :26 Jul 2018	Demand Letter (../writer Generated Challan (../Us
5	FP/CG/MIN/1461/2006 (../viewreport.aspx? pid=FP/CG/MIN/1461/2006)	MIN14612006411	5814610411	03 Mar 2010	<b>CA:</b> 2873557/- , <b>Addl CA :</b> 0/- <b>PCA:</b> 3381217/- , <b>CAT :</b> 0/- <b>Safety Zone:</b> 0/- , <b>Addl PA :</b> 0/- <b>NPV:</b> 105400/- , <b>nil :</b> 0/- <b>nil :</b> 0/- <b>nil :</b> 0/- <b>Total :</b> 6360174/-		<b>Fund Demand</b> <b>Verified by</b> :27 Nov 2017 <b>Nodal Officer On</b> <b>Bank Name</b> : Corporation Bank <b>Mode of Payment</b> : NEFT/RTGS (Challan) <b>Challan Generated On</b> :01 Dec 2017 <b>Transaction Date</b> :06 Dec 2017	Demand Letter (../writer Generated Challan (../Us
6	FP/CG/MIN/1454/2006 (../viewreport.aspx? pid=FP/CG/MIN/1454/2006)	MIN14542006139	5814540139	20 Oct 2006	<b>CA:</b> 0/- , <b>Addl CA :</b> 0/- <b>PCA:</b> 0/- , <b>CAT :</b> 0/- <b>Safety Zone:</b> 0/- , <b>Addl PA :</b> 0/- <b>NPV:</b> 0/- , <b>difference amount :</b> 70981/- <b>nil :</b> 0/- <b>nil :</b> 0/- <b>nil :</b> 0/- <b>Total :</b> 70981/-		<b>Fund Demand</b> <b>Verified by</b> :07 Nov 2017 <b>Nodal Officer On</b> <b>Bank Name</b> : Corporation Bank <b>Mode of Payment</b> : NEFT/RTGS (Challan) <b>Challan Generated On</b> :07 Nov 2017 <b>Transaction Date</b> :28 Nov 2017	Demand Letter (../writer Generated Challan (../Us
7	FP/CG/MIN/1452/2006 (../viewreport.aspx? pid=FP/CG/MIN/1452/2006)	MIN14522006527	5814520527	20 Oct 2006	<b>CA:</b> 11690988/- , <b>Addl CA :</b> 0/- <b>PCA:</b> 3014675/- , <b>CAT :</b> 0/- <b>Safety Zone:</b> 0/- , <b>Addl PA :</b> 0/- <b>NPV:</b> 0/- , <b>nil :</b> 0/- <b>nil :</b> 0/- <b>nil :</b> 0/- <b>Total :</b> 14705663/-		<b>Fund Demand</b> <b>Verified by</b> :10 Nov 2017 <b>Nodal Officer On</b> <b>Bank Name</b> : Corporation Bank <b>Mode of Payment</b> : NEFT/RTGS (Challan) <b>Challan Generated On</b> :11 Nov 2017 <b>Transaction Date</b> :18 Nov 2017	Demand Letter (../writer Generated Challan (../Us



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For a  
EFCC  
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**DETAILS OF PUBLIC HEARING HELD FOR 25.00 MTY ON 05.09.2008 FOR  
DIPKA EXPANSION PROJECT, DIPKA AREA, SECL**

<b>S.NO</b>	<b>STATEMENT OF MAIN ISSUES RAISED BY PUBLIC</b>	<b>REPLY/COMMENTS OF PP</b>	<b>ACTION TAKEN BY PP</b>
1.	Factual figure of 309.50 Ha planted tree of Dipka Expansion Project, Dipka Area from Rajya Van Vikas Nigam to be given and Satellite imaging photocopy is to be given, so that progress rate of green belt could be assessed.	In Dipka Expansion Project, Dipka Area 10, 86,350 nos. plants (approx 309.15 Ha area) have been planted since 1992 to 2007 by Rajya Van Vikas Nigam. After the year of plantation and subsequent two years of their maintenance and after counting and ensuring 90% survival of plants by the joint committee of SECL and Rajya Van Vikas Nigam, SECL management takes the plants in its possession from Rajya Van Vikas Nigam. The factual report of Rajya Van Vikas Nigam is enclosed in Annex-1 Photocopy of satellite imaginary is also enclosed as Annex-2.	<ul style="list-style-type: none"> <li>i. A total of 23.17 lakh no. of plants has been planted since 1992 till 2023 through Chhattisgarh Rajya Van Vikas Nigam. The total expenditure incurred was Rs. 3133.543 lakhs.</li> <li>ii. Joint inspection is regularly conducted during first year of plantation and subsequent 04 years of their maintenance and found to be yielding more than 80% survival rate.</li> <li>iii. The satellite imagery of land-use changes is generated by CMPDIL, Ranchi for Dipka Expansion Project to monitor the green belt/ progressive land reclamation (Annexure-2). The expenditure incurred in last 05 years was Rs. 42.99 lakhs.</li> </ul>
2.	By CMPDIL study report regarding decline of water level in rehabilitated villages and produced records it is obvious that there is scarcity of water whose prime reasons is coal excavation.	In CMPDIL report the study has been conducted for villages located within 300 m. As the rehabilitated villages are situated at more than 300 m distance from the mine so according to standard fixed by Govt of India the effects on water level will be minimum. In rehabilitation villages collected rainwater is preserved and conserved in ponds so that the ground water aquifer level is maintained.	For augmentation of ground water Dipka Project has constructed artificial recharge ponds (16 Nos) and roof top rainwater recharge system (25 Nos) in Colony, Office Buildings, Dispensary, Guest House, Sneh Milan etc. Monitoring of water level is carried out routinely as per guidelines using 8 Nos of piezometers located at GM Office, Sneh Milan, Hardi Bazaar & Suwabhondi. Also, a network of 16 no of wells have been established, through which seasonal



S.NO	STATEMENT OF MAIN ISSUES RAISED BY PUBLIC	REPLY/COMMENTS OF PP	ACTION TAKEN BY PP
			water level monitoring of surrounding villages is carried out.
3.	In Dipka Expansion project, Dipka area the coal to be excavated in pit head. The coal will be transported to belt and silo. For this time limit has not been given time schedule may kindly be specified.	In Dipka Expansion Project, Dipka Area after excavation of coal from mine, the produced coal will be transported through belt conveyer up to silo and from silo to Railway wagons during 2009-10.	<ul style="list-style-type: none"> <li>▪ An arrangement for 15MTY coal loading using 02 Nos of Silos each having 3200 T capacity with Rapid Loading System (5500-6000 TPH) was initially constructed at Dipka Expansion Project against vide LoA dated: 02.02.2006 at a cost of Rs.30.90 Crores which came into operation in the year 2009. Sized coal from Feeder Breaker (mini-CHP) is fed into 02 no. of belt conveyors using truck receiving hoppers with vibratory feeders which further discharge the coal into the Silos for loading the wagons.</li> <li>▪ Further on 04.07.2009, Dipka Project issued LoA for main CHP having 04 no. of Truck Receiving Station, n-pit belt conveyer system of 2300 TPH capacity and 02 no. of RCC overhead bunkers of each 10000 T capacity at a cost of Rs.206.51 Crores. The in-pit belt conveyer system and RCC bunkers were connected to the existing 02 Nos of Silos, thus completing the fully automated system for 20 MTPA coal dispatch capacity which became operational in August 2014.</li> <li>▪ The main CHP (in-pit conveyer system) was designed for 20 MTPA capacity in which 15 MTPA coal was designed for dispatch through</li> </ul>

S.NO	STATEMENT OF MAIN ISSUES RAISED BY PUBLIC	REPLY/COMMENTS OF PP	ACTION TAKEN BY PP
			02 no. of Silos and remaining 5MTPA was designed to dispatch through truck loading System (TLS). The TLS is not operational anymore.
4.	When will the surface miner technique be applicable and what is its importance in coal mining	<p>Surface Miner technique will be applicable during 2009-10 after adopting surface technique following benefits will be observed.</p> <ol style="list-style-type: none"> <li>1. In excavation of coal and blasting will be required as a result there will be reduction in coal dust emission.</li> <li>2. This technique will eliminate subsequent coal crushing and resulting reduction in coal dust emission.</li> <li>3. Damage due to blasting vibration will not be occurred.</li> </ol>	<p>The surface miner was deployed in Dipka Expansion Project during the year January 2010. As on date 08 surface miners are operated at Dipka Project.</p> <ol style="list-style-type: none"> <li>i. Surface miners have been deployed for Coal extraction which eliminates Conventional drilling &amp; blasting of coal seams.</li> <li>ii. Surface miner eliminated coal blasting in the mines. Hence only the overburden lying over the coal seams is blasted. To remove overburden layer from over the coal seam, shock tube initiation system has been adopted in delay blasting, which is an advanced method of blasting operation which controls blast related vibrations and fly rock to a larger extent. Blast monitoring is being done on a regular basis. The values of blast measured are in ppv and within limits. The readings are recorded and maintained promptly.</li> <li>iii. This technique has eliminated subsequent coal crushing which resulted in reduction of coal dust emission.</li> </ol>
5.	The species e.g. Mahua and Palash, Karanj, Neem, Peepal etc.	Plantation is being done by CGRVVN and selection of species is done in such a manner	The species Neem, Karanj, Shishu, Bamboo, Mahua, Cacia Samiya, Gulmohar, Palash,

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	found in Korba Forest Division is to be undertaken for plantation.	that nos. of species found in Korba Forest Division are included as far as practicable (i.e. Mahua, Karanj, Neem etc.)	Kalasiras, Sathvan, Ganga Imli, Awla, Teak, Siras etc are planted in Dipka Expansion Project by CGRVVN. During the FY 2022-23, species such as Shisu, Siras, Karanj, Gulmohar, Peltafaram, Satwaan, Sagwaan, Baans, Arjun, Kauha and fruit bearing trees such as Kaju, Badam, Ganga Imli, Jamun, Amla, Chirol, Sarai, Peepal, Vargad, mango, jackfruit and Neem were planted. 3000 No of Sal species were planted near lilagarh river opposite to bihi bigicha during FY 2019-20.
6.	What measures have been adopted for rainwater harvesting to maintain the ground level around the mine? Please furnish the village wise details	Rainwater harvesting technique has been adopted to maintain the ground water level by the process of automatic discharge. Details are given below: 1. Storage of rain water in mine pit 2. Discharge of water through kuchha sedimentation tank. 3. Storage of rain water in natural pond. 4. Storage of rain water in Sirki and Pragati Nagar ponds. 5. Construction of ponds and storage of water in rehabilitation villages such as Gandhi Nagar, Vivekananda Nagar, Chainpur Nagar, Chainpur Nagar (Batari) 6. Water recharging in water table through voids available in backfilled dumps.	The rainwater harvesting system has been adopted to recharge the ground water level. An expenditure of 12.60 Lakhs was incurred for rain water harvesting systems. The ground water recharge systems deployed in Dipka Expansion Project are i. Storage of rainwater in mine pit/ sumps. ii. 16 groundwater recharge ponds have been constructed within and outside the ML having a recharge capacity of 55,447 cum. iii. Sirki & Chainpur ponds which functions as both as sedimentation tanks and ground water recharge ponds. iv. Pragati Nagar pond and Silo ponds acts as the rainwater recharge ponds. v. In rehabilitated villages ponds has been constructed namely Chainpur pond, Chainpur-

S.NO	STATEMENT OF MAIN ISSUES RAISED BY PUBLIC	REPLY/COMMENTS OF PP	ACTION TAKEN BY PP
			<p>Batari Pond, Gandhinagar Pond, Vivekanand Nagar Pond and Nehru Nagar pond.</p> <p>vi. Rainwater harvesting system (25 no.) has been installed in Pragati House, Dipka House, Recreation club, CGM Office, New C-Type and minors' quarter for ground water recharge. The roof area covered by RWH is approximately 14,174 sq.m and recharges to a quantum of 12,493 m<sup>3</sup>/annum.</p> <p>vii. The extensive plantation inside the mine lease area also helps in effective recharge of ground water.</p> <p>iii. The backfilled area is also systematically leveled and biologically reclaimed, this helps in reducing surface run off and improve infiltration capacity of soil.</p>
7.	Transportation of coal produced from Dipka Expansion Project should be ensured through railway. What is the management view for officially banning coal transportation through road?	Major quantity of coal produced from Dipka Expansion Project is proposed to be dispatched through covered conveyor belt silo loading and then wagon loading and finally transportation through railway. Minimum quantity of coal produced by Dipka Exp. Project has been proposed to be dispatched by road to meet the local requirement.	<p>The coal produced from Dipka Expansion Project is transported through Inpit closed belt conveyor to Silo to Wagon loading.</p> <p>Minimum quantity of coal produced at Dipka OCP is dispatched by roads for meeting the local requirement. Bypass roads such as diverted Hardi Bazar road is constructed for coal transportation to protect the villages from dust, sound, and accidents.</p> <p>Mechanized Railway Siding with Rapid loading system having capacity of 25MTY is under construction at Dipka Expansion Project as a part</p>

S.NO	STATEMENT OF MAIN ISSUES RAISED BY PUBLIC	REPLY/COMMENTS OF PP	ACTION TAKEN BY PP
			<p>of First Mile Connectivity Initiative. This will help Dipka Project to achieve 100% dispatch through rail mode.</p> <p>The LoA was awarded to McNally-AML on 18.01.2021 for a total work value of Rs. 211.22 Crores. The construction activities of mechanized siding to handle coal handling capacity of 25 MTPA, having 02 no. of RCC silo 3000 T capacity each with Rapid Loading system of 4500-8500 TPH capacity, truck receiving station, RCC overhead Bunker of 20000 T and associated belt conveyors with Transfer Points is in progress.</p> <p>The physical completion of the FMC project is 88.50% and financial completion is 87.50% with an expenditure of Rs. 190.13 Crores. The construction activities of the FMC project will be completed by the end of September 2023 and will be operational by November 2023.</p>
8.	<p>In Dipka Exp. Project coal production is being done more than 20 Mty. In this connection RO CECB has filed a case in court suitable reasons to be given.</p>	<p>The matter is sub-judice to court.</p>	<p>The case CECB Korba Vs Debasis Chatterjee, Ex-CGM Dipka was filed for production of coal more than the EC capacity. The case was disposed by court JMFC, Katghora. An appeal has been filed by CGECB in Chhattisgarh High court against the decision. The case is pending at High Court, Bilaspur.</p>
9.	<p>Construction of separate road for coal transportation to be ensured by Dipka, Gevra, Kusmunda projects after consultation with</p>	<p>The construction of separate road for coal transportation will be ensured after consultation with State Authority Under the welfare activities of Coal India a certain</p>	<p>For coal transportation diverted Hardi Bazaar Road near Sarai Singar was constructed after consultation with State Authority. Under the welfare activities of Coal India, a certain portion</p>

<b>S.NO</b>	<b>STATEMENT OF MAIN ISSUES RAISED BY PUBLIC</b>	<b>REPLY/COMMENTS OF PP</b>	<b>ACTION TAKEN BY PP</b>
	State Authority so that supply of coal can take place keeping in view the demand of coal production in future.	portion of profit is always spent on the construction of roads and their maintenance.	of profit is always spent on the construction of roads and their maintenance. The expenditure spend on CSR works by SECL Dipka is Rs.6866 Lakhs and expenditure incurred for construction of roads is Rs.476 Lakhs.
10.	Up to what percent the point mentioned in earlier environment clearance letter given by MOEF New Delhi? Furnish factual information.	The Six-Monthly Report was submitted by MOEF Bhopal in which point wise compliance report has been given. A copy of the same is enclosed herewith as annexure-3.	The status of compliance points stipulated in environment clearance of 35 MTY EC capacity are submitted in six monthly compliance report regularly to IRO, MoEF&CC, Raipur. Copy of the same is made available in SECL website.
11.	Compensation for land should be minimum Rs. 05 lakhs per acre	Land compensation per acre is done as per the policy framed by the Chhattisgarh Government.	Land compensation per hectare is done as per the CIL R&R policy (Rs. 1976800 per Ha that is Rs. 8,00,000 per acre) which has been opted by the local people also. The total expenditure incurred for Land & House Asset Compensation is Rs.4399.9 Lakhs
12.	All Khatedar who is the domicile of village be given employment of one member of their families and proper compensation as per Government rule.	Norms of R&R policy of the Government will be followed and accordingly employment & compensation will be offered to members of affected families.	<p>i. Norms of R&amp;R policy, 2012 of CIL is followed and accordingly employment &amp; compensation is being offered to members of affected families. The total expenditure incurred for Land &amp; House Asset Compensation is Rs.4399.9 Lakhs</p> <p>ii. As on 01/04/2023, out of 2988 Project Affected Persons (PAP's), 1715 no. of PAP's are entitled for employment out of which 1498 PAP's have been awarded employment, 41 has taken cash compensation. Balance 176 PAPs are yet to receive employment.</p>

S.NO	STATEMENT OF MAIN ISSUES RAISED BY PUBLIC	REPLY/COMMENTS OF PP	ACTION TAKEN BY PP
			iii. Out of 1690 PAFs 1137 has taken cash grant, 470 were rehabilitated and balance 83 are yet to be settled.
13.	Education facility would be extended to the rehabilitated villages by the management	Primary and middle school is operated in rehabilitation village for spread of education by the State government School building is provided & maintained to time by the Management.	All the 05 Rehabilitation sites have schools run by State government. The buildings has been constructed and maintained by the SECL management. Expenditure incurred for construction of schools and associated infrastructure is Rs.45.4 Lakhs.
14.	Free medical facilities be extended to the rehabilitated villages by the management	Free medical facilities are available to all affected families and their dependent who got mine job and residing in rehabilitation sites. Medical camps are organized under planned welfare activities by the management for giving medical facilities to the affected families from time to time. Dispensary building is provided at rehabilitation sites.	<p>i. All the PAFs who have been provided employment in the mines along with their dependents and those residing in rehabilitation sites are entitled to free medical facilities.</p> <p>ii. Free medical facilities are entitled to all PAF's and their dependent who got mine job and residing in rehabilitation sites.</p> <p>ii. Medical camps are organized under planned welfare activities by the management for giving medical facilities to the affected families from time to time. In 2022-23, 04 medical camps were conducted by Dipka Dispensary for a total of 541 beneficiaries.</p>
15.	Land acquisition to be done under the State Land Acquisition Rules and employment facilities to be made available as per State R&R Policy.	Land acquisition is done as per Central and State Rules & Regulations and the rehabilitation of land oustees is done in consultation with State Govt.	Land acquisition is done as per Central and State Rules & Regulations and the rehabilitation of land oustees is done in consultation with State Govt.

<b>S.NO</b>	<b>STATEMENT OF MAIN ISSUES RAISED BY PUBLIC</b>	<b>REPLY/COMMENTS OF PP</b>	<b>ACTION TAKEN BY PP</b>
16.	SECL Dipka has violated the provision of EIA Notification 2006	Dipka Expansion mine has consistently followed the provision of EIA Notification of 1994 and 2006. The mine was given environment clearance for a capacity of 20 MTY on 4 <sup>th</sup> Oct. 2004. Again after the notification of EIA 2006 on 14 <sup>th</sup> Sept. 2006 the form I for environmental clearance of Dipka OCP for 25 Mty was submitted on 27 <sup>th</sup> April 2007. The TOR was issued to Dipka OCP on 22 <sup>nd</sup> Oct. 2007 i.e. After a lapse of 6 months from the date of submission of application which is more than the time limit of 60 days prescribed in the EIA Notification of 2006. Further, the draft EMP/EIA report of Dipka OCP (25 MTY) was submitted to CECB Raipur on 24.12.2007 for conducting Public Hearing. The hearing was held on 5 <sup>th</sup> Sept. 2008 i.e. After a period of 8 months instead of 45 days stipulated in EIA Notification 2006. Thus a perusal of above will bring forth the fact that there has been considerable delay on the part of regulatory agencies in processing the application of environmental clearance of Dipka OCP for which neither SECL nor undersigned are responsible.	The case CECB Korba Vs Debasis Chatterjee, Ex-CGM Dipka was filed for production of coal more than the EC capacity. The case was disposed by court JMFC, Katghora. An appeal has been filed by CGECB in Chhattisgarh High court against the decision. The case is pending at High Court.
17.	By capacity expansion of Dipka OCM nearby agricultural lands will be affected.	Dipka mine is an opencast mine in which surface miner technique will be issued for coal excavation. Air pollution will be minimized by	i. Surface miner has reduced the blast related dust emission to a tremendous extent. The surface is provided with a jet spray system along with a



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		<p>this advance technique in which coal is excavated with sprinkling water and amount of fine particles and dust particles will be controlled. As such its effects on agricultural land and other land will be negligible. Around mine 300 meter safety band is left so that agricultural land remains unaffected. For OB higher capacity (240T) HEMM will be deployed, reducing fleet strength number of trips and lesser air pollution.</p>	<p>water tank attached to it. There by, source emission is avoided to a large extent.</p> <p>ii. Therefore, the effect of dust on agricultural land and other land will be negligible.</p> <p>iii. For OB handling HEMMs of higher capacities such as 100T, 120T &amp; 240T have been deployed in the mine which reduces the no. of trips and thereby by air pollution.</p>
18.	<p>There will be increase in dust pollution by capacity expansion of the mine.</p>	<p>High technique surface miner will be used in the expansion of capacity of mine. Most of the coal will be transported through covered belt conveyor to silo to Wagon loading to rail transport. By this techniques dust pollution will not be increased? As well as sprinkler system have been adopted. Inside mine effective method for water sprinkling has been adopted.</p>	<p>i. Surface miner has reduced the blast related dust emission tremendously. The surface is provided with a jet spray system along with a water tank attached to it. There by, source emission is avoided to a greater extent.</p> <p>ii. Around 40-45% of extracted coal is being transported through belt conveyor to silo to wagon loading each attached with separate dust suppression arrangement.</p> <p>iii. An amount of Rs. 9442.5 Lakhs has been expended for implementing various dust control measures such as Fixed Sprinklers, Rain Guns, Long-Range Fogging Machine, Sweeping Machines etc. at Dipka Expansion Project.</p>
19.	<p>Water level of nearby villages is going down due to capacity expansion of the mine as a result</p>	<p>Water table is affected inside the periphery by 300 m radius and the effect due to coal mining on water level beyond 300 m distance is minimum. Storage and conservation of water</p>	<p>The effect of coal mining on water table beyond a distance of 300 m radius is minimum. Storage and conservation of water in ponds, mine sumps and construction of rainwater harvesting structures in</p>

S.NO	STATEMENT OF MAIN ISSUES RAISED BY PUBLIC	REPLY/COMMENTS OF PP	ACTION TAKEN BY PP
	there may be drinking water problem	in ponds & mine sumps in mine area is done by project so that the water level remains maintained. Arrangements have been made for safe drinking water under welfare activities in rehabilitation villages and in villages nearby mine.	mine area is done by project so that the water level remains maintained. Arrangements have been made for Safe drinking water under welfare activities in rehabilitation villages and in villages nearby mine. An expenditure of Rs. 436.77 lakhs was incurred for construction & repair of handpumps, borewells, wells, ponds etc. Drinking water is also made available to villages through water tankers for which an expenditure of Rs.135.9 Lakhs was expended.
20.	Cracks in the walls of many houses are being developed due to vibration caused by blasting. During blasting safety measures/method to be adopted by management.	For excavation of coal and OB explosives is used which is in controlled amount under the guidelines of DGMS State of the art technology i.e. Surface miner system will be put in place. Only for OB removal blasting would be needs. Blasting is always carried out as per DGMS stipulations.	<ul style="list-style-type: none"> <li>i. Controlled blasting is carried out as per DGMS Stipulated rules and regulations. Surface miners have been deployed for Coal extraction which eliminates Conventional drilling &amp; blasting of coal seams.</li> <li>ii. To remove overburden layer from over the coal seam, shock tube initiation system has been adopted in delay blasting, which is an advanced method of blasting operation which controls blast related vibrations and fly rock to a lager extent.</li> <li>iii. Blast monitoring is being done on a regular basis. The values of blast measured are in ppv and within limits. The readings are recorded and maintained.</li> <li>iv. Dipka Management is committed to resolve the issues raised by villagers. In case of complaints received for damaged houses, walls or</li> </ul>

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			borewells etc. due to blasting, the issue is investigated through a committee formed and all possible assistance are provided. An expenditure of Rs.16.9 Lakhs was spend on roofing and repair of roofs in villages.
21.	Putting question mark on the justification of EIA Notification 2006 before getting clearance capacity expansion has been done by mine.	Dipka Expansion mine has consistently followed the provision of EIA Notification of 1994 and 2006. The mine was given environment clearance for a capacity of 20 MTY on 4 <sup>th</sup> Oct. 2004. Again, after the notification of EIA 2006 on 14 <sup>th</sup> Sept. 2006 the form I for environmental clearance of Dipka OCP for 25 MTY was submitted on 27 <sup>th</sup> April 2007. The TOR was issued to Dipka OCP on 22 <sup>nd</sup> Oct. 2007 i.e. After a lapse of 6 months from the date of submission of application which is more than the time limit of 60 days prescribed in the EIA Notification of 2006. Further, the drat EMP/EIA report of Dipka OCP (25 MTY) was submitted to CECB Raipur on 24.12.2007 for conducting Public Hearing. The hearing was held on 5 <sup>th</sup> Sept. 2008 i.e. After a period of 8 months instead of 45 days stipulated in EIA Notification 2006. Thus a perusal of above will bring forth the fact that there has been considerable delay on the part of regulatory agencies in processing the application of environmental clearance of	The case CGEPB, Korba Vs Debasis Chatterjee, Ex-CGM Dipka was filed for production of coal more than the EC capacity. The case was disposed by court JMFC, Katghora. An appeal has been filed by CECB in Chhattisgarh High court against the decision. The case is pending at High Court.

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		Dipka OCP for which neither SECL nor undersigned are responsible.	
22.	Facilities of electricity, water, medical and other facilities to be provided.	All the facilities covered under the Rehabilitation policy will be given to Rehabilitated land oustees at Rehabilitation site.	All the facilities covered under the R&R policy has been provided at the Rehabilitation sites.
23.	The condition of roads is becoming worst, and accident is occurring by transportation of coal through trucks more than their carrying capacity.	In Dipka Area, the proper maintenance of road is done by the management giving clear cut instruction to the transporter and coal is not given beyond prescribed carrying capacity.	Diverted Hardi bazar road was also constructed for coal transportation away from villages. In this way road accident is minimized. Also, trucks while leaving the premises are ensure for optimal loading and tarpaulin cover. Concrete roads are constructed to reduce dust emissions and to prevent road accidents. Shramik Chowk to Gandhi Nagar to Pail Road junction Concrete Road has been made and similarly from BSES Chowk to police Chowki concrete road has been constructed. Also, the road to Railway Siding from Shramik Chowk is concreted.
24.	The data produced by management regarding plantation is false.	SECL management gets the plantation work done by Van Vikas Nigam and the counting of trees has been done by joint committee of SECL & Van Vikas Nigam. So, the data is not false.	SECL management gets the plantation work done through C.G.R.V.V.N. Ltd. as per MoU signed between SECL and CGRVVN and the trees planted has been inspected through joint committee of SECL & CGRVVN. So, the data is not false.
25.	Every family of villages to be provided five numbers of fruit bearing trees.	SECL management is agreed to provide five numbers of fruit bearing trees to the affected village families who desire to take fruit tree.	Project affected families who ever desires for fruit trees have been provided the same by CGRVVN an agency for plantation for SECL, Dipka whenever requested. During FY 2020-21 & 2021-

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			22, 3000 no. of fruit bearing saplings were distributed to employees and in nearby villages and 3500 no. of fruit saplings was provided to villages and Dipka College in 2022-23 as per request. And in 2023-24, 5000 no. of saplings were distributed.

(1)  
24/8/23  
General Manager,  
SECL, Dipka Area.  


**SECL DIPKA AREA**  
**CSR ACTIVITIES 2022-23**

S.No.	CSR Project or Activity identified	District	Block	Village/ Town	Expenditure in Lakh
1	Supply of 5000 no of tiffin box to pregnant mothers for the implementation of Mahatari Jatan Yojana in korba Dist.	Korba	Different Block of Korba District	Different villages of Korba	13.60
2	Establishment of Smart Classrooms in 500 no of Govt. Schools operated in Korba Dist. For an amount of Rs.898.2 lakhs	Korba	Different Block of Korba District	Different villages of Korba	247.02
3	Har Ghar tiranga Programme at Dipka Area	Korba	Different Block of Korba District	Different villages of Korba	1.25
<b>Total</b>					<b>261.87</b>

Financial Year	CSR Project or activity identified	Location	Sanction Details	Fund Allocated
2022-23	NIL	NA	NA	0
<b>Total</b>				<b>0</b>

*Bottan*

Dy. Manager(CD), Dipka Area, SECL

*CB*

# SECL DIPKA AREA

S.No.	Financial Year	CSR Project or Activity identified	District	Block	Village/ Town	Expenditure in Lakh
1	2018-2019	Construction of CC road (360m) from main road to House of Makhan at Bankhetapara of Dipka Area(Under CSR).	Korba	Katghora	Gandhi Nagar	0.08
<b>TOTAL</b>						0.08

S.No.	Financial Year	CSR Project or Activity identified	District	Block	Village/ Town	Expenditure in Lakh
1	2019-2022	Nil	Nil	Nil	Nil	0.00
<b>TOTAL</b>						0.00

S.No.	Financial Year	CSR Project or Activity identified	District	Block	Village/ Town	Expenditure in Lakh
1	2020-2021	Procurement of Stadiometer for accurate measurment of physical development and identification of malnutrition for children of 2 to 5 years og age and above for 2539 no. of aanganwadies in Korba District. (2800 Each)	Korba	Different Block of Korba District	Different villages of Korba	71.09
2	2020-2021	Procurement of Infantometer for accurate measurment of physical development and identification of malnutrition for children of 2 to 5 years og age and above for 2539 no. of aanganwadies in Korba District. (2800 Each)	Korba	Pali	Dadar	71.09
3	2020-2021	Establishment of Smart Class Rooms in 500 no. of Govt. Schools operated in Korba District for an amount of Rs.898.2 Lakh	Korba	Different Block of Korba District	Different villages of Korba	179.74
4	2020-2021	Costruction of fully Equipped cultural hall at Nagar Palika Dipka	Korba	Katghora	Dipka	69.86
<b>TOTAL</b>						391.78

S.No.	Financial Year	CSR Project or Activity identified	District	Block	Village/ Town	Expenditure in Lakh
1	2021-2022	Supply of 5000 no. Of Tiffin box to preganant mothers for the implementation of Mahatari Jatan Yojna in Korba District.	Korba	Different Block of Korba District	Different villages of Korba	20.40
2	2021-2022	Establishment of Smart Class Rooms in 500 no. of Govt. Schools operated in Korba District for an amount of Rs.898.2 Lakh	Korba	Different Block of Korba District	Different villages of Korba	454.88
3	2021-2022	Providing of financial assistant to District Authority, Korba for Prevention and Cure of COVID-19 at Korba for an amount of ₹ 25.00 Lakh under CSR head of SECL, Dipka Area.2020-21	Korba	Different Block of Korba District	Different villages of Korba	25.00
4	2021-2022	Costruction of fully Equipped cultural hall at Nagar Palika Dipka	Korba	Katghora	Dipka	52.86
5	2021-2022	Procurement of COVID Medicine for COVID Patients from nearby villages of Dipka Area	Korba	Different Block of Korba District	Different villages of Korba	3.21
6	2021-2022	Providing of financial assistant to District Authority, Korba for Prevention and Cure of COVID-19 at Korba for an amount of ₹ 25.00 Lakh under CSR head of SECL, Dipka Area.2021-22	Korba	Different Block of Korba District	Different villages of Korba	25.00
<b>Total</b>						581.35

Dy. General Manager (C)
   
 S.E.C.L. Dipka Area

## CSR ACTIVITIES OF DIPKA AREA, SECL

FY 2017-18					
S.No:	Financial Year	CSR Project or activity identified	Location	Sanction Details	Fund Allocated (In Lakhs)
1	2017-18	Providing Financial assistance to the District Collector, Korba for an amount of Rs. 200.00 Lakh for construction of Cultural Building at Nagar Palika Dipka, under CSR activities of Dipka Area of SECL	Korba	Later No. 62, Dated 31/05/2017	200
2	2017-18	Providing Financial assistance of Rs. 16.797 Lakh to District Collector Korba for construction/installation of hand pump/bore well platform/water supply arrangement at 14 locations, of Korba District, under CSR activities of Dipka Area of SECL	Korba	Later No. 61, Dated 31/05/2017	16.797
3	2017-18	Providing Financial assistance to the District Collector, Korba for an amount of Rs. 182.23 Lakh for construction of 1582 nos. toilets for domestic purpose on saturation basis for Open Defecation Free (ODF) Status to Village of Korba block, District - Korba under CSR activities of Dipka Area of SECL	Korba	Later No. 60, Dated 31/05/2017	182.23
<b>Total</b>					<b>399.027</b>

FY 2018-19					
S.No:	Financial Year	CSR Project or activity identified	Location	Sanction Details	Fund Allocated
1	2018-19	NIL	NA	NA	0
<b>Total</b>					<b>0</b>

FY 2019-20					
S.No:	Financial Year	CSR Project or activity identified	Location	Sanction Details	Fund Allocated
1	2019-20	NIL	NA	NA	0
<b>Total</b>					<b>0</b>

FY 2020-21					
S.No:	Financial Year	CSR Project or activity identified	Location	Sanction Details	Fund Allocated (in lakhs)
1	2020-21	Providing financial support to District Administration, Korba for prevention and cure of COVID-19 at Korba District for an amount of 25 lakhs under CSR of SECL Dipka Area.	Korba	Letter no: 125, Dt: 15.04.2020	25.00
2	2020-21	Drilling of bore hole & tube well at 105 no of selected gauthans of 43 gram panchayat under narwa garuva ghurwa badi development program	Korba	Letter no: 202, Dt: 23.07.2020	167.27
3	2020-21	Procurement of Stadiometer for children age 2 to 5 yrs for 2539 aanganwadis in korba district.	Korba		71.09

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## CSR ACTIVITIES OF DIPKA AREA, SECL

4	2020-21	Procurement of Stadiometer for children age 0 to 2 yrs for 2539 aanganwadis in korba district.	Korba		71.09
5	2020-21	Supply of 5000 no.s of tiffin box to pregnant mothers for the implementation of Mahtari Jatan Yojana in Korba District.	Korba		34.45
6	2020-21	Organizing 592 no. of nutrition awareness camps in Korba Dist.	Korba		41.70
7	2020-21	Construction of boundary wall at P.S. Devdhara, Khodari, Podi Uproda, Korba	Korba	Letter no: 204, Dt: 23.07.2020	6.68
8	2020-21	Construction of boundary wall at P.S. Dumarmund, Amjhar, Podi Uproda, Korba	Korba		4.77
9	2020-21	Construction of boundary wall at M.S.Dharrabhata, Bhanjibhan, Podi Uproda, Korba	Korba		7.92
10	2020-21	Construction of boundary wall at P.S. Bhatrapara, Kutesharnagoi, Podi Uproda, Korba	Korba		6.68
11	2020-21	Construction of Stage in Bandhapara village, lepra, Podi Uproda, Korba	Korba		2.00
12	2020-21	Construction of community building at Dadar village, Iraf, Pali, Korba	Korba		16.29
13	2020-21	Construction of boundary wall at PHC Chaitma, Pali, Korba	korba		8.68
14	2020-21	Construction of boundary wall at P.S. Rainpur, Chaitma, pali, Korba	Korba		5.60
15	2020-21	Construction of boundary wall at P.S. Charpara, Chaitma, Pali, Korba	Korba		5.60
16	2020-21	Construction of boundary wall at P.S. Darrimuda, Chaitma, Pali, Korba	Korba		5.60
17	2020-21	Construction of 500 Metre approach road from Baratarai Road to Dongatarai Road-I Baratarai, Podi Uproda, Korba	Korba		34.57
18	2020-21	Construction of 630 Metre approach road from Baratarai Road to Dongatarai Road-I Baratarai, Podi Uproda, Korba	Korba		34.82
19	2020-21	Construction of 500 Metre approach road from Karra CC Road to Kauatal, Kautal, Podi Uproda, Korba	Korba		34.57
20	2020-21	Construction of 600 Metre approach road from Jatga Ghuanidhand Road to Basin, Ghuanidhand, Podi Uproda, Korba	Korba		34.74

## CSR ACTIVITIES OF DIPKA AREA, SECL

21	2020-21	Construction of cultural stage at PS Rangbel, Rangbel, Katghora, Korba	Korba		2.47
22	2020-21	Digging of borewell for drinking water at Gautiya Mohalla, Rangbel, Katghora, Korba	Korba		2.00
23	2020-21	Digging of borewell for drinking water at Deshgosain, Rangbel, Katghora, Korba	Korba		2.00
24	2020-21	Construction of new building for PS Sirkikhurd, Pali, Korba	Korba		10.13
25	2020-21	Construction of CC Road from Satrabhuwan House to Sital House at Chaitma, Pali, Korba	Korba		5.22
26	2020-21	Construction of CC road from Sagardas house to Ram Prasad House at Bharuwamuda, Bharuwamuda, Pali, Korba	Korba		5.22
27	2020-21	Providing Drinking water at Gram Panchayat Chaitma, Pali, Korba	Korba		2.00
	2020-21	Establishment of smart class rooms in 500 no of Govt. Schools operated in Korba District for an amount of Rs.898.72 lakhs through DC, Korba under CSR activities of SECL Dipka Area	Korba	Letter no: 205, Dt: 23.07.2020	898.73
<b>Total</b>					<b>1,546.89</b>

FY 2021-22					
S.No:	Financial Year	CSR Project or activity identified	Location	Sanction Details	Fund Allocated (in lakhs)
1	2021-22	Providing financial assistance of Rs.25 lakhs to district administration for prevention and cure of novel corona virus COVID-19 at Korba under CSR head of SECL Dipka Area.	Korba	Letter No: 58, dated: 25.04.2021	25.00
2	2021-22	Providing financial assistance of 5 Crore to District Authority, Korba to equip Covid care center, Sipet Syahimudi as 1000 bedded Covid hospital under CSR activities of SECL Dipka Area.	Korba	Letter No: 103, Dt: 30.04.21	500.00
<b>Total</b>					<b>525.00</b>

*B. S. S. S.*

Dy. Manager(CD), Dipka Area, SECL

**Compliance of conditions stipulated by MoEF vide its notification no: Z-11013/57/2014-IA.II(M) dated: 29<sup>th</sup> October 2014 regarding Impact of mining activities on Habitations.**

S.N:	Conditions	Compliance/Action Taken
2(a)	The Project Authority shall adopt Best Mining Practice for the given mining conditions. In the mining area, adequate number of check dams. Retaining wall/structures. Garland drains and settling ponds should be provided to arrest the wash-off with rain water in catchment area.	<p><b>Being Complied</b></p> <ul style="list-style-type: none"> <li>• Adequate number of check dams and gabion walls are constructed as and when necessary.</li> <li>• A total of 33800 cum of check dams were constructed at Jingatpur, Renki, Beltikri and Old Dipka dump (HB bypass road side).</li> <li>• Garland Drain is provided around the quarry to collect runoff. Two Settling Ponds for mine water namely Sirki Pond and CISF Ponds are constructed at Dipka Mines.</li> </ul>
2(b)	The natural water bodies and or streams which are flowing in and around the village should not be disturbed. The Water Table should be nurtured so as not go down below the pre-mining period in case of any water scarcity in the area, the Project Authorities have to provide water to the villagers for their use. A provision for regular monitoring of water table in open dug well located in village should be incorporated to ascertain the impact of mining over ground water table.	<p><b>Being Complied</b></p> <ul style="list-style-type: none"> <li>• Ground water recharge measures are undertaken by constructing artificial recharge ponds, roof top rain water harvesting methods etc. to nurture the water table.</li> <li>• Drinking Water is supplied to nearby villages facing water scarcity.</li> <li>• The water table in the region is monitored regularly by means of 04 sets of piezometers constructed and using a network of existing wells.</li> </ul>
2(c)	The illumination and sound at night at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may affect the health in the villages located close to mining operations. Habitations have a right for darkness and minimal noise levels at night. The Project Proponents (PPs) must ensure that the biological clock of the villages is not disturbed by orienting the floodlights/ masks away from the villages and keeping the noise levels well within the prescribed limits for day/nights hours.	<p><b>Being Complied</b></p> <ul style="list-style-type: none"> <li>• Measures have been taken to keep the noise level within the prescribed norms. Routine noise monitoring is carried out as per the guidelines to ensure the same.</li> </ul>
2(d)	The Project Authority shall make necessary alternative arrangements. Where required, in consent with the State Government to provide alternate areas for livestock grazing. In this content Project Authority should implement the directions of the Hon'ble Supreme Court with regard to acquiring grazing land. The sparse trees on such grazing ground. Which provide mid-day relief from the scorching sun should be scrupulously guarded against felling. Lest the cattle the grazing ground or return home by noon.	<p><b>Not Applicable</b></p> <p>No grazing land is acquired by the Project.</p>

2(e)	<p>Where ever blasting is undertaken as part of mining activity, the Project Authority shall carry out vibration studies well before approaching and such habitats or other building to evaluate the zone of influence and impact of blasting on the neighborhood. Within 500 meters of such sites vulnerable to blasting vibrations, abidance of use of explosives and adoption of alternative means of mineral extraction, such as ripper/dozer combination /rock breakers/surface minerals etc. should be seriously considered and practiced wherever practicable. A provision for monitoring of each blast should be made so that the impact of blasting on nearby habitation and dwelling units could be ascertained. The covenant of lease deep under Rule 31 of MCR, 1960 provides that no mining operations shall be carried out within 50 meters of public works such as public roads and buildings or inhabited sites except with the prior permission from the Competent Authority.</p>	<p><b>Being Complied</b></p> <ul style="list-style-type: none"> <li>• Vibration studies were undertaken to evaluate the zone of influence and impact of blasting and the same is incorporated in the EIA/EMP Report.</li> <li>• In order to minimize the blasting, surface miners are used in coal extraction and Controlled Blasting technique is adopted for OB removal.</li> <li>• Blast Monitoring is regularly carried out and the PPV value are well within the limits.</li> </ul>
2(f)	<p>Main haulage road in the mine should be provided with permanent water sprinklers and other roads should be regularly wetted with water tankers fitted with sprinklers. Crusher and material transfer points should invariably be provided with Bag filters and or dry fogging system. Belt-conveyors should be fully covered to avoid air borne dust.</p>	<p><b>Complied</b></p> <ul style="list-style-type: none"> <li>• 294 no. of fixed sprinklers were installed on coal transport road and 04 no. 70KL water tanker &amp; 04 no. 28 KL water tankers has been deployed.</li> <li>• Mist Spray Systems are provided at Feeder Breaker and TRS.</li> <li>• Covered Conveyor Belt of approximate 5.1kms is used for coal transportation.</li> </ul>
2(g)	<p>The Project Authority shall ensure that the productivity of agricultural crops is not affected due to mining operations. Crop Liability Insurance Policy has to be taken by the PP as a precaution to compensate for any crop loss. The impact zone shall be 5Km from the boundary of mine lease area for such insurance policy. In case, several mines are located in a cluster, the Associations of owners of the cluster mines, formed inter-alia, to sub-serve such an objective, shall take responsibility for securing such Crop Liability Policy.</p>	<p><b>Agreed</b></p>
2(h)	<p>In case any village is located within the mining leasehold which is not likely to be affected due to mining activities during the life of mine, the Expert Appraisal Committee (EAC) should consider the proposal of Environmental Clearance (EC) for reduced mining area. The mining lease may be executed for the area for which EC is accorded. The mining plan may also be accordingly revised and required stipulations under the MMDR Act, 1957 and MCR, 1960 met.</p>	<p><b>Agreed</b></p>

2(i)	<p>Transportation of the minerals by road passing through the village shall not be allowed. A bypass road should be constructed (say, leaving a gap of at least 200 meters) for the purpose of transportation of the minerals of the minerals so that the impact of sound, dust and accidents could be mitigated. The PP shall bear the cost towards the widening and strengthening of existing public road network in case the same is proposed to be used for the Project. No road movement should be allowed on existing village road network without appropriately increasing the carrying capacity of such roads.</p>	<p><b>Complied</b> Diverted Hardi Bazar road near Sarai Singar has been completed.</p>
2(j)	<p>Likewise, alteration or re-routing of foot paths, pagdandies, cart roads, and village infrastructure/public utilities or roads (for purpose of land acquisition for mining) shall be avoided to the extent possible and in case such acquisition is inevitable, alternative arrangements shall be made first and then only the area acquired. In these types of cases, inspection Reports by site visit by expert may be insisted upon which should be done through reputed Institutes.</p>	<p><b>Agreed</b></p>
2(k)	<p>As CSR activities by Companies including the Mining Establishments has become mandatory to 2% of their financial turn-over, Socio Economic Development of the neighborhood habitats could also be planned and executed by the PPs more systematically based on the 'Need based door to door survey' by established Social Institutes/Workers on the lines as required under TOR. "R&amp;R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&amp;R Plan. The relevant State/National Rehabilitation &amp; Resettlement Policy should be kept in view. In respect of SCs/STs and other weaker sections of the society in the study area a need based sample survey family-wise should be undertaken to assess their requirements, and action programme prepared and submitted accordingly, integrating the sectoral programme of line departments of the State Governments. It may be clearly brought out whether the village located in the mine lease area will be shifted or not. The issues relating to shifting of Villages including their R&amp;R and socio-economic aspects should be discussed in the EIA report."</p>	<p><b>Being Complied</b></p> <ul style="list-style-type: none"> <li>• CSR Policy has been framed after incorporating the features of the Companies Act 2013 and as per notification issued by Ministry of Corporate Affairs, Govt. of India on 27.02.2014 as well as DPEs guidelines.</li> <li>• The project has taken up various activities under CSR head like construction of schools, toilets, hospitals, roads, culverts, ponds, markets etc.</li> <li>• The socio-economic aspects have been studied in the EIA/EMP Report. As per CIL's R&amp;R policy 2012, compensation &amp; employment is provided to project affected persons.</li> </ul>

EXPENDITURE INCURRED ON ENVIRONMENT RELATED ACTIVITIES OF DIPKA EXPANSION PROJECT, DIPKA AREA, SECL.		
Categories	Activities	2022-23
<b>Biological Reclamation</b>	Current plantation including plantation of maintenance period	34606353.55
	Social Forestry & Others	4173794.00
<b>Technical reclamation</b>	OB dump-dozing	229715354.00
	Construction of Toe wall & gabions	16429116.40
<b>Air Pollution</b>	Dust suppression of road (fixed sprinklers, mobile sprinklers etc.)	70601028.76
	Dust suppression of road (mist sprinklers, CHP, Silo etc.)	800000.00
	Dust suppression of haul road (Mobile Tankers)	69596036.05
	Temporary Wind Barrier Wall at siding	15669000.00
	Vertical greenery System at railway siding (5 year work)	144141.00
<b>Water Pollution control</b>	ETP O&M	507602.05
<b>Statutory payments</b>	Statutory payment	170267092.00
<b>Environment Monitoring</b>	Environment Monitoring Cost	33973912.30
	CAAQMS	440862.76
	GW monitoring (DWFM & DWLM)	0.00
	Environmental & Other Audits	2649336.00
<b>Studies</b>	Environment related studies	708000.00
<b>Awareness</b>	Environment Awareness	20000.00
<b>R&amp;R</b>	Land & compensation	122585288.00
	Infrastructure	767776.51
<b>Community Development</b>	CSR & Other Expenditures	16935000.00
	<b>Grand Total</b>	<b>79,05,89,693.38</b>

**ESTIMATED CAPITAL AND REVENUE REQUIREMENT FOR ENVIRONMENTAL PROTECTION MEASURES**

S.No	PARTICULARS	Approved in Dipka 35.00 Mty (Lakhs)	Additional Capital for 37.50 Mty (Lakhs)	TIME LINE
1	Water Treatment Plant/ Recycling of water in mines	200.00	0.00	The work is expected to be undertaken during FY 2024-25.
2	Mechanized Sweeping machine	50.00	50.00	Proposal for additional (01 no) mechanized sweeping machine is initiated and is expected to be completed by March 2024.
3	Permanent water sprinkling/misting arrangement on haul road & loading site	200.00	0.00	Activity will be completed in 02 phases. Rs. 1.09 Crores in 1 <sup>st</sup> phase in 2023. Total capital will be utilized by March 2025.
4	Long range mobile Misting/ Fogging arrangement (2 nos.)	100.00	200.00	Proposal for additional (01 no) mechanized sweeping machine & 15 no of fixed fogging machine has been initiated and is expected to be completed by March 2024.
5	Green belt along safety zone of the Project	50.00	0.00	The work is expected to be undertaken during FY 2024-25 in a progressive manner.
6	Scientific studies including Environment related studies	50.00	0.00	Capital cost to be expended as per statutory conditions imposed on the project.
7	Dust suppression at Railway siding	50.00	0.00	Completed
8	Miscellaneous	20.00	0.00	Capital cost to be expended as per statutory conditions imposed on the project.
10	Wind breaker/barrier (2km)	0.00	328.00	Completed
	<b>TOTAL</b>	<b>720.00</b>	<b>578.00</b>	--

*(Signature)*  
24/7/2023

महाप्रबंधक (खनन)  
GENERAL MANAGER (MINING)  
दीपका एक्स. परिवोजना  
DIPKA EXPN. PROJECT

*(Signature)*

Nodal Officer (Envt./Forest)  
Environment Dept.  
Dipka Area, SECL

S.No.	PARTICULARS	Amount (Rs in Lakhs)
1	Land Reclamation/Restoration @ 1.00 Lakh/Ha for Biological Reclamation	29.00
2	Plantation Cost	309.43
3	Environment Audit @ Rs.1.00 Lakh per annum	1.00
4	Dust suppression of road (fixed sprinklers, mobile sprinklers etc.), CHP, Silo etc.	122.10
5	Environment Monitoring Cost	313.71
6	Environment Awareness	0.65
7	ETP operation and maintenance	8.98
8	Air Consent Charges/annum	10.00
9	Water Consent Charges/annum	10.00
10	Annual Closure Cost based on WPI Sep 22 to be deposited in Escrow A/C	2282.225
11	Monitoring of land use through Satellite surveillance.	10.00
12	C.S.R Cost @ Rs. 2.00 % of last three-year profit	750
13	Regular monitoring of CSR, R&R Plan and Mine Closure Plan.	10.00
<b>Total Revenue Cost on Environment Head</b>		<b>3857.10</b>

  
 महाप्रबंधक (खनन)  
 GENERAL MANAGER (MINING)  
 दीपका एक्स. परिवोजना  
 DIPKA EXPL. PROJECT

  
 Nodal Officer (Envt./Forest)  
 Environment Dept.  
 Dipka Area, SECL



Final Report– April, 2023

# Environmental Audit of Dipka Opencast Coal Mine Expansion Project, Dipka Area, Korba

For



**M/s. South Eastern Coalfields Limited**  
*(A Subsidiary of Coal India Ltd.)*  
**Korba, Bilaspur, Chhattisgarh**



Submitted By



**ENVIRONMENT MANAGEMENT DIVISION**  
**Directorate of Extension**

**Indian Council of Forestry Research & Education**

*(An Autonomous Body of Ministry of Environment, Forests and Climate Change, GoI)*

**Dehradun–248006 (Uttarakhand), India**

[www.icfre.gov.in](http://www.icfre.gov.in)

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## ABBREVIATIONS

<b>Abbreviation</b>	<b>Full Form</b>
amsl	Above mean seal level
AQI	Air Quality Index
ASOSAI	Asian Organization of Supreme Audit Institution
CAAQMS	Continuous Ambient Air Quality Monitoring Stations
CECB	Chhattisgarh Environment Conservation Board
CETI	Central Excavation Training Institute
CHP	Coal Handling Plant
CIL	Coal India Limited
CMPDI	Central Mine Planning and Design Institute
COD	Chemical Oxygen Demand
CPCB	Central Pollution Control Board
CPP	Coal Processing Plant
CSR	Corporate Social Responsibility
CTE	Consent to establish
CTO	Consent to Operate
dB	Decibel
DGMS	Directorate General of Mine Safety
EA	Environmental Audit
EC	Environmental Clearance
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPA	Environment Protection Act
ETP	Effluent Treatment Plant
FC	Forest Clearance
FY	Financial Year
Ha	Hectare
HEMM	Heavy Earth Moving Machinery
HFL	High flood level
HQ	Headquarter
ICFRE	Indian Council of Forestry Research and Education
ISO	International Organization for Standardization
ISSAI	International Standards of Supreme Audit Institutions
km	Kilometre
m	Meter
Mcum	Million cubic meter
ML	Mine Lease
mm	Millimeter
MoEF&CC	Ministry of Environment, Forest and Climate Change
MT	Metric tonne
MTPA	Million Tonne per Annum
NAAQ	National Ambient Air Quality Standards
NABL	National Accreditation Board for Testing and Calibration Laboratories
NIOH	National Institute of Occupational Health

<b>Abbreviation</b>	<b>Full Form</b>
NOC	No Objection Certificate
OB	Over Burden
OCP	Open Cast Project
PA	Project Authority
PAFs	Project Affected Families
PAP	Project Affected People
pH	potential of hydrogen
PM <sub>10</sub>	Particulate Matter (aerodynamic diameter $\leq 10 \mu\text{m}$ )
PM <sub>2.5</sub>	Particulate Matter (aerodynamic diameter $\leq 2.5 \mu\text{m}$ )
PME	Periodic Medical Examination
PP	Project Proponent
PPE	Personal Protective Equipment
PPV	Peak Particle Velocity
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
RDS	Respirable Dust Sampler
RL	Reduced Level
SPCB	State Pollution Control Board
SPM	Suspended Particulate Matter
Sq Km	Square Kilometer
STP	Sewage Treatment Plant
TDS	Total Dissolved Solids
TRS	Truck Receiving Station
TSS	Total Suspended Solids

## CHAPTER - 1 INTRODUCTION

### 1.1 INTRODUCTION

Ministry of Environment, Forest and Climate Change (MoEF&CC), Govt. of India has stipulated in the condition [No. 41 (h) (v)] of Environment Clearances issued to Dipka Expansion Project, M/s. South Eastern Coalfields Ltd., (SECL), a subsidiary of Coal India Ltd. that a third party environmental audit shall be carried out once in three years. Accordingly, SECL *vide* letter No. एस.ई.सी.एल./दी.क्षे./पर्या./2021/2344 dated 07.09.2021 and No. एस.ई.सी.एल./दी.क्षे./पर्या./2021/2386 dated 30.10.2021 approached the Indian Council of Forestry Research and Education (ICFRE), Dehradun (an autonomous council of MoEF&CC) for a proposal along with estimates of expenditures towards conducting third party environmental audit for Dipka Expansion Project of SECL, Dipka Area, Korba district, Chhattisgarh'. Accordingly, the ICFRE, Dehradun submitted a proposal *vide* email dated 24.11.2021 and thereafter, the SECL, Dipka Area awarded the assignment *vide* its letter No. एस.ई.सी.एल./दी.क्षे./पर्या./2021/2448 dated 22.12.2021 (Annexure I) to the ICFRE for work of environmental audit of this project.

### 1.2 OBJECTIVE

To conduct third party environmental audit for the compliance of Environmental Clearance (EC) conditions for Dipka OCP as stipulated by MoEF&CC, GoI.

### 1.3 SCOPE OF WORK

1. To review and assess the compliance of the conditions laid down in the EC granted to Dipka Expansion Project.
2. To conduct site inspection, preparation of Environmental Audit Report providing assessment of compliance against each EC condition and provision of recommendations for improvements.

### 1.4 CONDUCT OF ENVIRONMENTAL AUDIT WORK AND SUBMISSION OF REPORT

After completion of field verification of EC compliance conditions of Dipka OCP, SECL, a draft environmental audit report was prepared and submitted to project proponent for perusal and comments. The comments of the authority of Dipka OCP, SECL on ICFRE report was communicated was discussed and reviewed at end of ICFRE. Accordingly, the post Audit comments, clarification and conclusion have been presented in a separate chapter and included in the final report as Chapter 6 - Post Audit Clarifications and Final Conclusion.





## **1.5 STRUCTURE OF THE REPORT**

The report is structured in the following major chapters:

**Chapter 1:** Introduction

**Chapter 2:** Approach and Methodology

**Chapter 3:** Study Area profile

**Chapter 4:** Compliance Status

**Chapter 5:** Observation and Recommendation

**Chapter 6:** Post Audit Clarifications and Final Conclusion



## CHAPTER - 2

### APPROACH AND METHODOLOGY

#### 2.1 METHODOLOGY

The audit process broadly followed the standard methodologies described in guidelines of International Organization for Standardization (ISO) framework; guidance recommended by Asian Organization of Supreme Audit Institution (ASOSAI) and the guidelines of Compliance Audit *i.e.*, the International Standards of Supreme Audit Institutions on Compliance Auditing (ISSAI 4000) framework. The Compliance audits are conducted based on the planning, execution and evidence gathering process to arrive at the judgment on the conditions compliance or noncompliance (adherence to formal criteria such as relevant laws, policies, established codes, or agreed upon terms and conditions, regulations, and agreements). Therefore, the outline principles, objectives, approach, methodology, techniques, and procedures were adopted for conducting compliance audits. In the present third-party environmental audit process for Dipka OCP the statutory environmental compliance condition stipulated in the environmental clearance (EC) and the approved environmental impact assessment and environmental management plan (EIA/EMP) specific to the mine were used as a criterion for the audit.

The audit methodology adopted include discussion with the personnel from the Dipka OCP, desk review of documentation and copies of records provided by project proponent, brain storming session, working group meeting, one to one discussion and site inspection to understand the plan, programme and assess the compliance of the stipulated Environmental Compliance (EC) condition by MoEF&CC., Govt. of India and agreed in the environmental management plan. The EC components constitute land, water, air to address the ecological condition and social that takes care of human health. The audit processes adopted are presented below:

##### 2.1.1 Opening Meeting

The audit process commenced with an opening meeting on 15<sup>th</sup> July, 2022 with team of officers headed by Shri. Manoj Kumar, Colliery Manager of the Dipka OCP to introduce the audit scope and their responsibility in facilitating the process (Plate 1). The purpose, depth and the scope of the audit were outlined and the methods were explained. Further, requirement of documents to review such as various management plans, project report, mine closure plan, and periodical reports submitted to various regulatory agencies to address specific compliance requirement particularly those relevant to address the scope of the study were elaborated and discussed. The following team of Dipka officials participated during the audit process:

Sl.No.	Name	Designation
1.	Sri. Manoj Kumar	Colliery Manager
2.	Sri. Anoop Mandwaria	Chief Manager (Mining), Survey Incharge
3.	Sri. Alok Srivastava	Chief Manager (Civil)



Sl.No.	Name	Designation
4.	Sri. Naresh Prasad	Chief Manager (Mining), L&R Incharge
5.	Sri. G K. Rai	Chief Manager (Mining)
6.	Sri. Bijay Prasad	Chief Manager (E & M)
7.	Sri. D. K. Sahu	Chief Manager (Excv.)
8.	Dr. U. P. Singh	Chief Medical Officer
9.	Sri. D. P. Kurrey	Manager (Survey)
10.	Sri. Bhushan Ram	Manager (E & M)
11.	Sri. R. K. Singh	Manager (Survey)
12.	Smt. Janani Hemalatha	Nodal Officer (Env./Forest)
13.	Sri. Sanoj Jose	Asst. Manager (Env.)

### 2.1.2 Audit Team

The ICFRE audit team comprised of following experts who conducted the EC compliance audit:

Sl.No.	Name	Designation
1.	Dr. N. Rama Rao	Expert Member
2.	Sri. R. Nanmathi Selvan	Expert member
3.	Sri. Chandra Sharma	Scientist-C, ICFRE
4.	Sri. Ajin Sekhar	Scientist-B, TFRI, Jabalpur
5.	Sri. Anish V. Pachu	Chief Technical Officer, IFGTB, Coimbatore
6.	Dr. Shiv Kumar Yadav	Junior Project Consultant, ICFRE

### 2.1.3 Desk Review

The team collected Environmental Clearance (EC) conditions stipulated by MoEF&CC, GoI issued *vide* letter Nos. J-11015/487/2007-IA-II(M) dated 09.03.2020, J-11015/487/2007-IA-II(M) dated 20.03.2019 and J-11015/487/2007-IA-II(M) dated 20.02.2018 for Dipka OCP of South Eastern Coalfields Limited (SECL) of South Eastern Coalfields Limited (SECL) (Annexure – II) and various documents such as Environmental Impact Assessment (EIA), Environment Management Plan (EMP), approved Mine Plan and other statutory approvals such as No Objection Certificate (NOC) from State Pollution Control Board (SPCB), DGMS permission, all periodical reports submitted to various regulatory agency and any other relevant study conducted.

The relevant documents were desk reviewed by expert team for collection of data, prepare checklist prior to the audit and onsite to verify the implementation process. Wherever the document was not available, detailed discussions were held with the relevant personnel and same are pointed out in the audit report for further implementation. In addition, the statements provided by the project personnel were also verified by desk reviewing the document and or during site inspection. Wherever suitable verification could not be obtained, the same has been identified in the audit process and suitable suggestion has been provided for future course of action.



## 2.1.4 Site Inspections

Comprehensive site inspections during the audit period from 16<sup>th</sup> to 20<sup>th</sup> July 20222 were carried out by the individual expert for the respective components (Plate 2 & 3). Following are the key areas:

- Mine Pit & Benches
- Drilling and Blasting site
- Mining machineries deployed
- Mode of Transportation of OB and Coal sites
- Haulage roads
- Site facilities
- In-pit crusher and conveyor system
- Coal Handling and Coal Processing Plant (CHP/ CPP) and stock yard
- Overburden (OB) dumps
- Garland drains
- Employee's protection measures
- Surface water management structures
- Greenbelt area/ safety zone
- Afforestation
- Occupational Health Centre / facilities
- Sewage Treatment Plants (STP)/ Effluent Treatment Process (ETP)
- Hazardous waste management
- Rehabilitation and Resettlement (R&R) sites
- Corporate Social Responsibility (CSR) activities

## 2.2 REVIEW OF STATUTORY COMPLIANCE

Environmental Audit (EA) was conducted mainly based on Environmental Compliance (EC) conditions stipulated by MoEF&CC, GoI issued *vide* letters Nos. J-11015/487/2007-IA-II(M) dated 09.03.2020, J-11015/487/2007-IA-II(M) dated 20.03.2019 and J-11015/487/2007-IA-II(M) dated 20.02.2018 for Dipka OCP of South Eastern Coalfields Limited (SECL) for expansion of 31 MTPA to 35 MTPA. Following statutory documents and guidelines were referred to assess the status of statutory and environmental compliance conditions:

### a) Project approvals

- Mining Plan and Mine Closure Plan (Scheme of Mining for 35 MTPA approved by 245<sup>th</sup> SECL Board)
- Inspection details, violations of DGMS and compliances
- Concern to Operate

### b) Environmental Impact Assessment

### c) Health & Safety: Coal Mines Regulations, 2017 and its related DGMS Circulars

### d) Blast Monitoring

### e) Hazardous waste

### f) Environment



- Water (Prevention & Control of Pollution) Act, 1974;
- Air (Prevention & Control of Pollution) Act, 1981;
- Environmental (Protection) Act, 1986 – approvals
- Forest (Conservation) Act, 1980
- Environmental Management Strategy

### **Air Quality**

- Work zone –Standards for Coal Mines issued by MoEF, GSR-742 E dated 25.09.2000
- Residential category – National Ambient Air Quality Standards (NAAQS) issued by CPCB, GSR 176 dated 02.04.1996- Air quality monitoring.

**Noise Monitoring Plan** – Noise monitoring programme, GSR-742 E dated 25.09.2000 Standards for Coal Mines issued by MoEF.

### **Water Quality**

- Water license
- Mine discharge / Workshop / Colony effluents – Standards for Coal Mines issued by MoEF, GSR-742 E dated 25.09.2000 and GSR-801 (E), EPA, 1986, dated 31.12.1993- water quality management
- Ground Water – IS 10500: 2012
- Surface Water – IS 2296: 1982

## **2.3 WORKING GROUP MEETING AND REPORTING**

After completion of the initial open meeting and desk review of documents checklist specific to the Dipka OCP were prepared for verification during site visit incorporating expert's input. The report comprises of brief profile of the study area, geology, mining, and comprehensive audit finding along with suggestion, conclusions, and recommendations. The deliverables include a draft report with a request for comments from the project team; and the final report will be submitted after incorporating relevant comments from the Dipka OCP team.



## CHAPTER 3 STUDY AREA PROFILE

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### 3.1 BACKGROUND INFORMATION

The environmental auditing (EA) for Dipka OCP was conducted mainly based on EC compliance conditions stipulated by MoEF&CC, GoI issued *vide* letters Nos. J-11015/487/2007-IA-II(M), dated 09.03.2020, J-11015/487/2007-IA-II(M), dated 20.03.2019 and J-11015/487/2007-IA-II(M), dated 20.02.2018 for Dipka OCP Expansion (Capacity 35 MTPA) of South Eastern Coalfields Limited (SECL). The SECL is a Schedule-B Miniratna for Central Public Sector Enterprises (CPSE) in the coal and lignite sector. The SECL is one of the eight subsidiaries of CIL (A Govt. of India Undertaking) under the Ministry of Coal having registered Corporate Office at Bilaspur, Chhattisgarh and it has a total of 83 major coal projects (50 Underground Projects and 33 Opencast Projects) approved for a total ultimate capacity of 290.00 MTPA with sanctioned capital of 45,626.35 Crore (including pre-nationalized mines & Custodian Mines). Out of the 83 projects, 32 projects (06 UG & 26 OC) are On-going Projects, 45 projects (39 UG & 06 OC) are completed projects as on 31.03.2022 and 05 UG Mines are Existing Mines & one is custodian mine.

The SECL has four major coalfields namely, Central India Coalfield, Korba coalfield, Mand-Raigarh coalfield and Ramkola-Tatapani coalfield in Son-Mahanadi master basin. It spreads over 6 districts of Chhattisgarh State namely Korba, Raigarh, Surguja, Balrampur Surajpur & Korea and 3 districts of Madhya Pradesh viz. Shahdol, Anuppur & Umaria districts. The Korba coalfield has a total areal extent of about 520 sq.km. It is an elongated along east-west direction for 64 km long with varying width of 4.8 km to 16 km. Southerly flowing Hasdeo river divides the coalfield into two parts, the western part being larger than the eastern part. The Dipka coal block lies in the western part of the coal field. Dipka project initially planned for 2 MTPA capacity during 1982 and with periodical enhancement it has achieved peak production capacity of 35 MTPA during the year 2018-19.

### 3.2 LOCATION AND APPROACH

Dipka OCP Expansion, a part of Dipka and Hardi Blocks, is located in the south-central part of Korba Coalfield in Korba district of Chhattisgarh. The Dipka mining block having an area of about 12.42 sq. km (excluding the area required for colony, road and infrastructure) it is depicted in the Survey of India Toposheet No. 64 J/11 and is bounded by latitudes 22°18'59" and 22°19'43" North and longitudes 82°30'47" to 82°33'34" East. The coal block is well connected by road and rail. Gevra Road is nearest railway station situated at a distance of about 12 km from the mine. Coal from Dipka OCP is being dispatched through the existing Rly Sidings at Junadih and Gevra Road. The Dipka coal mine is located at a distance about 26 km from the Korba town and 90 km from SECL (HQ), Bilaspur.





**Figure 3.1: Location Map of Dipka OCP, Dipka Area, Bilaspur, Chhattisgarh**

(Source: EIA/EMP of Dipka for 35.00 MTPA, Oct'2017)

### 3.3 TOPOGRAPHY, DRAINAGE AND CLIMATE

The general topography is gently undulating with elevations ranging from 298 m to 326 m above mean sea level. The general slope is towards south. Lilagarh nala flowing along the southwestern boundary of the block. Presently entire mining lease area has been altered due to mining activities and mining is advancing towards south and southeast direction towards dip of the formation as well as slope of general topography. The area experiences tropical climate varying from dry to moist tropical with well-defined summer from April to June, rainy season from July to September and winter from November to February. The temperature rises to a maximum of about 48°C in May and drops to a minimum of about 6°C in December. The average annual rainfall reported is 1506.7 mm. The predominant wind direction is generally easterly to south westerly with velocity varying from 0.57 to 9.30 kmph. The relative humidity ranges from 70% to 94% during monsoon and 17% to 78% during summer.

#### Surface Water Regime (Stream/Nala)

The area is having gently undulating topography with elevations ranging from 288 m to 328 m amsl. The general slope of the area is towards S-SE. The Hasdeo River, which is a major tributary of Mahanadi River, flows along the eastern side in a north-south direction and it forms the major drainage of the area. The coal block area is primarily drained by Lilagarh Nala, which is a fourth order stream passing through the project area from north to south along west side boundary. The streams that drain the entire buffer zone of the area other than Lilagarh Nala include Kholar Nala, Ahiran Nadi and Gangdel Nala. The HFL of Lilagarh

Nalla noted near to quarry boundary at downstream and upstream was 301.10 m and 309.54 m respectively. The west side working quarry boundary lying close to Lilagarh Nalla at elevation 294.65 mRL has been provided an embankment (stone masonry in cement sand mortar) at elevation 300.14 – 300.12 mRL to prevent the inrush of water into the quarry during peak flow.

### 3.4 REGIONAL GEOLOGY

The Korba Coalfield, constituting the south-central part of the vast stretch of Gondwana sediments of Son-Mahanadi Valley, is located between the North Latitudes 22°15' and 22°30' and East Longitudes 82°15' and 82°55'. It has a total aerial extent of about 520 sq.km. It is elongated in an east-west direction and 64 km long and 4.8 km to 16 km wide. The southerly flowing Hasdeo river divides the coalfield into two parts, the western part being larger than the eastern part. The Dipka coal Block lies in the western part of the coalfield.

The stratigraphic succession of the Korba Coalfield based on surface and sub-surface data is given in **Table 3.1**.

**Table 3.1: Generalized stratigraphic succession in Korba Coalfield**

Age	Formation		Thickness (m)	Lithology
Recent	Alluvium		Upto 20m	Soil and sub-soil.
Lower Triassic to Upper Permian	Kamthi		More than 200m	Coarse ferruginous sand stone, pebbly sand stone & conglomerate, minor shales.
Lower Permian	Barakar	Upper Member	More than 350m	Sandstone, shale, thick coal seams inter-banded with carbonaceous shale.
		Middle Member	More than 300m	Sandstone of varied grain sizes
		Lower Member	More than 160m - 250 m	Sandstone, shales and Ghordewa group of <b>coal seams</b> .
Basal Permian to Upper Carboniferous	Talchir		More than 251m	Diamictites, sandstone, middle shales, rhythmites, varies and black shales.
----- Un-conformity -----				
Pre-cambrian				Granite, Gneisses and migmatites.

Source: Geological Survey of India, Bulletin series A, No. 45 Vol.-III, 1983

The strata in general have a southerly dip varying from 4° to 10° except in the northeastern part of the coalfield in Rajgamar- Kesla sector where the dip is easterly. Rolling dips in confirmation with the anticlinal nature of the basins have also been recorded in Korba Coalfield. A prominent East-West strike fault dipping towards south divides the coalfield in two parts influencing the stratigraphic disposition. In the north of this fault, i.e. in Dilwadih-Banki-Surakachhar areas, only Karharbari with superior grade thin seams are preserved. In the south of this fault, i.e. in Dipka-Gevra-Kusmunda-Manikpur sector, the entire succession





is preserved. The sedimentary strata in the Korba Coalfield are not affected by igneous intrusive.

### 3.5 EXPLORATION IN DIPKA BLOCK

Exploration was carried out by various agencies in Dipka Coal Block over an area of 10.06 sq.km. A total of 92 boreholes were drilled with a borehole density of 9.15 per sq.km. The details of drilling are given in the Table 3.2.

**Table 3.2 Details of Exploration**

Agency	Financial year	Borehole codes and Nos.	Meterage
GSI	NA	KDT (5)	504.50
CMPDI	1978-79	CMKK (6)	757.96
CMPDI	1979-80	CMKK (2)	235.15
CMPDI	1980-81	CMKK (1)	126.80
CMPDI	1981-82	CMKDP (3)	365.60
CMPDI	1982-83	CMKDP (30)	6206.70
CMPDI	1983-84	CMKDP (15)	2885.15
CMPDI	1984-85	CMKDP (1)	351.15
CMPDI	1985-86	CMKDP (8)	1041.30
CMPDI	1986-87	CMKDP (5)	435.15
CMPDI	1997-98	CKHD(6)	1275.80
CMPDI	1998-99	CKHD (6)	1073.80
CMPDI	1998-99	MPHD (2)	429.95
MECL	1998-99	MKD (2)	497.70
	<b>TOTAL</b>	<b>92</b>	<b>16150.71</b>

### 3.6 GEOLOGY OF THE BLOCK

The entire block is covered with soil. The thickness of the soil cover generally varies between 3m to 6m. The stratigraphic succession of the block is given in Table 3.3, is based on the data obtained from exploratory bore holes drilled in an around the block.

**Table 3.3: Stratigraphic Succession of Dipka Expansion**

Age	Formation	Thickness (m)	Lithology
Recent	Soil/Weathered Zone	1.5 to 20m	Soil/sub-soil and laterite soil.
Lower	Barakar Upper Member	+ 293m	Permian Sandstone of varying grain size. Carbonaceous shale, shale, sandy shale and <b>thick coal seams of Lower Kusbunda, Upper Kusbunda and E&amp;F.</b>
	Middle Member	+ 200 m	Coarse to gritty grained sandstone intercalation of shaly sandstone, shale/carbonaceous shale and <b>thin inter-banded, impersistent coal seam.</b>
	Lower Member	+ 250 m	Coarse grained to pebbly sandstone with thin good quality coal seams.
Upper Carboniferous	Talchir	Not drilled	Greenish shale and sandstones.
----- Un-conformity -----			
Archeans	Metamorphics		Granites, Gneisses, schist etc.

Source: Geological Survey of India, Bulletin series A, No. 45 Vol.-III, 1983



### 3.6.1 Strike and Dip

The strike and dip of the coal seams in different parts of the block is given in Table 3.4:

**Table 3.4 Strike and dip of the deposit**

Part of the block	Strike	Dip
Western part	E-W with local swings	4° -7° towards south
Central part	E-W with swings	3°-4° towards south
Eastern part	NE - SW to ENE-WSW	2°-6° towards SE to SSE
Northern part	NE-SW with local swings	3°-7° towards south-east

### 3.6.2 Faults

Altogether 12 nos. of faults have been deciphered in the block. Details of these faults are as follows:

**Table 3.5 Details of Fault in the Dipka block**

Fault F1	This is an N-S trending fault which defines the western boundary of the block. The throw of this fault is more than 175m towards east.
Fault F2	This fault lies in the western part of the block having N-S trend. The amount of westerly throw varies between 0 to 58m from south to north and gradually dies out near borehole CKDP-133.
Fault F3	The trend of fault F3 is also N-S. The amount of throw is between 0 - 15 m and the direction of throw is towards west.
Fault F4 (Malgaon Sector)	This fault has NE-SW trend with a throw direction of NW. The amount of throw varies between 10 to 20 m.
Fault F4 (Hardi)	This fault has a NE-SW strike and the direction and amount of throw is SE and 0-20 m respectively. The fault has an arial extent of 0.3 km.
Fault F5 (Malgaon)	This fault has a NE-SW trend extending upto 0.56 km in the block. The direction of throw of fault is towards NW and the amount of throw is 5 m and dies out in the west.
Fault F5 (Hardi)	Fault F5 has a strike ENE-WSW extending upto 2.8 km strike length. The amount of throw varies between 0-40 m.
Fault F6 (Hardi)	The fault has a strike NE trending towards east. The amount of throw varies between 120m to 20m and it dies out towards south west. The fault has a strike length of 1.85km.
Fault F7	The trend of the fault is NE-SW to E-W and the direction of throw is NW to N. The amount of the throw varies between 0-15m.
Fault F8	The fault has a NE-SW trend in the central part and becomes E-W towards east. The direction of throw is NW to north. The fault has a maximum throw of 15 m in the central part and it dies out towards south west.
Fault F9	The fault has a NE-SW to ENE-WSW trend with the throw direction of NW to NNW. The fault has a maximum throw of 60 m in the central part and gradually reduces towards NW and SW and gradually dies out.
Fault F10	The trend of fault F10 is E-W in the western part and it swings to NW-SE in the eastern part. This fault defines the northern and eastern boundary of the block. It has a strike length of 4.4 km and further extends south - east wards.

### 3.6.3 GEOLOGICAL BLOCK BOUNDARY

The area of Dipka and Hardi (Dip side of Dipka) geological block is 12.42 sq.km excluding the area required for road, colony & infrastructure. Its boundaries are given as in table below:

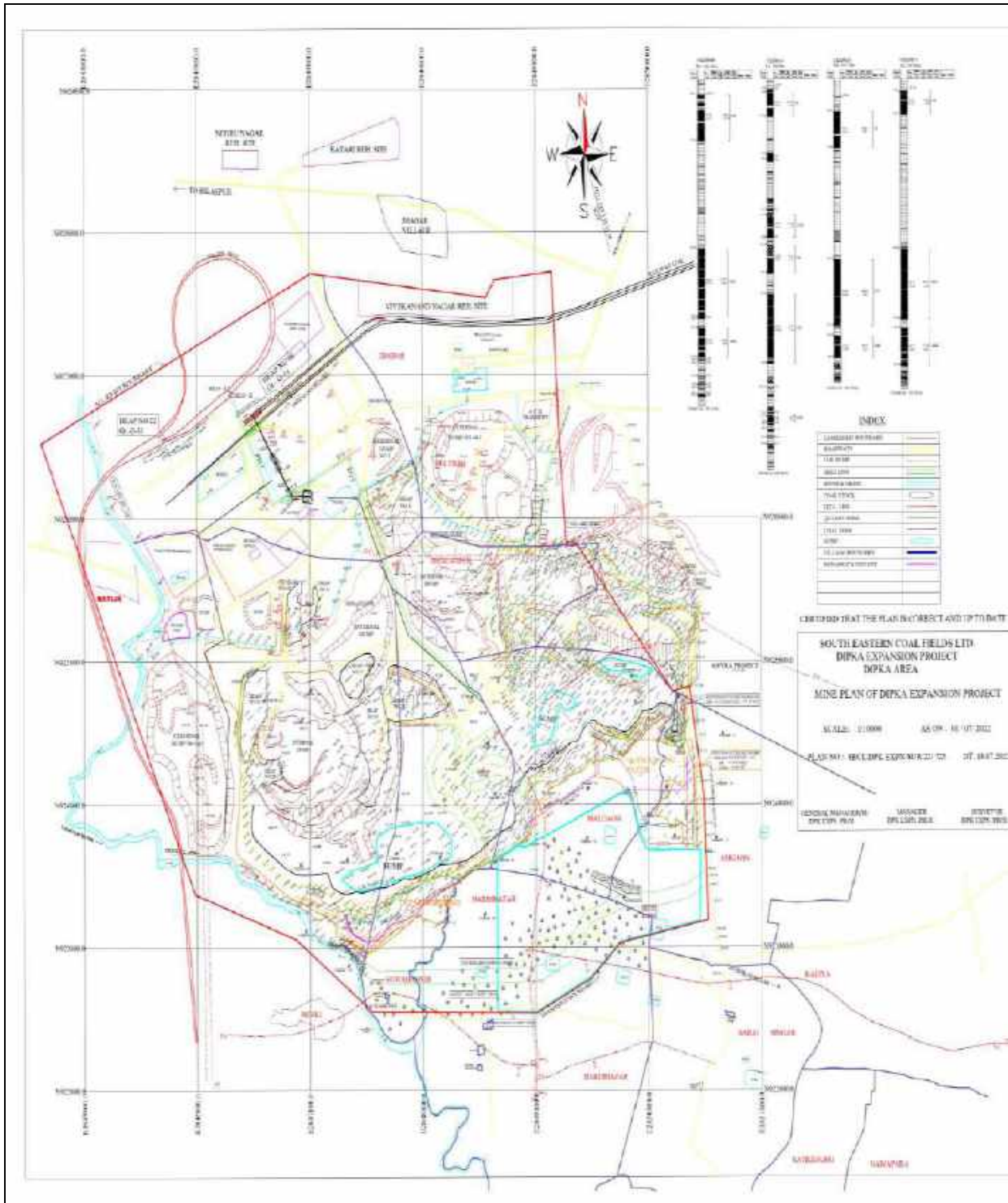


**Table 3.6: Details of Block Boundary**

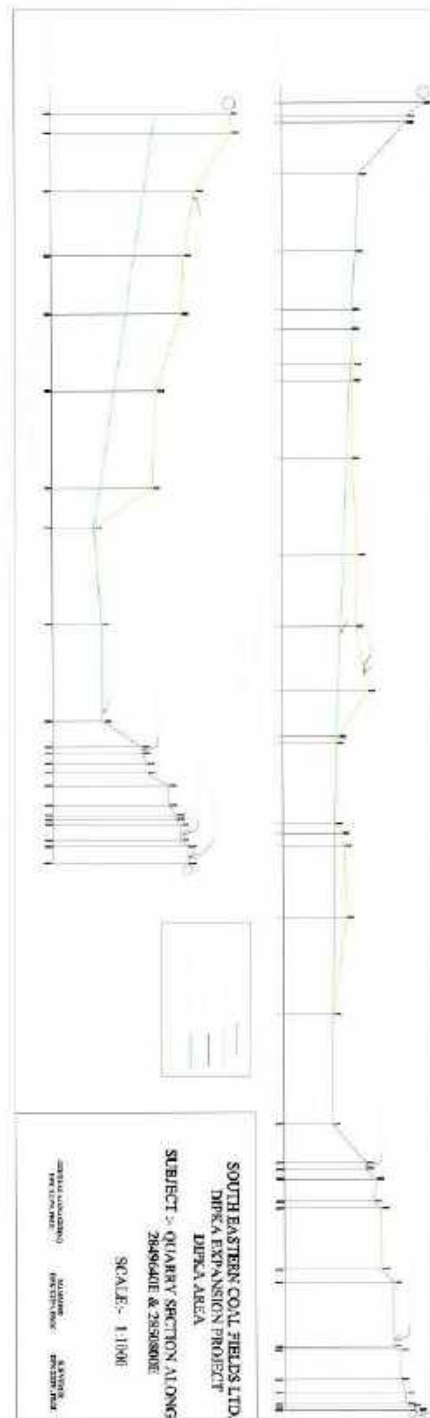
<b>Boundary direction</b>	<b>Details</b>
North	The northern boundary has been fixed along the Floor In-crop of Lower Kusmunda Seam. The incrop has been mined out in the north-western part.
West	The western floor boundary on the rise side is fixed along fault F1- F1, at the middle along fault F2-F2 in the dip side, the surface edge has been fixed leaving a surface barrier of 60m from Lilagarh Nala.
East	The eastern boundary has been fixed leaving a surface barrier of 50m from proposed western surface of Gevra OC Expansion (25 mty). The barrier is used existing for diversion of existing Hardi-Bazar Road.
South	The Southern boundary in the west has been fixed leaving a surface barrier of 60m from the Lilagarh nala, and on the east the floor limit has been fixed along the fault F6-F6 having throw of maximum 120m.

Working plan and geological cross sections of Dipka OCP is given as **Figure 3.2** and **Figure 3.3** respectively.





**Figure 3.2: Working Plan of Dipka OCP (Expansion Project), Dipka Area, Bilaspur, Chhattisgarh**



**Figure 3.3: Representative Quarry Section of Dipka OCP (Expansion Project), Dipka Area, Bilaspur, Chhattisgarh**

### 3.6.4 SEQUENCE OF COAL SEAMS

The sequence of coal seams and partings in the block is summarized in Table 3.7.

**Table 3.7: Sequence of coal seams and partings in the block**

Seam Nomenclature	Thickness Range (m)		No. of BH inter section	Area (sq. km)	Seam wise BH Density	No. of samples actually tested for proximate & ultimate analysis
	Seam	Parting				
E&F*	12.70-19.05 (CKDP-78) CKDP-139)		9	0.51	17.65	2
		30.14-62.12 (CKDP-81) CKDP-34)				
Upper Kusmunda	24.69-35.82 (MPHD-69) (CKDP-32)		41	3.87	10.59	33
		12.17-78.63 (CKDP-68) (CKDP-73)				
Lower Kusmunda (Combined)	56.70 - 70.15 (CKHD-25) (CKDP-102)		52	8.04	6.47	15
Lower Kusmunda (Top Section)	34.70 - 44.85 (CKHD-32) (CKDP-72)		52	8.04	6.47	15
		3.00 - 36.56 (CKDP-34)	34	3.63	9.37	20
Lower Kusmunda (Bottom Section)	2.19 - 24.50 (CKHD-29) (CKDP-32)		29	3.63	7.99	14

### 3.6.5 DESCRIPTION OF COAL SEAMS

Occurrences of 3 nos. of coal seams have been proved in the block. These seams in descending orders are 'E' & 'F', Upper Kusmunda and Lower Kusmunda. Lower Kusmunda Seam occurs as composite seam in the northern part of the block. However, it splits up in two sections, namely, Lower Kusmunda (Top Section) and Lower Kusmunda (Bottom Section) in southern part of the block. The average grade of the coal is 'E'.

### 3.7 RESERVE

The mineable reserves and overburden estimated as per Project Report for 25 MTPA is 617 million tons coal and 615 Mcum overburden. However, as on 01/04/2016, balance reserves as per Project Report for 35 MTPA is 359.19 MT of coal and 430.71 Mcum of OB respectively within the same quarry boundary.



**Table 3.8 Coal reserve and overburden**

S.N.	Seams/Partings	Unit	West Section	East Section	Total
<b>A.</b>	<b>Mineable Reserves</b>				
	E&F Seam	MT	6.63	1.96	8.59
	Upper Kusmunda seam	MT	56.21	41.57	97.78
	Lower Kusmunda (Top) seam	MT	83.19	106.70	189.89
	Lower Kusmunda (Comb/Bot)	MT	133.15	187.59	320.74
	Total Reserves	MT	<b>279.18</b>	<b>337.82</b>	<b>617.00</b>
<b>B.</b>	<b>Vol. of OB/Parting</b>				
	Top O.B.R.	Mcum	108.58	166.16	274.74
	Parting between E&F & UK	Mcum	21.08	5.64	26.72
	In seam band of Upper Kusmunda seam	Mcum	3.74	10.5	10.5
	Parting between LK (Comb) / (Top) & U/K	Mcum	122.29	205.61	205.61
	In seam band of Lower Kusmunda(Top)seam	Mcum	5.90	9.41	9.41
	Part. bet. L/K(B/C) & L/K(T)	Mcum	37.15	64.70	64.70
	In seam band of Lower Kusmunda(Comb/Bot)	Mcum	13.93	23.32	23.32
	Total vol. of OB/Parting	Mcum	<b>260.19</b>	<b>354.81</b>	<b>615.00</b>
<b>C.</b>	<b>Stripping Ratio</b>	Mcum/t	0.93	1.05	1.00

Source: EIA/EMP of Dipka OCP Oct 2017 (35 MTPA)

### 3.7.1 Geo-mining Characteristics

The total quarry has been divided into two sections i.e., western section and eastern section. Western section would be worked in advance. Geo-mining characteristics of the project is depicted in Table 3.9.

**Table 3.9: Geo-mining characteristics**

Sl.No.	Particulars	Unit	Values
(a)	Lower Kusmunda (Comb)	m	56.70 - 70.15
(b)	Lower Kusmunda (Top)	m	34.70 - 44.85
(c)	Lower Kusmunda (Bot)	m	2.19 - 24.50
(d)	Upper Kusmunda	m	24.69 -35.82
(e)	Seam E&F	m	12.70 -19.05
A.	Specific Gravity of the seams	Mcum/t	1.58
B.	Av. gradient of the quarry floor	1 in 9 to 1 in 17	
C.	Av. Quality of seam	Grade	G-10/11
D.	Excavation Category	Assumed	III
a	Parting between Lower Kusmunda (Bottom) and Lower Kusmunda (Top)	m	3.00 -35.56
b	Parting between Lower Kusmunda (Top)/(Combined) & Upper Kusmunda	m	12.17 - 78.63
c	Parting between E&F and UK	m	30.14 - 62.12
d	Top O.B.	m	8.02 - 85.15
E.	Excavation Category	Assumed	50% Cat III 50% Cat IV



Sl.No.	Particulars	Unit	Values
F.	<i>In situ</i> volume weight	T/cum	2.25 - 2.40
A.	Strike length of the quarry	Km	3.0 - 4.0
B.	Dip rise width of the quarry	Km	2.6 - 3.2
C.	Maximum depth of the quarry	m	250
D.	Surface area of the quarry	Ha	1002

Source: EIA/EMP of Dipka OCP Oct 2017 (35 MTPA)

### 3.8 BASELINE INFORMATION OF DIPKA EXPANSION OCP

#### 3.8.1 Status on Statutory Clearance

The details on the Mining Plan and status of various statutory clearances pertaining to Dipka OCP is given in Table 3.10.

**Table 3.10: Status statutory clearances for Dipka Expansion OCP (35 MTPA)**

S.No.	Particulars	Status
1.	<b>Mining Plan /Project Report</b>	Initially Project Report for the production capacity 2 MTPA was approved on November 1982. Further 3 MTPA approved on 1992, 10 MTPA approved in on 06.12.1996 and 20 MTPA approved in SECL Board on 12.07.2005. Project report/mining plan for Dipka OCP for the production capacity 20-25 MTPA has been approved by SECL Board on 22.12.2009 for incremental of 5 MTPA. The scheme of mining for 25-35 MTPA enhanced production for obtaining EC of capacity 35 MTPA has been approved by SECL Board on 14.06.2016. Progressive Mine Closure Plan for Dipka OCP has been approved by the SECL Board on 25.10.2013. EIA/EMP for enhancement of production from 31 to 35 MTPA prepared during January and October 2017.
2.	<b>Environmental Clearances</b>	Environmental clearance for 20 MTPA coal production was granted by MoEF&CC <i>vide</i> letter No. J-11015/87/2003-IA-II (M) dated 04.10.2004.(For an Area: 1461.51Ha) Environmental clearance for enhanced production of 20-25 MTPA was granted by MoEF & CC <i>vide</i> letter No. J-11015/487/2007-IA-II (M) dated 03.06.2009. based on Public Hearing 05.09.2008.(For an Area: 2000.642Ha) Environmental clearance for enhanced production of 25-30 MTPA was granted by MoEF&CC <i>vide</i> letter No. J-11015/487/2007-IA-II (M) dated 06.02.2013. under clause 7(ii) (For an Area: 1999.293Ha) Environmental clearance for enhanced production of 30-31 MTPA was granted by MoEF&CC <i>vide</i> letter No. J-11015/487/2007-IA-II (M) dated 12.02.2015. (For an Area: 1999.293Ha) Environmental clearance for enhanced production of 31-35 MTPA was granted by MoEF&CC <i>vide</i> letter No. J-11015/487/2007-IA-II (M) dated 28.02.2017, expansion within existing leasehold area (For an Area: 1999.293Ha) Environmental clearance for enhanced production of 31-35 MTPA was granted by MoEF&CC <i>vide</i> letter No. J-11015/487/2007-IA-II





S.No.	Particulars	Status																						
		(M)pt dated 20.02.2018, extension of mine life further period. (For an Area: 1999.293Ha)																						
		Environmental clearance for enhanced production of 31-35 MTPA was granted by MoEF&CC <i>vide</i> letter No. J-11015/487/2007-IA-II (M)pt dated 20.03.2019, extension of mine life further period of one year (For an Area: 1999.293Ha)																						
		Environmental clearance for enhanced production of 31-35 MTPA was granted by MoEF&CC <i>vide</i> letter No. J-11015/487/2007-IA-II (M)pt dated 09.03.2020, extension of mine life further period for life of mine or 30 years whichever is earlier (For an Area: 1999.293Ha)																						
2A	EC Compliances	Half-yearly EC compliance reports are routinely submitted to the MoEF&CC. Previous compliance report for the period Sep. 21-March 22 has been submitted <i>via</i> email to the Raipur Regional Office of MoEF&CC.																						
3	Project Report	Initially Project Report for the production capacity 2 MTPA was approved on November 1982. Further 3 MTPA approved on 1992, 10 MTPA approved in on 06.12.1996 and 20 MTPA approved in SECL Board on 12.07.2005. Project report/mining plan for Dipka OCP for the production capacity 20-25 MTPA has been approved by SECL Board on 22.12.2009 for incremental of 5 MTPA. The scheme/mining plan for 25-35 enhanced production for obtaining EC of capacity 35 MTPA has been approved by SECL Board on 14.06.2016.																						
4.	CTE, CTO for Air and Water and Hazardous Waste Authorization	Consent to establish and operate under the Air and Water Act for enhanced production of capacity 35 MTPA has obtained from Chhattisgarh Environment Conservation Board (CECB) <i>vide</i> letter No. 8301/TS/CECB/2022 dated 16.02.2022 for the period 01.03.2022 to 28.02.2023. Hazardous Waste authorization has also been obtained from the CECB and subsequent renewal up to 27.11.2024 has been obtained <i>vide</i> authorization renewal No. 882/HSMD/HO/CECB/2020 dated 27.05.2020.																						
5.	Mining Leases and compliances	Total lease area of the mine is 1999.293 Ha which has been acquired through CB and MPLR Acts as follows: <table border="1"> <thead> <tr> <th>Notification No. &amp; Date</th> <th>Total Area (Ha)</th> </tr> </thead> <tbody> <tr> <td>CBA no. 1514 dtd. 02.06.1960</td> <td>1065.490</td> </tr> <tr> <td>CBA no. 681 dtd. 21.02.1964</td> <td>174.060</td> </tr> <tr> <td>CBA no. 2125 dtd. 06.06.1964</td> <td>368.060</td> </tr> <tr> <td>CBA no. 2024 dtd. 25.09.1993</td> <td>291.830</td> </tr> <tr> <td>MPLR no. Q/SDO/KB/19 dtd. 13.11.1975</td> <td>32.389</td> </tr> <tr> <td>MPLR no. K/ABA/KB/918 dtd. 03.05.1976</td> <td>7.260</td> </tr> <tr> <td>MPLR no. K/ABA/KB/921 dtd. 03.05.1976</td> <td>3.560</td> </tr> <tr> <td>MPLR no. K/ABA/KB/78 dtd. 18.04.1978</td> <td>1.280</td> </tr> <tr> <td>MPLR no. K/ABA/KB/80 dtd. 19.09.1980</td> <td>0.222</td> </tr> <tr> <td><b>Total Area</b></td> <td><b>1999.293/</b></td> </tr> </tbody> </table>	Notification No. & Date	Total Area (Ha)	CBA no. 1514 dtd. 02.06.1960	1065.490	CBA no. 681 dtd. 21.02.1964	174.060	CBA no. 2125 dtd. 06.06.1964	368.060	CBA no. 2024 dtd. 25.09.1993	291.830	MPLR no. Q/SDO/KB/19 dtd. 13.11.1975	32.389	MPLR no. K/ABA/KB/918 dtd. 03.05.1976	7.260	MPLR no. K/ABA/KB/921 dtd. 03.05.1976	3.560	MPLR no. K/ABA/KB/78 dtd. 18.04.1978	1.280	MPLR no. K/ABA/KB/80 dtd. 19.09.1980	0.222	<b>Total Area</b>	<b>1999.293/</b>
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<b>Total Area</b>	<b>1999.293/</b>																							

6.	Forest Clearance	Forest clearance letter and date	Area (Ha)
		F.No 8-171/92-FC dated 31.07.1995 and renewed vide F.No.8-8/2006-FC dt.03.03.2011	33.84*
	F.No 8-78/2016-FC dated 21.01.2022	133.707	
	F.No 8-80/2006-FC dated 20.03.2006	206.638	
	No. 8/6/591/98-FCW/78 dated 11.01.2001	16.794	
	M/s. Spectrum Coal and Power Ltd. (coal washery) vide letter No. 8B/115/2001-Few/869b dated 03.04.2002	2.918	
	Area already FC given to NTPC	15.159	
	<b>Total area FC obtained</b>	<b>409.056</b>	
	<b>*Second stage FC yet to be obtained</b>		
7.	DGMS Approvals	Latest DGMS approval obtained vide letter No. 2206 dated 09.05.2016 valid upto 01.02.2021, subsequently renewed on 12.08.2001.	
8.	Ground Water approval	NOC for groundwater withdrawal from CGWB has been obtained for the project vide letter No. CGWA/NOC/MIN/REN/1/2021/6545 valid up to 25.02.2023.	

### 3.8.2 Status of Mine Lease Area

Dipka OCP came into operation in 1991-92. Project reports were approved by CIL board/Ministry of Coal as under:

**June 1985:** Project report for 2.0 MTPA of coal production was sanctioned by Govt. of India in June 1985. Due to delay in land acquisition, the Dipka project was started in a patch transferred from adjacent Gevra OCP. Project was successfully implemented in March 1992.

**July 1992:** A scheme for augmentation of coal production by 1.0 MTPA from Dipka OCP (total 3.0 MTPA) was approved by SECL board in July 1992. It was completed in March 1994.

**December 1996:** Project report for Dipka Expansion OCP for production capacity of 10.0 MTPA of coal was sanctioned by Govt. of India on 06.12.1996. The project achieved its targeted production (10 MTPA) in 2001-02

**July 2005:** Project report of Dipka Expansion OCP for a production capacity of 20 MTPA was sanctioned by Govt. of India on 12.07.2005. Coal production had progressively gone up from 12.68 MT in 2002-03 to 21.50 MT in 2007-08.

**October 2009:** Project report for Dipka OCP expansion (20.0 MTPA to 25.0 MTPA) was approved by the board of Coal India Ltd on 01.10.2009. The project report stipulates OB removal by departmental HEMM and coal production by surface miners on outsourced basis. Targeted production of 25 MTPA of coal was achieved in 2011-12.

**February 2013:** No project report or Mining Plan/Scheme of Mining was prepared by CMPDI for enhancement of coal production from 25.0 MTPA to 30.0 MTPA and its report



(internal/Department) was approved by CIL board in its 253rd meeting and communicated to SECL on 25.02.2010. However, EC was obtained from MoEF vide approval letter dated, 12.02.2013, and subsequent increase in production from 25.0 MT in 2011-12 to 29.13 MT in 2012-13 and 29.20 MT in 2013-14 was achieved.

**February 2015:** Although there was no mining plan/scheme of mining for enhancement of coal production from 30.0 MTPA to 31.0 MTPA, however based on the EC dated 06.02.2015 from MoEF&CC for peak production of 31.0 MTPA, enhanced coal production of 31.0 MTPA was achieved by Dipka OCP in 2014-15, 2015-16 and 2016-17.

**April 2016:** Scheme of Mining (including mining plan) for enhancement of coal production from 25.0 MTPA to 35.0 MTPA at Dipka OCP and to obtain EC from MoEF&CC for 35.0 MTPA of coal production was approved by SECL board in its 245th meeting held on 13.05.2016. EC for enhanced production has obtained for production 31 MTPA to 35 MTPA from MoEF&CC vide letter dated 20<sup>th</sup> February, 2018 over an extent of 1999.293 Ha mining lease area in Korba district Chhattisgarh and peak production of 35 MTPA has been achieved during the year 2018-19.

### 3.8.3 Land Use Pattern: Pre Mining, During Mining and Post-Mining:

Land use pattern at pre-mining, during mining post-mining stage in the project area is furnished under:

#### Pre-Mining

Activity	Type of Land area (Ha)			Total area
	Forest	Tenancy/Agriculture	Govt.	
Nil	409.056	1409.244	180.993	1999.293

Source: EC granted by MoEF&CC vide letter no J-11015/487/2007-IA-II (M)pt dtd. 20.02.2018 of Dipka OCP

#### Land Use Pattern During Mining (area in Ha)

Sl.No.	Particulars	Forest Land	Tenancy/Agriculture	Govt. land	Total area(Ha)
		52.889	858.314	90.850	1002.053
2	External OB Dump	54.718	125.212	26.070	206.00
3	Infrastructure, workshop, administrative building etc.	279.242	313.518	41.114	633.874
4	Safety Zone	22.207	85.200	22.959	130.366
5	Green belt		23.00		23.00
6	Roads		4.00		4.00
<b>Total land already acquired</b>		<b>409.056</b>	<b>1409.244</b>	<b>180.993</b>	<b>1999.293</b>

Source: EC granted by MoEF&CC vide letter no J-11015/487/2007-IA-II (M)pt dtd. 20.02.2018 of Dipka OCP

#### Post-Mining

S.No.	Pattern of Utilization	Area(Ha)
1	Reclaimed External and Internal dumps	986.00
2	Green Belt	23.00
3	Final void/Water body	222.053
4	Built-up area (Infrastructure, colony, road etc.)	633.874
5	Safety zone: Undisturbed area	130.366
6	Roads	4.00
<b>Total</b>		<b>1999.293</b>

Source: EC granted by MoEF&CC vide letter no J-11015/487/2007-IA-II (M)pt dtd. 20.02.2018 of Dipka OCP



### 3.9 QUARRY PARAMETERS

#### 3.9.1. Method of Mining

Considering the geo-mining parameters mining operations are undertaken by opencast mechanized mining method deploying HEMM. Shovel-dumper combination system has been adopted to excavate OB by departmentally and outsourcing agency undertake OB removal deploying Pay loader and Tipper combination. Extraction of coal is also being undertaken departmentally as well as by outsourcing agency. Drilling, blasting and shovel and dumper combination is adopted departmentally, whereas outsourcing agency deploy surface miner, pay loader and Tipper combination. During the field study, it is found shovel dumper combination also deployed for extraction of coal wherever deployment of surface miner is not feasible due to ground conditions.

Two electric rope shovels of 42 cum capacity and five electric rope shovels of 10 cum capacity are deployed for removal of overburden with dumpers combination of 240T rear dumpers (14 nos.) and 120 T capacity rear dumpers (32 nos.) respectively. Surface Miner has been deployed for extraction of coal. It is utilized only for coal cutting and payloaders are deployed for loading through tippers. It is observed that overburden benches are not kept away from coal benches and bench heights are not commensurate with boom height of the shovel.

#### 3.9.2 Balance Coal and OB

As on 01.04.2016, the balance coal & OB within the approved quarry boundary was 359.19 MT and 430.71 Mcum respectively. Based on the balance coal and OB, the revised production calendar programme is calculated to produce 35.0 MTPA of coal. Accordingly, a new mining plan has been prepared to produce 35.0 MTPA and approved by SECL Board on 13/05/2016. As per the approved mining plan the balance life of the project was 11 years. Since this is a running mine the current status of reserve has been changed/reduced. The production of the 1st year *i.e.* in 2016-17 is restricted to 31.00 MT (coal) & 18.88 Mcum (OB), hence the balance reserves of the mine comes to 328.19 MT (coal) & 411.62 Mcum (OB) as on 01/04/2017. Balance life of the mine is also reduced to 10 years as on 01/04/2017.

Project	Total waste generation (Mm <sup>3</sup> )	Topsoil (Mm <sup>3</sup> )	Total OB generation (Mm <sup>3</sup> )	Total OB in Ext. Dump	Total OB Backfilled (Mm <sup>3</sup> )
Original Project (1999.293 Ha)	615.00	3.00	612.00	80.50	531.50
Expansion Project (1999.293 Ha)	411.62 (Balance waste in 10 years balance life as on (01/04/2017))	1.55	410.07	19.03	391.04
<b>TOTAL (Mcum)</b>	<b>411.62</b>	<b>1.55</b>	<b>410.07</b>	<b>19.03</b>	<b>391.04</b>

Source: EIA/EMP of Dipka OCP, Oct, 2017 (35 MTPA)



### 3.9.3 Drilling and Blasting

Drilling and blasting would be required only in OB benches before excavation by shovels. The top OBR and the partings would be drilled using 381/250 mm RBH drills. Wagon drills of 100 mm have been provided for secondary blasting if required and for other miscellaneous purposes. For blasting, the explosives consumption has been envisaged as 0.30 - 0.35 kg/cum of excavation.

### 3.9.4 Overburden Dump

#### External OB Dumps

As per expansion EC document for 35 MTPA, the area earmarked for external OB dumps is 206.0 Ha and out of the envisaged total area, it occupies an area of 204.26 Ha with a quantity of 80.81 Mcum at present. External dumping is reported to have been carried out till 31-03-2019 and since then, no dumping has been carried out. The external dumps are located mainly at N-NW side of the OCP area. The details of three external OB dumps are given as under:

External Dumps	Active/ Inactive	Area (Ha)	Volume of OB (Mcum)	Top RL (m)	Surface RL (m)	Height (m)
Dump-1 & 2	Inactive	98.36	25.92	375.56	314	61.56
Dump-3	Inactive	20.50	7.55	356.02	322	34.02
Dump-6 & 7	Inactive	85.40	47.34	402.15	314	88.15
<b>Total</b>		<b>204.26</b>	<b>80.81</b>			

Source: Survey Deptt. Dipka OCP

**(1) External OB Dump-1 & 2:** It is the conglomeration of two waste dumps and is located over an area of 98.36 Ha with a quantity of 25.92 Mcum at north side of the project area. It has a height of 61.56 m and slope average angle of about 45 degrees. A road named as CT (hall) road is passing across the dump south-north direction.

**(2) External OB Dump-3:** It is relatively a small dump located over an area of 20.50 Ha with a quantity of 7.55 Mcum at north-west side of the project area further west of External OB Dump-1 & 2. It has a height about 34 m and slope angle of about 30 degrees.

**(3) External OB dump-6 & 7:** It is a conglomeration of four waste dumps. Of the total, Dump-6 & 7 are located in close proximity, while the relatively small other two waste dumps (i.e., 4 & 5) are located little away further north and NE separated by a drain and approach road. Put together, the dump is relatively a larger waste dump located over an area of 85.40 Ha with a quantity of 47.34 Mcum at NW side of the project area. It has a height of 88.15 m with an average three terraces of 30 m height each at larger part of the dump and slope angle of about 45 degrees.



### Internal Backfilled Dumps

The mine has been worked in three sections viz., Old Dipka Quarry at east side, Jhingatur Quarry at the middle and Western Quarry and accordingly, three internal backfilled waste dumps have been formed in the respective de-coaled quarry areas advancing from north to south. The details of internal backfilled as per the data provided by the mine management is given as under:

Internal/ Backfilled Dumps	Active/ Inactive	Area (Ha)	Volume of OB (MCum)	Top RL (m)	Pit Bottom RL (m)	Surface RL (OGL) (m)	Height from pit bottom RL/surface (OGL) (m)
1. North Section (Old Dipka quarry-Near Top soil stack)	Active	25.50	94.44	382.72	190	324	192.72/ 58.72
2. North-western Section (Jhingatur Quarry -Near Observatory Tower)	Active	87.00	53.36	291.12	220	312	71.12/ -20.88
3. West section	Active	115.166	134.22	358.22	235	316	123.22/ 40.22
<b>Total</b>		<b>227.666</b>	<b>282.02</b>				

The total area under internal backfilled dumping as on date is 227.666 Ha and the volume of waste accommodated is 282.02 Mcum. The dumps vary in height from pit bottom RL to top RL, i.e., 71.12 m in Jhingatur dump to 192.72 m in Old Dipka dump. All the internal dumps are active as backfilling is being progressed.

**(1) Backfilled Dump of North Section (Near Top soil stack):** It is an active dump located over an area of 25.50 Ha with a quantity of 94.44 Mcum at N-NE side of the project area. The present height of the dump is only 58.72 m above original ground. A total of 3-4 terraces have been formed on this as part of technical reclamation.

**(2) Backfilled Dump of North-western Section (Near Observatory Tower):** It is an active dump located over an area of 87.0 Ha with a quantity 53.36 Mcum at central part of the project area. The height of the dump is 71.12 m from pit bottom RL, whereas from surface RL it is -20.88m and slope angle is varying from 40 to 45 degrees. A total of 3-4 terraces have been formed on this dump in the process of technical reclamation.

**(3) Backfilled dump of West Section:** It is an active dump located over an area of 115.166 Ha with a quantity of 134.22 Mcum at west section quarry. The height of the dump is 40.22 m above original ground level and slope angle is varying from 40 to 45 degrees. A total of 3-4 terraces have been formed on this dump as part of the technical reclamation.

### 3.9.5 Production Programme for 35.0 MTPA

Production of coal and removal of waste envisaged in the scheme of mining from 2016-17 to 2022-23 and achieved are tabulated below:



Year	Total Coal Production Planned (Million Tons)	Total Waste removal Planned (Mcum)	SR	Total Coal Produced (Million Tons)	Total Waste Removed (Mcum)	SR
2016-17	35.00	41.00	1.17	31.00	28.15	0.91
2017-18	35.00	41.00	1.17	34.35	22.86	0.67
2018-19	35.00	41.00	1.17	35.00	19.29	0.55
2019-20	35.00	41.00	1.17	25.18	26.78	1.06
2020-21	35.00	41.00	1.17	34.35	25.78	0.75
2021-22	35.00	41.00	1.17	34.37	19.30	0.56
<b>Total</b>	<b>210.00</b>	<b>246.00</b>	<b>1.17</b>	<b>194.25</b>	<b>142.16</b>	<b>0.73</b>

Source: Office of the Dy. GM(Mining)

It is found that about 93% of envisaged coal production has been achieved for last 6 years, whereas in respect of waste handling only 58% has been achieved. It indicates mine development is not commensurate with coal production.

### 3.9.6 Coal Transportation System

As stipulated in the PR the hired surface miners cut would produce coal of (-) 100 mm size by windrowing method. The (-) 100mm coal, which is transported coal truck receiving station and feed to belt conveyors through hoppers. The salient features of coal transport system are:

**Coal handling for LK seam :** The three inpit belt conveyors will discharge coal from LK seam on three surface belt conveyors. Belt conveyors are of 1600 mm wide, 2300 tph (nominal) capacity.

**Mini CHPs for upper seam coal:** Two numbers of mini-CHP's (eastern and western sectors) have been provided on surface at suitable locations for handling upper Kusmunda Seam, E&F seams coal brought through franks. The mini-CHP will consist of a truck receiving station, elevating conveyor, conveyor with reversible drive, overhead steel hoppers (4 x 100 t. capacity) vibratory feeders below the hoppers etc.

**Dispatch of coal by Silo:** Considering the quantum of coal produced from the mine provision of Silos have been made for rapid loading.

- i) Two numbers of silos each of 3200 t. capacity have been provided for loading of rake of 42 bottom discharge wagons at a rate of 5500 – 6000 TPH on NTPC MGR track. Under each silo two nos. of pre-weighing systems along with rapid loading arrangements have been proposed for loading of wagons. Out of the two arrangements, one is for standby.
- ii) Two numbers of silos each of 4000 t. capacity was proposed for loading a rake of 58 box N wagons at a rate of 5500-6000 tph on SECL's railway track.

**Railway Siding:** The nearest railway station from where rakes are supplied to this project is Gevra road Railway station. The Gevra road railway station is serving the needs of Kusmunda OCP, Gevra OCP and Dipka OCP. ST-CLI coal washeries are loading coal at



Dipka OCP in the rake of wagons by means of pay loaders at ST-CLI wharf wall siding. ST-CLI is contemplating to load coal in the rake of wagons under a silo (to be constructed by them) by means of rapid loading system.

### **3.10 ENVIRONMENT MANAGEMENT CELL**

The Project Authority has established Environment Management Cell with the following officials to carry out functions relating to environment management.

#### **Area Level Members:**

1. General Manager (Dipka Area)
2. Staff Officer (Civil)
3. Area Nodal Officer (Env/Forest)
4. Staff Officer (P&P)
5. Area Survey Officer

#### **Project Level:**

1. General Manager (M), Dipka Project
2. Dy. General Manager (Civil)
3. Environment Officer
4. Survey Officer

### **3.11 CORPORATE SOCIAL RESPONSIBILITY**

The SECL has a well laid down CSR policy in lines of CIL (version 2021) applicable for all the subsidiaries, to take care of continual socio-economical upliftment of the society in the project affected areas. The composition of CSR Committee of SECL consists of one independent Director and five functional Directors. There is a dedicated CSR Dept. at HQ level headed by GM (CSR) to coordinate with various inter departmental and Govt. agencies for implementation of CSR programmes under the guidance of Director (P), SECL. The committee monitors and reviews the progress of CSR activities from time to time. As per current policy, after approval of action plan by SECL Board, it is communicated to respective areas. Accordingly, the estimate is prepared from the area level and send for scrutiny to SECL HQ for estimate more than Rs. 5.00 lakhs but up to Rs. 100.00 lakhs and getting approval from the competent authority after obtaining NOC from the State Govt. authorities. Projects/activities having value more than Rs. 1.00 crore are approved by subsidiary Board on recommendation of CSR committee of Board. For estimated cost up to Rs. 5.00 lakhs, it is approved at area level as it is within the DOP of GM (Area) after obtaining NOC from the State Govt. authorities.

The CSR policy of SECL is governed by Schedule VII, Section 135 of the Companies Act, 2013. The CSR prime focus areas are identified to have long term benefits to the society such as preventive healthcare, sanitation, supply of drinking water; promotion of education; gender equality, empowering woman; ensuring environmental sustainability; training to remote rural sports; rural development projects; and generating employment of the local people.





The annual activities to be undertaken by the Company are generally formulated based on inputs from Village level consultation /State Authorities and the financial allocation against each activity are recommended by the CSR Committee and approved by the SECL Board. Based on the annual work plan, the CSR budget is approved by SECL Board. Maintenance of Assets created under CSR is the responsibility of the concerned State Government, local representative of the Society and concerned Non-Government Organization (NGO) through which the CSR activities are implemented and an undertaking/consent is also taken. Board Level CSR Committee or its representative monitors the progress of ongoing projects from time to time on case-to-case basis. The committee reviews implementation of CSR activities in every six months and recommends the amount of expenditure to be incurred on the same.

80% of CSR funds budgeted amount of the SECL are spent within the radius of 25 km of the project/ mines/Area HQ/Company HQ and rest of the 20% of the budget are spent on the CSR activities in rest of the State where SECL is operating.

### **3.12 RESETTLEMENT & REHABILITATION**

10 villages (Chainpur, Malgaon, Sirki, Suaobhondi, Jhingatpur, Ratija, Beltikri, Dipka, Renki, Jhabar) were acquired in for Gevra and Dipka Expansion projects on dated 19/04/1986 under Coal Bearing Act (SO No. 1562). Hardi Bazar village has been acquired but not under possession yet.



## CHAPTER -4 COMPLIANCE STATUS

Environmental clearance audit is performed to assess the activities implemented by the project authority as per EC conditions and the compliance as a set of criteria or standards recommended by the MoEF&CC, Govt. of India. The team conducted audit for Dipka OCP through exhaustive document review, site visit and interactions with the stakeholders. The status report on compliance to environmental clearance conditions submitted by the project authority to the respective regulatory agencies was also reviewed by the audit team for relevant input.

### 4.1 DEFINITIONS OF TERMINOLOGY USED FOR ASSESSMENT OF COMPLIANCE STATUS

For assessment of compliance status against each stipulated environmental clearance condition, certain terminology has been used. The same has been described in **Table 4.1**.

**Table 4.1: Expression of compliance with conditions of approval**

Status	Description
Complied	Where the environmental condition is implemented in accordance to the stipulated conditions.
Being Complied	The condition is dynamic where continuous compliance is ensured with passage of time.
Will be complied/ Agreed	Requirement of compliance is at later date and will be complied at appropriate time.
Partially Complied	Compliance of condition is not fully met and is inadequate.
Not Complied	Non-conformance/ lack of implementation of needed action.
Not applicable/ Review required	Condition is not applicable for the mine. Need review and initiative by PP to bring it to the notice of MoEF&CC for needful action.
Compliance Condition not addressed	Compliance statement to environmental condition is not recorded in Six monthly compliance report.

Accordingly, a checklist of EC conditions by the MoEF&CC, status of environmental compliance and audit observation by the audit team prepared is provided in Table 4.2



**Table 4.2a: ICFRE assessment to the point wise compliance status stipulated in the Environmental Clearance conditions (31 MTPA to 35 MTPA) vide letter No. J-11015/487/2007-IA.II (M)Pt dated 20.02.2018 for Expansion of Dipka OCP**

**(Period of Compliance from October 2021 to March 2022)**

Sl. No.	Specific Conditions	Compliance Status	Observations/ Recommendations by ICFRE
4.(i)	The environmental clearance for the proposed increase in capacity shall be valid up to 31 <sup>st</sup> March, 2020. Further continuance of the project shall be based on evaluation of the proposed control measures and its impact on the ambient air quality by the EAC in later half of the FY 2018-19.	Complied i. To monitor compliance status of the conditions stipulated in the EC, Regional Office, MoEF Nagpur did a site inspection on 05.11.19. ii. Upon site inspection and evaluation of compliance status, the EC was extended in 2020 for a period of 30 years/ life of mine. (Annexure-5)	It is evident from extension of EC for a period of 30 years/ life of the mine by MoEF that the <b>condition is complied.</b>
ii	To control the dust generation at source, the crusher and in-pit belt conveyors shall be provided with mist type sprinklers.	Complied i. A total of 110 no. of mist type jet sprinklers have been installed at source like: Crusher, Feeder breaker, Ground bunker and Belt Conveyors for dust suppression (Fig-1). ii. Surface Miners (06 no.) have been provided with jet sprinklers to curb dust emission at source during coal extraction. (Fig-2)	<b>This condition is being complied.</b> The sprinkling systems are in place to control the dust generation at source: <ul style="list-style-type: none"> <li>• 4 nos. of Truck Receiving Stations (TRS) are available with mist water spraying system to receive coal from tipper at mine pit and further transport of coal through closed conveyor belt (Plate 5).</li> <li>• Belt conveyors are closed with water spraying arrangement at transfer points.</li> <li>• 06 nos. of surface miner are using water sprinkler to control dust at source.</li> <li>• nos. of mobile crusher unloading point are equipped with mist spraying system (Plate 9).</li> </ul>



			<ul style="list-style-type: none"> <li>Total 9 nos. of feeder breaker of CHP are available; however, they were not running during period of ICFRE audit, due to scarcity of coal during monsoon (Plate 8).</li> <li>Transportation of coal to Silo is transported through closed conveyor belt with mist sprinkler at transfer point (Plate 16).</li> </ul>									
iii	<p>Mitigative measures shall be undertaken to control dust and other fugitive emissions all along the roads by providing sufficient numbers of water sprinklers. Adequate corrective measures shall be undertaken to control dust emissions as presented before the Committee, which would include mechanized sweeping, water sprinkling/mist spraying on haul roads and loading sites, long range misting/fogging arrangement, wind barrier wall and vertical greenery system, green belt, dust suppression arrangement at railway siding, etc.</p>	<p>Being complied</p> <p>1. Surface miners has eliminated conventional drilling &amp; blasting in coal and has inbuilt jet spraying system. &gt;90% of the Coal in Dipka Project is extracted by Surface Miners.</p> <table border="1"> <thead> <tr> <th>FY</th> <th>Coal Production (MTPA)</th> <th>%</th> </tr> </thead> <tbody> <tr> <td>2020-21</td> <td>34.355</td> <td>100%</td> </tr> <tr> <td>2021-22</td> <td>34.375</td> <td>100%</td> </tr> </tbody> </table> <p>2. Drill machines are provided with Dust extractor / equipped with wet drilling arrangements. (Fig-3)</p> <p>3. Fugitive dust at haul roads are controlled by mobile water sprinklers (05 no. of 70KL and 05 no. of 28 KL). (Fig-4)</p> <p>4. Fugitive dust emission at coal transportation roads are controlled with the help of 289 no. of fixed sprinklers (covers 5.5 Km) and 10 no. of rain guns. (Fig-5)</p> <p>5. At railway siding 11 rain guns along with 05 fixed sprinklers are installed. (Fig-6)</p> <p>6. Long range fog forming water sprinkler system (1 no.) with horizontal throw of 40 m is operated at coal stock and siding areas since</p>	FY	Coal Production (MTPA)	%	2020-21	34.355	100%	2021-22	34.375	100%	<p><b>The condition is being complied.</b></p> <p>The following mitigation measures are being undertaken to control dust:</p> <ul style="list-style-type: none"> <li>06 nos. of surface miner are using water sprinkler to control dust at source.</li> <li>4 nos. of Truck Receiving Stations are available with mist water spraying system at mine pit to control dust at source (Plate 4).</li> <li>Drill machines are being used with Dust extractor / equipped with wet drilling arrangements.</li> <li>Total 10 nos. of Mobile water sprinklers (05 no. of 70KL and 05 no. of 28 KL are deployed to control ffugitive dust at haul roads.</li> <li>Temporary wind barrier wall (net) is installed at wharf wall of railway siding No 2 (Plate 7).</li> <li>11 nos. rain guns along with 05 nos. fixed sprinklers are installed at wharf wall of railway siding no. 2, however, some sprinklers are at the temporary</li> </ul>
FY	Coal Production (MTPA)	%										
2020-21	34.355	100%										
2021-22	34.375	100%										

		<p>April 2019 (Rs. 45.66 Lakhs). (Fig-7)</p> <p>7. Mechanical Road sweeping machine is being operated at Dipka Area since 2019 (Rs. 34.23 Lakhs). (Fig-8)</p> <p>8. Vertical greenery system at Railway siding (downwind direction) was completed through CGRVVN, Korba (Rs. 22.34 Lakhs). (Fig-9)</p> <p>9. Extensive plantation along roads, OB Dumps &amp; slopes etc. to develop green belt. Till date 22.37 lakhs plantation completed. (Fig-10)</p> <p>10. The proposal for Construction of Permanent Wind Barrier with brick wall and GI sheeting on both side of the siding for a length of 750 m each side is approved and tendered, the tender will be finalized in May 2022. (Estimated cost- Rs. 3.21 Crores).</p> <p>11. RCC road for coal transportation and Black topping of roads in other areas.</p> <p>12. Optimal loading of coal trucks and also covered with tarpaulin while leaving the mine premises. (Fig-11)</p>	<p>vertical curtain. Therefore, it is suggested that permanent wind barrier wall (net) be installed behind the water sprinkler.</p> <ul style="list-style-type: none"> <li>• It is suggested that long range fixed fog cannon be installed to strengthen dust suppression at wharf wall railway siding.</li> <li>• Wind barrier wall is not provided at coal yard (<b>Plate 6</b>).</li> <li>• The tender is approved for construction of permanent wind barrier with brick wall and GI sheeting on both sides of the siding for a length of 750 m each side (CGRVVN, Korba).</li> <li>• Mechanical road sweeping machine is being operated for cleaning road dust in colony of Dipka Area (Plate 13).</li> <li>• Transportation of coal for road sale is being covered with tarpaulin (Plate 14).</li> <li>• Spillage on haulage/coal transport roads need to be cleared regularly (Plate 12).</li> </ul>
iv	<p>Efforts shall be made to explore the possibility of providing wind shield/breaker arrangement with creepers and climbers.</p>	<p>Being complied</p> <p>i. The proposal for Construction of Permanent Wind Barrier with brick wall and GI sheeting on both side of the siding for a length of 750 m each side is approved and tendered, the tender will be finalized in May 2022.</p> <p>ii. Constructed a temporary wind barrier wall at Railway Siding to reduce the fugitive dust. (Fig-12)</p> <p>iii. Vertical greenery system with creepers and climbers (2250 no.) has been developed along the railway siding for 750 m</p>	<p><b>The condition is being complied.</b></p> <p>As per the EC condition, the Vertical Greenery System (VGS) has been established near railway siding (on one side only) with the aim to prevent suspended air pollutants entering outside the area. However, the arrangement is observed to have been a temporary type with green colour plastic net curtain and the project authorities have informed that official procedures has been finalized for</p>

		(Rs.22.35 lakhs). ➤ VGS species: Venesta, Montivilla, Allamanda, Madhumalathi, Bleeding Heart, Chameli, Kaurav pandav, Pinar, Bougainvillea.	implementing a permanent VGS. The creeper plant species employed for raising vertical greenery system include <i>Tenospora cordifolia</i> , <i>Combretum indicum</i> , <i>Ipomoea sp.</i> , <i>Thumbergia sp.</i> , <i>Bougainvillea sp.</i> , etc.
v	Thick green belt of 50 m width at the final boundary in the downwind direction of the project site shall be developed to mitigate/check the dust pollution.	Complied i. A thick green belt with 9375 no. of plants of varied species of width 25 m and length of 1.5 Km has been developed in the down wind direction along the diverted Hardi Bazar road. (Fig-13) ii. A total safety zone plantation for 4.91 Km has been developed to mitigate dust pollution. (Fig-14) iii. A total of 22.37 lakhs no. of plants have been planted since 1992 on OB dumps, plain areas and in avenues for greenbelt development at Dipka Area.	<b>The condition is being complied.</b> The post-mining land use envisaged an additional area of 23.0 Ha to be developed under greenbelt other than the safety zone/undisturbed area of 130.366 Ha. The greenbelt afforestation is reported to have been developed over an area of 4.80 Ha (width 25 m and length of 1.5 Km) mainly on the area (outside the project boundary partly) at north-east side along Hardibazar Road side with a total number of 12,000 saplings comprising of mixed native tree species and some exotics. Also, the safety zone on west side of the project area at the bottom of the external dump-6 & 7 is observed with barbed wire fenced and greenbelt afforestation has been raised. Further, it is suggested to develop the greenbelt afforestation all around the lease area as per statute in the post mining land use plan of EC.
vi	Persons of nearby villages shall be given training for their livelihood and skill development.	Complied i. As a pilot project, SECL authority has issued sanction order for execution of skill development training programme to unemployed/ underprivileged youths through CIPET (Central Institute of Plastic Engineering	<b>The condition is being complied.</b> Skill development training programme are being organised for underprivileged/ unemployed youths of nearby villages at CIPET (Central Institute for Plastic Engineering and Technology) by SECL.

		and Technology), Raipur, amounting to Rs. 24 Lakhs. In addition, Sanction order issued dt: 07.02.2020 for Skill development training programme for 520 underprivileged/unemployed youths through CIPET amounting to Rs. 335.40 lakh. ii. Due to COVID pandemic, no one was nominated from Dipka Area in 2020-21 and 2021-22.																									
vii	To ensure health and welfare of nearby villages, regular medical camps shall be organized at least once in six months.	Complied. i. Medical camps are organized regularly for compliance of Mines Act' 1952 provisions. Averages of 20% employees are involved for PME every year therefore, covering all employees in 05-year period. ii. Awareness programmes on Tuberculosis, HIV, Heart diseases etc. including corona were conducted in 2020-21. In 2021-22, 07 medical camps were organized by Dipka Dispensary with a total of 370 beneficiaries. <table border="1"> <thead> <tr> <th>Date</th> <th>Location</th> <th>Beneficiaries</th> </tr> </thead> <tbody> <tr> <td>02.04.21</td> <td>MTK-01</td> <td>26</td> </tr> <tr> <td>03.04.21</td> <td>MTK-01</td> <td>13</td> </tr> <tr> <td>05.04.21</td> <td>MTK-03</td> <td>58</td> </tr> <tr> <td>07.04.21</td> <td>MTK-03</td> <td>20</td> </tr> <tr> <td>30.10.21</td> <td>Hathi Muda, Pakhnapara</td> <td>73</td> </tr> <tr> <td>29.12.21</td> <td>Datura NSS Camp</td> <td>136</td> </tr> <tr> <td>06.03.22</td> <td>Nehru Nagar, Batari</td> <td>44</td> </tr> </tbody> </table>	Date	Location	Beneficiaries	02.04.21	MTK-01	26	03.04.21	MTK-01	13	05.04.21	MTK-03	58	07.04.21	MTK-03	20	30.10.21	Hathi Muda, Pakhnapara	73	29.12.21	Datura NSS Camp	136	06.03.22	Nehru Nagar, Batari	44	<b>The condition is being complied.</b> Regular medical camps are being organized by the project proponent at various locations around the project for the beneficiaries.
Date	Location	Beneficiaries																									
02.04.21	MTK-01	26																									
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06.03.22	Nehru Nagar, Batari	44																									
viii	The predominant Sal species in the forest area shall be protected, and in case of coal mining operations inevitable therein, compensatory afforestation of these species shall be	Complied 3000 no. of Sal species has been planted near Lilagarh nala. (Fig-15)	<b>The condition is being complied.</b> The <i>Shorea robusta</i> tree popularly known by the common name 'Sal' is considered as a key stone species of the central Indian forests. It is very important to note that Sal																								

	carried out in consultation with State Forest Department.		is not observed to have been a favourite choice for afforestation activities of the Dipka Project. Nevertheless, Sal tree plantation is reported to have been raised with 3,000 tree seedlings at N-NW side of the project area adjacent to Lilagarh Nala during 2019-20. The area particulars and location details of the said plantation could not be readily made available for auditing. Further, it is suggested to include Sal trees in the future afforestation activates in the ML area. To make the availability of Sal saplings in large quantity, the user agency (CGRVVN) may be directed to establish a Sal tree nursery as has been done by the adjacent Gevra OCP.
ix	In view of the mining potential of the area and the pollution concerns, carrying capacity of the eco-system shall be studied through some expert agencies to assess optimal mining operations with minimal impact on ecosystem services.	Complied <ul style="list-style-type: none"> <li>The study regarding carrying capacity of eco system for both Dipka OCP &amp; Gevra OCP was carried out by IIT(BHU) at a cost of Rs.17.7 lakhs. The final report was submitted by IIT (BHU) on 20<sup>th</sup> May 2020 (Annexure-6).</li> <li>Recommendations: At the current level of production of 35 MTPA at Dipka, the environmental control measures adopted by the mine are adequate.</li> </ul>	<b>The condition has been complied.</b>  Study has been conducted on Carrying capacity and eco-system by IIT (BHU), as recommended in the study report sweeping machines and water sprinkler need to be strengthened to suppress the dust and remove clay and dust on the mine roads.
x	A sustainable mining practice shall be developed in the mine, catering to attributes of ecological, societal and economical dimensions.	Being complied. Following actions taken by the project helps to fall in line with sustainable mining practices. <ul style="list-style-type: none"> <li>Surface miners (06 no.) has eliminated conventional drilling &amp; blasting in coal extraction. It has inbuilt jet spray sprinkler</li> </ul>	<b>The condition is being complied.</b> Surface miners are deployed for coal production to minimize pollution at source during mining. Coal transportation is major source of pollution. Installation of 2 silo for loading about 15 MTPA capacity through



		<p>system. More than 90% of coal production is done through Surface Miners.</p> <ul style="list-style-type: none"> <li>• CHP with In-pit belt Conveyor System (4.8 Km) (Fig-16) and 02 Silos (Total capacity 3200 te each) is used for coal handling and loading.</li> <li>• Mechanized Railway Siding with Rapid loading system having capacity of 25MTY is under construction at Dipka Expansion Project as a part of First Mile Connectivity Initiative. This will help Dipka Project to achieve 100% dispatch through rail mode.</li> <li>• CAAQMS has been installed at Dipka Project for continuous monitoring and is in operation since January 2014. (Fig-17)</li> <li>• Extensive green belt has been developed with plantation along the safety zone with 7.5 m and 15 m thickness.</li> <li>• Reduced fugitive dust along coal transportation road through fixed sprinklers, mist spray arrangements, rain guns, mobile sprinklers etc.</li> </ul>	<p>MGR and mechanical rail loading of about 5 MTPA together contribute about 57% of coal transportation by environmentally friendly mode. Remaining coal production of 15 MTPA is being transported by road to washeries initially then by rail to powerplants, local consumers etc., which contributes impact on environmental parameters. As proposed and being implemented Mechanized Railway siding with Rapid Loading System with capacity of 25 MTPA is implemented, it will further improve mine environment. As life of the mine is envisaged to 10 years, the scale of operation with available infrastructure, implementation of proposed rapid rail loading system and continuation of environmental mitigation measures; sustainable and environment friendly mining is possible.</p>
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4.1	Generic Conditions	Compliance Status	Observations/ Recommendations by ICFRE
4.1(a)	<b>Mining:</b>		
i	Mining shall be carried out under strict adherence to provisions of the Mines Act 1952 and subordinate legislations made there under as applicable.	Agreed	<b>The condition is being complied.</b> No violations have been observed by statutory authority, DGMS in the mine.
ii	No change in mining method i.e. OC to UG, calendar programme	Agreed	<b>The condition is being complied.</b> There is no change in mining method.



	and scope of work shall be made without obtaining prior approval of the Ministry of Environment, Forest and Climate Change (MoEF&CC).		Opencast mechanized mining method by deploying HEMM is practiced.
iii	Mining shall be carried out as per the approved mining plan (including Mine Closure Plan) abiding by mining laws related to coal mining and the relevant circulars issued by Directorate General Mines Safety (DGMS).	Agreed	<b>The condition is being complied.</b> Mining operations are undertaken as per approved scheme of mining (2016). However, overburden removal is not commensurate with coal extractions. Due to this, OB benches are not away from coal benches with suitable bench height and width. This may be due to paucity of land to be acquired.
iv	No mining shall be carried out in forest land without obtaining Forestry Clearance as per Forest (Conservation) Act, 1980 and also adhering to The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 read with provisions of Indian Forest Act, 1927.	Agreed	<b>The condition is being complied.</b> Forest land in lease area is 409.056 Ha. Second stage FC is yet to be obtained over an area of 133.707 Ha and FC has been accorded in favour of NTPC over an area of 15.519 Ha. FC has been obtained for remaining area. It is observed that mining activities are within the FC obtained area.
<b>4.1 (b)</b>	<b>Land reclamation and water conservation</b>		
i	Digital Survey of entire leasehold area/ core zone using Satellite Remote Sensing survey shall be carried out at least once in three years for monitoring land use pattern and report in 1:50000 scale shall be submitted to Ministry of	Being Complied • Land use & land reclamation status of Dipka mine is being monitored every year through CMPDIL using satellite imagery. (Annexure-7) • The report is submitted to Regional office MoEF&CC, Nagpur along with the EC compliance report. • Copy of the same is also	<b>The condition is being complied.</b> The report on “ <i>Land Restoration/ Reclamation Monitoring of more than 5 million cu.m (Coal+OB) Capacity Open Cast Coal Mines of South Eastern Coalfields Limited based on satellite data for the year 2021</i> ” submitted February-2022

	<p>Environment, Forest and Climate Change/Regional Office (RO).</p>	<p>available in the Company's website i.e. <a href="http://www.secl.gov.in">www.secl.gov.in</a></p>	<p>by Remote Sensing Cell Geomatics Division CMPDI Ranchi" is in place. The salient features of the land reclamation report are summarized as follows:  Based on the study report, the significant land use changes in the project area with regard to land reclamation/restoration observed during the year 2020 and 2021 in comparison are detailed as follows:  Out of the total lease area of 19.99 km<sup>2</sup>, the total excavated area has been increased from 7.01 km<sup>2</sup> (35.07%) to 7.61 km<sup>2</sup> (38.07%).  The area under active mining has been reduced from 3.30 km<sup>2</sup> (47.08%) to 2.92 km<sup>2</sup> (38.37%) out of the total excavated area.  Technical reclamation over the backfilled area has been increased from 2.94 km<sup>2</sup> (41.94%) to 3.69 km<sup>2</sup> (48.49%) out of the total excavated.  Biological reclamation over the reclaimed/backfilled area has been increased from 0.77 km<sup>2</sup> (26.19%) to 1.00 km<sup>2</sup> (27.10%) out of the total backfilled area.  The total reclaimed area has been increased from 2.37 km<sup>2</sup> (33.81%) to 2.81 km<sup>2</sup> (36.93%) out of the total excavated area. Plantation over external OB dumps has been increased from 1.60 to 1.81 km<sup>2</sup>.  The other area plantation viz., social</p>
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			<p>forestry, avenue plantation, etc., is observed to have been increased from 1.59 to 1.67 km<sup>2</sup>.</p> <p>The total area under plantation relative to the total lease area has been increased from 3.96 km<sup>2</sup> (19.81%) to 4.48 km<sup>2</sup> (22.41%).</p> <p>In summary, results of the satellite monitoring revealed that there is significant increase in reclamation and rehabilitation of the area under mining environment viz., total reclaimed area relative to total excavated area from 33.81% to 36.93% and total plantation area relative to total project area from 19.81% to 22.41% respectively during the period from 2020 to 2021.</p>
ii	<p>The surface drainage plan including surface water conservation plan for the area of influence affected by the said mining operations, considering the presence of river/rivulet/pond/lake etc, shall be prepared and implemented by the project proponent. The surface drainage plan and/or any diversion of natural water courses shall be as per the approved Mining Plan/EIA/ EMP report and with due approval of the concerned State/Gol Authority. The construction of embankment to prevent any danger against inrush of surface water into the mine should be as per the approved Mining Plan and</p>	<p>Complied</p> <ul style="list-style-type: none"> <li>• Comprehensive Surface drainage/ Catchment area treatment plan within 5 KM from ML boundary was prepared through CCoST, Raipur in the year 2020. (Rs. 7.16 Lakh) (Annexure-8)</li> <li>• For Implementation of the Surface Water Conservation Plan a detailed project report having a total project cost of 253.640 Lakhs has been prepared by State Forest Department (Annexure-9).</li> <li>• The Project is forwarded to CCF Bilaspur on 11.01.2022, through DFO Katghora for approval.</li> </ul>	<p><b>The condition is being complied.</b></p> <p>As reported in the compliance to the condition, the surface drainage/CAT plan report and the subsequent DPR in respect of surface water conservation plan is in place. The following surface water management measures are observed to have been implemented in the OCP area.</p> <ul style="list-style-type: none"> <li>• Retaining wall of a total length of 472 m for waste dumps and other infrastructure facilities.</li> <li>• Garland/catch drains of a total length of 24,760 m have been provided along the toe of waste dumps, catch drains around the quarry, along haul roads and approach roads in the OCP area. Catch Drain has been implemented over a length of 6700</li> </ul>

	<p>as per the permission of DGMS.</p>		<p>m along the quarry boundary at east along Hardibazar Road, north along the mine workings and west along waste dumps to prevent flood water flow entering into the quarry.</p> <ul style="list-style-type: none"> <li>• A dedicated drain has been provided for evacuation of surface water flow during monsoon from the area around waste dumps, along haul/approach roads, etc., starting at N-NE and ending at the Lilagarh Nala at S-SW. The drain is observed to have been well maintained with RCC walls particularly at the downstream locations where quantity of flow is relatively high.</li> <li>• Two settling ponds namely Sirki Pond and CISF pond respectively have been made over a total area of 31817 sq.m area. Sirki pond has been provided stone pitched walls, while CISF ponds RCC/PCC walls. Both the ponds are well maintained and have been given excess flow control measures. Drains covering a significant area from N-NE of OCP area is connected to the settling ponds and finally let out to the Lilagarh Nala after proper treatment. The water is also being used for dust suppression, plantations and other related uses.</li> <li>• The HFL of Lilagarh Nala noted near to quarry boundary at downstream and upstream was 301.10 m and 309.54 m</li> </ul>
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			respectively. The west side working quarry boundary lying close to Lilagarh Nala at elevation 294.65 mRL has been provided an embankment (stone masonry in cement sand mortar) at elevation 300.14 – 300.12 mRL to prevent the inrush of water into the quarry during peak flow.
iii	The final mine void depth should preferably be as per the approved Mine Closure Plan, and in case it exceeds 40 m, adequate engineering interventions shall be provided for sustenance of aquatic life therein. The remaining area shall be backfilled and covered with thick and alive top soil. Post-mining land be rendered usable for agricultural/forestry purposes and shall be handed over to the respective state government as specified in the guidelines for Preparation of Mine Closure Plan issued by the Ministry of Coal dated 27 <sup>th</sup> August, 2009 and subsequent amendments.	Agreed <ul style="list-style-type: none"> <li>• Final Mine Closure Plan will be prepared &amp; implemented as per MCP guidelines.</li> <li>• Progressive MCP of Dipka has been prepared and approved by SECL Board in 218<sup>th</sup> meeting on 28.11.2013. (Annexure-10).</li> </ul>	<b>The condition is being progressively complied.</b> As per Mining Scheme approved (2016), life of the mine is 11 years i.e 2016-17 to 2026-27. If envisaged life of the mine is in order, final mine closure plan has to be prepared 5 years before closure of the mine, which is due for the year 2022-23. Presently, the mine pit is not matured for closure. Backfilling /internal dumping is in progress and FMCP yet to be prepared. As reported in the post mining land use plan, the final mine void of 222.053 Ha out of the total quarry area of 1002.053 Ha is proposed to be converted into a water body having a depth of 40 m.
iv	The entire excavated area, backfilling, external OB dumping (including top soil) and afforestation plan shall be in conformity with the "during mining / post mining" land-use pattern, which is an integral part	Being complied <ul style="list-style-type: none"> <li>• Backfilling, OB dumping, afforestation works are in conformity with the mining plan.</li> <li>• The progressive compliance status is submitted bi-annually to MoEF&amp;CC along with the six-monthly compliance report.</li> </ul>	<b>The condition is being progressively complied.</b> The data made available to the auditing team pertaining to the activities of land area reclamation and progressive afforestation carried out in the Dipka OC mine are

	<p>of the approved Mining Plan and the EIA/EMP submitted to this Ministry. Progressive compliance status vis-a-vis the post-mining land use pattern shall be submitted to the Ministry of Environment, Forest and Climate Change/ Regional Office on six monthly basis.</p>	<ul style="list-style-type: none"> <li>• The reclamation status as on 31.03.2022 is enclosed as (Annexure-11).</li> </ul>	<p>summarized as follows:</p> <ul style="list-style-type: none"> <li>• The quarry excavation carried out is 696.73 Ha as against the targeted area of 1002.053 Ha, hence the relative achievement is 69.53%.</li> <li>• OB generation carried out is 443.587 Ha as against the envisaged total of 615.0 Ha hence the relative achievement is 72.13%.</li> <li>• Total area de-coaled is 574.299 Ha out of the envisaged total area of 1002.053 Ha, hence the relative achievement is 57.31%.</li> <li>• Internal backfilled dump area formed is 227.666 Ha out of the envisaged total area of 780.0 Ha, hence the relative achievement is 29.19%.</li> <li>• Biological reclamation of internal backfilled dump carried out is 127.66 Ha as against the planned area of 780.0 Ha, hence, the relative achievement is 16.37%.</li> <li>• The area under both external OB dump formed and biological reclamation carried out is 204.26 Ha as against the planned area of 206.0 Ha, hence the relative achievement is 99.16%.</li> <li>• The total progressive afforestation area carried out is 336.72 Ha out of the total proposed area of 1009.0 Ha, hence the relative achievement is 33.37%.</li> </ul>
v	<p>The top soil shall temporarily be stored at earmarked site(s) only and shall not be kept unutilized for long. The top soil shall be used for land</p>	<p>Being Complied</p> <ul style="list-style-type: none"> <li>• As mining progresses the top 1.5 m (approx.) depth of soil is excavated and temporarily stored at 12.00 Ha earmarked site (Internal</li> </ul>	<p><b>The condition is being progressively complied</b> Presently, top soil dump is located at N-NE corner of the project area over the internal</p>

<p>reclamation and plantation purposes. Active OB dumps shall be stabilized with native grass species to prevent erosion and surface run off. The other overburden dumps shall be vegetated with native flora species. The excavated area shall be backfilled and afforested in line with the approved Mine Closure Plan. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment, Forest and Climate Change/ Regional Office on six monthly basis.</p>	<p>Dump-west section) and subsequently spread on the technically reclaimed dump for 30-50 cm thickness before biological reclamation. (Fig-18)</p> <ul style="list-style-type: none"> <li>• During the FY 2021-22, 25979.38 cum of topsoil was removed, which was spread over OB Dumps for Biological Reclamation.</li> <li>• The External OB Dumps of Dipka OCP is technically and biologically reclaimed. The excavated area is currently being backfilled and afforested as per the mine closure plan.</li> <li>• During FY 2021-22, 76912 nos of plants &amp; 44100 nos. grass beds have been developed over OB Dumps.</li> </ul> <p>Species include: Sal, Neem, Karenj, Amla, Siras, Sissoo, Bel, Bamboo, GangaImli, Bahera, Ashok, Golmohar, Satwan, CassiaGemec, Teak, Jamun, Peltaforum, CassiaGulco, Bogan vallia, Khamar, Sitaphal, Amrood, Kathal, Imli, Mango, Sisham jatropa etc.</p> <p>Grass Species: Khasi, Deenanath, Stylo Hamata, Khair, Keki.</p>	<p>backfilled waste dump reportedly belong to Gevra OCP. It is seen that the top soil dumping is being progressed and further, the measures for its protection, if at all retain for long till utilization, are yet to be given. The previous EC audit of ICFRE as on 2017 has reported that the top soil is located over an area of 12.0 Ha on the west internal backfilled dump near coal stock No. 15. Presently, this top soil dump is observed to have been almost fully stabilized with native vegetation growth. Although good top soil management plan is given in the EIA/EMP Report (Chapter 10, Page No. 9-13), implementation of the same is observed to have been seldom carried out appropriately. Also, the present quantity of top soil stack, if not consumed within the targeted period, shall be given adequate measures for protection from erosion. The data made available to the auditing team pertaining to the activities of land area reclamation and progressive afforestation carried out in the Dipka OC mine are summarized as follows:</p> <ul style="list-style-type: none"> <li>• Biological reclamation of internal backfilled dump carried out is 127.66 Ha as against the planned area of 780.0 Ha, hence, the relative achievement is 16.37%.</li> <li>• The area under both external OB dumps formed and biological reclamation</li> </ul>
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			<p>carried out is 204.26 Ha as against the planned area of 206.0 Ha, hence the relative achievement is 99.16%.</p> <p>The total progressive afforestation area carried out is 331.92 Ha over the external and internal OB dumps</p>
<b>4.1 (c)</b>	<b>Emissions, effluents &amp; waste disposal:</b>		
i	<p>Transportation of coal, to the extent permitted by road, shall be carried out by covered trucks/conveyors. Effective control measures such as regular water/mist sprinkling/ rain gun etc shall be carried out in critical areas prone to air pollution (with higher values of PM10/PM2.5) such as haul road, loading/unloading and transfer points. Fugitive dust emissions from all sources shall be controlled regularly. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central/State Pollution Control Board.</p>	<p>Being complied with</p> <ul style="list-style-type: none"> <li>• Coal production is being done by Surface Miner, which eliminates the crushing of coal in CHP.</li> <li>• Water guns are installed at coal stock yard &amp; railway sidings to suppress fugitive dust emission.</li> <li>• Mechanized Sweeping Machine is deployed in the project to curb the fugitive dusts along the road at the project.</li> <li>• Long Range Fogging Machine is deployed in the project to tackle the problem of airborne dust particles. The truck mounted fogging machine is being directed at the point sources such as stockpiles, haul road and at high volume dust generating sources such as loading/ unloading and transfer points to rapidly suppress the emitted dust before it can disperse.</li> <li>• Trucks are optimally loaded, and vehicle used for transportation of coal outside the mine area are being covered with Tarpaulins.</li> <li>• In addition to it, conventional perforated pipe method of spraying is installed in 09 no. of feeder breakers and mist spray systems in 03</li> </ul>	<p><b>This condition is being complied.</b></p> <ul style="list-style-type: none"> <li>• Around 50-60% of Coal is loaded by SILO system and railway siding to rake. About 40-50% of coal is evacuated through trucks for road sale (including auction and washery) (<b>A-III 12</b>).</li> <li>• It is suggested that transportation system is to be increased in environmental friendly methods by rapid loading system (RLS).</li> <li>• Transportation of coal permitted by road sale is being covered with tarpaulin, and optimally loaded.</li> <li>• Transportation of coal received from pit through TRS (6 nos.) is being transported by closed belt conveyors with water spraying arrangement at transfer points.</li> <li>• Surface miner coal from face is transported to wharf wall and coal yard by Tripper. Surface miner coal transportation is not practiced through covered trucks (<b>Plate 13</b>).</li> <li>• One road sweeping machine is operational in colony for road dust</li> </ul>

		<p>no. of feeder breaker.</p> <ul style="list-style-type: none"> <li>• 172 no.s of mist spray systems are provided at CHP and 50 nos. are provided at Silo to arrest the coal dust emission.</li> <li>• 13 no. of rain guns are also installed for effective dust suppression in coal transportation road.</li> <li>• 294 no. of fixed sprinklers are provided for 5.5 Km of coal transportation road to arrest fugitive dust emission.</li> <li>• Additionally, 05 no. of 70 KL and 03 no. of 28 KL mobile water sprinklers are also deployed for water sprinkling along the haul roads.</li> <li>• The Ambient Air Quality parameters are in conformity to the norms prescribed by the Central/State Pollution Control Board.</li> </ul>	<p>cleaning.</p> <ul style="list-style-type: none"> <li>• Mobile water sprinklers (05 No's. of 70 KL and 05 nos. of 28 KL) are deployed for dust suppression along haul roads.</li> <li>• One mobile Mist Fog Cannon is deployed for dust suppression along internal coal transport road and at high volume dust generating sources such as loading/ unloading and transfer points (<b>Plate 15</b>).</li> <li>• 294 nos. of fixed sprinklers with 13 nos. of rain guns are installed along coal transportation road (distance about 5.5 km) to arrest fugitive dust emission, however road condition is not good, it is being under maintenance (<b>Plate 10-11</b>).</li> <li>• 9 nos. of mini CHP (feeder breaker) with <i>conventional perforated pipe method of spraying systems</i> are not running during field visit of ICFRE audit due to coal scarcity during monsoon month (<b>Plate 8</b>).</li> <li>• Total 3 nos. of mobile crushers (2 nos. of contractor and 1 no. of departmental) with <i>mist spray systems</i> are available in mine pit area. <i>One departmental mobile crusher is under maintenance</i> (<b>Plate 9</b>).</li> <li>• Ambient Air Quality parameters (PM<sub>10</sub>/PM<sub>2.5</sub>) monitored at eight locations by CMPDI are found within the norms prescribed by the Central/State Pollution Control Board.</li> </ul>
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			<p>Dust is being monitored by Personal Dust Sampler (PDS) only for human exposure as per DGMS guideline.</p> <ul style="list-style-type: none"> <li>• It is suggested to make a provision to monitor fugitive dust emissions at critical areas prone to air pollution such as haul road, loading/unloading and transfer points.</li> <li>• Further, it is also suggested that Tyre washing system with instant showering system may be installed for trucks carrying coal for road sale before entering to transport road to control fugitive dust.</li> </ul>
ii	<p>Greenbelt consisting of 3-tier plantation of width not less than 7.5 m shall be developed all along the mine lease area in a phased manner. The green belt comprising a mix of native species shall be developed all along the major approach/ coal transportation roads.</p>	<p>Being complied with</p> <ul style="list-style-type: none"> <li>• Every year extensive plantations are being carried out on both plain and OB dump area by Chhattisgarh Rajya Van Vikas Nigam (a state government organization).</li> <li>• During the FY 2021-22, 100712 no. of plants were planted over an area of 33.58 Ha and in 2020-21, 45,500 no. of plants was planted in 17.00 Ha.</li> <li>• The cost expended for plantation in FY 2020-21 was Rs. 4.57 crore. As on date a total of 22,37,259 no. of plants have been planted at Dipka Project since 1992 to 2021-22 by CGRVVN. Ltd. The details are enclosed as (Annexure-12).</li> <li>• 25 m thick plantation (9375 no. of plants) has been planted along the road side for a length of 1500 m towards Dipka OCP side of diverted</li> </ul>	<p><b>The condition is being complied.</b></p> <p>The post-mining land use envisaged an additional area of 23.0 Ha to be developed under greenbelt other than the safety zone/undisturbed area of 130.366 Ha. The greenbelt afforestation is reported to have been developed over an area of 4.80 Ha (width 25 m and length of 1.5 Km) mainly on the area outside the project boundary partly at north east side along Hardibazar Road side with a total number of 12,000 saplings comprising of mixed native tree species and some exotics. Also, the safety zone on west side of the project area at the toe of the external dump-6 &amp; 7 is observed to have been made barbed wire fence and raised greenbelt afforestation. Hence, it is suggested to develop the</p>

		<p>Hardi Bazar road near Sarai Singar. • Green belt of 4.91 Km has been developed around the project.</p> <p>• Species include: Neem, Karenj, Amla, Siras, Sishu, Bel, Bamboo, Ganga Imli, Bahera, Ashok, Gulmohar, Satwan, CassiaGemec, Teak, Jamun, Peltaforum,CassiaGulco, Bogan vallia, Khamar, Sitaphal, Amrood, Kathal, Imli, Mango, Sisham, Jatropha, etc.</p>	<p>greenbelt afforestation to the extent maximum envisaged as per statute in the post mining land use plan of EC.</p>
iii	<p>The transportation of coal shall be carried out as per the provisions and route proposed in the approved Mining Plan. Transportation of the coal through the existing road passing through any village shall be avoided. In case, it is proposed to construct a 'bypass' road, it should be so constructed so that the impact of sound, dust and accidents could be appropriately mitigated.</p>	<p>Complied. Diverted Hardi Bazar bypass road near Sarai Singar has been completed.</p>	<p><b>This condition is being complied.</b></p> <ul style="list-style-type: none"> <li>• The transportation of coal is being carried out as per the provisions and route proposed in the approved Mining Plan.</li> <li>• Coal is transported to Thermal power station by railways through Silo (Rapid Loading system- MGR/ railway wagons), which is about 50-60% of coal production.</li> <li>• Transportation of the coal (about 40-50%) is being transported through road by diverted Hardi Bazar bypass road near Sarai Singar with tarpaulin covered trucks.</li> <li>• It is suggested that transportation system is to be increased environmental friendly method by Silo.</li> <li>• Additional 2 nos. of Silos are under construction (<b>Plate 27</b>).</li> </ul>
iv	<p>Vehicular emissions shall be kept under control and regularly monitored. All the vehicles engaged</p>	<p>Being complied with. Vehicle emissions are periodically (Six Monthly) monitored and a PUC certificate to</p>	<p><b>The condition is being partially compiled.</b></p> <ul style="list-style-type: none"> <li>• Vehicular emissions are not monitored for HEMM used in mines during</li> </ul>

	in mining and allied activities shall operate only after obtaining 'PUC' certificate from the authorized pollution testing centers.	this effect is being issued to each vehicle by the authorized agency of Transport Department Government of Chhattisgarh. Records are being maintained at the auto-section Dept. of Dipka Area. (Annexure-13)	<p>maintenance.</p> <ul style="list-style-type: none"> <li>• Outsourced vehicle used for transport of coal are submitting their valid PUC certificates (A-III 8).</li> <li>• It is suggested that vehicular emission of departmental HEMM should also be monitored to control emission during maintenance.</li> </ul>
v	Coal stock pile/crusher/feeder and breaker material transfer points shall invariably be provided with dust suppression system. Belt conveyors shall be fully covered to avoid air borne dust. Side cladding all along the conveyor gantry should be made to avoid air borne dust. Drills shall be wet operated or fitted with dust extractors.	<p>Being complied with</p> <p>Drills are wet operated/provided with dust extractors.</p> <p>172 no. of mist spray systems are provided at CHP and 50 nos. are provided at Silo to arrest the coal dust emission.</p> <p>294 fixed sprinklers and 21 rain guns are installed at Dipka Project to curb fugitive dust emissions along coal transportation road and at railway siding.</p> <p>Surface miners have been deployed for coal extraction which eliminates conventional drilling &amp; blasting of coal seams.</p> <p>The surface miner has inbuilt jet spray sprinkler system to suppress dust at the source of dust emission.</p> <p>09 no. of conventional perforated pipe method of spraying and 03 no. of mist spray systems has been installed in feeder breakers.</p> <p>Also truck mounted Long Range Fogging Machine has been deployed in the project to tackle the problem of airborne dust particles generated at the point sources such as stockpiles and at high volume dust generating</p>	<p><b>The condition is being compiled.</b></p> <ul style="list-style-type: none"> <li>• All belt conveyors are provided with water spraying arrangement at transfer points.</li> <li>• Drills are being operated with dust extraction system.</li> <li>• 9 nos. of mini-CHP (feeder breaker) with <i>conventional perforated pipe method of spraying systems</i> are not running during field visit of ICFRE audit due to coal scarcity during monsoon month (<b>Plate 8</b>).</li> <li>• <i>Total 3 nos. of mobile crushers (2 nos. of contractor and 1 no. of departmental) with mist spray systems</i> are installed in mine pit area. Out of 3, one departmental mobile crusher is under maintenance (<b>Plate 9</b>).</li> <li>• It is suggested that fixed fog canon is to be installed at mobile crusher <i>to suppress dust around crusher point.</i></li> </ul>

		sources such as loading/ unloading and transfer points to rapidly suppress the emitted dust before it can disperse.	
vi	Coal handling plant shall be operated with effective control measures viz. bag filters/water or mist sprinkling system etc to check fugitive emissions from crushing operations, conveyor system, transfer points, etc	<p>Being complied with</p> <ul style="list-style-type: none"> <li>• 172 no.s of mist spray systems are provided at CHP and 50 nos. are provided at Silo to arrest the coal dust emission.</li> <li>• Conventional perforated pipe method of spraying is installed in 9 no. of feeder breakers and mist spray systems of 3 no. in feeder breaker.</li> </ul>	<p><b>This condition is being complied.</b></p> <p>The bag filters are attached to stacks for arresting flue gas emissions.</p> <p>The following sprinkling systems are available in the mine for control of fugitive emissions:</p> <ul style="list-style-type: none"> <li>• All belt conveyors are equipped with water spraying arrangement at transfer points.</li> <li>• Rake loading point from Silo is equipped with mist spraying arrangement (<b>Plate 16</b>)</li> <li>• 05 nos. of 70 KL and 05 nos. of 28 KL mobile water sprinklers are deployed for water sprinkling along the haul roads.</li> <li>• 9 nos. of mini CHP (feeder breaker) with conventional perforated pipe method of spraying systems are not running during field visit of ICFRE audit team due to coal scarcity during monsoon month (<b>Plate 8</b>).</li> <li>• Total 3 nos. of mobile crushers (2 nos. of contractor and 1 no. of departmental) with mist spray systems are installed in mine pit area. Out of 3, one departmental mobile crusher is under maintenance (<b>Plate 9</b>).</li> <li>• One truck mounted mobile Mist Fog Cannon is deployed for dust suppression</li> </ul>

			<p>along internal coal transport road and at high volume dust generating sources such as loading/ unloading and transfer points (<b>Plate 15</b>).</p> <p>Steps must be taken to control fugitive dust as following manner:</p> <ul style="list-style-type: none"> <li>• Spillage of coal on haul road should be cleaned regularly in the mine premises to control fugitive dust.</li> <li>• Maintenance and sprinkling of Coal transportation/haul road should be done regularly to control fugitive dust dispersion.</li> <li>• Instant shower system should be installed at transfer point to controlling dust from coal loaded truck.</li> <li>• Fugitive emissions sampling should also be done regularly along with ambient monitoring.</li> <li>• Automatic fixed fog canon should be installed at wharf wall of railway siding No. 2 and near coal stock yard for manual loading of road sale.</li> </ul>
vii	<p>Ground water, excluding mine water, shall not be used for mining operations. Rainwater harvesting shall be implemented for conservation and augmentation of ground water resources.</p>	<p>Being complied</p> <ul style="list-style-type: none"> <li>• NOC for 23.2 lakh cum/year withdrawal of ground water was obtained vide NOC No: CGWA/NOC/MIN/ORIG/2019/4890 dated: 14.03.2019, from CGWA, Ministry of water Resources (GoI).</li> <li>• The Renewed NOC was obtained vide NOC No:CGWA/NOC/MIN/REN/1/2021/6545, which is valid till 25.02.2023. (Annexure-14)</li> </ul>	<p><b>The condition is being complied.</b></p> <ul style="list-style-type: none"> <li>• A total of 25 rainwater harvesting structures with a total recharge capacity of 13493 cubic meters/ annum have been erected at different locations in Dipka OCP to augment ground water recharge (<b>Plate 24 &amp; 25</b>).</li> <li>• 11 nos. groundwater recharge ponds (08 within Mine Lease (ML) area and 03</li> </ul>

		<ul style="list-style-type: none"> <li>• For mining operations, no additional tube well/ ground water abstraction structures, which deplete ground water will be constructed.</li> <li>• Mine water obtained during extraction of coal &amp; Rainwater accumulated is utilized for industrial purposes.</li> <li>• Rainwater harvesting system (25 no.) has been installed in Pragati House, Dipka House, Recreation club, CGM Office, New C-Type and minors quarter for ground water recharge. (Fig-19)</li> </ul> <p>08 groundwater recharge ponds have been constructed within the ML having a recharge capacity of 55,447 cum. (Fig-20)</p> <ul style="list-style-type: none"> <li>• The extensive plantation inside the mine lease area also helps in effective recharge of ground water.</li> <li>• The backfilled area is also systematically leveled and biologically reclaimed, this helps in reducing surface run off and improve infiltration capacity of soil.</li> </ul>	<p>outside ML area) have also been constructed with a total recharge capacity of 55,447 cubic meters / annum.</p> <ul style="list-style-type: none"> <li>• It is observed the catch drain of roof top rain water has not covered. It is advised that the catch drain of roof top water is be constructed with closed system to prevent from dust, choking etc. So that good quality water is continuously recharged.</li> </ul>
viii	<p>Catch/garland drains and siltation ponds of appropriate size shall be constructed around the mine working, coal heaps &amp; OB dumps to prevent run off of water and flow of sediments directly into the river and water bodies. Further, dump material shall be properly consolidated/ compacted and accumulation of water over dumps shall be avoided</p>	<p>Being complied</p> <ul style="list-style-type: none"> <li>• Check dams and bunds were constructed at Jingatpur Dump (25,800 cum) and at Renki Dump (8000 cum). (Rs.50.52 lakhs and 15.6 lakhs). (Fig-21)</li> <li>• Catch drains in the form of pucca and kachha drains have been constructed as and where required. (Fig-22)</li> <li>• Retaining wall/ gabion wall of dimension 1m x 1m for 1.758 Km was constructed at the toe</li> </ul>	<p><b>The condition is being complied.</b></p> <p>As reported in the compliance to the condition, the surface drainage/CAT plan report and the subsequent DPR in respect of surface water conservation plan is in place. The following surface water management measures are observed to have been implemented in the OCP area.</p> <ul style="list-style-type: none"> <li>• Retaining wall of a total length of 472 m for waste dumps and other infrastructure</li> </ul>



	<p>by providing adequate channels for flow of silt into the drains. The drains/ ponds so constructed shall be regularly de silted particularly before onset of monsoon and maintained properly. Sump capacity should provide adequate retention period to allow proper settling of silt material. The water so collected in the sump shall be utilized for dust suppression measures and green belt development. Dimension of the retaining wall constructed, if any, at the toe of the OB dumps within the mine to check run-off and siltation should be based on the rainfall data. The plantation of native species to be made between toe of the dump and adjacent field/habitation/water bodies.</p>	<p>of external Dump No. 03 and 1.628 Km of dimension 1m x 1m at Dump no. 05. (Fig-23)</p> <ul style="list-style-type: none"> <li>• The drains/ ponds are regularly de-silted before onset of monsoon and maintained properly.</li> <li>• Mine sumps at LK1 &amp; LK2 helps in storage, acts as well as recharge structure. (Fig-24)</li> <li>• Extensive plantation carried out at Dipka also helps in controlling surface runoff and soil protection.</li> </ul>	<p>facilities.</p> <ul style="list-style-type: none"> <li>• Garland/catch drains of a total length of 24,760 m have been provided along the toe of waste dumps, catch drains around the quarry, along haul roads and approach roads in the OCP area.</li> <li>• Catch Drain has been implemented over a length of 6700 m around the quarry boundary towards east along Hardibazar Road, north along the mine workings and west along waste dumps to prevent flood water flow entering inside the quarry.</li> <li>• A dedicated drain has been provided for evacuation of surface water flow during monsoon from the area around waste dumps, along haul/approach roads, etc., starting at N-NE and ending at the Lilagarh Nala at S-SW. The drain is observed to have been well maintained with RCC walls particularly at the downstream locations where quantity of flow is relatively high.</li> <li>• Two settling ponds namely Sirki Pond and CISF pond respectively have been made over a total area of 31817 sq.m area. Sirki pond has been provided stone pitched walls, while CISF ponds RCC/PCC walls. Both the ponds are well maintained and have been provided excess flow control measures. Drains covering a significant area from N-NE of OCP area is connected to the settling</li> </ul>
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			<p>ponds and finally let out to the Lilagarh Nala after proper settlement of silt and sediments. The water is being used for dust suppression, plantations and other related uses.</p> <ul style="list-style-type: none"> <li>• Two check dams are reported to have been implemented on the drains at Lilagarh Nala and drain at Dump-3. These are earthen dams aimed to promote water recharge as well as to prevent siltation on surface water flow.</li> <li>• Three water recharge ponds viz., Chatghat pond and Pragathi Nagar pond at Pragati Nagar Colony and one pond near SILO have been made in the OCP area.</li> <li>• The HFL of Lilagarh Nala noted near to quarry boundary at downstream and upstream was 301.10 m and 309.54 m respectively. The west side working quarry boundary lying close to Lilagarh Nala at elevation 294.65 mRL has been provided an embankment (stone masonry in cement sand mortar) at elevation 300.14 – 300.12 mRL to prevent the inrush of water into the quarry during peak flow.</li> <li>• Three functional sumps covering an area of 7,41,500 sq.m with a capacity of 1,68,73,640 Cum exist in the active working phase of the quarry area. Also, the mine sumps are made to receive surface water from the flow channelized</li> </ul>
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			through garland drains during raining season. There are provisions made to utilize the settled sump water by pumping to the designated locations for different related end uses. Filling stations have been provided at north side of the project area.
ix	Industrial waste water generated from CHP, workshop and other waste water, shall be properly collected and treated so as to conform to the standards prescribed under the Environment (Protection) Act, 1986 and the Rules made there under, and as amended from time to time. Oil and grease trap shall be installed and maintained fully functional with effluents discharge adhering to the norms. Sewage treatment plant of adequate capacity shall be installed for treatment of domestic waste.	Being complied For treatment of effluent from workshop etc. ETP (oil & grease trap) of 110 KL capacity was commissioned on 01.05.2005. It is a zero effluent discharge plant, were treated effluents are reused for HEMM washing. (Fig-25) DETP of 3.00 MLD Capacity has been constructed at Gevra project and combinedly used by Dipka Expansion project. Approximately 840 KLD of domestic effluent of Dipka colony goes to the DETP. (Fig-26)	<b>This condition is being partially complied.</b> Oil and grease trap of ETP is not functioning during the field visit of ICFRE audit team, due to this problem, oil and grease contained water from HEMM is being bypassed from ETP ( <b>Plate 23</b> ). <ul style="list-style-type: none"> <li>• The repair and maintenance of ETP is approved from SECL HQ vide letter No. ESCL/GM/DA/DGM(C)/LOA/22/83 dated 02.05.2022.</li> <li>• It is suggested to repair Oil and grease trap for proper treatment of effluents of HEMM washed water in ETP.</li> <li>• STP/DEPT is not available in Dipka area. Domestic effluent of Dipka colony is combinedly used with Gevra colony.</li> <li>• Hazardous wastes are being properly keeping in tin shade and dispose of burnt oil through authorized agencies.</li> </ul>
x	Adequate groundwater recharge measures shall be taken up for augmentation of ground water. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to	Being complied <ul style="list-style-type: none"> <li>• 25 no. of Roof Top Rainwater harvesting structures has been installed in Pragati House, Dipka House, Recreation club, CGM Office, New C-Type and minors quarters for guard water recharge which covers an area of 14,174</li> </ul>	<b>This condition is being complied.</b> <ul style="list-style-type: none"> <li>• Total 11 nos. groundwater recharge ponds (8 nos. in ML area and 3 nos. at R&amp;R sites) have been constructed having a recharge capacity of 55,477 cum/annum.</li> <li>• A total of 25 rainwater harvesting</li> </ul>

	dewatering of mine.	sq.m approximately and recharges 13,494 m <sup>3</sup> /annum. <ul style="list-style-type: none"> <li>• Artificial groundwater recharge ponds have been constructed in 11 locations having a recharge capacity of 55,447 cum.</li> <li>• The extensive plantation inside the mine lease area also helps in effective recharge of ground water.</li> <li>• The backfilled area is also systematically levelled and biologically reclaimed, this helps in reducing surface run off and improve infiltration capacity of soil.</li> <li>• Dipka project authorities are supplying water in tankers to meet water requirement of nearby village(s) facing water scarcity.</li> </ul>	structures with a total recharge capacity of 13493 cubic meters/ annum have been erected at different locations in Dipka OCP to augment ground water recharge. <ul style="list-style-type: none"> <li>• It is observed the catch drain of roof top rain water has not covered (Plate 24&amp;25).</li> <li>• It is advised that the catch drain of roof top water is be constructed with closed system to prevent from dust, choking etc. So that good quality water will be continuously recharged.</li> </ul>
<b>4.1 (d)</b>	<b>Illumination, noise &amp; vibration</b>		
i	Adequate illumination shall be ensured in all mine locations (as per DGMS standards) and monitored weekly. The report on the same shall be submitted to this ministry & to its RO on six-monthly basis.	Being complied with Adequate illumination has been ensured in all mine locations as per DGMS standards and being monitored on monthly basis as per DGMS guidelines. The reports are submitted biannually along with EC compliance report.(Annexure-15) (Fig-27)	<b>This condition is being complied.</b> Adequate illumination has been provided in the working spots with mobile generator and in the mine area. However, monitoring is being undertaken monthly as per DGMS guidelines against the EC condition of weekly monitoring (A-III 11).
ii	Adequate measures shall be taken for control of noise levels below 85dB(A) in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with personal protective equipment (PPE) like ear plugs/muffs in conformity with the prescribed norms and	Being complied with <ul style="list-style-type: none"> <li>• Noise proof cabins for All HEMMs are provided.</li> <li>• Extensive plantation work is being carried out on over burden dumps, around residential areas, along colony roads, coal transportation road and around the mine infrastructure.</li> <li>• Workers engaged in blasting and drilling operations, operation of HEMM, etc. have been</li> </ul>	<b>The condition is being complied.</b> HEMM are provided with noise and dust proof cabins. It is observed during the site inspection that employees are wearing helmet and boot, however, outsourced operators/workers at drilling and excavation site not using dust mask. PPE compliance such as use of ear plug is not adequate. Workers should be informed

	guidelines in this regard. Adequate awareness programme for users to be conducted. Progress in usage of such accessories to be monitored.	provided with earplug and dust mask as per requirement. (Fig-28) <ul style="list-style-type: none"> <li>Workers are adequately trained and informed regularly by experienced Doctors about the safety and health aspect during vocational training / special training at group VTC.</li> </ul>	by Safety department to use of safety items regularly about the safety and health of miners.
iii	Controlled blasting techniques shall be practiced in order to mitigate ground vibrations and fly rocks as per the guidelines prescribed by the DGMS.	Being complied. <ul style="list-style-type: none"> <li>Controlled blasting is done as per DGMS Stipulated rules and regulations. Surface miners have been deployed for Coal extraction which eliminates Conventional drilling &amp; blasting of coal seams.</li> <li>To remove overburden layer over the coal seam, shock tube initiation system has been adopted in delay blasting, which is an advanced method of blasting operation which controls blast related vibrations and fly rock to a large extent.</li> <li>Blast monitoring is being done on a regular basis. The values of blast measured in ppv the period Jan 2022 – March 2022 lies for between 2.064 mm/sec to 5.191 mm/sec. (Annexure-16)</li> </ul>	<b>The condition is being complied.</b> Controlled blasting is practiced. Ground vibration studies conducted every month and ground vibration is within permissible limits. It is recorded as low as 0.34 PPV and highest vibration recorded is 5.001 for the period from January 2022 to June 2022.
iv	The noise level survey shall be carried out as per the prescribed guidelines to assess noise exposure of the workmen at vulnerable points in the mine premises, and report in this regard shall be submitted to the Ministry/RO on six-monthly basis.	Being complied. Noise level monitoring is being done through CMPDI on regular basis as per the prescribed guidelines and report in this regard is being submitted to the Ministry and CECB on six monthly basis. (Annexure-4)	<b>The condition is being complied.</b> <ul style="list-style-type: none"> <li>Ambient noise (A-III 3) monitoring plan available and monitoring is carried out at eight locations in fortnightly basis and reported to the Ministry/RO. Average noise level is found within the stipulated standard at all locations.</li> <li>It is suggested that a tripod stand should be placed above 1 to 1.5 m from ground level and monitoring has to be carried</li> </ul>

			<p>out instead of handheld monitoring.</p> <ul style="list-style-type: none"> <li>• Worksite noise monitoring is being done at each vulnerable point (<i>i.e.</i> loading/unloading points, dozer, shovel, etc.) in the mine premises (A-III 7) as per DGMS guideline and data record of various operations was verified.</li> </ul>																																		
<b>4.1 (e)</b>	<b>Occupational health &amp; safety</b>																																				
i	<p>The project proponent shall undertake occupational health survey for initial and periodical medical examination of the workers engaged in the project and maintain records accordingly as per the provisions of the Mines Rules, 1955 and DGMS circulars. Besides regular periodic health check-up, 20% of the workers identified from workforce engaged in active mining operations shall be subjected to health check-up for occupational diseases and hearing impairment, if any.</p>	<p>Being complied.</p> <ul style="list-style-type: none"> <li>• In compliance to provisions of Mine Act 1952 and DGMS circular, regular periodic health checkup of workers initially in 5 years (both contractual and departmental) and for workers above 45 years of age are subjected to health checkup 03 years once. The records are properly maintained.</li> <li>• Occupational Health check-ups for workers having some ailments like BP, diabetes, habitual smoking, hearing impairment etc. is being carried out once in six month. PME details are given below:-</li> </ul> <table border="1"> <thead> <tr> <th rowspan="2">Year</th> <th colspan="2">Target</th> <th colspan="2">Achievement</th> </tr> <tr> <th>Dept</th> <th>Contract</th> <th>Dept</th> <th>Contract</th> </tr> </thead> <tbody> <tr> <td>2017</td> <td>564</td> <td>170</td> <td>545</td> <td>180</td> </tr> <tr> <td>2018</td> <td>564</td> <td>170</td> <td>564</td> <td>37</td> </tr> <tr> <td>2019</td> <td>556</td> <td>170</td> <td>556</td> <td>95</td> </tr> <tr> <td>2020</td> <td>550</td> <td>52</td> <td>312</td> <td>50</td> </tr> <tr> <td>2021</td> <td>533</td> <td>85</td> <td>527</td> <td>85</td> </tr> </tbody> </table>	Year	Target		Achievement		Dept	Contract	Dept	Contract	2017	564	170	545	180	2018	564	170	564	37	2019	556	170	556	95	2020	550	52	312	50	2021	533	85	527	85	<p><b>The condition is partially complied.</b></p> <p>IME/PME is done as per the statute and the records are being maintained at the Nehru Centenary Hospital, Gevra. The hospital takes care of the health of the departmental as well as outsourced workers of Dipka, Gevra and Kusmunda OCP.</p> <p>Besides regular periodic health check-up, 20% of the workers identified from workforce engaged in active mining operations have not been subjected to health check-up for occupational diseases and hearing impairment, as stipulated. The same should be done for compliance of this EC condition.</p>
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ii	<p>Personnel (including outsourcing employees) working in dusty areas shall wear protective respiratory devices and shall also be provided with adequate training and</p>	<p>Being complied</p> <ul style="list-style-type: none"> <li>• Workers engaged in blasting and drilling operations, operation of HEMM etc. have been provided with earplug, dust mask, and boots.</li> <li>• Vocational training provided to the</li> </ul>	<p><b>The condition is being partially complied.</b></p> <p>HEMM are provided with noise and dust proof cabins. It is observed during the site inspection that employees are wearing helmet and boot, however, outsourced</p>																																		

	information on safety and health aspects.	<p>departmental and outsourcing employees covers both safety and health aspects. The detail is given below:</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Dept</th> <th>Cont (including referred)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2019-20</td> <td>Target: 211</td> <td rowspan="2">875</td> </tr> <tr> <td>Ach: 212</td> </tr> <tr> <td rowspan="2">2020-21</td> <td>Target: 177</td> <td rowspan="2">2127</td> </tr> <tr> <td>Ach: 167</td> </tr> <tr> <td rowspan="2">2021-22</td> <td>Target: 174</td> <td rowspan="2">1674</td> </tr> <tr> <td>Ach: 176</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>PPE (2021-22)</th> <th>No.</th> </tr> </thead> <tbody> <tr> <td>Gum boot</td> <td>400</td> </tr> <tr> <td>Ankle shoes</td> <td>1000</td> </tr> <tr> <td>Helmet</td> <td>1100</td> </tr> <tr> <td>Dust mask</td> <td>2000</td> </tr> <tr> <td>Ear Plug</td> <td>2000</td> </tr> <tr> <td>Safety belt</td> <td>250</td> </tr> <tr> <td>Reflective jacket</td> <td>Nil</td> </tr> </tbody> </table>	Year	Dept	Cont (including referred)	2019-20	Target: 211	875	Ach: 212	2020-21	Target: 177	2127	Ach: 167	2021-22	Target: 174	1674	Ach: 176	PPE (2021-22)	No.	Gum boot	400	Ankle shoes	1000	Helmet	1100	Dust mask	2000	Ear Plug	2000	Safety belt	250	Reflective jacket	Nil	operators/workers at drilling and excavation site not using dust mask.
Year	Dept	Cont (including referred)																																
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iii	Skill training as per safety norms specified by DGMS shall be provided to all workmen including the outsourcing employees to ensure high safety standards in mines.	<p>Being complied</p> <p>Regular Skill training as per safety norms specified by DGMS is being provided to all workmen including the outsourcing employees to ensure high safety standards in mines.</p>	<p><b>This condition is being complied.</b></p> <p>Skill training as per safety norms specified by DGMS is organized at Centre for Excavational Training Institute (CETI) for dumper, shovel and drill operation; engine, electricity and maintenance, etc. for all workmen including the outsourcing employees to ensure high safety standards in mines.</p>																															
<b>4.1 (f)</b>	<b>Ecosystem &amp; biodiversity conservation</b>																																	
i	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered flora/fauna, if any, spotted/ reported in the	<p>Being complied</p> <ul style="list-style-type: none"> <li>Wildlife Conservation Plan (WLCP) was prepared by TFRI, Jabalpur in 2020 as per the MoU signed between ICFRE, Dehradun and CIL, Kolkata. (Rs.14.90 lakhs) (Annexure-17)</li> </ul>	<p><b>The condition is being complied.</b></p> <p>As detailed in the compliance to the condition, WLCP report is in place and the recommendations of the plan with budget has been submitted to the competent</p>																															

	study area. The Action plan in this regard, if any, shall be prepared and implemented in consultation with the State Forest and Wildlife Department.	<ul style="list-style-type: none"> <li>The plan and budgetary provisions were submitted at DFO office, Katghora on 13.11.20 for execution of the work.</li> <li>As per the recommendation in the WLCP, a 2.00 Ha area has been identified at Chainpur village for development of a herbal garden. The work is planned to be taken up through CGRVVN, Korba and their offer was invited on 09.10.21.</li> </ul>	authority for approval.						
<b>4.1 (g)</b>	<b>Public hearing, R&amp;R &amp; CSR</b>								
i	Implementation of the action plan on the issues raised during the public hearing shall be ensured. The project proponent shall undertake all the tasks/measures as per the action plan submitted with budgetary provisions during the public hearing. Land oustees shall be compensated as per the norms laid down in the R&R policy of the company/State Government/ Central Government, as applicable.	<p>Being complied</p> <ul style="list-style-type: none"> <li>All the issues raised during public hearing conducted on 05.09.2008 have been resolved.</li> <li>Land oustees are compensated as per R&amp;R policy 2012 &amp; Chhattisgarh Rajya Adarsh Punarvas Niti-2007 and employment is provided to project affected persons as per approved policy.</li> <li>Total PAF- 1690</li> <li>PAF shifted to R&amp;R site- 470</li> </ul>	<p><b>This condition is being complied.</b></p> <p>Issues raised during public hearing on 05.09.2008 for 25 MTPA was mainly related to Employment, Resettlement, air pollution, plantation, mining, coal transportation, water level, medical facilities, etc. These issues are being resolved by the project proponent and measures are being undertaken. Land oustees are compensated as per CIL R &amp; R policy, 2012 which has been accepted by villagers in DRRC (District Rehabilitation and Resettlement Committee) meetings.</p>						
ii	The project proponent shall ensure the expenditure towards socio-economic development in and around the mine, in every financial year in pursuance of the Corporate Social Responsibility Policy as per the provisions under Section 135 of the Companies Act, 2013.	<p>Being complied with</p> <ul style="list-style-type: none"> <li>CSR Policy has been framed after incorporating the features of the Companies Act 2013 and as per notification issued by Ministry of Corporate Affairs, Govt. of India on 27.02.2014 as well as DPEs guidelines</li> <li>Year wise Expenditure is as below :</li> </ul> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Year</th> <th>Allotted (Rs. in lakhs)</th> <th>Expenditure (Rs. in lakhs)</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Year	Allotted (Rs. in lakhs)	Expenditure (Rs. in lakhs)				<p><b>This condition is being complied.</b></p> <p>The SECL has a well laid down CSR policy in lines of CIL presently version 2021 applicable for all the subsidiaries. This policy has been framed after incorporating the features of the Companies Act 2013, notification issued by the Ministry of Corporate Affairs (MCA) and Department of Public Enterprises (DPE), Govt. of India</p>
Year	Allotted (Rs. in lakhs)	Expenditure (Rs. in lakhs)							



		<table border="1"> <tr> <td>2018-19</td> <td>0.00</td> <td>0.08</td> </tr> <tr> <td>2019-20</td> <td>207.31</td> <td>0.00</td> </tr> <tr> <td>2020-21</td> <td>1062.76</td> <td>381.78</td> </tr> <tr> <td>2021-22</td> <td>530</td> <td>581.35</td> </tr> </table>	2018-19	0.00	0.08	2019-20	207.31	0.00	2020-21	1062.76	381.78	2021-22	530	581.35	<p>from time to time and Companies (Amendment) Act 2019.</p> <p>The fund for the CSR is allocated based on 2% of the average net profit of the company for the three immediately preceding financial years or Rs. 2 per tonnes of coal production of the previous year whichever is higher.</p>
2018-19	0.00	0.08													
2019-20	207.31	0.00													
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2021-22	530	581.35													
iii	<p>The project proponent shall follow the mitigation measures provided in this Ministry's OM No. Z-11013/5712014-IA.II(M)dt. 29.10.2014 titled impact of mining activities on habitations-issues related to the mining projects wherein habitations and villages are the part of mine lease areas or habitations and villages are the part of mine lease areas or habitations and villages are surrounded by the mine lease area</p>	Being complied	<p><b>The condition is being complied.</b></p> <p>The MoEF&amp;CC Office Memorandum No. Z-11013/5712014-IA.II (M) dt. 29.10.2014 is being followed by the Dipka Mine Project authorities.</p>												
iv	<p>The project proponent shall make necessary alternative arrangements, if grazing land is involved in core zone, in consultation with the State government to provide alternate areas for livestock grazing, if any. In this context, the project proponent shall implement the directions of Hon'ble Supreme Court with regard to acquiring grazing land.</p>	<p>Not Applicable.</p> <p>No Grazing land is involved in core zone.</p>	<p><b>This condition is not applicable.</b></p> <p>As such no grazing land is reported to have been involved in the core zone mining land.</p>												

4.1 (h)	<b>Corporate environment responsibility</b>		
i	<p>The Company shall have a well laid down environment policy duly approved by Board of Directors. The environment policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/ deviation/ violation of the environmental or forest norms/conditions. Also, the company shall have a defined system of reporting of non compliances/ violations of environmental norms to the Board of Directors and/or shareholders/ stakeholders.</p>	<p>Being complied with</p> <ul style="list-style-type: none"> <li>• SECL has a well laid down Environment policy as per ISO 14001 duly approved by SECL board on 07.10.2020.</li> <li>• Further, System to report non compliance/ violations of the EC to the Board of Directors is in practice and a quarterly report is sent to the Board in accordance with the instructions issued by the Ministry of Coal vide letter no. 23/3/2015-ASO/BA dated 26/04/17.</li> <li>• Capital investment of Dipka Project as per 35 MTPA scheme is Rs. 1950.86 Crores (brownfield projects- 0.25%). Therefore, the fund allocation for CER would be Rs. 4.87 crores.</li> <li>• The copy of Environmental Policy is also available on the company's website <a href="http://www.secl.gov.in">www.secl.gov.in</a></li> </ul>	<p><b>This condition is being complied.</b></p>
ii	<p>The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions should be displayed on website of the Company.</p>	<p>Being complied with</p> <p>The organization structure is as follows:</p> <pre> graph TD     A[CMD, SECL] --&gt; B[Director Tech. (P&amp;P)]     B --&gt; C[GM (Env), SECL HQ]     B --&gt; D[GM Dipka, Area]     C --&gt; E[HQ Env Team]     D --&gt; F[Manager (Env)]     F --&gt; G[Asst. Manager (Env)]     </pre>	<p><b>This condition is complied.</b></p>

iii	A separate environmental cell management both at the project and company headquarter level, with suitable qualified personnel shall be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	<p>Complied</p> <ul style="list-style-type: none"> <li>• There is a separate Environmental management cell both at the project and company headquarter level with suitable qualified personnel.</li> <li>• At HQ level it is headed by GM (Env.), who is reporting to CMD through Director (Tech./P&amp;P).</li> <li>• At Dipka Area Environment Department is headed by Manager (Env.), who is directly reporting to General Manager, Dipka Area. An Asst. Manager (Env) works under Manager (Env) of Dipka Area.</li> </ul>	<b>This condition is complied.</b>				
iv	Action plan for implementing EMP and environmental conditions shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation of action plan shall be reported to the Ministry/ Regional Office along with the Six Monthly Compliance Report.	<p>Being complied with</p> <ul style="list-style-type: none"> <li>• Year-wise expenditure of environment related works is being submitted in the six-monthly reports to MoEF.</li> </ul> <table border="1"> <thead> <tr> <th>Financial Year</th> <th>Expenditure incurred (in Rs.Cr.)</th> </tr> </thead> <tbody> <tr> <td>2021-22</td> <td>21.04 Crores (approx..)</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>• Expenditure Details of FY 2021-22 are enclosed as (Annexure-18).</li> </ul>	Financial Year	Expenditure incurred (in Rs.Cr.)	2021-22	21.04 Crores (approx..)	<b>This condition is partially complied.</b> Action plan for implementation of environment management plan and environmental conditions are allocated to environment cell of the mine for implementation in the field. Funds are allocated from Headquarter level to unit and expenditure are booked in different heads. It is suggested that a separate accounting system under Environment Protection and pollution control be created and accounting be done accordingly. Funds are not diverted for any other purpose. Year wise progress of implementation of action plan is reported to the Ministry/Regional Office along with the Six Monthly Compliance Report.
Financial Year	Expenditure incurred (in Rs.Cr.)						
2021-22	21.04 Crores (approx..)						
v	Self- environmental audit shall be conducted annually. Every three years third party environmental audit	<p>Being complied with</p> <ul style="list-style-type: none"> <li>• Internal Committee has been constituted at Area Level for Self-Environmental Audit. Inter</li> </ul>	<b>This condition is being complied.</b> Self-Environmental Audit is being done annually by the PP. The ICFRE has				

	shall be carried out.	Area Monitoring mechanism has been developed for monitoring of EC compliances. • A Third-Party Audit was carried out by ICFRE, Dehradun in 2017. The report is enclosed as (Annexure-19.A.) • ICFRE Dehradun was again awarded with the work of carrying out Third Party Environmental Audit vide Work Order dated: 22.12.2021. (Annexure-19.B.) • Yearly Environmental audit statement is submitted to CECB & MoEF&CC. (Annexure-20)	conducted third party environmental audit in 2017 and present audit is also being done by ICFRE for compliance of the condition.
<b>4.1 (i)</b>	<b>Statutory Obligations</b>		
i	The environmental clearance shall be subject to orders of Hon'ble Supreme Court of India, Hon'ble High Court, NGT and any other Court of Law from time to time, and as applicable to the project.	Agreed to comply	<b>The PP has agreed to comply the condition.</b> It is reported that no specific order has been issued by jurisdictional High Court or Hon'ble Supreme Court or NGT for this project.
ii	This environmental clearance shall be subject to obtaining wildlife clearance, if applicable, from the Standing Committee of National Board for Wildlife.	Not applicable Dipka Expansion Project does not fall under 10 km radius of any national park or wildlife sanctuary.	<b>The condition is not applicable</b> to this OCP as the area is not falling within the buffer zone of wildlife sanctuary.
iii	The project proponent shall obtain Consent to Establish/Operate under the Air Act, 1981 and the Water Act, 1974 from the concerned State Pollution Control Board.	Complied Consent to Operate (renewed) for 35 MTY has been obtained from Chhattisgarh Environment Conservation Board, Raipur vide letter No. 8301, dated- 16.02.2022, valid till 28.02.2023. (Annexure-21)	<b>The condition has been complied.</b> Renewal of consent obtained from Chhattisgarh Environment Conservation Board, Raipur under Water (Prevention and Control of Pollution) Act 1974 and Air (Prevention and Control of Pollution) Act 1981 vide letter No. 8301/TS/CECB/2022 and valid up to 6.02.2022.

iv	The project proponent shall obtain the necessary permission from the Central Ground Water Authority (CGWA).	<p>Being complied</p> <ul style="list-style-type: none"> <li>• NOC was obtained from CGWA for 23.20 lakh m<sup>3</sup>/year withdrawal of ground water on 14.03.2019. The NOC was renewed vide NOC No: CGWA/NOC/MIN/REN/1/2021/6545, and is valid till 25.02.2023.</li> <li>• Regular Monitoring of Ground Water level is carried out through 08 no. of piezometers (deep- 04, shallow- 04) constructed at up and dip side of the mine and well inventory is carried out to monitor the GW level changes around the mine. (Annexure-22) (Fig-29)</li> <li>• The Ground Water Quality is analyzed yearly 04 times through CMPDIL. (Annexure-23)</li> </ul>	<p><b>The condition is being complied.</b></p> <p>NOC for withdrawal of Ground Water has been renewed for the project from Central Ground Water Authority <i>vide</i> NOC No. CGWA/ NOC/MIN/REN/1/2021/6545 for the period from 26.02.2021 to 25.02.2023.</p>
<b>4.1 (j) Monitoring of Project</b>			
i	Adequate ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for monitoring of pollutants, namely PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> and NO <sub>x</sub> . Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Online ambient air quality monitoring stations may also be installed in addition to the regular monitoring stations as per the requirement and/or in consultation with the SPCB. Monitoring of heavy	<p>Being complied with</p> <ul style="list-style-type: none"> <li>• Eight ambient air quality-monitoring stations have been established (four in buffer zone and four in core zone) based on the meteorological data, topographical features and in consultation with CECB.</li> <li>• 04 ambient air quality monitoring stations at the core and the buffer zone are measured as per coal mines standards.</li> <li>• Heavy metals in air are being monitored twice a year. (Annexure-24)</li> <li>• CAAQMS has been installed at Dipka Project. For Online monitoring and real time data acquisition, signal availability add on card 4-20 analog port is installed in the IOT device of analyzer.</li> </ul>	<p><b>The condition is being partially complied.</b></p> <ul style="list-style-type: none"> <li>• 8 No's of ambient air monitoring stations (2 Nos. in core zone and 6 Nos in buffer zone) have been established for monitoring of ambient air pollutants, namely PM<sub>100</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub> in consultation with SPCB Annexure-III (A-III 1 and 4) (<b>Plate 17-20</b>). However, no specific record available for consultation with SPCB.</li> <li>• Monitoring of heavy metals such as As, Pb, Ni, Cd, Cr, etc. except Hg are being carried out at once in six months.</li> <li>• It has been observed that ambient air sampling instrument is not kept at open space and at a specified height to receive uninterrupted air at few locations (e.g.</li> </ul>

	metals such as Hg, As, Ni, Cd, Cr, etc to be carried out at least once in six months.		<p>Malgaon village, and Ratija).</p> <ul style="list-style-type: none"> <li>• It has been also observed that the air sampling instrument (e.g. gaseous sampling by sampler attached with Respirable Dust Sampler (RDS), flow rate display) is not running properly at some locations (e.g. near railway siding, and near excv. workshop).</li> <li>• One online continuous ambient air quality monitoring station (CAAQMS) has been installed at GM office of Dipka area in consultation with the SPCB for monitoring of ambient pollutants (namely PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> NO<sub>x</sub> and CO) with weather parameters (<b>Plate 21</b>).</li> <li>• It has been observed that display system of CAAQMS parameter is not visible clearly (i.e. very small and moving type parameter value) (<b>Plate 22</b>).</li> </ul>
ii	The Ambient Air Quality monitoring in the core zone shall be carried out to ensure the Coal Industry Standards notified vide GSR 742 (E) dated 25.9.2000 and as amended from time to time by the Central Pollution Control Board. Data on ambient air quality and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly reported to the Ministry/Regional Office and to the CPCB/SPCB.	<p>Being complied.</p> <ul style="list-style-type: none"> <li>• Ambient air quality monitoring of core zone area (04 stations) are monitored as per Coal Industry standards.</li> <li>• The AAQ and heavy metals in air data are being submitted regularly at CECB and MoEF&amp;CC.</li> </ul>	<p><b>The condition is being partially complied.</b></p> <ul style="list-style-type: none"> <li>• Monitoring is done as per Gazette notification no. G.S.R.742 (E) Dated. 25/09/2000 and as per NAAQS 2009 in core zone and buffer zone areas respectively. Core Zone results are compared with G.S.R 742(E) and Buffer Zone with NAAQS 2009.</li> <li>• Five parameters SPM, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub> were reported and average concentrations were within prescribed permissible limit in industrial and residential areas (A-III 2) (Dipka Area</li> </ul>

			<p>Environmental Report 2021).</p> <ul style="list-style-type: none"> <li>Monitoring of heavy metals such as As, Ni, Cd, Cr, etc. except Hg are being carried out at once in six months.</li> <li>PP should ensure to analysis of Hg as per EC condition.</li> </ul>
iii	<p>The effluent discharge (mine wastewater, workshop effluent) shall be monitored in terms of the parameters notified under the Coal Industry Standards vide GSR 742 (E) dated 25.9.2000 and as amended from time to time by the Central Pollution Control Board.</p>	<p>Being complied.</p> <ul style="list-style-type: none"> <li>The effluent discharge of ETP (O&amp;G trap) and mine water discharge are monitored as per Coalmines standards.</li> <li>The effluent discharges are monitored fortnightly through CMPDIL.</li> </ul>	<p><b>This condition is being partially complied.</b></p> <ul style="list-style-type: none"> <li>The effluent discharge of ETP (O&amp;G trap) was not working during field visit of ICFRE audit (<b>Plate 23</b>).</li> <li>The repair and maintenance of ETP is approved from SECL HQ <i>vide</i> letter No. ESCL/GM/DA/DGM(C)/LOA/22/83 dated 02.05.2022.</li> <li>The effluent discharge and mine water are monitored as per Coal mines standards as per GSR742(E) dated 25.9.2000 and as amended from time to time by the Central Pollution Control Board.</li> </ul>
iv	<p>The monitoring data shall be uploaded on the company's website and displayed at the project site at a suitable location. The circular No. J-20012/1/2006-IA.11 (M) dated 27.05.2009 issued by Ministry of Environment, Forest and Climate Change shall also be referred in this regard for its compliance.</p>	<p>Being complied.</p> <ul style="list-style-type: none"> <li>Continuous Ambient Air Quality Monitoring Station has been installed at Dipka Area since 18.01.2014 and readings are regularly being monitored.</li> <li>The data is displayed at GM Office through digital display board.</li> </ul>	<p><b>The condition is being partially complied.</b></p> <ul style="list-style-type: none"> <li>Online CAAQMS data is displayed at GM Office through small size digital display board and also manual display of old data at time office.</li> <li>It has been observed that the auto captured data is not instantly uploaded for display in SPCB website and display board of parameters are not visible clearly (<i>i.e.</i> very small and moving type parameter value).</li> </ul> <p>It is suggested that PP should make a</p>

			<p>provision to upload auto captured data for online display in website of SPCB and display board of captured data by online CAAQMS in proper size should be installed for clear visibility.</p> <p>Further it is suggested that regular monitoring data of all environmental quality parameters like as air (e.g. PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub>), noise, water, wastewater hazardous wastes, etc., are to be electronically displayed at PO/Time Office or suitable location in the mine premises of Dipka OCP.</p>
v	<p>Regular monitoring of ground water level and quality shall be carried out in and around the mine lease area by establishing a network of existing wells and constructing new piezometers during the mining operations. The monitoring of ground water levels shall be carried out four times a year i.e. pre-monsoon, monsoon, post-monsoon and winter. The ground water quality shall be monitored once a year, and the data thus collected shall be sent regularly to Ministry of Environment, Forest and Climate Change/Regional Office.</p>	<p>Being complied with.</p> <ul style="list-style-type: none"> <li>• A total of 08 no. of piezometers have been constructed at the project and have also established a network of existing wells where water levels are being monitored regularly.</li> <li>• Out of 08 no. of piezometers, 04 were installed recently at the down dip of the project; the locations are Anganbadi school premise at new Suwabhondi village and at Sarva Shiksha Milan near Hardi Bazaar (Amgaon and Bhilai Bazaar junction).</li> <li>• Regular monitoring of piezometer is being done through Civil Dept.</li> <li>• Monitoring of ground water level in and around the mine lease area using existing wells is being done once in every 03 months. (Annexure-25)</li> </ul>	<p><b>This condition is being complied.</b></p> <ul style="list-style-type: none"> <li>• 08 no. of piezometers (4 in down dip) have been constructed at the project and also established a network of existing wells where water levels are being monitored regularly by CMPDI.</li> <li>• Monitoring of ground water level in and around the mine lease area using existing wells is being monitored once in every 03 months a year i.e. pre-monsoon, monsoon, post-monsoon and winter (A-III 13) and reported regularly.</li> <li>• The ground water quality is being monitored and reported regularly.</li> <li>• Reports of ground water samples found in accordance to the environmental factors related to water usage.</li> <li>• However, out of total 24 analyzed parameters, Total Hardness (mg/l) as</li> </ul>



			CaCO <sub>3</sub> in LK1 and nitrate (mg/l) in LK2 was found exceeding the permissible limits (A-III 14).
vi	Monitoring of water quality upstream and downstream of water bodies shall be carried out once in six months and record of monitoring data shall be maintained and submitted to the Ministry of Environment, Forest and Climate Change/Regional Office.	Being complied. Regular monitoring of water quality is being carried out through CMPDIL and the last report was sent to MoEF&CC along with Six Monthly EC Compliance Report.	<b>The condition is being complied.</b> The surface water quality (upstream and downstream) is also being monitored through CMPDI on monthly basis adhering to parameters <i>vis-à-vis</i> pH, COD, TSS and Oil & Grease notified under gazette notification GSR 742 (E) dated 25.09.2000. The reported values comply within the prescribed permissible limit of 'General Standards for Discharge of Environmental Pollution (Part A: Effluent as per Schedule VI, Environment (Protection) Rules (max)'. <b>The condition is being complied.</b>
vii	The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental conditions to the Ministry of Environment, Forest and Climate Change/Regional Office. For half yearly monitoring reports, the data should be monitored for the period of April to September and October to March of the financial years.	Being complied with. • Six monthly EC compliance report are being sent to MoEF & CC, Nagpur Office bi-annually. • Last compliance report was submitted vide our letter no: 2428, dated- 09.12.2021 for the period April 2021 to Sept 2021.	<b>This condition is being complied.</b> The PP is being submitted every six monthly reports on the status of the implementation of the stipulated environmental conditions to the MoEF&CC/RO.
viii	The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by	Agreed to comply	<b>The PP has agreed to this stipulation.</b>

	furnishing the requisite data information/monitoring reports.		
<b>4.1(k)</b>	<b>Miscellaneous</b>		
i	Efforts should be made to reduce energy consumption by conservation, efficiency improvements and use of renewable energy.	Being complied with Halogen lamps were replaced by energy efficient LED Lighting system in the mines and in the office buildings.	<b>The condition is being partially complied.</b> In addition, to halogen lighting arrangements, electric heavy mining machineries like 42 cum and 10 cum rope shovels, 240T and 120T dumpers are deployed, which is provide more efficient and less power consumption. However, no attempt has been made to tap renewal energy.
ii	The project authorities shall inform to the Regional Office regarding commencement	Complied.	<b>The condition has been complied.</b> It is reported that compliance of the condition.
iii	A copy of the environmental clearance shall be marked to concern Panchayat. A copy of the same shall also be sent to the concerned State Pollution Control Board, Regional Office, District Industry Sector and Collector's Office / Tehsildar Office for information in public domain within 30 days.	Complied Information of extended EC accorded by MoEF & CC for 35 MTY coal production was submitted to: 1. CECB. 2. Collector Office. 3. Tehsildar Office. 4. Concerned Panchayat office. (Annexure-26)	<b>The condition has been complied.</b> As reported in the compliance to the condition, the necessary information has been submitted to the concerned authorities for necessary action.
iv	The EC shall be uploaded on the company's website. The compliance status of the stipulated EC conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in public domain.	Complied. The EC letter and the EC compliance reports are available in the official SECL website.	<b>The condition has been complied.</b> As reported in the compliance to the condition, the documents are made available in the website.

v	<p>The project authorities shall advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment, Forest and Climate Change at <a href="http://www.environmentclearance.nic.in">www.environmentclearance.nic.in</a> and a copy of the same shall be forwarded to the Regional Office.</p>	<p>Complied. The 35 MTPA EC extension was published on 18<sup>th</sup> June 2020 in:</p> <ol style="list-style-type: none"> <li>1. Lok Sadan (Korba)</li> <li>2. Navbharat (Bilaspur)</li> <li>3. Navbharat (Raipur)</li> </ol> <p>(Annexure-27)</p>	<p><b>The condition has been complied.</b> As reported in the compliance to the condition, the details have been published in the local daily for information to the public.</p>
vi	<p>The environmental statement for each financial year ending 31 March in Form-V is mandated to be submitted by the project proponent for the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be uploaded on the Company's website along with the status of compliance of EC conditions shall be sent to the respective Regional Office of the MoEF&amp;CC by e-mail. Concern rose during public hearing.</p>	<p>Being complied.</p> <ul style="list-style-type: none"> <li>• Environmental Audit Statement (EAS) for the FY 2020-21 was submitted at CECB on 14.09.2021.</li> <li>• EAS &amp; EC compliance reports are available in company's website.</li> </ul>	<p><b>The condition is being complied.</b> As reported in the compliance to the condition, the necessary details are being submitted periodically to the concerned statutory authorities.</p>

vii	The Ministry may stipulate any further condition for environmental protection, if so required in due course of time.	Agreed	<b>The PP has agreed to this stipulation.</b>
viii	The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and Rule and any other orders passed by the Hon'ble Supreme Court of India/ High Courts and any other Court of Law relating to the subject matter.	Agreed	<b>The condition stands partially complied with.</b> The proponent has reported that above conditions have been enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act 1981, and the Environment (protection) Act, 1986. However, the provisions of the Public Liability Insurance Act, 1991 are <b>not complied</b> by the proponent, as mandated by law.
5.	The proponent shall abide by all the commitments and recommendations made in the EIA/EMP report and also that during presentation to the EAC. All the commitments made on the issues raised during public hearing shall also be implemented in the letter and spirit.	As per the capital provision committed in 35 MTY mine plan/ scheme and in EMP, 01 no. of Mechanized sweeping machine (Rs. 32.00 lakhs), 01 no. of Long rang Fogging machine (Rs.45.66 lakhs), development of 1.5 km safety zone along Hardi Bazaar by-pass road, installation of 05 no. of rain guns at Railway Siding, Environment related scientific studies such as Ecosystem carrying capacity at Dipka (Rs.17.70Lakhs), Surface drainage Plan (Rs. 7.16 lakhs), Wild life conservation plan (Rs. 14.90 lakhs), Study on the feasibility of dumping Fly ash on OB dumps (Rs. 21.535 Lakhs), Impact of coal mining on the base-	<b>The condition is being complied.</b>

		flows in the downstream of the mine area (Rs.14.50 Lakhs) was completed. Apart from that Vertical greenery system was developed at Siding for a cost of Rs.23.00 Lakhs.	
6.	The proponent shall obtain all necessary clearance / approvals that may be required before the start of the project. The ministry or any other competent authority may stipulate any further condition for environmental protection.	Dipka Expansion Project obtained EC, CTO, Ground water NOC, Hazardous Waste Authorization, DGMS approval for the project. Any new conditions, if stipulated by the statutory body will be implemented in the project.	<b>The PP has agreed to this stipulation.</b>
7.	Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the Environment (Protection) Act, 1986.	Agreed	<b>The PP has agreed to this stipulation.</b>
8.	Any appeal against this environmental clearance shall lie with the National Green Tribunal, If preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.	NGT case was filed by Shri Laxmi Chauhan against Dipka Project in 2018 against sanction of 35 MTY EC to the project. The NGT Principal Bench has issued their verdict on 25.08.2020, upholding the impugned 35 MTPA EC and dismissing all appeals. (Copy of verdict enclosed as Annexure-2)	<b>Condition is complied</b>
9.	The coal company/project proponent shall be liable to pay the compensation against the illegal mining, if any and as raised by the respective State Governments at any point of time, in terms of the orders dated 2 <sup>nd</sup> August, 2017 of Hon'ble	1. Dy. Director (mines) through the Collector issued a notice in line to the orders dated 2 <sup>nd</sup> August, 2017 of Hon'ble Supreme Court in WP(Civil) No.114/2014 in the matter of 'Common Cause vs Union of India & others'. 2. Reply to the notice was prepared through	Action being taken by PP

	Supreme Court in WP (Civil) No. 114/2014 in the matter of Common Cause Vs Union of India & others’.	<p>Advocate Shri Anoop Mehta and submitted at the Collector office by the project (Annexure-3).</p> <p>3. It stated that, the land for Dipka Project was acquired under CB Act,1957and not governed by MMDRAct,1957.</p> <p>4. As per the Act, the rights over the land is vested with the central Govt and M/s. SECL is the custodian and State Govt. is not the Mining landholder.</p> <p>5. Upon meeting between the SECL projects and the Collector no conclusive decision was reached between SECL and the Collector and Dy. Director (Mines) this case. (Timeline is enclosed in Annexure-4)</p>	
10.	The project proponent, without prejudice to this EC, shall be bound to comply with any other interpretation of the orders of Hon’ble Supreme Court also, in due course of time.	Agreed to comply to SC orders, if any.	<b>The PP has agreed to this stipulation.</b>
11.	This EC supersedes the earlier EC granted vide letter No. J-11015/487/2007-IA.II(M) dated 06.02.2015 with a capacity 31 MTPA.	Agreed	<b>Agreed by PP</b>

**Table 4.2 b: ICFRE assessment to the point wise compliance status stipulated in the Environmental Clearance conditions (31 MTPA to 35 MTPA) vide letter No. J-11015/487/2007-IA.II (M)Pt dated 09.03.2020 for Expansion of Dipka OCP**

**(Period of Compliance from October 2021 to March 2022)**

Sl.No.	EC conditions	Project Proponent Compliance	Observations/ Recommendations by ICFRE
4 (i)	EAC desired that the MoC may direct CIL subsidiaries to comply the EC/FC/CTO conditions strictly within certain time bound manner so that the mining operations will be environmentally sustainable/ viable etc.	<p><b>Complied.</b></p> <ul style="list-style-type: none"> <li>• In order to monitor the compliance of EC and FC stipulations in coal mines, an Apex Committee has been constituted at MoC level vide OM dated 11.06.2019.</li> <li>• As per directives of MoC, Committees have been made at CIL Level, at Subsidiaries level and at Area level for regular inspection, monitoring &amp; compliance of EC/FC/CTO conditions with timebound action plan.</li> <li>• Internal Committee has been constituted at Area Level for Self-Environmental Audit and Inter-Area Monitoring mechanism is also in place.</li> </ul>	<b>The condition is being complied.</b>
(ii)	Also, EAC asked project proponent to plant 50,000 nos. of native trees (excluding other conditions of plantation given by this Ministry) with broad leaves along the villages and transportation route to prevent the effect of air pollution in three years. After completion of tree plantation, number of trees shall be duly endorsed from District Forest Office.	<p><b>Being complied</b></p> <ul style="list-style-type: none"> <li>• 50,000 native species plantations will be carried out in 20.00 Ha of revenue forest land in village Kasaipali of tehsil Pali, district Korba.</li> <li>• A 05 year scheme was prepared through DFO office, Katghora. The cost of the work is Rs. 99.91 Lakhs. The amount for this work was paid on 29.06.21. As demanded a difference amount of Rs.8.25 lakhs were also</li> </ul>	<b>The condition is being complied.</b> As reported in the compliance to the condition, necessary action for plantation raising is being taken up.



		<p>paid to DFO on 07.04.2022. (Annexure-28).</p> <ul style="list-style-type: none"> <li>The work will be started during Monsoon of 2022. Once completed, the work will be duly endorsed by DFO, Katghora.</li> </ul>	
(iii)	<p>All Partially and non-complied conditions reported by Ministry's Regional Office in its certified compliance report dated 27<sup>th</sup> November 2019 shall be completed in 2 years from the date of issue of this letter.</p>	<p><b>Complied.</b></p> <ul style="list-style-type: none"> <li>The partially complied conditions as noted by Regional Officer of MoEF&amp;CC Nagpur in EC certified compliance report dated 27.11.2019 (Date of RO inspection 05.11.20219) has been complied.</li> <li>However, action is being taken for implementation of the recommendations of the study reports.</li> </ul>	<p>It is reported that non-complied points identified by Ministry's Regional Office is <b>partially complied</b></p>
(iv)	<p>The project proponent shall comply with all the statutory requirements and judgment of Hon'ble Supreme Court dated the 2<sup>nd</sup> August 2017 in Writ Petition(Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors. State Government shall ensure that the entire compensation levied, if any, for illegal mining paid by the project proponent through their respective department in strict compliance of judgment of Hon'ble Supreme Court dated the 2<sup>nd</sup> August 2017 in Writ Petition(Civil) No. 114 of 2014 in the matter of Common Cause versus</p>	<p><b>Agreed to comply</b></p>	<p><b>The project proponent has agreed to comply</b> court order of Hon'ble Supreme Court in case of illegal mining takes place in the project.</p>



	Union of India and Ors. State Government.		
(v)	Project Proponent shall obtain the necessary prior permission from the Central Ground Water Authority (CGWA) in case of intersecting the Ground watertable. The intersecting ground water table can only be commenced after conducting detailed hydrogeological study and necessary permission from the CGWA. The report on six monthly basis on changes in Ground water level and quality shall be submitted to the Regional Office of the Ministry, CGWA and State Pollution ControlBoard.	<p><b>Being Complied</b></p> <ul style="list-style-type: none"> <li>• NOC was obtained from CGWA for 23.20 lakh m<sup>3</sup>/year withdrawal of ground water on 14.03.2019. The NOC was renewed vide NOC No: CGWA/NOC/MIN/REN/1/2021/6545 and is valid till 25.02.2023.</li> <li>• Regular Monitoring of Ground Water level is carried out through 08 no. of piezometers (deep- 04, shallow-04) constructed at up and dip side of the mines and well inventory is carried out to monitor the GWL changes around the mine.</li> <li>• The Ground Water Quality is analyzed yearly 04 times through CMPDIL.</li> </ul>	<p><b>This condition is being complied.</b></p> <p>NOC has been obtained from CGWA for 23.20 lakh m<sup>3</sup>/year withdrawal of ground water on 14.03.2019. NOC No: CGWA/NOC/MIN/REN/1/2021/6545 is valid till 25.02.2023.</p> <ul style="list-style-type: none"> <li>•Regular Monitoring of Ground Water level is being done through 08 no. of piezometers (deep-04, shallow-04) constructed at up and dip side of the mine and well inventory is carried out to monitor the ground water level changes around the mine (<b>Plate 26</b>).</li> </ul> <p>Ground Water Quality is being analyzed.</p> <ul style="list-style-type: none"> <li>• Reports of ground water sample found in accordance to the environmental factors related to water uses.</li> </ul> <p>However, out of total 24 analyzed parameters, Total Hardness (mg/l) as CaCO<sub>3</sub> in LK1 and nitrate (mg/l) in LK2 was found exceeding permissible limits.</p>
vi	Proponent shall appoint an Occupational Health Specialist for Regular and Periodical medical examination of the workers engaged in the project and maintain records accordingly; also, Occupational health check-ups for workers having some ailments like BP, diabetes, habitual smoking, etc. shall be undertaken once in six months and	<p><b>Being Complied</b></p> <ul style="list-style-type: none"> <li>• Regular Periodical Medical Examination (PME) of the workers engaged in the project is carried out through NCH Gevra under the supervision of Chief Medical Officer.</li> <li>• Health checkup for occupational diseases and hearing impairment are covered under PME.</li> </ul> <p><b>Periodical Medical Examination (PME)</b></p>	<p><b>The condition is being complied.</b></p> <p>IME/PME is done as per the statute and the records are being maintained at the Nehru Centenary Hospital, Gevra. Occupational health checks up of the workers having some ailments like BP, diabetes, habitual smoking, etc. are also being done once in 6 months.</p> <p>Further, it is suggested that the Project authorities have to consult the National Institute for ensuring good occupational environment for the mine</p>

	<p>necessary remedial/ preventive measures taken accordingly. The recommendations of National Institute for ensuring good occupational environment for ensuring good occupational environment for mineworkers shall be implemented; The prevention measure for burns, malaria, and provision of anti-snake venom including all other paramedical safeguards may be ensured before initiating the mining activities.</p>	<b>Year</b>	<b>Departmental</b>		<b>Contractual</b>		<p>workers and the recommendations of the same has to be implemented as stipulated by the MoEF&amp;CC.</p>
			<b>Target</b>	<b>Achievement</b>	<b>Target</b>	<b>Achievement</b>	
		2016	570	571	230	226	
		2017	564	545	170	180	
		2018	564	564	170	37	
		2019	556	556	170	95	
		2020	550	312	52	50	
		2021	533	527	120	85	
		<ul style="list-style-type: none"> <li>The paramedical safeguards including medicines for burns, malaria and anti-snake venom are available at NCH Gevra. (Annexure-29)</li> </ul>					
(vii)	<p>Project Proponent shall follow the mitigation measures provided in office memorandum no. Z-11013/57/2014- IA.II(M), dated 29<sup>th</sup> October, 2014, titled “Impact of mining activities on Habitations. Issues related to the mining projects wherein Habitations and villages are the part of mine lease areas or Habitations and villages are surrounded by the mine lease area”.</p>	<p><b>Being Complied</b> The compliance of mitigation measures provided in OM no: Z-11013/57/2014-IA.II (M), dated 29<sup>th</sup> October, 2014 is being complied. (Annexure-30)</p>				<p><b>This condition is being complied.</b> All mitigation measures provided in OM no: Z-11013/57/2014-IA.II(M), dated 29<sup>th</sup>October, 2014 is being complied.</p>	
(viii)	<p>The illumination and sound at night at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may affect the health in the villages located close to mining operations. Habitations have a right for darkness and</p>	<p><b>Being Complied</b></p> <ul style="list-style-type: none"> <li>Illumination at project sites are maintained as per DGMS guidelines (circular no: 03, dated- 06.11.2017).</li> <li>Noise levels are monitored in accordance with <i>The Noise Pollution (Regulation and Control) Rules, 2000</i> and <i>Coal Mine standards</i>. The measured</li> </ul>				<p><b>This condition is being complied.</b></p> <ul style="list-style-type: none"> <li>Illumination at project sites is maintained as per DGMS guidelines (A-III 11).</li> <li>Heavy noise activity (like drilling, blasting) is strictly prohibited during night hours in the mine.</li> <li>Noise level are being reduced by using of Surface Miners (6 nos.) instead of</li> </ul>	

	minimal noise levels at night. PPs must ensure that the biological clock of the villages is not disturbed by orienting the floodlights/ masks away from the villagers and keeping the noise levels well within the prescribed limits for day light/ night hours.	reading are within the prescribed limits.	conventional drilling and blasting of coal. <ul style="list-style-type: none"> <li>• Bypass road is being used for transportation of road sale coal to reduce traffic noise in village area.</li> <li>• Noise levels are being monitored as per prescribed rules. The average noise levels are within the prescribed limits (A-III 3).</li> </ul>
(ix)	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna, if any, spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. A copy of action plan shall be submitted to the ministry of Environment, Forest and Climate Change and its Regional Office.	<p><b>Being Complied</b></p> <ul style="list-style-type: none"> <li>• Wildlife Conservation Plan (WLCP) was prepared by TFRI, Jabalpur in 2020 as per the MoU signed between ICFRE, Dehradun and CIL, Kolkata. (Rs.14.90 lakhs)</li> <li>• The plan and budgetary provisions were submitted at DFO office, Katghora on 13.11.20 for implementation.</li> <li>• As per the recommendation in the WLCP, a 2.00 Ha area has been identified at Chainpur village near CISF hostel to construct and develop an herbal garden. The work is planned to be taken up through CGRVVN, Korba. The detailed scheme/offer from CGRVVN is awaited.</li> </ul>	<p><b>The condition is being periodically complied.</b></p> <p>As reported in the compliance to the condition, the WLCP report is in place and the recommendations of the report together with budget provisions has been submitted to the competent authority for necessary approval.</p>
(x)	Hon'ble Supreme Court in an Writ Petition(s) Civil No. 114/2014, Common Cause vs Union of India & Ors vide its judgment dated 8th January, 2020 has directed the Union of India to impose a condition in the mining lease and a similar condition	<b>Agreed to comply</b>	<p><b>The PP has agreed to comply this condition.</b></p> <p>The project is not matured for final mine closure activities. However, final mine closure is due during the year 2022-23, if life of the mine ends in the year 2026-27 as envisaged. In such case restoration of mined out area should be proposed for reclamation as directed by Hon'ble Supreme</p>

<p>in the environmental clearance and the mining plan to the effect that the mining lease holders shall, after ceasing mining operations undertake regressing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of folder, flora, fauna etc. Compliance of this condition after the mining activity is over at the cost of mining lease holders/Project Proponent”. The implementation report of the above said condition shall be sent to regional office of Ministry.</p>		<p>Court of India in the Writ Petition(s) No.114/2014, Common cause Vs Union of India &amp; Ors <i>vide</i> its judgement dated 8<sup>th</sup> January, 2020.</p>
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## CHAPTER -5 OBSERVATIONS AND RECOMMENDATIONS

This chapter deals with audit findings to the compliance status of stipulated EC conditions issued by MoEF&CC, GoI issued vide letter no. J-11015/487/2003-IA. II (M)pt dated 20.02.2018 and No. J-11015/487/2007-IA.II (M)Pt dated 09.03.2020 for Expansion of Dipka OCP (31 MTPA to 35 MTPA) of SECL. The ICFRE team audited individual EC conditions stipulated and the comments/observation are provided in detail in Table 4.2 a&b of Chapter-4. In addition, following are the areas identified for further suggestions to enhance environment of mine with adequate remedial measures.

### 5.1 SPECIFIC OBSERVATIONS AND RECOMMENDATIONS

#### 5.1.1 Mining Lease and Mining

It has been observed that Dipka OCP has been granted “Mining lease” under Mines and Mineral (Development and Regulation) Act 1957. A circular issued by Ministry of Coal vide letter No.43024/1/2004 PRIW dated 2<sup>nd</sup> September 2004 states that under in para 2:

“On acquisition of land and its rights under section 9(1) of CBA (A&D) Act, the same is vested in the central govt. free from all encumbrances as per section 10(1) of the said Act. Therefore, State Govt. is diverted of all the rights over such land. Hence granting of lease by the state government is not required”.

- Dust suppression system at the mine haul roads as well as CHP is satisfactory. Pressurized water sprinkling system through fixed sprinklers along the haul roads within the mine to CHP installed.
- Coal extraction and its management along with fire (spontaneous heating) incident management was found satisfactory as the spontaneous heating (fire) of coal was observed at the quarry.
- Persons deployed in the mine were not using dust mask as protective measure against coal/air borne dust.
- Mining operations undertaken by deploying HEMM, where departmentally operated sections. HEMM are electrical and is more efficient and energy conserving. Coal handling undertaken departmentally by shovel - dumper combination. Outsourcing agency deployed surface miner, pay loader and dumper combination for extraction coal and shovel-dumper combination for removal of OB.
- As per approved scheme of mining, balance coal and OB removal envisaged in the project area is 359.19 million tons and 430.71 Mcum respectively as on 01.04.2016. Coal extracted and OB removed between 2016-17 to 2021-22 is reported as 194.25 million tons and 142.16 Mcum respectively. As on 01.04.2022 balance coal and OB is 164.94 million tons and 288.55 Mcum respectively. It is found that about 93% of envisaged coal production has been achieved for last 6 years, whereas in respect of waste handling only 58% has been achieved.



- As per the approved mining plan overall stripping ratio envisaged is 1.17, however during the last 6 years production and waste removal indicates stripping ratio is 0.73. It indicates production is not commensurate with development activities.
- If coal extraction is continued @ 35 MTPA, life of the mine will be 5 years. Therefore, action has to be initiated for preparation of Final Mine Closure Plan.
- It is observed that Overburden benches are not much advanced from coal benches. It may be due delay in land acquisition. The issue has to be addressed on priority and mine pit has to be advanced scientifically with systematic benches.
- Width and gradient of mine roads are in order. However, regular sweeping for removal of clay and dust has to be intensified. As audit period was rainy season dust accumulated on the mine roads as slurry.
- HEMM are provided with noise and dust proof cabins. It is observed during the site inspection that employees are wearing helmet and boot, however, outsourced operators/workers at drilling and excavation site not using dust mask.

### **5.1.2 Statutory Compliance**

- The project proponent has complied with most of the statutory responsibilities. During the audit period no violation of statutory agency is outstanding.
- CECB has filed a case in the Hon'ble Court of Chief Judicial Magistrate, Korba against the project proponent for excess production of during the year 2001-02 without renewal of consent. SECL has filed a petition in the Hon'ble High Court of Bilaspur against CECB. The High Court has issued the verdict on 18.06.2019 and accordingly the case proceedings will be further taken up by lower court.
- CECB has filed a case in the Hon'ble Court of First-Class Judicial Magistrate, Katghora against the project proponent for excess production of during the year 2007-08 against the EC of 20MTPA. Court order pronounced in favour of SECL. Aggrieved by the order CECB has filed an appeal in the Hon'ble High Court of Bilaspur (CRMP No.859/2014). The matter is in the Hon'ble Court.
- A case was filed at NGT Principal Branch at New Delhi by Laxmi Chouhan against UoI & Others (including Dipka OCP as respondent 4), challenging the 35 MTPA EC alleging the EC is illegal as Public Hearing was not done. The NGT Principal Branch at New Delhi pronounced its verdict on 25.08.2020, upholding 35 MTPA EC grant and dismissing all appeals.
- Review of safety aspects reveals that during the last 3 years 3 serious accidents took place, of which 1 is fatal and 2 are serious injuries.

### **5.1.3 Coal Transportation**

- Installation of 2 silo for loading about 15 MTPA capacity through MGR is efficiently working. Mechanical rail loading of about 5 MTPA together with 2 silos loading contribute



about 57% of coal transportation by environmentally friendly mode. Remaining coal production of 20 MTPA is being transported by road to washeries initially then by rail to powerplants, local consumers etc., which contributes impact on environmental parameters.

- As proposed and being implemented Mechanized Railway siding with Rapid Loading System with capacity of 25 MTPA is implemented, it will further improve mine environment.

#### 5.1.4 Dump Management

##### External OB Dumps

As per expansion EC document for 35 MTPA, the area earmarked for external OB dumps is 206.0 Ha and out of the envisaged total area, it occupies an area of 204.26 Ha with a quantity of 80.81 Mcum at present. External dumping is reported to have been carried out till 31-03-2019 and since then, no dumping has been carried out. The external dumps are located mainly at N-NW side of the OCP area. As per expansion EC document for 35 MTPA, the area earmarked for external OB dumps is 206.0 Ha and out of the envisaged total area, it occupies an area of 204.26 Ha with a quantity of 80.81 Mcum at present. External dumping is reported to have been carried out till 31-03-2019 and since then, no dumping has been carried out. The external dumps are located mainly at N-NW side of the OCP area (Plate 29). The details of three external OB dumps are given as under:

External Dumps	Active/ Inactive	Area (Ha)	Volume of OB (MCum)	Top RL (m)	Surface RL (m)	Height (m)
Dump-1 & 2	Inactive	98.36	25.92	375.56	314	61.56
Dump-3	Inactive	20.50	7.55	356.02	322	34.02
Dump-6 & 7	Inactive	85.40	47.34	402.15	314	88.15
<b>Total</b>		<b>204.26</b>	<b>80.81</b>			

The N-NE side of the project area adjacent to the current view point occupies an undesignated waste dump, which is said to have been dumped by the adjacent Gevra OCP during the period when only one project was being operated over the land area. Together with the dump, some part of the quarry area is also said to have been operated by the adjacent Gevra OCP. It is seen that the dump falling adjacent to the Dipka project area has been provided stabilization measures including terracing, gully control measures such as loose boulder gully checks, extensive plantation, RCC garland drain, etc., over a relatively larger area facing towards the diverted Hardibazar Road. Hence, the dump is regarded as a stabilized one. Moreover, the plain area at the foothill of the dump is observed to have been provided safety zone greenbelt vegetation over a quite large extent with mixed native tree species together with few exotics. The top soil of the Dipka project is observed to have been temporarily preserved over this sump.



### **(1) External OB Dump-1 & 2**

As the name indicated, it is the conglomeration of two waste dumps and is located over an area of 98.36 Ha with a quantity of 25.92 Mcum at north side of the project area. It has a height of 61.56 m and slope average angle of about 45 degrees. A road named as CT (hall) road is passing across the dump in south-north direction. With the available moderate plantation cover, the dump is observed to have been stabilized except that of the N-NE part where relatively heavy soil erosion and consequent slope failure leading to rills and gullies are noticed primarily due to steep gradient of the dump slope as well as lack of adequate SMC works and vegetation cover. Gabion toe/retaining wall has been made along the toe of the dump over a relatively small distance without any garland drain. Though natural ground at east side of the dump forms a drain leading to further south of the project area beyond the existing sub-station, the water movement alongside the dump is observed to have been restricted due to haul roads, quarrying, dumping, etc., resulting in surface water inundation of a relatively larger area. Hence, proper drainage systems for surface water movement are to be made alongside of this dump to prevent water stagnation. Extensive plantation has been made on this OB dump (except that of the N-NE part) with mixed native tree species together with few exotics viz., *Acacia auriculaeformis*, *Ailanthus excelsa*, *Albizia procera*, *Alstonia scholaris*, *Azadirachta indica*, *Cassia siamea*, *Dalbergia sissoo*, *Dendrocalamus strictus*, *Eucalyptus* sp., *Leucaena leucocephala*, *Peltophorum pterocarpum*, *Phyllanthus emblica*, *Pithecellobium dulce*, *Pongamia pinnata*, *Simarouba glauca*, etc.

### **(2) External OB Dump-3:**

It is relatively a small dump located over an area of 20.50 Ha with a quantity of 7.55 Mcum at north-west side of the project area further west of External OB Dump-1 & 2. It has a height about 34 m and slope angle of about 30 degrees. Gabion retention wall has made to some extent at the foothill of the dump without garland drain. The dump has been stabilized by relatively moderate dense plantation employing both mixed native species together with some exotics viz., *Acacia auriculaeformis*, *Ailanthus excelsa*, *Alstonia scholaris*, *Azadirachta indica*, *Cassia siamea*, *Dalbergia sissoo*, *Delonix regia*, *Eucalyptus* sp., *Leucaena leucocephala*, *Peltophorum pterocarpum*, *Pithecellobium dulce*, *Pongamia pinnata*, etc.

### **(3) External OB dump-6 & 7:**

It is a conglomeration of four waste dumps. Of the total, Dump-6 & 7 are located in close proximity, while the relatively small other two waste dumps (i.e., 4 & 5) are located little away further north and NE separated by a drain and approach road. Put together, the dump is relatively a larger waste dump located over an area of 85.40 Ha with a quantity of 47.34 Mcum at NW side of the project area. It has a height of 88.15 m with an average three terraces of 30 m height each at larger part of the dump and slope angle of about 45 degrees.





The relatively smaller part of the dump has been provided retaining wall of both gabion and loose boulder structures along the toe of the dump as well as at the intermediate terraces. Stone pitched garland drains have been provided at the toe along slope. Also, vertical drains with stone pitched structures have been provided for smooth surface water flow along dump slope. Extensive SMC works have been carried out on the dump surfaces. The dump has been fully reclaimed (except with few gaps) by both afforestation with mixed native tree species together with some exotics as well as native vegetation growth viz., *Acacia auriculaeformis*, *Acacia nilotica*, *Agave americana*, *Ailanthus excelsa*, *Albizia lebbeck*, *Albizia procera*, *Alstonia scholaris*, *Azadirachta indica*, *Bahunia verigata*, *Bombax ceiba*, *Bougainvillea spectabilis*, *Cassia siamea*, *Dalbergia sisoo*, *Delonix regia*, *Eucalyptus* sp., *Leucaena leucocephala*, *Parkinsonia aculeata*, *Peltophorum pterocarpum*, *Phyllanthus emblica*, *Pithecellobium dulce*, *Pongamia pinnata*, *Tectona grandis*, etc.

The larger part of the dump is sloping towards the quarry at west side and hence, garland drain has been provided at each terrace of the dump to arrest the silt and sediments flow into the quarry, while its west side is sloping towards the Lilagarh Nala. Though retaining wall has not been provided alongside of the road at east side at the toe of the dump, kutcha garland drain with culverts has been provided for smooth flow of surface water. The dump slopes are observed to have been eroded at many places leading to several rills and gullies. In order to prevent erosion along slope, suitable gully control/soil moisture conservation measures like loose boulder and sand bag gully checks have been implemented extensively. The dump slopes have been grass carpeted with *Saccharum spontaneum* and *Stylosanthes hamata*, while dump top has been provided small water recharge ponds. Biological stabilization by afforestation including gap plantation is being carried out regularly.

### **Ash Dump**

As reported in the EC audit of ICFRE as on 2017, an Ash dump reportedly belongs to SCPL (Spectrum Coal and Power Limited) had been noticed at NW side of the project area. However, at present, the details of the dump have not been made available to the team for auditing.

Further, it is seen that the location details of the permanent establishments including external waste dumps at north side depicted in the working plan is not appropriate. Hence, it is suggested to prepare a proper working plan by updated survey details for depicting all the pertinent surface features legibly.

### **Internal Backfilled Dumps**

As per the earlier EC audit report of ICFRE as on 2017, mine has been worked in three sections viz., Old Dipka Quarry at east side, Jhingatpur Quarry at the middle and Western Quarry and accordingly, three internal backfilled waste dumps have been formed in the respective de-coaled



quarry areas advancing from north to south (Plate 30). The details of internal backfilled as per the data provided by the mine management is given as under:

Internal/ Backfilled Dumps	Active/ Inactive	Area (Ha)	Volume of OB (MCum)	Top RL (m)	Pit Bottom RL (m)	Surface RL (OGL) (m)	Height from pit bottom RL/surface (OGL) (m)
1. North Section (Old Dipka quarry-Near Top soil stack)	Active	25.50	94.44	382.72	190	324	192.72/ 58.72
2. North-western Section (Jhingatur Quarry -Near Observatory Tower)	Active	87.00	53.36	291.12	220	312	71.12/ -20.88
3. West section	Active	115.166	134.22	358.22	235	316	123.22/ 40.22
<b>Total</b>		<b>227.666</b>	<b>282.02</b>				

The total area under internal backfilled dumping as on date is 227.666 Ha and the volume of waste accommodated is 282.02 Mcum. The dumps vary in height from pit bottom RL to top RL, i.e., 71.12 m in Jingatpur dump to 192.72 m in Old Dipka dump. All the internal dumps are active as backfilling is being progressed.

On the contrary, as per the latest six-monthly EC compliance report dated 25.05.2022 (page No. 6 under reclamation and restoration programme) submitted to MoEF&CC, the total area under internal backfilled dumps formed as on 31.03.2022 is 542.366 Ha out of the envisaged total quarry area of 1002.053 Ha. This variation in internal backfilled dumping area needs to be corrected by the mine management before submitting any to the statutory organizations. Accordingly, the technical reclamation followed by biological reclamation carried out on the internal backfilled dumps as reported in the EC compliance is 223.0 Ha and 127.66 Ha respectively.

**(1) Backfilled Dump of North Section (Near Top soil stack):**

It is an active dump located over an area of 25.50 Ha with a quantity of 94.44 Mcum at N-NE side of the project area. The present height of the dump is only 58.72 m above original ground. A total of 3-4 terraces have been formed on this as part of technical reclamation.

**(2) Backfilled Dump of North-western Section (Near Observatory Tower):**

It is an active dump located over an area of 87.0 Ha with a quantity 53.36 Mcum at central part of the project area. The height of the dump is 71.12 m from pit bottom RL, whereas from surface RL it is -20.88m and slope angle is varying from 40 to 45 degrees. A total of 3-4 terraces have been formed on this dump in the process of technical reclamation.



### (3) Backfilled dump of West Section:

It is an active dump located over an area of 115.166 Ha with a quantity of 134.22 Mcum at west section quarry. The height of the dump is 40.22 m above original ground level and slope angle is varying from 40 to 45 degrees. A total of 3-4 terraces have been formed on this dump as part of the technical reclamation.

Although, the slope angle provided for both the external and internal dumps appears to be quite good, some locations on the dumps are observed to have been maintained at above 45°. Hence, future dumping may be carried out well within the limits prescribed for the same. At many locations on the external and internal dumps, erosion and slope failure has been noticed possibly due to slope being not maintained proper gradient, lack of afforestation measures on the slope, lack of toe protection measures, etc. A significant area under external waste dumps and a relatively smaller area under internal backfilled dumps have been made to stabilize by afforestation measures with mixed native tree species with some exotics.

Waste dumping should be carried out as per the physical features of the terrain by adopting retreating method starting from bottom and reaching to the top by creating terraces of 30 m height and 25 m terrae/bench width. The overall slope of the dump should not exceed 28 degrees as per the statute given in EC. Wherever necessary, retaining/toe walls and garland drains should be provided and the drains have to be connected to the surface water harvesting structures like settling ponds, mine sumps, etc., for proper settlement.

#### 5.1.5 Surface Water Management Measures

##### Retaining Wall/Toe wall

Retaining Wall/ Toe wall is the engineering structure that is erected at the toe of the waste dump to retain the waste material at the designated location and to prevent the possible breaching of OB waste beyond the desired boundary. As per design, there are different types of retaining wall structures and are implemented as per the suitability of the ground condition. The retaining wall structures observed on the lease area are detailed as follows:

<b>Retaining/Toe Wall:</b>			
<b>Sl. No.</b>	<b>Locations</b>	<b>Length</b>	<b>Dimensions</b>
1	Eastern External Dump (Dump-3)	No details available	
2	Central External Dump (Dump-5)		
3	Parallel to conveyor belt from TH-7	250 m	3.5 x 0.5 m
4	Near TRS of conveyor belt	72 m	2.5 x 0.5 m
5	Near erection yard along coal transport road	150 m	3.5 x 0.3 m
<b>Total</b>		<b>472 m</b>	

Retaining wall is reported to have been provided up to a length of 472 m for waste dumps and other infrastructure facilities (Plate 31). Although these structures have been implemented on the



field, periodic maintenance from being breached by the eroding waste materials are very essential. Also, there is further scope for improving the structures as well as new structures to be proposed depending on the terrain. Considering quite large area under both external and internal backfilled dumps and quantum of surface water flow during monsoon leading to the Lilagarh Nala, it is suggested to prepare proper dump and surface water management plan with suitable site-specific measures for controlling erosion of silt and sediments into the natural drains.

### Garland Drains/Catch Drains around waste dumps, road, etc.

Garland drain is one of the physical measures used to provide along the toe of the waste dump for smooth draining of surface water flow from the dump. In mining scenarios, the garland drains usually accompany by the side of retaining wall and are being connected to settling ponds/tanks for preventing silt and sediment flow towards outside mining lease. Besides this, smooth draining of surface water along haul/approach road is made possible by implementing catch drains, which are surface drains to intercept, collect and lead the flow of water in order to prevent water inrush on roads and other related infrastructure facilities and are designed as per the rainfall density and elevational gradient of the area.

The details of garland/catch drains exist on the project area are given as under:

Catch Drain/ Garland Drain	Drain Locations	Length (m)	Dimensions
Around the OB dumps	Jhingatpur OB Dump	1200	2.0 x 1.5 m
	Western side of External Dump (Dump No 6&7)	4500	2.0 x 1.5 m
	Beltikiri OB Dump (External OB dump 1&2)	800	3.0 x 1.5 m
Around the quarry	Mine No. 2	2200	3.0 x 2.0 m
	OB Dump below GTP Camp	2000	2.0 x 2.0 m
	Along Hardi Bazaar Bypass Road	2500	2.0 x 1.5 m
Catch Drains Along Haul Road	Behind coal stock 17	2000	2.0 x 1.5 m
	Coal stock 18-19 near mobile crusher	750	1.0 x 1.0 m
	Near Mobile Crusher behind MTK 2 to Coal Stock 15	1500	2.0 x 1.0 m
	Neem Bagicha Road	1600	2.0 x 2.0 m
	Erection Yard to Mobile Crusher near coal stock 18&19	1140	2.0 x 2.0 m
Catch Drains Along Approach Road	Near old auto section	70	2.0 x 1.5 m
	From Dump 1&2 to Lilagarh Nallah	4500	8.0 x 4.0 m (varying dimension)
<b>Total</b>		<b>24760</b>	

As reported by the mine management, garland/catch drains of a total length of 24,760 m have been provided along the toe of waste dumps, catch drains around the quarry, along haul roads



and approach roads in the OCP area. As the area is sloping towards south, the surface water flow from south does not enter the quarry. Catch Drain has been implemented over a length of 6700 m around the quarry boundary at east along Hardibazar Road, north along the mine workings and west along waste dumps to prevent flood water flow entering inside the quarry.

At many places, the drains are observed to have been fully/partially filled with eroded silt and sediments. It is observed that there is further scope for either improving the existing structures or proposing new ones. Hence, the Project Proponent has to maintain them properly by de-silting at periodical intervals preferably before the onset of every monsoon season. Moreover, detailed surface water management plan depicting various measures as per statute given in the EC condition shall be prepared.

A dedicated drain has been provided for evacuation of surface water flow during monsoon from the area around waste dumps, along haul/approach roads, etc., starting at N-NE and ending at the Lilagarh Nalla at S-SW. The drain is observed to have been well maintained with RCC walls particularly at the downstream locations where quantity of flow is relatively high (Plate 31). Hence, it is suggested to carry out the further strengthening the channel with either RCC/gabion/stone pitched walls and some grade stabilization facilities by employing gabion walls for control of flow.

## Water Harvesting Structures

### (1) Silt Settling Ponds

Settling ponds are regarded as one of the key structures in the surface water management having the function of retaining the silt and sediments from contaminated water mainly emanating from infrastructure area such as CHP, OB dumps, railway sidings, stockyard, mine sumps, etc. The details of settling ponds/tanks of the OCP area given as under:

<b>Silt Settling Pond/Tank</b>			
<b>Sl. No.</b>	<b>Location</b>	<b>Dimensions</b>	<b>Area (Ha)</b>
1	Sirki Pond	216 x 60 x 8 m	12,960 m <sup>2</sup>
2	CISF Pond	173 x 109 x 12 m	18,857 m <sup>2</sup>
<b>Total</b>			<b>31,817 m<sup>2</sup></b>

As reported, two settling ponds namely Sirki Pond and CISF pond respectively have been made over a total area of 31817 sq.m area (Plate 32). Sirki pond has been provided stone pitched walls, while CISF ponds RCC/PCC walls. Both the ponds are well maintained and have been given excess flow control measures. Drains covering a significant area from N-NE of OCP area is connected to the settling ponds and finally let out to the Lilagarh Nala after proper settlement of silt and sediments. The water is being used for dust suppression, plantations and other related uses.



## (2) Check Dams

Apart from this, 2 check dams are reported to have been implemented on the drains at Lilagarh Nala and drain at Dump-3. These are earthen dams aimed to promote water recharge as well as to prevent siltation on surface water flow. The details of check dams/embankments are given as under:

Check Dam/Water Augmentation Structures					
Sl. No.	Location	Dimensions			
1	Embankment along Lilagarh Nala	Length	Top width	Bottom width	Height
		400 m	20 m	35 m	4.5m
2	Embankment at Dump-3	600 m	6.0 m	18 m	5.0 m

## Nalla Diversion/River Embankment

As reported, the Lilagarh Nala flowing along the west side boarder of the OCP area needs to be diverted not at the present scale of production, but at 40 MTY expansion. Hence, it is suggested to obtain proper approval for the same from the competent authorities.

The HFL of Lilagarh Nalla noted near to quarry boundary at downstream and upstream was 301.10 m and 309.54 m respectively. The west side working quarry boundary lying close to Lilagarh Nala at elevation 294.65 mRL has been provided an embankment (stone masonry in cement sand mortar) at elevation 300.14 – 300.12 mRL to prevent the inrush of water into the quarry during peak flow (Plate 32).

Nalla Embankment/Bund			
Sl. No.	Location	Length	Dimensions
1	Along Lilagarh near Renki Substation	225 m	20 x 2.5 m
2	Old Dipka	250 m	9.0 x 5.0 m

## (3) Recharge Ponds

Apart from this, three water recharge ponds viz., Chatghat pond and Pragathi Nagar pond at Pragati Nagar Colony (Plate 32). and one pond near SILO have been made in the OCP area. The ponds are partially occupied by aquatic weed species viz., *Eichhornia crassipes*, *Typha augustifolia*, etc. Hence, it is suggested to maintain the pond free from pollution and aquatic weed species.

Though structures are observed to have been well performed, it is suggested to improve the structures with appropriate embankments and periodical maintenance as per the requirement for better serviceability. Therefore, it is suggested that the Project Proponent has to initiate preparation of a detailed surface water management plan and implement water harvesting/grade stabilization structures of appropriate number and dimensions along the water courses as per the stability and structure of micro-water shed basins of the area.



### Mine/Quarry sumps

As per the data provided by the mine management, three functional sumps covering an area of 7,41,500 sq.m with a capacity of 1,68,73,640 Cum exist in the active working phase of the quarry area. Also, the mine sumps are made to receive surface water from the flow channelized through garland drains during raining season (Plate 33). There are provisions made to utilize the settled sump water by pumping to the designated locations for different mine related end uses. Filling stations have been provided at north side of the project area.

<b>Mine Sump</b>			
<b>Sl. No.</b>	<b>Quarry Location</b>	<b>Area</b>	<b>Volume</b>
1	LK-1	4,10,590 m <sup>2</sup>	1,43,70,650 m <sup>3</sup>
2	LK-2	1,86,620 m <sup>2</sup>	14,92,960 m <sup>3</sup>
3	Old Dipka	1,44,290 m <sup>2</sup>	10,10,030 m <sup>3</sup>
<b>Total</b>		<b>7,41,500 m<sup>2</sup></b>	<b>1,68,73,640 m<sup>3</sup></b>

### Top Soil Management

Top soil is a rich source of plant nutrients and dormant seeds/rhizomes of different local/native plant species. The top soil extracted from the mining area needs to be preserved and later used for spreading over the OB waste dumps before commencement of plantation activities so as to enrich the soil with nutrients and native soil microflora/fauna. Also, the top soil significantly helps in revegetation process by way of growth of dormant native grass rhizomes and seeds of herbs, shrubs and tree species. Hence, it is very important to map and quantify the top soil available in the area to be broken for mining and to plan for its preservation and utilization effectively.

The thickness of top soil in the project area is reported to vary between 25 cm and 35 cm. As per the data provided by the mine management, the estimated top soil of the project area is 3.0 Mcum that extracted since inception is 2.10 Mcum and that stacked for future use is 0.02 Mcum. However, the quantity of top soil extracted and utilized during the last six months period is reported as nil. The details of top soil are given as under:

<b>Top Soil</b>	<b>Quantity</b>
Total Topsoil as per plan	3.0 Mcum
Topsoil extracted since inception	2.1 Mcum
Topsoil removed in last six months	0.0
Topsoil utilized last six months	0.0
Top soil stacked for future use (present top soil quantity)	0.02 Mcum

Presently, top soil dump is located at N-NE corner of the project area over the internal backfilled waste dump reportedly belong to Gevra OCP (Plate 34). It is seen that the top soil dumping is being progressed and further, the measures for its protection, if at all retain for long till utilization, are yet to be given. Hence, it is suggested to utilize the top soil for afforestation



activities without much delay so that the dormant seeds, grass rhizomes, nutrients, other biological components, etc., would be effectively employed. The previous EC audit of ICFRE as on 2017 has reported that the top soil is located over an area of 12.0 Ha on the west internal backfilled dump near coal stock No. 15. Presently, this top soil dump is observed to have been almost fully stabilized with native vegetation growth.

Although good top soil management plan is given in the EIA/EMP Report (Chapter 10, Page No. 9-13), implementation of the same is observed to have been seldom carried out appropriately. Also, the present quantity of top soil stack, if not consumed within the targeted period, shall be given adequate measures for protection from erosion.

### **Safety Zone/ Boundary pillars**

The safety zone is the 7.5 m wide well defined statutory area all around the project boundary where there is no activity is permitted other than developing a thick greenbelt cover that serves as a biological barrier for airborne pollutants likely to be generated by way of mining within the project area from entering outside the mining environment. Therefore, it is made mandatory to establish thick greenbelt on safety zone around the established boundary of the project area as stipulated in EC Conditions. It is important to use tall seedlings (>1 m height) of fast growing mixed native tree species to hasten the process of greening the area.

The Dipka project area is sharing common boundary with that of Gevra project on the eastern side separated by the diverted Hardibazar Road. As detailed in the post-mining land use of EC condition, the area earmarked for safety zone is 130.366 Ha. In compliance to the condition, the project proponent has earmarked the specific area under safety zone and developed green belt to a considerable extent with mixed native tree species. Both the Lilagarh Nala and external dump-6 & 7 form the west side boundary of the project area have been made safety zone plantation (Plate 35).

Few boundary Pillars are observed to have been erected on the right bank of Lilagarh Nala at west side. However, boundary pillars with geo-coordinates are suggested to be erected at the project area boundary. Fencing/trenching has been done along the south side of the quarry. Safety zone greenbelt together with barbed wire fencing has been done over an extent of 4.91 km along west and east side boundaries of the project area.

### **5.1.6 Plantations**

#### **Afforestation/Plantation**

As per the post mining land use plan, total afforestation is envisaged over an area of 1009.0 Ha comprising of reclaimed external and internal OB dumps of 986.0 Ha and greenbelt of 23.0 Ha.





Plantation Site/location	Area (Ha)	No of Trees Planted
Plantation on External OB dumps	204.26	727766
Plantation on Internal backfilled OB Dump	127.66	322521
Plantation on Waste lands/ Barren/ degraded lands	437.10	1097747
Plantation around silo, coal stockyard, infrastructure, etc.		
Township plantation	30.89	77225
Avenue (transport/service roads) plantation		
Safety zone/greenbelt plantation	4.80	12000
<b>Total</b>	<b>804.71</b>	<b>2237259</b>

As against the target, the progressive total afforestation is reported to have been carried out over an area of 804.71 Ha with a total number of 22,37,259 saplings of mostly mixed native tree species together with some exotics.

Although extensively planted trees over waste dumps for reclamation, around project boundaries for greenbelt development, etc., the surviving plantation and greenbelt around the infrastructure areas such as Railway Siding, Coal Handling Plant, Coal Stock Yard, etc., for mitigation of pollution are observed to have been relatively inadequate. Hence, it is suggested that the infrastructure areas should be well afforested with suitable tall broad-leaved mixed native trees species that serve the purpose of arresting airborne suspended particles from spreading outside leading to air and noise pollution.

The tree species employed for afforestation include some exotic species such as *Cassia siamea*, *Leucaena leucocephala*, *Acacia auriculiformis*, *Acacia holosericea*, *Simarouba glauca*, *Casuarina* sp., *Eucalyptus* sp., etc. However, these exotic species should not be considered in future afforestation activities, because of their potential high regeneration and colonization efficiency that harm the proliferation of native plant communities leading to biodiversity loss of undergrowth herbs and shrubs. ***The afforestation/plantation activities on both the external and internal backfilled OB dumps, degraded areas, township, railway sidings, transport/service roads, etc., shall be carried out by using only mixed native tree species as suggested in Annexure-IV.***

### (1) OB dump afforestation

As per the details of total afforestation plan provided in EC (post-mining plan), external and internal backfilled dump afforestation is proposed to be carried out over an area of 206.0 Ha and 780.0 Ha respectively put together a total of 986.0 Ha. In compliance to this condition, the progressive afforestation employing mixed native tree species has been carried out over a total area of 204.26 Ha on external dumps and 127.66 Ha on internal dumps put together a total of 331.92 Ha since inception of the project.



A plan for the plantation works for the year from 1995 to till date has been prepared as on 01-01-2019 that depicted the details of areas where plantation raised since inception. Although relatively large area under plantation has been raised over the years, minoring mechanisms for evaluating the survival of planted trees location-wise and year-wise based on the plantation data are seldom implemented, collected and documented appropriately. Therefore, no data with regard to survival monitoring of the planted trees are available. Hence, it is suggested to maintain the pertinent information on plantation monitoring for reporting of compliance.

## (2) Greenbelt vegetation

The post-mining land use envisaged an additional area of 23.0 Ha to be developed under greenbelt other than the safety zone/undisturbed area of 130.366 Ha. The greenbelt afforestation is reported to have been developed over an area of 4.80 Ha mainly on the area (outside the project boundary partly) at east side along Hardibazar Road side with a total number of 12,000 saplings comprising of mixed native tree species and some exotics (Plate 36). Also, the safety zone on west side of the project area at the foothill of external dump-6 & 7 is observed to have been barbed wire fenced and raised greenbelt afforestation. Hence, it is suggested to develop the greenbelt afforestation to the extent maximum envisaged as per statute in the post mining land use plan of EC.

## (3) Barren /Degraded waste lands afforestation

Plain area afforestation on waste/ barren/ degraded lands as well as around silo, coal stockyard, infrastructure, etc., is reported to have been carried out as block plantation over an area of 437.10 Ha employing a total number of 10,97,747 saplings of mixed native tree species and some exotics like *Acacia auriculiformis*, *Acacia catechu*, *Aegle marmelos*, *Ailathes excelsa*, *Albizia lebbek*, *Albizia procera*, *Alstonia scholaris*, *Artocarpus heterophyllus*, *Azadirachta indica*, *Bauhinia variegata*, *Bougainvillea spectabilis*, *Callistemon citrinus*, *Cascabela thevetia*, *Cassia fistula*, *Cassia siamea*, *Dalbergia sissoo*, *Delonix regia*, *Eucalyptus* spp., *Mangifera indica*, *Madhuca longifolia*, *Nerium odorum*, *Neolamarckia cadamba*, *Peltophorum pterocarpum*, *Phyllanthus emblica*, *Pithecellobium dulce*, *Polyalthia longifolia*, *Pongamia pinnata*, *Samanea saman*, *Simarouba glauca*, *Syzygium cumini*, *Tecoma stans*, *Tectona grandis*, *Terminalia arjuna*, *Ziziphus* sp., etc.

In addition, a fruit orchard (Bihi garden) over an area about 6.0 Ha at NW side of the project area near Chainpur RR site Phase-2 with the following fruit yielding plant species namely, *Aegle marmelos*, *Anacardium occidentale*, *Artocarpus heterophyllus*, *Citrus* spp., *Pithecellobium dulce*, *Mangifera indica*, *Phyllanthus emblica*, *Psidium guava*, *Syzygium cumini*, etc., together with multipurpose tree species, namely, *Alstonia scholaris*, *Dalbergia sissoo*, *Dendrocalamus strictus*, *Simarouba glauca*, *Tectona grandis*, etc. are planted.



#### **(4) Township/Avenue (Transport/Approach Roads) Plantation**

Township/avenue plantation has been developed over an area of 30.89 Ha with a total number of 77,225 tree saplings comprising of both native and exotic species namely, *Acacia auriculiformis*, *Albizia lebbbeck*, *Azadirachta indica*, *Cassia siamea*, *Dalbergia sissoo*, *Delonix regia*, *Eucalyptus* spp., *Pongamina pinnata*, *Nerium odorum*, *Mangifera indica*, *Parkinsonia aculeata*, *Peltophorum pterocarpum*, *Pithecellobium dulce*, *Roystonea regia*, *Tamarindus indica*, *Terminalia arjuna*, etc (Plate 36). The township area is well afforested, while avenue areas at the infrastructure establishments are relatively less afforested. Hence, it is suggested to raise thick avenue area plantation alongside important locations within the project area.

#### **(5) Sal Plantation under plain area afforestation**

The *Shorea robusta* tree popularly known by the common name as ‘Sal’ is considered as a key stone species of the central Indian forests. Developmental projects like open cast mining involving considerably vast extent of forest land utilization may cease to progress the advancement of unique Sal forests in its home ranges. Hence, it attracts much conservations significance.

The total forest land involved in the project is 409.056 Ha. Sal and associated tree species are the predominant natural forest vegetation in and around the project area. The progressive afforestation has been raised over an area of 804.71 Ha with a total number of 22,37,259 saplings of mostly mixed native tree species together with some exotics. It is very important to note that Sal is not observed to have been a favourite choice for afforestation activities of the Dipka Project. Nevertheless, Sal tree plantation is reported to have been raised with 3,000 tree seedlings at N-NW side of the project area adjacent to Lilagarh Nala during 2019-20. The area particulars and location details of the said plantation could not be readily made available for auditing. Hence, it is suggested to include Sal trees in the future afforestation activities. To make the availability of Sal saplings in large quantity, the user agency (CGRVVN) may be directed to establish a Sal tree nursery as it has been done by the adjacent Gevra OCP.

#### **(6) Vertical Greenery System (VGS)**

As per the EC condition, the Vertical Greenery System (VGS) has been established near railway siding (on one side only) with the aim to prevent suspended air pollutants entering outside the area. However, the arrangement is observed to have been a temporary type with green colour plastic net curtain and it is informed that official procedures has been finalized for implementing a permanent VGS. The creeper plant species employed for raising vertical greenery system include *Tinospora cordifolia*, *Combretum indicum* (Pynar), *Bougainvillea* sp., *Thumbergia* sp., *Ipomoea* sp., etc (Plate 36). Hence, it is suggested to use the following climber species as listed below for making vertical greenery system more diverse with plant species and serving the purpose effectively.



Sl. No.	Species Name	Common Name
1.	<i>Celastrus paniculatus</i>	Mal-Kangani
2.	<i>Combretum indicum</i>	
3.	<i>Cryptolepis buchananii</i>	Kala Bel, Karanta
4.	<i>Ficus pumila</i>	Climbing Fig
5.	<i>Gymnema sylvestre</i>	Gurmar
6.	<i>Ipomoea batatas</i>	Ornamental Sweet potato vine
7.	<i>Ipomoea indica</i>	Blue morning glory
8.	<i>Ipomoea nil</i>	
9.	<i>Ipomoea staphylina</i>	
10.	<i>Jasminum grandiflorum</i>	
11.	<i>Mansoa alliacea</i>	
12.	<i>Plumbago zeylanica</i>	
13.	<i>Pyrostegia venusta</i>	Flame vine
14.	<i>Tiliocora acuminate</i>	
15.	<i>Thunbergia erecta</i>	
16.	<i>Thunbergia grandiflora</i>	Bengal clock vine
17.	<i>Thunbergia elegans</i>	Clock vine
18.	<i>Tinospora cordifolia</i>	Giloy
19.	<i>Trachelospermum jasminoides</i>	
20.	<i>Vernonia elaeagnifolia</i>	

### Assessment of land reclamation by satellite imagery

The report on “Land Restoration/ Reclamation Monitoring of more than 5 million cu.m (Coal+OB) Capacity Open Cast Coal Mines of South Eastern Coalfields Limited based on satellite data for the year 2021” submitted February-2022 by Remote Sensing Cell Geomatics Division CMPDI Ranchi” is in place. The salient features of the land reclamation report are summarized as follows:

Sl. No.	Area/activity particulars of land reclamation status		Area (sq.km)	
			2020	2021
1	Total lease area		19.99	19.99
2	Total excavated area		7.01	7.61
3	Active mining area		3.30	2.92
4	Technical reclamation	Backfilled Area	2.94	3.69
5	Biological reclamation by afforestation	Plantation on Excavated/ Backfilled Area	0.77	1.00
6		External OB dumps	1.60	1.81
7	<b>Total reclamation area (5+6)</b>		<b>2.37</b>	<b>2.81</b>
8	Other plantations	Social forestry, avenue plantation, etc.	1.59	1.67
9	<b>Total plantation area (7+8)</b>		<b>3.96</b>	<b>4.48</b>



Sl. No.	Area particulars of land reclamation status	Relative area (%)	
		2020	2021
1	Excavated area relative to lease area	35.07	38.07
2	Active mining area relative to excavated area	47.08	38.37
3	Technically reclaimed backfilled area relative to excavated area	41.94	48.49
4	Biologically reclaimed backfilled area relative to technically reclaimed area	26.19	27.10
5	<b>Total reclaimed area relative to excavated area</b>	<b>33.81</b>	<b>36.93</b>
6	<b>Total plantation area relative to lease area</b>	<b>19.81</b>	<b>22.41</b>

Based on the study report, the significant land use changes in the project area with regard to land reclamation/restoration observed during the year 2020 and 2021 in comparison are detailed as follows:

Out of the total lease area of 19.99 km<sup>2</sup>, the total excavated area has been increased from 7.01 km<sup>2</sup> (35.07%) to 7.61 km<sup>2</sup> (38.07%).

The area under active mining has been reduced from 3.30 km<sup>2</sup> (47.08%) to 2.92 km<sup>2</sup> (38.37%) out of the total excavated area.

Technical reclamation over the backfilled area has been increased from 2.94 km<sup>2</sup> (41.94%) to 3.69 km<sup>2</sup> (48.49%) out of the total excavated.

Biological reclamation over the reclaimed/backfilled area has been increased from 0.77 km<sup>2</sup> (26.19%) to 1.00 km<sup>2</sup> (27.10%) out of the total backfilled area.

The total reclaimed area has been increased from 2.37 km<sup>2</sup> (33.81%) to 2.81 km<sup>2</sup> (36.93%) out of the total excavated area. Plantation over external OB dumps has been increased from 1.60 to 1.81 km<sup>2</sup>.

The other area plantations viz., social forestry, avenue plantation, etc., is observed to have been increased from 1.59 to 1.67 km<sup>2</sup>.

The total area under plantation relative to the total lease area has been increased from 3.96 km<sup>2</sup> (19.81%) to 4.48 km<sup>2</sup> (22.41%).

In summary, results of the satellite monitoring revealed that there is significant increase in reclamation and rehabilitation of the area under mining environment viz., total reclaimed area relative to total excavated area from 33.81% to 36.93% and total plantation area relative to total project area from 19.81% to 22.41% respectively during the period from 2020 to 2021.

### Summary of land reclamation and afforestation measures

The data made available to the auditing team pertaining to the activities of land area reclamation and progressive afforestation carried out in the Dipka OC mine are summarized as follows:



Area/Activity	Area Planned (Ha) (as per EC/PMCP)	Achieved as on date (Ha)	Relative achievement%
Total area managed for production (Ha)	1002.053	696.73	69.53%
Total Quarry/ excavated/ broken area (Ha)	1002.053	696.73	69.53%
Total OB generated (Mcum)	615.0	443.587	72.13%
Total de-coaled area (Ha)	1002.053	574.299	57.31%
Total Mine void area (Ha)	222.053	154.394	59.53%
No. of voids	01	01	--
No. of External OB dumps	03	03	--
External OB dump volume (Mcum)	81.0	80.81	99.77%
External OB dump Area (Ha)	206.0	204.26	99.16%
Biological reclamation on external dumps (Ha)	206.0	204.26	99.16%
No. of internal dumps	03	03	--
Total internal backfilled dump area (Ha)	780.0	227.666	29.19%
Total internal backfilled dump volume (Mcum)	534.0	282.02	52.81%
Biological reclamation on internal dumps (Ha)	780.0	127.66	16.37%
Total Progressive afforestation by reclamation (Ha)	986.0 + 23.0 = 1009.0	204.26 + 127.66 + 4.80 = 336.72	33.37%
Unutilized area (Ha)	130.366	154.394	--

- The quarry excavation carried out is 696.73 Ha as against the targeted area of 1002.053 Ha, hence the relative achievement is 69.53%.
- OB generation carried out is 443.587 Ha as against the envisaged total of 615.0 Ha, hence the relative achievement is 72.13%.
- Total area de-coaled is 574.299 Ha out of the envisaged total area of 1002.053 Ha, hence the relative achievement is 57.31%
- Internal backfilled dump area formed is 227.666 out of the envisaged total area of 780.0 Ha, hence the relative achievement is 29.19%.
- Biological reclamation of internal backfilled dump carried out is 127.66 Ha as against the planned area of 780.0 Ha, hence, the relative achievement is 16.37%.
- The area under external OB dumps formed and biological reclamation carried out is 204.26 Ha as against the planned area of 206.0 Ha, hence the relative achievement is 99.16%.
- The total progressive afforestation area carried out is 336.72 Ha out of the total proposed area of 1009.0 Ha, hence the relative achievement is 33.37%.



### 5.1.7 Environment Management Plan And Monitoring

Monitoring of pollution levels through related environmental parameters is an essential requirement of EC granted by MoEF & CC. The project has been regularly carrying out such monitoring as under:

- i. Ambient air quality
- ii. Water and effluent quality
- iii. Noise levels

The above monitoring is carried out by NABL accredited laboratory of CMPDI has established its laboratory in mining areas for analysing critical parameters in the field.

The data on the environmental monitoring were mainly drawn from the half yearly environmental monitoring report (October 2021 to March 2022) of Dipka OCP which was made available to the ICFRE team by the project proponent and the same was reviewed for assessing air, water, effluents and noise quality of the area.

#### 5.1.7.1 Ambient Air Quality Monitoring

- 8 Nos. of ambient air monitoring stations (2 Nos. in core zone and 6 Nos. in buffer zone) have been established for monitoring of ambient air pollutants, namely PM<sub>100</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub> in consultation with SPCB (**Annexure-III (A-III 1 and 4)**). However, no specific record of consultation with SPCB is made available.
- It has been observed that ambient air sampling instrument is not kept at open space and at a specified height to receive uninterrupted air at few locations (e.g. Malgaon village and Ratija).
- It has been also observed that the air sampling instrument (e.g. gaseous sampling by sampler attached with Respirable Dust Sampler (RDS), flow rate display) is not running properly at some locations (e.g. near railway siding and near excv. Workshop).
- One online continuous ambient air quality monitoring station (CAAQMS) has been installed at GM office of Dipka area in consultation with the SPCB for monitoring of ambient pollutants (namely PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> NO<sub>x</sub> and CO) with weather parameters. It has been observed that display system of CAAQMS parameters is not visible clearly (i.e. very small and moving type parameter value).
- Five parameters SPM, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub> were reported and average concentrations were within prescribed permissible limit in industrial and residential area (**A-III 2**) (Dipka Area Environmental Report 2021).
- Monitoring of heavy metals such as As, Ni, Cd, Cr, etc. except Hg are being carried out at once in six months. PP should ensure to analysis of Hg as per EC condition.
- It has been observed that the auto captured data is not instantly uploaded for display in SPCB website and display board of parameter is not visible clearly (i.e. very small and



moving type parameter value). It is suggested that PP should make a provision to upload auto captured data for online display in website of SPCB and display board of captured data by online CAAQMS in proper size should be installed for clear visibility.

- Further, it is suggested that regular monitoring data of all environmental quality parameters like air (e.g. PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub>), noise, water, wastewater hazardous wastes, etc., are to be electronically displayed at PO/Time Office or suitable location in mine premises of Dipka OCP.
- It is suggested that vehicular emission of departmental HEMM should also be monitored to control emission during maintenance.
- Around 50-60% of coal is loaded by SILO system and railway siding to rake. About 40-50% of coal is evacuated through trucks for road sale (A-III 12).
- It is suggested that transportation system is to be increased in environmental friendly method by rapid loading system (RLS).
- Transportation of coal permitted by road sale is being covered with tarpaulin, and optimally loaded.
- Further, it is also suggested that Tyre washing system with instant showering system may be installed for trucks carrying coal for road sale before entering to transport road to control fugitive dust.
- There is no provision to monitor fugitive dust emissions in mine premises area, whereas dust is being monitored by Personal Dust Sampler (PDS) only for human exposure as per DGMS guideline. It is suggested to make a provision to monitor fugitive dust emissions at critical areas prone to air pollution such as haul road, loading/ unloading and transfer points.
- 4 nos. of Truck Receiving Stations are available with mist water spraying system at mine pit to control dust at source.
- 3 nos. of mobile crusher unloading points are equipped with mist spraying system.
- Total 9 nos. of feeder breaker of CHP are available, however not running during the Audit of ICFRE team due to scarcity of coal during monsoon.
- Total 10 nos. of Mobile water sprinklers (05 no. of 70KL and 03 no. of 28 KL are deployed to control fugitive dust on haul roads.
- Temporary wind barrier wall (net) is installed at wharfwall of railway siding No 2.
- 11 nos. rain guns along with 05 nos. of fixed sprinklers are installed at wharfwall of railway siding no 2.
- It is suggested that long range fixed fog cannon is to be installed to strengthen of dust suppression at wharfwall railway siding. The tender is approved for construction of permanent wind barrier with brick wall and GI sheeting on both sides of the siding for a length of 750 m each side.
- Wind barrier wall is not available at coal yard. Vertical greenery system is not available at Wharfwall loading system, coal yard, etc.
- Spillage on Haulage/coal transport road is needs to be cleared/removed regularly.





### 5.1.7.2 Water Quality Monitoring

#### Monitoring of surface water

Monitoring of surface water quality at upstream and downstream of Lilagarh nala is being carried out through CMPDIL regularly, and water quality parameters are within prescribed standards.

Rain water and seepage water extracted from mine sump is being collected in Sirki settling pond and utilized for sprinkling for dust suppression, fire fighting, horticulture, mining and associated activities. After settlement of silt and sediments, the water is passing through CISF pond and finally into Lilagarh nala

#### Monitoring of ground water

- 08 nos. of piezometers (4 in down dip) have been constructed at the project area and have also established a network of existing wells where water levels are being monitored regularly by CMPDI.
- Reports of ground water samples found in accordance to the environmental factors related to water utilization. However, out of total 24 analyzed parameters, the Total Hardness (mg/l) as CaCO<sub>3</sub> in LK1 and nitrate (mg/l) in LK2 are found exceeding the permissible limits.
- PP has constructed twenty-five (25 nos.) of rain water harvesting structures for groundwater augmentation in Pragati House, Dipka House, Recreation club, CGM Office, New C-Type and minors quarter. The area covers of RWH pit (11 nos.) is 14,174 sq.m approximately and recharges 13,493 m<sup>3</sup>/annum.

It is observed the catch drain of roof top rain water has not covered. It is advised that the catch drain of roof top water is to be constructed with closed system to prevent from dust, choking etc. So that good quality water is continuously recharged.

#### Effluent discharge-ETP/STP

Oil and grease trap of ETP is not functioning during the field visit of ICFRE audit team, due to this problem, oil and grease contaminated water from HEMM is being bypass from ETP. It is suggested to repair Oil and grease trap for proper treatment of effluent of HEMM washed water in ETP.

The repair and maintenance of ETP is approved from SECL HQ *vide* letter No. ESCL/GM/DA/DGM(C)/ LOA/22/83 dated 02.05.2022.

STP/DEPT is not available in Dipka area. Domestic effluent of Dipka colony is combinedly used with Gevra project colony.



Hazardous wastes are being properly keeping in tin shade and dispose of burnt oil through authorized agencies.

### 5.1.7.3 Groundwater

- A total of 25 rainwater harvesting structures with a total recharge capacity of 13494 cubic meters / annum have been made at different locations in Pragati House to augment ground water recharge.
- 11 groundwater recharge ponds (08 within Mine Lease area) and 03 outside ML area) have also been constructed with a recharge capacity of 55,447 cubic meters / annum.
- The monitoring of ground water level has been carried out four times a year i.e. pre-monsoon, monsoon, post-monsoon and winter.
- 08 piezometers have been installed (4 deep and 4 shallow) for monitoring ground water table at Dipka Area.
- The ground water quality is being monitored through CMPDI on monthly basis from 5 sampling points vis-à-vis bore well water from Nunera, Suwabhohri, Tiwarta, Dipka Moore and Hardi Bazaar, with any two sampling points taken together for testing in a month on rotational basis. The reported values for all the tested parameters comply within the prescribed permissible limits of IS 10500:2012

### 5.1.7.4 Surface Water

- The surface water quality is also being monitored through CMPDI on monthly basis adhering to parameters *vis-à-vis* pH, COD, TSS and Oil & Grease notified under gazette notification GSR 742 (E) dated 25.09.2000. The reported values comply within the prescribed permissible limit of 'General Standards for Discharge of Environmental Pollution (Part A: Effluent as per Schedule VI, Environment (Protection) Rules (max)'
- The sampling points were at Upstream of Lilaghar nala before entering mining lease boundary - approximately 100 meters upstream from the sump water- Lilaghar nala confluence. Downstream of Lilaghar nala after leaving mine lease boundary - approximately 150 - 200 meters downstream from the sump water- Lilaghar Nala confluence.

### 5.1.7.5 Drinking Water

- Drinking water quality, also monitored through CMPDI on monthly basis undertaken testing for a set of 24 parameters at 2 sampling points namely, Dipka colony guest house and CGM Office, Dipka.
- The reported values for all the tested parameters comply within the prescribed permissible limits of IS 10500:2012.



### 5.1.7.6 Ambient Noise and Monitoring

- Dipka OCP does not own hand held noise level meters for monitoring, but is being done through CMPDI on regular basis at 8 monitoring locations *vis-à-vis* ETP area, Malgaon village, Railway siding, Dipka House, Ratija, Batari, Jhabar and Hardi Bazar
- The noise quality at all 8 monitoring stations are monitored for both day time and night time, obligated as per the Noise Pollution (R & C) Rules, 2000. The reported values stand within the prescribed permissible limit depending upon the station category (industrial / commercial/ residential)
- Heavy Earth Moving Machines have been provided with noise proof cabins.
- Workers engaged in blasting and drilling operations have been provided with ear plugs, dust masks in addition to welding goggles, fluorescent jackets, rubber hand gloves, safety belts, operator seat belts and first aid box. Documents in this regard were verified at the office of Chief Manger (Mines) DEP.
- Blasting is usually undertaken between 2 pm and 3 pm as it coincides with work shift time of the workers thereby limiting their susceptibility to air and noise pollution.

### 5.1.8 Monitoring of Soil Quality

Monitoring of soil quality is done as base line data while preparing the EIA/EMP. The EC does not prescribe soil sampling during working of the mine. As a good management practice soil monitoring should be taken up and record maintained.

### 5.1.9 Observation on Mitigative Measures to Control Ground Vibration

Ground Vibration is being monitored by the project proponent and maintained the vibration (PPV) data. It is recorded as low as 0.34 PPV and highest vibration recorded is 5.001 for the period from January 2022 to June 2022 which are within permissible limits. Drilling is undertaken in staggered pattern and controlled blasting is practiced. Summary of ground vibration results with reference to monitoring station distance from blasting site is as follows:

Sl. No.	Distance between Monitoring station and Blasting site	Minimum vibration recorded (PPV)	Maximum vibration recorded (PPV)
01	150m	0.35	4.6
02	200m	0.39	5.0
03	250m	0.71	4.46
04	500m	1.0	4.8
05	700m	2.7	4.2



### **5.1.10 Environment Management**

The project authority has established Environment Management Cell in the project with Sr. Management level executive that looks after the implementation of compliance conditions stipulated in the EC. The management team is effectively working and implementing the stipulations laid.

### **5.1.11 Occupational Health, Safety and Public Hearing**

- IME/PME is done as per the statute and the records are being maintained at the Nehru Centenary Hospital, Gevra. The hospital takes care of the health of the departmental as well as outsourced workers of Dipka, Gevra and Kusmunda OCPs. The hospital is equipped with all medical facilities for occupational health checkups like X-ray, audiometer, spirometry, blood test and others. As per data provided by the hospital for the whole area for the last three years, most common disease diagnosed are Diabetes Mellitus, Dyslipidemia, Hypertension, eye disease, hearing disease, etc. No cases of Pneumonociosis have been reported so far in the area.
- It is advised that in addition to regular periodic health check-up of the workers, 20% of the workers identified from workforce engaged in active mining operations should be subjected to health check-up for occupational diseases and hearing impairment as stipulated in the EC condition.
- Project proponent has issued adequate PPEs to the workers but PPE compliance is poor. It is suggested that PPE compliance be enforced more judicially.
- Initial and Refresher training is imparted to Departmental and contractual worker as per DGMS norms at Vocational Training Centre before entering to various trades of mine.
- Skill training as per safety norms specified by DGMS is organized at CETI for dumper, shovel and drill operation; engine, electricity and maintenance, etc. for all workmen including the outsourcing employees to ensure high safety standards in mines.
- Issues raised during public hearing on 05.09.2008 for 25 MTPA was mainly related to Employment, Resettlement, air pollution, plantation, mining, coal transportation, water level, medical facilities, etc. These issues are being resolved by the project proponent and measures are being undertaken.

### **5.1.12 Corporate Environmental Responsibility**

SECL has a well laid down Environment policy as per ISO 14001 duly approved by SECL board on 07.10.2020. A total of Rs. 21, 03, 91, 003.82 was spent during 2021-22 on environment related works under various categories viz. biological reclamation, air pollution control, water pollution control, statutory payments, environmental monitoring, land Rehabilitation & Resettlement, community development and other studies, etc.



The fund for the CSR is allocated based on 2% of the average net profit of the company for the three immediately preceding financial years or Rs. 2 per tonne of coal production of the previous year whichever is higher. Average net profit is computed in accordance with the provision of section 198 of the Companies Act, 2013. 2% of the average net profit of the company for the three immediately preceding financial years is given as under:

**Details of CSR fund for last three years**

Year	Profit (Rs. in Crores)	Average of preceding 3 years	2% profit of (Rs. In Crore)	Expenditure of 2020-21 (Rs. in Crore)
2017-18	3820.97	3971.04	79.42	38.33
2018-19	5570.67			
2019-20	2521.47			
<b>Total</b>	<b>11913.11</b>			

The production of 2019-2020, Rs. 2/tonne calculation and CSR details of SECL are given below:

**Details of CSR based on production**

Year	Production (MT)	Rs.2/ tonne (in Crore)
2019-2020	150.55	30.11

2% of the average net profit of the company for the three immediately preceding financial years is more than Rs. 2 per tonne of coal production of the previous years. Hence, the former has been taken as the CSR allocation for the financial year 2020-21. Therefore, expenditure towards SECL CSR initiatives made during the preceding financial year, *i.e.*, from 2020-2021 is Rs. 38.33 Crores which is 0.96 % only and less than laid down provision of 2% of the average net profit of the Company. The works related to infrastructure, Skill Development, Education, etc., got delayed by the implementing agencies & some of the works could not be started due to spread of Pandemic COVID-19 in FY 2020-21. SECL has committed to actively engage with the Implementing Agencies to execute the projects and programs and incur expenditure from unspent CSR Account as per Section 135(6) in accordance with Section 135 of the Companies Act, 2013.

The Sector wise CSR expenditure and Budget vs Expenditure of last 5 years in respect of Dipka Area, SECL provided in the following tables:

**Sector wise CSR expenditure of last 5 years in respect of Dipka Area, SECL**

Sector	Financial Year				
	2017-18	2018-19	2019-20	2020-21	2021-22
Safe Drinking Water	0.14	0.00	0.00	0.00	0.00
Ecological Balance	0.00	0.00	0.00	0.00	0.00
Construction of Road	0.09	0.008	0.00	0.00	0.00
Education	1.03	0.00	0.00	1.79	4.55
Electrification &	0.64	0.00	0.00	0.70	0.53



Sector	Financial Year				
	2017-18	2018-19	2019-20	2020-21	2021-22
Infrastructure Development					
Health & Sanitation	2.59	0.00	0.00	1.42	0.73
Promotion of Sports	0.00	0.00	0.00	0.00	0.00
Others	0.00	0.00	0.00	0.00	0.00
<b>Total Amount (In Crores)</b>	<b>4.49</b>	<b>0.008</b>	<b>0.00</b>	<b>3.91</b>	<b>5.81</b>

**Budget vs Expenditure of last 5 years in respect of Dipka Area, SECL**

Year	CSR Sanctioned Amount (In lakhs)	Total Expenditure (In lakhs)	Budget vs Expenditure (%)
2017-18	399.03	449.63	112.68
2018-19	0.00	0.08	0.00
2019-20	0.00	0.00	0.00
2020-21	1546.88	391.78	25.33
2021-22	530.00	581.35	109.69
<b>Total</b>	<b>2475.91</b>	<b>1422.84</b>	<b>57.47</b>

As evident from the above data of 5 years, i.e., 2017-18 till 2021-22, various CSR works have been carried out involving a sanctioned budget of Rs. 2475.91 lakhs and expenditure of Rs. 1422.84 lakhs. The average budget vs expenditure comes out to be 57.47% only. Site inspection of the selected CSR works undertaken by Dipka Area (Plate 37) during the last few years are given as follows:

1. Butiminuous road from Baitari Chowk to Ranjhana Gram
2. Construction of Adivasi Asharam at Udana
3. Construction of community hall around the project site
4. Construction of road, pond and beautification at Chodha Village
5. Cultural building at Nagar Palika, Dipka

The review of Corporate Social Responsibility (CSR) activities clearly indicates that the SECL is committed to take up the socio-economic development initiatives not only to minimize the negative impact on the population and also to improve the socio-economic status of population living around the mine as its sustained effort as part of CSR.

**5.1.13 Rehabilitation and Resettlement**

Land acquisition has been done as per the CBA Act, 1957. 1413.978 Ha of tenancy land from 11 villages are involved. Villages have been acquired under Coal Bearing Act. Hardi Bazar village has been acquired but not under possession yet. The compensation for land and structures is awarded as per State norms.



PAFs in Malgaon village have not still vacated the village due to which there is hindrance in the shifting of the villages from the coal bearing area. The people are not accepting the proposed R&R site at Darra, which is far away. The details of compensation paid till now are given below:

Acquisition Year	Name of the Village	Tenancy Land (in Acres)	Compensation Amount of Land & Structure Awarded (crores)	Compensation Amount Paid (crores)	Balance (crores)	Remarks
19-04-1986	Beltikri	140.400	3.08	3.08	0.00	
	Sirki	175.000	5.78	5.78	0.00	
	Chainpur	409.000	3.04	3.04	0.00	
	Jhingatpur	113.660	0.88	0.88	0.00	
	Suwabondi	136.000	0.85	0.85	0.00	
	Malgaon	147.402	1.24	1.24	0.00	
	Jhabar	6.589	0.65	0.65	0.00	
	Dipka	56.746	0.05	0.05	0.00	
	Ratiza	0.416	0.19	0.19	0.00	
24-11-2004 & 15-03-2010	Renki	14.200	0.023	0.023	0.00	
	Suwabondi	35.162	27.59	10.08	17.51	Compensation payment is under Process
	Renki	6.893	1.36	0.00	1.36	
	Malgaon	46.46	9.18	1.53	7.65	
	Hardi Bazar	126.05	0.00	0.00	0.00	Statement 1A & 1B to be prepared with asset compensation
<b>TOTAL</b>		<b>1413.978</b>	<b>53.91</b>	<b>27.39</b>	<b>26.52</b>	

Source: L&R Dept, Dipka Area

Till now, compensation amount for land & structure awarded is 53.91 Crores out of which 27.39 Crores has been paid and Rs. 26.52 Crores is remaining.

## Employment

The norms in force which was prevailing at that point of time for employment at Dipka Area are

a) One employment against each holding irrespective of quantum of land in the holdings. (Minutes dated 25/11/1988 & Minutes of meeting dated 22/01/1992).

b) Land oustees having 6 Acres of land and more shall be given one additional employment for every three acres of land. (FD decision *vide* letter No. SECL/CMD/TS/23(M)/786 dated 23/05/1992 & per/mp/374/GVR/ dated 30/03/1995).

The mine is following the R&R policy of the CIL, 2012 for matters related to employment and resettlement. Out of 1879 sponsored persons, 1489 Nos. have been provided employment, 41 Nos. have considered cash compensation/ annuity in lieu of employment and 353 Nos. are still under process. The details of employment provided by project proponent are given below:



Name of the Village	Sponsored	No. of Employments Provided	No. of Cases considered for Cash compensation/ Annuity in lieu of employment	Balance under Process	Remarks
Jhingatpur	101	94	3	4	-
Dipka	25	25	0	0	-
Ratiza	29	28	0	1	-
Jhabar	90	82	0	8	-
Malgaon	166	144	2	22	-
Renki	7	2	0	6	-
Beltikri	250	231	3	16	-
Chainpur	639	580	24	35	-
Suwabhondi	173	157	2	15	-
Sirki	136	123	7	6	-
Suwabondi	43	23	0	20	-
Renki	8	0	0	8	DRRC Not Conducted
Malgaon	56	0	0	56	-
Hardi Bazar	156	0	0	156	DRRC Not Conducted
<b>TOTAL</b>	<b>1879</b>	<b>1489</b>	<b>41</b>	<b>353</b>	-

There are total 1853 PDFs enumerated till now. The details of resettlement are given below:

Name of the village	Nos. of PDFs identified	PDFs allotted plot	PDF opted for cash in lieu of resettlement plot	Remarks
Beltikri	351	124	211	-
Sirki	388	136	231	-
Chainpur	385	92	292	-
Jhingatpur	134	65	66	-
Suwabondi	148	0	138	-
Malgaon	284	53	199	-
Jhabar	0	0	0	-
Dipka	0	0	0	-
Ratiza	0	0	0	-
Renki	0	0	0	-
Suwabondi	163	0	163	All Eligible PDFs opted Cash Compensation in lieu of resettlement plot
Renki	0	0	0	Family Survey Not Done
Malgaon	0	0	0	Family Survey Not Done
Hardi Bazar	0	0	0	Family Survey Not Done

Source: L&R Dept. Dipka Area

\*Out of 10 Villages acquired by Dipka Area under CBA (A&D) Act 1957, only 06 Villages needed rehabilitation *i.e.*, Village Chainpur, Jhingatpur, Beltikri, Sirki, Malgaon and





Suwabhondi. However, till date not a single family from the village of Suwabhondi has taken plot of land at R&R site, they have opted for Cash Compensation.

### R&R Sites

There are 6 Nos. of R&R sites around the project area (Plate 38) and one more has been proposed at Darri. 470 PAFs have shifted to the R&R sites. Rehabilitation site wise and village wise details are given below:

Rehab Site/ Village	Area (Ha)	Name of villages settled	Beltikri	Jhingatpur	Malgaon	Sirki	Chainpur	Total	Remarks
Vivekanand Nagar	28.285	Beltikari & Malgaon	85	24	43	0	0	152	Land within leasehold of Dipka Area
Gandhi Nagar	19.125	Sirki	0	0	0	136	0	136	Land within leasehold of Dipka Area
Nehru Nagar	40.47	Jhingatpur, Malgaon  & Beltikari	3	41	10	0	0	54	Land given by State Govt.
Chainpur Nagar	18.500	Chainpur	0	0	0	0	54	54	Land within leasehold of Dipka Area
Chainpur Batari	17.888	Chainpur & Beltikari	36	0	0	0	38	74	Land given by State Govt.
Chainpur Nagar Phase-II	5.100	-	0	0	0	0	0	0	Land within leasehold of Dipka Area
Darri	35.613	-	0	0	0	0	0	0	Proposed
<b>Total</b>	<b>164.981</b>		<b>124</b>	<b>65</b>	<b>53</b>	<b>136</b>	<b>92</b>	<b>470</b>	

The amenities such as, Electricity supply, Training centre, Weekly market, Public stage, Bus stop, Devasthal, Pond/Deepening of existing ponds, School Building, Bore Wells for drinking water supply, Dispensary Building/Panchayat Bhawan, Children Park/Playground, Approach road, internal roads, culverts and drains, etc., have been provided in all the established R&R sites.

The total expenditure at the R&R sites of Nehru Nagar, Vivekanand Nagar and Chainpur Nagar Phase-II from 2016-17 to 2022-23 is Rs. 381.49 lakhs.



## 5.2 GENERAL SUGGESTION/RECOMMENDATIONS

- Yearly EC audit being undertaken and statement submitted by project proponent to CPCB and MoEF&CC. Last third-party audit was conducted by ICFRE during 2017. After a gap of 5 years ICFRE has been assigned to conduct third party auditing. As per the EC condition third party auditing should be conducted once in 3 years.
- It is observed that delay in land acquisitions is one of the reasons for non-commensurations of mine development / overburden removal activities with respect to coal extraction and suggested priority may be assigned for acquire land timely for systematic development of mine pit.
- It is found that about 93% of envisaged coal production has been achieved for last 6 years, whereas in respect of waste handling only 58% has been achieved, thereby reducing stripping ratio to 0.73 from envisaged 1.17. Development and overburden removal has to be accelerated to commensurate with coal extraction by advancing overburden benches and maintaining bench parameters scientifically for safe and sustainable mining.
- If coal extraction is continued @ 35 MTPA, life of the mine will be 5 years. In such case, action has to be initiated for preparation of Final Mine Closure Plan and accordingly final mine closure activities has to be taken up to bring back mined out area close to original topography complying Hon'ble Supreme Court of India direction in the Writ Petition(s) No.114/2014, Common cause vs Union of India & Ors *vide* its judgement dated 8<sup>th</sup> January, 2020 for restoration of mined out area.
- As per the latest six-monthly EC compliance report dated 25.05.2022 (page No. 6 under reclamation and restoration programme) submitted to MoEF&CC, the total area under internal backfilled dumps formed as on 31.03.2022 is 542.366 Ha out of the envisaged total quarry area of 1002.053 Ha. This variation in internal backfilled dumping area needs to be corrected by the mine management before submitting any to the statutory organizations.
- Although, the slope angle provided for both the external and internal dumps appears to be quite good, but at some locations the slope angle is observed to have been maintained at above 45°. Hence, future dumping may be carried out well within the limits prescribed for the same.
- At many locations on the external and internal dumps, erosion and slope failure has been noticed possibly due to slope being not maintained proper gradient, lack of afforestation measures on the slope, lack of toe protection measures, etc.
- Considering quite large area under both external and internal backfilled dumps and quantum of surface water flow during monsoon leading to the Lilagarh Nala, it is suggested to prepare proper dump and surface water management plan with suitable site-specific measures for controlling erosion of silt and sediments into the natural drains.
- At many places, the Garland/catch drains are observed to have been fully/partially filled with eroded silt and sediments. Hence, the Project Proponent has to maintain them properly by de-silting at periodical intervals preferably before the onset of every monsoon season.



- Ambient air sampling instrument should be kept in open space and at specified height to receive uninterrupted air at monitoring locations.
- Project authority should ensure proper functioning of air sampling instrument installed at monitoring locations.
- Catch drain of roof top water should be closed system to prevent from dust, choking etc. So that good quality water is continuously recharged.
- Oil and grease trap at ETP should be maintained timely for proper treatment of effluent of HEMM washed water.
- Display system of CAAQMS parameters should be of proper size and clearly visible.
- Regular monitoring data of all environmental quality parameters like as air (e.g. PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub>), noise, water, wastewater hazardous wastes etc. should also be electronically displayed for human awareness at PO/Time Office or suitable location in mine premises of Dipka OCP.
- Respirable Dust Samplers (RDS) at all the eight existing monitoring stations should be installed at a minimum height of 3 meters from the ground to facilitate uninterrupted wind supply for optimum sampling.
- All air quality stations should invariably comply with the condition of establishing monitoring stations at a distance of 500 meters from the dust generation source, as mandated by Coal Industry Standards notified *vide* GSR 742 € dated 25.9.2000.
- The proponent has mostly complied with the mandates and have enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act 1981, and the Environment (Protection) Act, 1986, however the provisions of the Public Liability Insurance Act, 1991 are not complied by the proponent, as mandated by law.
- More skill development program for imparting trainings should be conducted for the PAFs keeping in view the requirement of local people and generation of employment through them.
- The average budget vs expenditure of the CSR activities comes out to be 57.47% as activities were limited in two financial years (2018-19 & 2019-20). It was also observed that some of the activities were carried forward to next financial year due to slow pace of some works. Hence, it is suggested that the new assigned tasks may be completed on time before taking up new activities.
- The issue of R&R of the Malgaon village has to be settled for further advancement of the mine.
- The Public Liability Insurance Act, 1991 mandates the following obligations for owners handling hazardous substances

#### *Obligation for Owners*

- ❖ Provide relief in case of death or injury or damage to property from an accident on the principle of no fault.



- ❖ Draw insurance policies more than the paid – up capital\* but less than Rs 50 Crores. (*\*Paid-up Capital is the market value of all assets and stocks on the date of insurance*).
- ❖ Or for 1 Year Insurance Policy: 15 Crores.
- ❖ Pay additional amounts as contribution to the Environment Relief Fund.
- ❖ Provide any information required for ascertaining compliances with the provisions of the Act.
- ❖ Pay the amount of an award as specified by the District Administration.
- ❖ Comply with the directions issued in writing by the Central Government, direction may include prohibition or regulations of handling of any hazardous substances or stoppage or regulation of the supply of electricity, water, or any other service.

Further, Hon’ble Supreme court directives for the industries producing hazardous waste are also explained as under:

**Supreme Court Order for Hazardous Industries (October, 2003)**

*“--- all industries involved in the hazardous chemicals and generating hazardous wastes display on line data outside the factory gate, on quantity and nature of hazardous chemicals being used in the plant, as well as water and air emissions and solid wastes generated within factory premises. If such data is not made available, the unit should be asked to show cause or even be asked to close down”.*

- It is suggested that the Project Proponent should draw a judicious action plan and implement the same by complying with the aforesaid conditions.

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## CHAPTER – 6 POST AUDIT CLARIFICATIONS AND CONCLUSION

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Draft audit report of Dipka OCP, SECL was submitted to Project Proponent by the ICFRE *vide* its email 22.09.2022. Further, the comments of the authority of Dipka OCP, SECL on the audit report were received by the ICFRE and the same were reviewed at end of ICFRE. Point wise post audit clarifications/remarks of ICFRE audit team on the comments from project proponent is presented in **Table 6.1**.



**Table 6.1: Post audit comments and resolution on draft Third Party Environmental compliance Audit Report of Dipka OCP, SECL and clarification, final comments from ICFRE**

Sl. No.	EC Conditions stipulated by MoEF&CC	Compliance Status (October 2021 to March 2022)	Observations/ Recommendations by ICFRE	PP comments over ICFRE report	Post audit clarification over comments of PP by ICFRE									
<b>4 Specific Conditions</b>														
iii	Mitigative measures shall be undertaken to control dust and other fugitive emissions all along the roads by providing sufficient numbers of water sprinklers. Adequate corrective measures shall be undertaken to control dust emissions as presented before the Committee, which would include mechanized sweeping, water sprinkling/mist spraying on haul roads and loading	<p>Being complied</p> <p>1. Surface miners has eliminated conventional drilling &amp; blasting in coal and has inbuilt jet spraying system. &gt;90% of the Coal in Dipka Project is extracted by Surface Miners.</p> <table border="1"> <thead> <tr> <th>FY</th> <th>Coal Production (MTPA)</th> <th>%</th> </tr> </thead> <tbody> <tr> <td>2020-21</td> <td>34.355</td> <td>100%</td> </tr> <tr> <td>2021-22</td> <td>34.375</td> <td>100%</td> </tr> </tbody> </table> <p>2. Drill machines are provided with Dust extractor / equipped with wet drilling arrangements. (Fig-3)</p> <p>3. Fugitive dust at haul roads are controlled by mobile water sprinklers (05 no. of 70KL and 05</p>	FY	Coal Production (MTPA)	%	2020-21	34.355	100%	2021-22	34.375	100%	<p><b>The condition is being complied.</b></p> <p>The following mitigation measures are being undertaken to control dust:</p> <ul style="list-style-type: none"> <li>• 06 nos. of surface miner are using water sprinkler to control dust at source.</li> <li>• 4 nos. of Truck Receiving Stations are available with mist water spraying system at mine pit to control dust at source (Plate 4).</li> <li>• Drill machines are being used with Dust extractor / equipped with wet drilling arrangements.</li> <li>• Total 10 nos. of Mobile water sprinklers (05 no. of 70KL and 05 no. of 28 KL are deployed to control fugitive dust at haul roads.</li> <li>• Temporary wind barrier</li> </ul>	<p>The work of construction of permanent wind barrier wall has been issued vide LoA dated: 07.11.2022 vide letter no: 796 (enclosed as Annexure-1). The construction of wind barrier wall along railway siding is going on.</p>	<p><b>The condition is being complied.</b></p> <p>Work of construction of permanent wind barrier is under progress at Dipka Railway Siding of Dipka Area.</p>
FY	Coal Production (MTPA)	%												
2020-21	34.355	100%												
2021-22	34.375	100%												



	<p>sites, long range misting/fogging arrangement, wind barrier wall and vertical greenery system, green belt, dust suppression arrangement at railway siding, etc.</p>	<p>no. of 28 KL). (Fig-4)                  4. Fugitive dust emission at coal transportation roads are controlled with the help of 289 no. of fixed sprinklers (covers 5.5 Km) and 10 no. of rain guns. (Fig-5)                  5. At railway siding 11 rain guns along with 05 fixed sprinklers are installed. (Fig-6)                  6. Long range fog forming water sprinkler system (1 no.) with horizontal throw of 40 m is operated at coal stock and siding areas since April 2019 (Rs. 45.66 Lakhs). (Fig-7)                  7. Mechanical Road sweeping machine is being operated at Dipka Area since 2019 (Rs. 34.23 Lakhs). (Fig-8)                  8. Vertical greenery system at Railway siding (downwind direction) was completed through CGRVVN, Korba (Rs. 22.34 Lakhs). (Fig-9)</p>	<p>wall (net) is installed at wharf wall of railway siding No 2 (Plate 7).</p> <ul style="list-style-type: none"> <li>• 11 nos. rain guns along with 05 nos. fixed sprinklers are installed at wharf wall of railway siding no. 2, however, some sprinklers are at the temporary vertical curtain. Therefore, it is suggested that permanent wind barrier wall (net) be installed behind the water sprinkler.</li> <li>• It is suggested that long range fixed fog cannon be installed to strengthen dust suppression at wharf wall railway siding.</li> <li>• Wind barrier wall is not provided at coal yard (<b>Plate 6</b>).</li> <li>• The tender is approved for construction of permanent wind barrier with brick wall and GI sheeting on both sides of the siding for a length of 750 m each side (CGRVVN, Korba).</li> <li>• Mechanical road sweeping machine is</li> </ul>		
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		<p>9. Extensive plantation along roads, OB Dumps &amp; slopes etc. to develop green belt. Till date 22.37 lakhs plantation completed. (Fig-10)</p> <p>10. The proposal for Construction of Permanent Wind Barrier with brick wall and GI sheeting on both side of the siding for a length of 750 m each side is approved and tendered, the tender will be finalized in May 2022. (Estimated cost- Rs. 3.21 Crores).</p> <p>11. RCC road for coal transportation and Black topping of roads in other areas.</p> <p>12. Optimal loading of coal trucks and also covered with tarpaulin while leaving the mine premises. (Fig-11)</p>	<p>being operated for cleaning road dust in colony of Dipka Area (Plate 13).</p> <ul style="list-style-type: none"> <li>• Transportation of coal for road sale is being covered with tarpaulin (Plate 14).</li> <li>• Spillage on haulage/coal transport roads need to be cleared regularly (Plate 12).</li> </ul>		
<b>4.1 (c) Emissions, effluents &amp; waste disposal</b>					
iv	Vehicular emissions shall be kept under	Being complied with. Vehicle emissions are periodically (Six	<p><b>The condition is being partially compiled.</b></p> <ul style="list-style-type: none"> <li>• Vehicular emissions are</li> </ul>	As HEMMs does not fall under the purview of Motor Vehicle Act,	<p><b>The condition is partially complied.</b></p> <p>The ICFRE reiterates</p>





	control and regularly monitored. All the vehicles engaged in mining and allied activities shall operate only after obtaining 'PUC' certificate from the authorized pollution testing centers.	Monthly) monitored and a PUC certificate to this effect is being issued to each vehicle by the authorized agency of Transport Department Government of Chhattisgarh. Records are being maintained at the auto-section Dept. of Dipka Area. (Annexure-13)	not monitored for HEMM used in mines during maintenance. <ul style="list-style-type: none"> <li>• Outsourced vehicle used for transport of coal are submitting their valid PUC certificates (A-III 8).</li> <li>• It is suggested that vehicular emission of departmental HEMM should also be monitored to control emission during maintenance.</li> </ul>	1988, hence no PUC certificate will be issued by authorized pollution testing centres under Central Motor Vehicles Rules, 1989.	its observation against the EC condition. <p>As per EC condition, it is suggested that vehicular emission of departmental HEMM should also be monitored to control emission during maintenance and record may be kept.</p>
ix	Industrial waste water generated from CHP, workshop and other waste water, shall be properly collected and treated so as to conform to the standards prescribed under the Environment (Protection) Act, 1986 and the Rules made there under, and as amended from time to time. Oil and grease trap shall be installed	Being complied For treatment of effluent from workshop etc. ETP (oil & grease trap) of 110 KL capacity was commissioned on 01.05.2005. It is a zero effluent discharge plant, were treated effluents are reused for HEMM washing. (Fig-25) DETP of 3.00 MLD Capacity has been constructed at Gevra project and combinedly used by Dipka Expansion project. Approximately 840	<b>This condition is being partially complied.</b> Oil and grease trap of ETP is not functioning during the field visit of ICFRE audit team, due to this problem, oil and grease contained water from HEMM is being by passed from ETP ( <b>Plate 23</b> ). <ul style="list-style-type: none"> <li>• The repair and maintenance of ETP is approved from SECL HQ vide letter No. ESCL/GM/DA/DGM(C)/L OA/22/83 dated 02.05.2022.</li> <li>• It is suggested to repair Oil and grease trap for proper treatment of effluents of HEMM washed water in</li> </ul>	The work awarded vide LOA no: ESCL/GM/DA/DGM(C)/LOA /22/83, dated: 02.05.2022 for repair of ETP has been completed and the Oil and Grease Trap baffle walls have been repaired and the plant is operational. The photographs in this regard is enclosed. <p>The operation and maintenance contract of ETP has been awarded vide W.O no: 1087, dated: 12.02.2023 for next 780 days. (Copy</p>	<b>The condition is being complied.</b> <p>Repair of ETP including Oil and Grease Trap baffle walls has been done and made operational. The operation and maintenance contract of ETP has also been awarded.</p>

	and maintained fully functional with effluents discharge adhering to the norms. Sewage treatment plant of adequate capacity shall be installed for treatment of domestic waste.	KLD of domestic effluent of Dipka colony goes to the DETP. (Fig-26)	ETP. <ul style="list-style-type: none"> <li>• STP/DEPT is not available in Dipka area. Domestic effluent of Dipka colony is combinedly used with Gevra colony.</li> <li>• Hazardous wastes are being properly keeping in tin shade and dispose of burnt oil through authorized agencies.</li> </ul>	enclosed as Annexure-2)					
<b>4.1 (h) Corporate environment responsibility</b>									
iv	Action plan for implementing EMP and environmental conditions shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of	Being complied with <ul style="list-style-type: none"> <li>• Year-wise expenditure of environment related works is being submitted in the six-monthly reports to MoEF.</li> </ul> <table border="1"> <thead> <tr> <th>Financial Year</th> <th>Expenditure incurred (in Rs.Cr.)</th> </tr> </thead> <tbody> <tr> <td>2021-22</td> <td>21.04 Crores (approx..)</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>• Expenditure Details of FY 2021-22 are enclosed as (Annexure-18).</li> </ul>	Financial Year	Expenditure incurred (in Rs.Cr.)	2021-22	21.04 Crores (approx..)	<b>This condition is partially complied.</b> Action plan for implementation of environment management plan and environmental conditions are allocated to environment cell of the mine for implementation in the field. Funds are allocated from Headquarter level to unit and expenditure are booked in different heads. It is suggested that a separate accounting system under Environment Protection and pollution control be created and accounting be done accordingly. Funds are not diverted for any other purpose. Year wise progress	Action Plan prepared for implementation of EMP (Copy enclosed as Annexure-3). The budget for environmental protection measures is not being diverted to any other heads and 05 distinct GL codes were created in SAP for booking environmental expenditures in the accounts.	<b>The condition is being complied.</b>  The ICFRE agrees with the comment of the PP.
Financial Year	Expenditure incurred (in Rs.Cr.)								
2021-22	21.04 Crores (approx..)								



	implementation of action plan shall be reported to the Ministry/Regional Office along with the Six Monthly Compliance Report.		of implementation of action plan is reported to the Ministry/Regional Office along with the Six Monthly Compliance Report.		
<b>4.1 (j) Monitoring of Project</b>					
ii	The Ambient Air Quality monitoring in the core zone shall be carried out to ensure the Coal Industry Standards notified vide GSR 742 (E) dated 25.9.2000 and as amended from time to time by the Central Pollution Control Board. Data on ambient air quality and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly	Being complied. • Ambient air quality monitoring of core zone area (04 stations) are monitored as per Coal Industry standards. • The AAQ and heavy metals in air data are being submitted regularly at CECB and MoEF&CC.	<b>The condition is being partially complied.</b> • Monitoring is done as per Gazette notification no. G.S.R.742 (E) Dated. 25/09/2000 and as per NAAQS 2009 in core zone and buffer zone areas respectively. Core Zone results are compared with G.S.R 742(E) and Buffer Zone with NAAQS 2009. • Five parameters SPM, PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> and NO <sub>x</sub> were reported and average concentrations were within prescribed permissible limit in industrial and residential areas (A-III 2) (Dipka Area Environmental Report 2021).	The monitoring of Mercury in air was carried out through CMPDIL during June 2022 in eight locations (four in core zone and four in buffer zone). The monitoring report is enclosed as Annexure-4.	<b>The condition is being complied.</b> The monitoring of Mercury in air is being done.



	reported to the Ministry/Regional Office and to the CPCB/SPCB.		<ul style="list-style-type: none"> <li>Monitoring of heavy metals such as As, Ni, Cd, Cr, etc. except Hg are being carried out at once in six months.</li> <li>PP should ensure to analysis of Hg as per EC condition.</li> </ul>		
iii	The effluent discharge (mine wastewater, workshop effluent) shall be monitored in terms of the parameters notified under the Coal Industry Standards vide GSR 742 (E) dated 25.9.2000 and as amended from time to time by the Central Pollution Control Board.	Being complied. <ul style="list-style-type: none"> <li>The effluent discharge of ETP (O&amp;G trap) and mine water discharge are monitored as per Coalmines standards.</li> <li>The effluent discharges are monitored fortnightly through CMPDIL.</li> </ul>	<b>This condition is being partially complied.</b> <ul style="list-style-type: none"> <li>The effluent discharge of ETP (O&amp;G trap) was not working during field visit of ICFRE audit (<b>Plate 23</b>).</li> <li>The repair and maintenance of ETP is approved from SECL HQ vide letter No. ESCL/GM/DA/DGM(C)/L OA/22/83 dated 02.05.2022.</li> <li>The effluent discharge and mine water are monitored as per Coal mines standards as per GSR742(E) dated 25.9.2000 and as amended from time to time by the Central Pollution Control Board.</li> </ul>	The work awarded vide LOA no: ESCL/GM/DA/DGM(C)/LOA /22/83, dated:02.05.22 for repair of ETP has been completed and the Oil and Grease Trap baffle walls have been repaired. The photographs in this regard is enclosed. The operation and maintenance contract of ETP has been awarded vide W.O no: 1087, dated: 12.02.23 for next 365 days. (Copy enclosed as Annexure-2)	<b>The condition is being complied.</b> Repair of ETP including Oil and Grease Trap baffle walls has been done and made operational. The operation and maintenance contract of ETP has also been awarded.
iv	The monitoring data shall be uploaded on the	Being complied. <ul style="list-style-type: none"> <li>Continuous Ambient Air Quality Monitoring</li> </ul>	<b>The condition is being partially complied.</b> <ul style="list-style-type: none"> <li>Online CAAQMS data is</li> </ul>	Dipka project have procured and installed addon card for	<b>The condition is being complied.</b> Online transmission of



	<p>company's website and displayed at the project site at a suitable location. The circular No. J-20012/1/2006-IA.11 (M) dated 27.05.2009 issued by Ministry of Environment, Forest and Climate Change shall also be referred in this regard for its compliance.</p>	<p>Station has been installed at Dipka Area since 18.01.2014 and readings are regularly being monitored.</p> <ul style="list-style-type: none"> <li>• The data is displayed at GM Office through digital display board.</li> </ul>	<p>displayed at GM Office through small size digital display board and also manual display of old data at time office.</p> <ul style="list-style-type: none"> <li>• It has been observed that the auto captured data is not instantly uploaded for display in SPCB website and display board of parameters are not visible clearly (<i>i.e.</i> very small and moving type parameter value).</li> </ul> <p>It is suggested that PP should make a provision to upload auto captured data for online display in website of SPCB and display board of captured data by online CAAQMS in proper size should be installed for clear visibility. Further it is suggested that regular monitoring data of all environmental quality parameters like as air (e.g. PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub>), noise, water, wastewater hazardous wastes, etc., are to be electronically displayed at PO/Time Office or suitable location in the mine premises of Dipka OCP.</p>	<p>CAAQMS for online transmission of data to CPCB server and the same has been conveyed to CECB vide our letter no:15.01.2021 stating that CAAQMS of Dipka Project is ready for real time transmission of data (Annexure-5). Awaiting further directions from CECB.</p> <p>Electronic Display Board can only be installed were 24x7 security is provided, Hence Area GM Office was chosen</p>	<p>data is restored as per ICFRE suggestions after post audit. Efforts must be done to improve size of display so that it becomes clearly visible to the public.</p>
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<b>4.1(k) Miscellaneous</b>					
i	Efforts should be made to reduce energy consumption by conservation, efficiency improvements and use of renewable energy.	Being complied with Halogen lamps were replaced by energy efficient LED Lighting system in the mines and in the office buildings.	<b>The condition is being partially complied.</b> In addition, to halogen lighting arrangements, electric heavy mining machineries like 42 cum and 10 cum rope shovels, 240T and 120T dumpers are deployed, which is provide more efficient and less power consumption. However, no attempt has been made to tap renewal energy.	1. To reduce energy consumption the project has completely replaced halogen lamps with LED lights.2. Further possibilities of use of solar energy are already being explored by SECL. Centralized Tender has been floated by SECL for use of solar energy at townships of SECL for which 150KWp rooftop solar PP is being tendered for Dipka Project.3. Dipka project has also initiated tender process for hiring of electric cars to explore the possibility of use of electric vehicles in mines.	<b>The condition is being complied.</b> Replacement of halogen lights with LED lights have been done. Steps have also been initiated for further possibilities of use of solar energy through centralized tender and hiring of electric cars for use in mines as per ICFRE suggestions.
viii	The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act,	Agreed	<b>The condition stands partially complied with.</b> The proponent has reported that above conditions have been enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of	PLIA not applicable to Dipka Project as the quantity of hazardous substances as mentioned in MoEF&CC Notification S.O.227(E), dated: 24.03.1992 is used within the limits. Copy	<b>The condition is being complied.</b>  The ICFRE agrees with the comment of the PP.



<p>1974, the Air (Prevention &amp; Control of Pollution) Act 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and Rule and any other orders passed by the Hon'ble Supreme Court of India/ High Courts and any other Court of Law relating to the subject matter.</p>		<p>Pollution) Act 1981, and the Environment (protection) Act, 1986. However, the provisions of the Public Liability Insurance Act, 1991 are <b>not complied</b> by the proponent, as mandated by law.</p>	<p>of explosive license is enclosed as Annexure-6.</p>	
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**Table 6.2: Post audit comments and resolution on draft Third Party Environmental compliance Audit Report and clarification, final comments from ICFRE**

Sl.No.	EC conditions	Project Proponent Compliance (October 2021 to March 2022)	Observations/ Recommendations by ICFRE	PP comments over ICFRE report	Post audit clarification over comments of PP by ICFRE
(iii)	All Partially and non-complied	<p><b>Complied.</b></p> <ul style="list-style-type: none"> <li>The partially complied conditions as</li> </ul>	<p>It is reported that non-complied points identified by Ministry's</p>	<p>Out of the 06 partially conditions identified by ministry's regional</p>	<p>The PP has agreed to comply the partially complied points.</p>

	<p>conditions reported by Ministry's Regional Office in its certified compliance report dated 27<sup>th</sup> November 2019 shall be completed in 2 years from the date of issue of this letter.</p>	<p>noted by Regional Officer of MoEF&amp;CC Nagpur in EC certified compliance report dated 27.11.2019 (Date of RO inspection 05.11.20219) has been complied.</p> <ul style="list-style-type: none"> <li>• However, action is being taken for implementation of the recommendations of the study reports.</li> </ul>	<p>Regional Office is <b>partially complied</b></p>	<p>office in CCR dated 27.11.2019, 05 have already been complied 4(iii), 4(ix), 4.1 (b) (ii) , 4.1(f)(i) &amp; 4.1(j) (i) and continuous efforts are being put forward by Dipka project for the compliance of the rest of the conditions.</p>	
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The needful changes have been incorporated in the final report as suggested by the project authority through its post audit comments and indicated in Table 6.1 and 6.2.





**PLATES**



**Plate 1: ICFRE team meeting with mine officials of Dipka OCP**



**Plate 2: ICFRE team plan discussion at view point of Dipka OCP**



**View of eastern mine pit of Dipka OCP**

**View of western mine pit of Dipka OCP**

**Plate 3: View of mine pit of Dipka OCP**



**Plate 4: Truck receiving station (TRS)**



**Plate 5: In pit close conveyor belt**



**Plate 6: Coal Stock Yard**



**Plate 7: Wind barrier (net) at wharfwall of railway siding No. 2**



**Plate 8: Feeder breaker in idle condition (not running due to coal scarcity)**





**Plate 9: View of mobile crusher equipped with sprinkler**



**Plate 10: Fixed sprinkler along CT road with road condition**



**Plate 11: Rain gun at CT road**



**Plate 12: Condition of spillage of coal on road**



**Plate 13: Mechanical sweeping machine**



**Plate 14: Tarpaulin covered truck**



**Plate 15: Mobile fog mist canon**



**Plate 16: Silo with closed conveyor**



**Plate 17: AAQ New excv. workshop**



**Plate 18: AAQ Near railway siding (CISF camp)**



**Plate 19: AAQ Ratija**



**Plate 20: AAQ Malgaon**



**Plate 21: Online CAAQMS data logger**



**Plate 22: Display board of online CAAQMS**



**Plate 23: View of ETP with defunct Oil & Grease trap**





**Plate 24: Rain water harvesting pit with open drain at Colony outside Quarter, Dipka OCP**



**Plate 25: Rain water harvesting pit with open drain at Pragati house, Dipka OCP**



**Plate 26: Piezometer Bore well at Children park & Piezometer Telemetry system**



**Plate 27: Silo under construction**



**Plate 28: Hazardous Wastes Handling Unit**



**The External OB Dump-1 & 2 (Beltikri) and the adjoining areas**



**External Waste Dump-6 & 7 at N-NE part near to project office**



**External Dump-6 & 7 located adjacent to Rehabilitation site Chainpur Phase-2**



**Eastern side slope of Dump-6 & 7**



**Western side slope of Dump-6 & 7**

**Plate 29: External OB Dumps**



**Internal backfilled dump towards northern side**



**Internal backfilled dump towards western side**



**North side of Jhingatpur Internal Backfilled Dump (North-western side)**



**Plate 30: Internal Backfilled Dump**



**RCC retaining wall for TRS**



**Gabion retaining wall for waste dump**





**Catch Drain around quarry at east side along Hardibazar road**



**Drain provided for evacuation of excess surface water flow from N-NE to S-SW  
Plate 31 : Surface Water Management Structures**



**Sirki Pond**



**CISF Pond outlet**



**Embankment made alongside the Lilagrah Nala at quarry boundary**



**Recharge Ponds near Pragati Nagar Colony**



**Pond near Chainpur RR site Phase-2**

**Plate 32: Water Harvesting Structure**



**Quarry sump at east side**



**Quarry sump at west side**

**Plate 33: View of Quarry sump**



**Plate 34: Top soil dump located on external dump at N-NE of the project area**



**Safety zone demarcation at east side along Hardibazar Road (Outside project area)**



**Locations of boundary pillars at west side of OCP area beyond Lilagarh Nala**



**Plate 35: Safety zone demarcation and afforestation at west side (Dump-6 & 7) along Lilagarh Nala**



**Greenbelt afforestation area**





**Plain area plantation - barren/degraded/waste land**



**Avenue plantation along infrastrutre/transportation road**



**Township/avenue plantation**



**Vertical Greenery System established near railway siding  
Plate 36: Plantation/ Afforestation work carried out by Dipka OCP authority**



**Interaction of ICFRE with officials of CSR and L&R Dept.**



**Vocational Training Centre at Gevra**



**Butiminuous road from Baitari Chowk to Ranjhana Gram constructed under CSR activity**



**Construction of Adivasi Asharam at Udana**



**Construction of community hall around the project site**



**Construction of road, pond and beautification at Chodha Village**



**Cultural building at Nagar Palika, Dipka constructed under CSR activity**



**ICFRE member with the doctor for PME at Nehru Centenary Hospital, Gevra**

**Plate 37: CSR activities carried out by Dipka OCP authority**



**Chainpur Nagar Batari R&R site**



**Nehru Nagar R&R site**



**Gandhi Nagar R&R site**



**Vivekananda R&R site**

**Plate 38: View of R&R sites**

Annexure-I



साउथ ईस्टर्न कोलफिल्ड्स लिमिटेड  
**South Eastern Coalfields Limited**  
 (कोल इंडिया का एक अंग/A Subsidiary Of Coal India Ltd)  
 कार्यालय:- महाप्रबंधक, दीपिका क्षेत्र  
**OFFICE OF THE GENERAL MANAGER, DIPKA AREA**  
 P.O.: Dipka, Dist.: Korba (CG)-499452  
 Tel: 07815-235011,263300,253301 Fax:07815-239002  
 e-mail: gm@ipk.secl@coalindia.in



क्रमांक: एस.ई.सी.एल/दी.क्षे./पर्या./2021/ 2448

दिनांक: 22.12.2021

**WORK ORDER**

To,  
 The Director General,  
 Indian Council Forestry Research and Education (ICFRE),  
 Ministry of Environment, Forests and Climate Change,  
 Govt. of India, Dehradun



Sub: Environmental Audit of Dipka Expansion Project, Dipka Area, South Eastern Coalfields Limited-Reg.

- Ref: 1) Your offer no: 1-23/2006-ADG(EM)E01/ICFRE dated: 24.11.2021  
 2) Our letter no: SECL/DA/ENVT/2021/2344, dated:07.09.2021



महोदय,

With reference to the above subject, we are pleased to inform that your offer dated: 24.11.2021 for carrying out an "Environmental audit of Dipka Expansion Project" has been accepted. You are requested to contact Nodal Officer (Envt), Dipka Area to start the work and its early completion.

**SCOPE OF WORK**

- 1) To review and assess the compliance of the conditions laid down in the EC granted to Dipka Expansion Project.
- 2) To conduct site inspection, preparation of Environmental Audit Report providing assessment of compliance against each EC condition and provision of recommendations for improvements.

**TERMS AND CONDITIONS:**

- 1) **Payment :** The payment schedule will be as follows:

1 <sup>st</sup> installment	70% of the work order amount will be paid in advance before commencement of work
2 <sup>nd</sup> installment	20% of the work order amount will be released upon submission of interim report
3 <sup>rd</sup> installment	Balance 10% amount will be released after submission of final report

- 2) **Paying Authority:** Area Finance Manager, Dipka Area, SECL.
- 3) The date of commencement of work shall be reckoned from the date of release of 1<sup>st</sup> installment after submission of invoice along with the bank details and acceptance of the

उप महा प्र (विराट)  
 4/11

ADG (EM)  
 19  
 उप महा प्र (विराट)

S/- Ale  
 04/10/22





साउथ ईस्टर्न कोलफील्ड्स लिमिटेड  
South Eastern Coalfields Limited  
(कोल इंडिया का एक अंश/A Subsidiary Of Coal India Ltd)  
कार्यालय:- महाप्रबंधक, दीपिका क्षेत्र  
OFFICE OF THE GENERAL MANAGER, DIPKA AREA  
P.O.: Dipka, Dist.: Korba (CG)-495402  
Tel: 07815-239013, 2633003, 2633001 Fax: 07815-239002  
e-mail: g.mdpk.secl@coalindia.in

क्रमांक: एस.ई.सी.एल/दी.क्षे./पर्या./2021/

दिनांक: . 2021

- 4) **Duration:** The duration of the work will be 03 months (90 days) from the release of 3<sup>rd</sup> installment (70%), and an interim report shall be submitted at the end of 02 months (60 days).
- 5) The report shall be submitted in six hard and soft copies to the General Manager, Dipka Area after completion of the audit.
- 6) The data requirement from Dipka Expansion Project as mentioned in section 5.0 of your offer will be provided, if available with the project.
- 7) The logistics arrangements such as local travel and accommodation for ICFRE team will be provided by Dipka Expansion Project during the visit for audit works.
- 8) ICFRE if exempted from paying TDS, shall submit an exemption certificate issued by Income Tax Department.
- 9) All other terms & conditions, specially not mentioned herein, but prevalent in SECL for similar works, shall be applicable.

You are requested to submit acceptance of this work order on receipt of the same.

Thank you.

Your Sincerely,

Staff Officer (Mining),  
Dipka Area, SECL.

**Copy to,**

1. Director Technical (P&P), SECL, Bilaspur- For kind information.
2. General Manager, Dipka Area, SECL.
3. General Manager (Env), SECL, Bilaspur.
4. General Manager (Mining), Dipka Expansion Project, SECL.
5. Area Finance Manager, Dipka Area, SECL - BC no: DA/FIN/BC/21-22/Misc/1039 Dated: 21.12.2021
6. Nodal Officer (Env), Dipka Area, SECL.

Page 2 of 2





EC Copy



**No. J-11015/487/2007-IA.II (M)pt**  
Government of India  
Ministry of Environment, Forest and Climate Change  
Impact Assessment Division

Indira Paryavaran Bhavan,  
Vayu Wing, 3<sup>rd</sup> Floor, Aliganj,  
Jor Bagh Road, New Delhi-110 003

Dated: 9<sup>th</sup> March, 2020

To,  
The General Manager (W B P & Environment)  
M/s South Eastern Coalfields Ltd,  
W B P & Environment Department,  
Seepat Road, P B. No.60 **Bilaspur** - 495 006 (**Chhattisgarh**)  
Email: [gmenvtsecl@gmail.com](mailto:gmenvtsecl@gmail.com);

**Sub: Expansion of Dipka Opencast Coal Mine from 31 MTPA to 35 MTPA of M/s South Eastern Coalfields Limited in District Korba (Chhattisgarh) – Continuation of Environmental Clearance - reg.**

Sir,  
This has reference to your online proposal No. IA/CG/CMIN/127735/2019 dated 11<sup>th</sup> December, 2019 on the above-mentioned subject.

2. The Ministry of Environment, Forest and Climate Change, vide letter dated 20<sup>th</sup> February, 2018, has granted environmental clearance and extension dated 20<sup>th</sup> March, 2019 to the expansion of Dipka Opencast Coal Mining Project from 31 to 35 MTPA in mine lease area of 1999.293 ha in District Korba (Chhattisgarh), subject to compliance of certain terms and conditions, which *inter-alia* included the following:-

*subject to review of compliance status of the conditions by the EAC to consider continuance of the project after one year.*

3. To monitor compliance status of the conditions stipulated in the said environmental clearance, site inspection was carried out by Ministry's Regional Office at Nagpur on 5<sup>th</sup> November, 2019. The report in this regard has been forwarded by the Regional Office vide letter dated 27<sup>th</sup> November, 2019. The action taken report on Partial Non-compliance has been submitted to RO, MoEF & CC, Nagpur vide dated 26<sup>th</sup> December, 2019 and has been forwarded by Regional Office vide its letter dated 9<sup>th</sup> January, 2020.

4. The proposal was considered by the sectoral Expert Appraisal Committee (EAC) in its meeting held on 24<sup>th</sup> January, 2020. Based on recommendations of the EAC, the Ministry of Environment, Forest and Climate Change hereby accords approval for continuance of the **Dipka Opencast Coal Mining Project from 31 to 35 MTPA of M/s South Eastern Coalfields Limited** in mine lease area of 1999.293 ha located in District Korba (Chhattisgarh) **for life of the mine or 30 years whichever is earlier** as per provisions of EIA Notification, 2006 and subsequent amendments/circulars with the conditions remaining the same in earlier EC and in addition to the conditions as mentioned below:-

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Extension of EC of Dipka OCP of M/S South Eastern Coalfields Limited

- (i) EAC desired that the MoC may direct CIL subsidiaries to comply the EC/FC/CTO conditions strictly within certain time bound manner so that the mining operations will be environmentally sustainable/viable etc.
- (ii) Also, EAC asked project proponent to plant 50,000 nos. of native trees (excluding other conditions of plantation given by this Ministry) with broad leaves along the villages and transportation route to prevent the effect of air pollution in three years. After completion of tree plantation, number of trees shall be duly endorsed from District Forest Office.
- (iii) All Partially and non-complied conditions reported by Ministry's Regional Office in its certified compliance report dated 27<sup>th</sup> November, 2019 shall be completed in 2 years from the date of issue of this letter.
- (iv) The Project Proponent shall complies with all the statutory requirements and judgment of Hon'ble Supreme Court dated the 2nd August 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors. State Government shall ensure that the entire compensation levied, if any, for illegal mining paid by the Project Proponent through their respective Department in strict compliance of judgment of Hon'ble Supreme Court dated the 2<sup>nd</sup> August 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors.
- (v) Project Proponent shall obtain the necessary prior permission from the Central Ground Water Authority (CGWA) in case of intersecting the Ground water table. The intersecting ground water table can only be commence after conducting detailed hydrogeological study and necessary permission from the CGWA. The Report on six monthly basis on changes in Ground water level and quality shall be submitted to the Regional Office of the Ministry, CGWA and State Pollution Control Board.
- (vi) Proponent shall appoint an Occupational Health Specialist for Regular and Periodical medical examination of the workers engaged in the Project and maintain records accordingly; also, Occupational health check-ups for workers having some ailments like BP, diabetes, habitual smoking, etc. shall be undertaken once in six months and necessary remedial/preventive measures taken accordingly. The Recommendations of National Institute for ensuring good occupational environment for mine workers shall be implemented; The prevention measure for burns, malaria and provision of antisnake venom including all other paramedical safeguards may be ensured before initiating the mining activities.
- (vii) Project Proponent shall follow the mitigation measures provided in Office Memorandum No. Z-11013/57/2014-IA.II (M), dated 29th October, 2014, titled "Impact of mining activities on Habitations-Issues related to the mining Projects wherein Habitations and villages are the part of mine lease areas or Habitations and villages are surrounded by the mine lease area".
- (viii) The illumination and sound at night at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may affect the health in the villages located close to mining operations. Habitations have a right for darkness and minimal noise levels at night. PPs must ensure that the biological clock of the villages is not disturbed;

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Extension of EC of Dipka OCP of M/S South Eastern Coalfields Limited



by orienting the floodlights/ masks away from the villagers and keeping the noise levels well within the prescribed limits for day light/night hours.

- (ix) The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna, if any, spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. A copy of action plan shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office.
- (x) Hon'ble Supreme Court in an Writ Petition(s) Civil No. 114/2014, Common Cause vs Union of India & Ors vide its judgement dated 8<sup>th</sup> January, 2020 has directed the Union of India to impose a condition in the mining lease and a similar condition in the environmental clearance and the mining plan to the effect that the mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. Compliance of this condition after the mining activity is over at the cost of the mining lease holders/Project Proponent". The implementation report of the above said condition shall be sent to Regional Office of the Ministry.

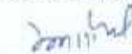
5. All other terms and conditions stipulated in the said environmental clearance dated 20<sup>th</sup> February, 2018 shall remain unchanged.

6. This issues with the approval of Competent Authority.

  
(Manoj Kumar Gangeya)  
Director

**Copy to:**

1. The Secretary, Ministry of Coal, Shastri Bhawan, New Delhi
2. The Secretary, Department of Environment & Forests, Government of Chhattisgarh, Secretariat, Raipur
3. The APCCF, Ministry of Environment, Forest and Climate Change, Regional Office (Western Central Zone), Ground Floor, East Wing, New Secretariat Building, Civil Lines, Nagpur (Maharashtra)
4. The Member-Secretary, Central Ground Water Authority, Ministry of Water Resources, Curzon Road Barracks, A-2, W-3 Kasturba Gandhi Marg, New Delhi
5. The Member Secretary, Central Pollution Control Board, CBD-cum-Office Complex, East Arjun Nagar, New Delhi - 32
6. The Member Secretary, Chhattisgarh State Environment Conservation Board, 1-Tilak Nagar, Shiv Mandir Chowk, Main Road, Avanti Vihar, Raipur - 492001 (Chhattisgarh)
7. The District Collector, Korba, Government of Chhattisgarh
8. Monitoring File      9. Guard File      10. Record File      11. Notice Board

  
(Manoj Kumar Gangeya)  
Director

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Extension of EC of Dipka OCP of M/S South Eastern Coalfields Limited



No.J-11015/487/2007-IA.II (M)pt  
Government of India  
Ministry of Environment, Forest and Climate Change  
IA-II (Coal Mining) Division

Indira Paryavaran Bhawan,  
Jorbagh Road, N Delhi - 3  
Dated: 20<sup>th</sup> March, 2019

To,  
The General Manager (W B P & Environment)  
M/s South Eastern Coalfields Ltd,  
W B P & Environment Department,  
Seepat Road, P B. No 60  
**Bilaspur - 495 006 (Chhattisgarh)**

Email: [gmenvtsecl@gmail.com](mailto:gmenvtsecl@gmail.com);

**Sub: Expansion of Dipka Opencast Coal Mine from 31 MTPA to 35 MTPA of M/s South Eastern Coalfields Limited in District Korba (Chhattisgarh) - Environmental Clearance - reg.**

Sir,  
This has reference to your online proposal No.IA/CG/CMIN/9114/2012 dated 3<sup>rd</sup> January, 2019 on the above-mentioned subject.

2. The Ministry of Environment, Forest and Climate Change, vide letter dated 20<sup>th</sup> February, 2018, has granted environmental clearance to the expansion of Dipka Opencast Coal Mining Project from 31 to 35 MTPA in mine lease area of 1999.293 ha in District Korba (Chhattisgarh), subject to compliance of certain terms and conditions, which *inter-alia* included the following:-

*'The environmental clearance for the proposed increase in capacity shall be valid up to 31<sup>st</sup> March, 2019. Further continuance of the project shall be based on evaluation of the proposed control measures and its impact on the ambient air quality by the EAC in later half of the FY 2018-19.'*


3. In line with the above condition, site inspection was carried out by Ministry's Regional Office at Nagpur on 1<sup>st</sup> December, 2018 to monitor compliance status of the conditions stipulated in the said environmental clearance. The report in this regard has been forwarded by the Regional Office vide letter dated 19<sup>th</sup> January, 2019.

4. The proposal was considered by the sectoral Expert Appraisal Committee (EAC) in its meeting held on 21<sup>st</sup> February, 2019. Based on recommendations of the EAC, the Ministry of Environment, Forest and Climate Change hereby accords approval for continuance of the **Dipka Opencast Coal Mining Project from 31 to 35 MTPA of M/s South Eastern Coalfields Limited** in mine lease area of 1999.293 ha located in District Korba (Chhattisgarh) **for a further period of one year**, under the provisions of the Environment Impact Assessment Notification, 2006 and subsequent amendments/circulars thereto, subject to review of compliance status of the conditions by the EAC to consider continuance of the project after one year.





5. All other terms and conditions stipulated in the said environmental clearance dated 20<sup>th</sup> February, 2018 shall remain unchanged.

  
20/3/2019  
(S. K. Srivastava)  
Scientist E

**Copy to:**

1. The Secretary, Ministry of Coal, Shastri Bhawan, New Delhi
2. The Secretary, Department of Environment & Forests, Government of Chhattisgarh, Secretariat, Raipur
3. The APCCF, Ministry of Environment, Forest and Climate Change, Regional Office (Western Central Zone), Ground Floor, East Wing, New Secretariat Building, Civil Lines, Nagpur (Maharashtra)
4. The Member-Secretary, Central Ground Water Authority, Ministry of Water Resources, Curzon Road Barracks, A-2, W-3 Kasturba Gandhi Marg, New Delhi
5. The Member Secretary, Central Pollution Control Board, CBD-cum-Office Complex, East Arjun Nagar, New Delhi - 32
6. The Member Secretary, Chhattisgarh State Environment Conservation Board, 1-Tilak Nagar, Shiv Mandir Chowk, Main Road, Avanti Vihar, Raipur - 492001 (Chhattisgarh)
7. The District Collector, Korba, Government of Chhattisgarh
8. Monitoring File 9. Guard File 10. Record File 11. Notice Board

  
20/3/2019  
(S. K. Srivastava)  
Scientist E



No.J-11015/487/2007-IA.II (M)pt  
Government of India  
Ministry of Environment, Forest & Climate Change  
IA-II (Coal Mining) Division

Indira Paryavaran Bhawan,  
Jorbagh Road, N Delhi - 3  
Dated: 20<sup>th</sup> February, 2018

To,  
The General Manager (W B P & Environment)  
M/s South Eastern Coalfields Ltd,  
W B P & Environment Department,  
Seepat Road, P B. No 60  
Bilaspur - 496 006 (Chhattisgarh)

Email: [gmenvtsecl@gmail.com](mailto:gmenvtsecl@gmail.com)

**Sub: Expansion of Dipka Opencast Coal Mine from 31 MTPA to 35 MTPA of M/s South Eastern Coalfields Limited in ML area 1999.293 ha in District Korba (Chhattisgarh) - Environmental Clearance-reg.**

Sir,

This has reference to your letter No. SECL/BSP/ENVT/DIPKA OC/17/EIA-EMP/6771 along with online proposal No.IA/CG/CMIN/70400/2017 dated 18<sup>th</sup> October, 2017 and subsequent letters dated 21.11.2017, 08.11.2017, 27.11.2017, 08.01.2018 and 25.01.2018 on the above-mentioned subject.

2. The Ministry of Environment, Forest and Climate Change has considered the proposal for environmental clearance to the project for expansion of Dipka Opencast Coal Mine from 31 MTPA to 35 MTPA of M/s South Eastern Coalfields Limited in mine lease area of 1999.293 ha in District Korba (Chhattisgarh).

3. The proposal was considered by the Expert Appraisal Committee (EAC) in the Ministry for Thermal & Coal Mining Sector in its 22<sup>nd</sup> meeting held on 27<sup>th</sup> November, 2017. The details during the meeting are given in the documents submitted by the project proponent, and also as informed

(i) Earlier, the Environmental Clearance for Dipka Opencast coal mine granted by this Ministry vide letter no.J-11015/87/2003-IA.II (M) dated 04.10.2004 for production capacity of 20 MTPA in an area of 1461.51ha.

(ii) Further, the project was accorded Environmental Clearance vide letter no. J-11015/487/2007-IA.II (M) dated 03.06.2009 for expansion from 20 MTPA to 25 MTPA in lease areas of 2000.642 ha based on the public hearing held on 05.09.2008.

(iii) Further, EC for expansion from from 25 MTPA to 30 MTPA in an area of 1999.293 was accorded vide letter no. J-11015/487/2007-IA.II (M) dated 12.02.2013 under clause 7(ii) of EIA Notification, 2006 (in accordance with OM J-11015/30/2004.IA.II(M) dated 19.12.2012) exempting public hearing.

(iv) In accordance to the OM J-11015/30/2004.IA.II (M) dated 2.9.2014 further, Ministry accorded amendment in the EC vide letter No. J-11015/487/2007-IA.II (M) dated 06.02.2015 for incremental difference in the production capacity from 30 MTPA to 31 MTPA.

Dipka OCP exon 31 - 35 MTPA of SECL 487\_2007

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(v) Further to meet the country's demand of coal, a proposal was made for expansion of project from 31 MTPA to 35 MTPA within the existing infrastructure and leasehold area. For same, the ToR was accorded vide letter No. J-11015/487/2007-IA-II(M) dated 28.02.2017 and the revised ToR dated 10.07.2017.

(vi) To verify the status of compliance of EC conditions for Dipka opencast expansion project 31 MTPA, the Regional Office of MoEF&CC, Nagpur has carried out the site inspection on 11.09.2016. The monitoring report was forwarded to this Ministry vide their letter No. 3-28/2014(Env) dated 04.11.2016, which was deliberated in the EAC meeting. The project proponent presented the action taken on each of the observations made by Regional Office during the site visit.

(vii) Meanwhile, OM No. J-11015/224/2015-IA.II, dated 15/09/2017, was issued for production capacity expansion up to 40% of PH capacity without Public Hearing with certain conditions. On the basis of the above said OM the proposal has been submitted for grant of EC for expansion of Dipka opencast coal mine from 31MTPA to 35 MTPA without public hearing in the existing mine lease area of 1999.293 ha.

(viii) The latitude and longitude of the project are 22° 18' 59" to 22° 19' 43" N and 82° 30' 47" to 82° 33' 34"E respectively.

(ix) Joint Venture: No

(x) Coal Linkage : NTPC Seepat and various other power plants

(xi) Employment generated / to be generated: 2694 persons

(xii) Benefits of the project: Project will considerably improve the socio-economic status of the adjoining areas. This will result in following benefits:

- Contribution to the Exchequer
- Meet energy requirement
- Post-mining Enhancement of Green Cover

(xiii) The land usage of the project will be as follows:

Pre-Mining:

Activity	Types of land are (Ha)			Total Area
	Forest	Tenancy/ Agricultural	Govt.	
Nil	409.056	1409.244	180.993	1999.293

Post-Mining:

S No	Pattern of utilization	Area (ha)
1.	Reclaimed External and Internal dumps	986.00
2.	Green belt	23.000
3.	Final void /Water body	222.053
4.	Built up area (Infrastructure, colony, roads,	633.874
5.	Safety zone: Undisturbed area	130.366
6.	Roads	4.00
<b>Total</b>		<b>1999.293</b>

*SH*



Core area:

SN	Particulars	Forest Land	Tenancy Land	Government Land	Grand Total
				others	
1	Quarry Area	52.889	858.314	90.850	1002.053
2	External OB Dump	54.718	125.212	26.070	206.00
3	Infrastructure, workshop, administrative building etc.	279.242	313.518	41.114	633.874
4	Safety Zone	22.207	85.200	22.959	130.366
5	Green belt		23.00		23.00
6	Roads		4.00		4.00
<b>Total land already Acquired</b>		<b>409.056</b>	<b>1409.244</b>	<b>180.993</b>	<b>1999.293</b>

(xiv) The total geological reserve is 617 MT. The mineable reserve 314.04 MT, extractable reserve is 314.04 MT. The percent of extraction would be 100 %.

(xv) The coal grade is E/G10. The stripping ratio is 1.20 Cum/tonne. The average Gradient is 3.37<sup>o</sup>-6.34<sup>o</sup>. There will be 3 seams with thickness ranging (E&F Seam- 12.70- 19.05 m; Upper Kusmunda-24.69 - 35.82 m; Lower Kusmunda (Top Split) - 34.70 - 44.85 m; Lower Kusmunda (Bottom Split) - 2.19 - 24.50 m).

(xvi) The total estimated water requirement is 8010 m<sup>3</sup>/day.

(xvii) The level of ground water ranges (CGM Office- Avg 8.275 m; Pragati Nagar- Shallow Avg-3.125 m deep Avg-19.17 m).

(xviii) The Method of mining would be Open cast mining.

(xix) There is three external OB dump with Quantity of 81.00 Mbcm in an area of 206.00 ha with height of 90 meters above the surface level and three internal dump with Quantity of 534.00 Mbcm in an area of 780.00 ha with height of 90 meters above the surface level.

(xx) The final mine void would be in 222.053 Ha with depth 80m and the total quarry area is 1002.053. Backfilled quarry area of 780.00 Ha shall be reclaimed with plantation. A void of 222.053 ha with depth upto 80 m which is proposed to be converted into a water body.

(xxi) The life of mine is 10 Years as on 01.04.2017.

(xxii) Transportation: Coal transportation from face to In pit crusher: by trucks. surface to siding: by trucks ; siding to consumer : rail

(xxiii) There is R & R involved. There are 1690 PAFs.

(xxiv) Total capital cost of the project is Rs. 1950.86 Crores. CSR Cost According to New CSR policy, the fund for the CSR should be allocated based on 2% of the average net profit of the Company for the three immediate preceding financial years or Rs. 2.00 per tonne of coal production of previous year whichever is higher. R&R Cost Rs. 51.49 Crores. Environmental Management Cost Rs. 198.13 Lakhs for the FY (2016- 17).

(xxv) Hasdeo river flows approximately at a distance of 18 km from the project site. There are number of seasonal nallah and tributaries of Hasdeo river in the study area.

(xxvi) Ground water clearance has been obtained for the project on 25.03.2004.

(xxvii) Mining plan for the 35 MTPA was approved by SECL Board on 13.05.2016 and mine closure plan is an integral part of mining plan.

(xxviii) There are no national Parks, wildlife sanctuary, biosphere reserves found in the 10 km buffer zone.

(xxix) Total forest land 409.056 ha, Status of Forest clearance: In process. Stage-1 FC available for 409.056 ha of forest land.

(xxx) Total afforestation plan shall be implemented covering an area of 1009 ha at the end of mining including green Belt over an area of 23 ha. Density of tree plantation 2500 trees/ ha of plants

Dipka OCP exan 31 - 35 MTPA of SECL 487\_2007

*Signature*

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(xxxi) There are court cases/violation pending with the project proponent as per the following details:-

Case No.	Court	Parties	Brief	Present status
1217/2007	Judicial Magistrate Class I, Korba transferred to Bilaspur HC, criminal revision in the year 2010	Regional Officer, CGEPB Vs Gevra & CGM Dipka Area	Increase of production without EC	Pending
26/2009	1) JMFC, Katghora Case no.-26/2009	CGEPB, Korba Vs Debasis Chatterjee, Ex CGM Dipka.	Increase of production without EC	Case disposed. Appeal preferred by CECB, Korba against order in Bilaspur High Court.

4. The Expert Appraisal Committee in its 22<sup>nd</sup> meeting held on 27<sup>th</sup> November, 2017 has recommended the proposal for grant of environmental clearance. Based on the recommendations of the EAC, the Ministry of Environment, Forest and Climate Change hereby accords environmental clearance to the project for expansion of **Dipka Opencast coal mine from 31 MTPA to 35 MTPA of M/s South Eastern Coalfields Limited in an area of 1999.293 ha located in District Korba (Chhattisgarh)**, under the provisions of the Environment impact Assessment Notification, 2006 and subsequent amendments/circulars thereto subject to the compliance of the terms & conditions and environmental safeguards mentioned below:

- (i) The environmental clearance for the proposed increase in capacity shall be valid up to 31<sup>st</sup> March, 2019. Further continuance of the project shall be based on evaluation of the proposed control measures and its impact on the ambient air quality by the EAC in later half of the FY 2018-19.
- (ii) To control the of dust generation at source, the crusher and in-pit belt conveyors shall be provided with mist type sprinklers.
- (iii) Mitigative measures shall be undertaken to control dust and other fugitive emissions all along the roads by providing sufficient numbers of water sprinklers. Adequate corrective measures shall be undertaken to control dust emissions as presented before the Committee, which would include mechanized sweeping, water sprinkling/mist spraying on haul roads and loading sites, long range misting/fogging arrangement, wind barrier wall and vertical greenery system, green belt, dust suppression arrangement at railway siding, etc.
- (iv) Efforts shall be made to explore the possibility of providing wind shield/breaker arrangement with creepers and climbers.
- (v) Thick green belt of 50 m width at the final boundary in the down wind direction of the project site shall be developed to mitigate/check the dust pollution.
- (vi) Persons of nearby villages shall be given training for their livelihood and skill development.
- (vii) To ensure health and welfare of nearby villages, regular medical camps shall be organized at least once in six months.
- (viii) The predominant Sal species in the forest area shall be protected, and in case of coal mining operations inevitable therein, compensatory afforestation of these species shall be carried out in consultation with State Forest Department.
- (ix) In view of the mining potential of the area and the pollution concerns, carrying capacity of the eco-system shall be studied through some expert agencies to assess optimal mining

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operations with minimal impact on ecosystem services.

(x) A sustainable mining practice shall be developed in the mine, catering to attributes of ecological, societal and economical dimensions.

**4.1** The grant of EC is further subject to compliance of the generic conditions as under:

**(a) Mining**

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

(ii) No change in mining method i.e OC to UG, calendar programme and scope of work shall be made without obtaining prior approval of the Ministry of Environment, Forest and Climate Change (MoEFCC).

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

(iv) No mining shall be carried out in forest land without obtaining Forestry Clearance as per Forest (Conservation) Act, 1980 and also adhering to The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 read with provisions of Indian Forest Act, 1927.

**(b) Land reclamation and water conservation**

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

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

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

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

*SD*



submitted to the Ministry of Environment, Forest and Climate Change/Regional Office on six monthly basis.

(v) The top soil shall temporarily be stored at earmarked site(s) only and shall not be kept unutilized for long. The top soil shall be used for land reclamation and plantation purposes. Active OB dumps shall be stabilised with native grass species to prevent erosion and surface run off. The other overburden dumps shall be vegetated with native flora species. The excavated area shall be backfilled and afforested in line with the approved Mine Closure Plan. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment, Forest and Climate Change/ Regional Office on six monthly basis.

**(c) Emissions, effluents, and waste disposal**

(i) Transportation of coal, to the extent permitted by road, shall be carried out by covered trucks/conveyors. Effective control measures such as regular water/mist sprinkling/rain gun etc shall be carried out in critical areas prone to air pollution (with higher values of  $PM_{10}/PM_{2.5}$ ) such as haul road, loading/unloading and transfer points. Fugitive dust emissions from all sources shall be controlled regularly. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central/State Pollution Control Board.

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

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

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

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

(vi) Coal handling plant shall be operated with effective control measures viz. bag filters/water or mist sprinkling system etc to check fugitive emissions from crushing operations, conveyor system, transfer points, etc.

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

(viii) Catch/garland drains and siltation ponds of appropriate size shall be constructed around the mine working, coal heaps & OB dumps to prevent run off of water and flow of sediments directly into the river and water bodies. Further, dump material shall be properly consolidated/ compacted and accumulation of water over dumps shall be avoided by providing adequate channels for flow of silt into the drains. The drains/ ponds so constructed shall be regularly de-

*SH*



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

(ix) Industrial waste water generated from CHP, workshop and other waste water, shall be properly collected and treated so as to conform to the standards prescribed under the Environment (Protection) Act, 1986 and the Rules made there under, and as amended from time to time. Oil and grease trap shall be installed and maintained fully functional with effluents discharge adhering to the norms. Sewage treatment plant of adequate capacity shall be installed for treatment of domestic waste.

(x) Adequate groundwater recharge measures shall be taken up for augmentation of ground water. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.

**(d) Illumination, noise & vibration**

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

(ii) Adequate measures shall be taken for control of noise levels below 85 dB(A) in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with personal protective equipments (PPE) like ear plugs/muffs in conformity with the prescribed norms and guidelines in this regard. Adequate awareness programme for users to be conducted. Progress in usage of such accessories to be monitored.

(iii) Controlled blasting techniques shall be practiced in order to mitigate ground vibrations and fly rocks as per the guidelines prescribed by the DGMS.

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

**(e) Occupational health & safety**

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

(ii) Personnel (including outsourcing employees) working in dusty areas shall wear protective respiratory devices and shall also be provided with adequate training and information on safety and health aspects.

(iii) Skill training as per safety norms specified by DGMS shall be provided to all workmen including the outsourcing employees to ensure high safety standards in mines.

*SD*



**(f) Ecosystem and biodiversity conservation**

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

**(g) Public hearing, R&R and CSR**

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

(ii) The project proponent shall ensure the expenditure towards socio-economic development in and around the mine, in every financial year in pursuance of the Corporate Social Responsibility Policy as per the provisions under Section 135 of the Companies Act, 2013

(iii) The project proponent shall follow the mitigation measures provided in this Ministry's OM No.Z-11013/5712014-IA.11 (M) dated 29<sup>th</sup> October, 2014, titled 'impact of mining activities on habitations-issues related to the mining projects wherein habitations and villages are the part of mine lease areas or habitations and villages are surrounded by the mine lease area'.

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

**(h) Corporate environment responsibility**

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

(ii) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions should be displayed on website of the Company.

(iii) A separate environmental management cell both at the project and company headquarter level, with suitable qualified personnel shall be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.

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

SH



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

**(i) Statutory Obligations**

(i) The environmental clearance shall be subject to orders of Hon'ble Supreme Court of India, Hon'ble High Court, NGT and any other Court of Law from time to time, and as applicable to the project.

(ii) This environmental clearance shall be subject to obtaining wildlife clearance, if applicable, from the Standing Committee of National Board for Wildlife.

(iii) The project proponent shall obtain Consent to Establish/Operate under the Air Act, 1981 and the Water Act, 1974 from the concerned State Pollution Control Board.

(iv) The project proponent shall obtain the necessary permission from the Central Ground Water Authority (CGWA).

**(j) Monitoring of project**

(i) Adequate ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for monitoring of pollutants, namely PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub>. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Online ambient air quality monitoring stations may also be installed in addition to the regular monitoring stations as per the requirement and/or in consultation with the SPCB. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc to be carried out at least once in six months.

(ii) The Ambient Air Quality monitoring in the core zone shall be carried out to ensure the Coal Industry Standards notified vide GSR 742 (E) dated 25.9.2000 and as amended from time to time by the Central Pollution Control Board. Data on ambient air quality and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly reported to the Ministry/Regional Office and to the CPCB/SPCB.

(iii) The effluent discharge (mine waste water, workshop effluent) shall be monitored in terms of the parameters notified under the Coal Industry Standards vide GSR 742 (E) dated 25.9.2000 and as amended from time to time by the Central Pollution Control Board.

(iv) The monitoring data shall be uploaded on the company's website and displayed at the project site at a suitable location. The circular No.J-20012/1/2006-IA.11 (M) dated 27.05.2009 issued by Ministry of Environment, Forest and Climate Change shall also be referred in this regard for its compliance.

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



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

(vii) The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental conditions to the Ministry of Environment, Forest and Climate Change/Regional Office. For half yearly monitoring reports, the data should be monitored for the period of April to September and October to March of the financial years.

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

**(k) Miscellaneous**

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

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

(iii) A copy of the environmental clearance shall be marked to concerned Panchayat. A copy of the same shall also be sent to the concerned State Pollution Control Board, Regional Office, District Industry Sector and Collector's Office/Tehsildar Office for information in public domain within 30 days.

(iv) The EC shall be uploaded on the company's website. The compliance status of the stipulated EC conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in public domain.

(v) The project authorities shall advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment, Forest and Climate Change at [www.environmentclearance.nic.in](http://www.environmentclearance.nic.in) and a copy of the same shall be forwarded to the Regional Office.

(vi) The environmental statement for each financial year ending 31 March in Form-V is mandated to be submitted by the project proponent for the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986 as amended subsequently, shall also be uploaded on the Company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Offices of the MoEF&CC by e-mail. Concerns raised during public hearing

(vii) The Ministry may stipulate any further condition for environmental protection, if so required in due course of time.

(viii) The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along



with their amendments and Rules and any other orders passed by the Hon'ble Supreme Court of India/High Courts and any other Court of Law relating to the subject matter.

5. The proponent shall abide by all the commitments and recommendations made in the EIA/EMP report and also that during presentation to the EAC. All the commitments made on the issues raised during public hearing shall also be implemented in letter and spirit.
6. The proponent shall obtain all necessary clearances/approvals that may be required before the start of the project. The Ministry or any other competent authority may stipulate any further condition for environmental protection. The Ministry or any other competent authority may stipulate any further condition for environmental protection.
7. Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
8. Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.
9. The coal company/project proponent shall be liable to pay the compensation against the illegal mining, if any, and as raised by the respective State Governments at any point of time, in terms of the orders dated 2<sup>nd</sup> August, 2017 of Hon'ble Supreme Court in WP (Civil) No.114/2014 in the matter of 'Common Cause Vs Union of India & others'.
10. The project proponent, without prejudice to this EC, shall be bound to comply with any other interpretation of the orders of Hon'ble Supreme Court also, in due course of time.
11. This EC supersedes the earlier EC granted vide letter No. J-11015/487/2007-(A.II (M) dated 06.02.2015 with a capacity 31 MTPA.

*S.K.*  
20/2/2018  
(S. K. Srivastava)  
Scientist E

**Copy to:**

1. The Secretary, Ministry of Coal, Shastri Bhawan, New Delhi
2. The Secretary, Department of Environment & Forests, Government of Chhattisgarh, Secretariat, Raipur
3. The APCCF, Ministry of Environment Forest and Climate Change, Regional Office (Western Central Zone), Ground Floor, East Wing, New Secretariat Building Civil Lines, Nagpur (Maharashtra)
4. The Member Secretary, Chhattisgarh State Environment Conservation Board, 1-Tilak Nagar, Shiv Mandir Chowk, Main Road, Avanti Vihar, Raipur-Chhattisgarh- 492001
5. The Member Secretary, Central Pollution Control Board, CBD-cum-Office Complex, East Arjun Nagar, New Delhi - 32
6. The Member-Secretary, Central Ground Water Authority, Ministry of Water Resources, Curzon Road Barracks, A-2, W-3 Kasturba Gandhi Marg, New Delhi
7. The District Collector, Korba, Government of Chhattisgarh.
8. Monitoring File 9. Guard File 10. Record File. 11. Notice Board

*S.K.*  
20/2/2018  
(S. K. Srivastava)  
Scientist E





**Annexure-III**

**Air/Dust management and Noise and Ground vibration system for Dipka OCP**

**A-III 1: Ambient Air quality (AAQ) monitoring stations in Dipka OCP**

S.N.	Name of Air/Noise Monitoring Station	Zone
1	Malgaon Village	Residential Zone
2	Near Railway Siding	Industrial Zone
3	Near Excv. Workshop	
4	Pragati Nagar	Residential Zone
5	Hardi Bazar	
6	Batari	
7	Jhabar	
8	Ratiya	

Source: Environmental Monitoring Report 2021, Dipka OCP.

**A-III 2: Concentration of AAQ parameters reported at various stations of Dipka OCP**

Monitoring Station	PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>
Malgaon Village	165.6	77.2	47.6	30.9	33.7
Near Railway Siding	513.7	247.1	48.9	32.2	34.9
New Excv. Workshop	501.0	248.7	47.8	31.6	34.5
Pragati Nagar	166.0	74.7	47.8	30.9	33.4
Hardi Bazar	164.5	75.2	48.4	31.1	33.5
Batari	163.8	75.4	47.8	31.8	34.5
Jhabar	163.8	74.3	48.2	31.5	34.3
Ratiya	166.0	90.0	48.0	31.7	34.7

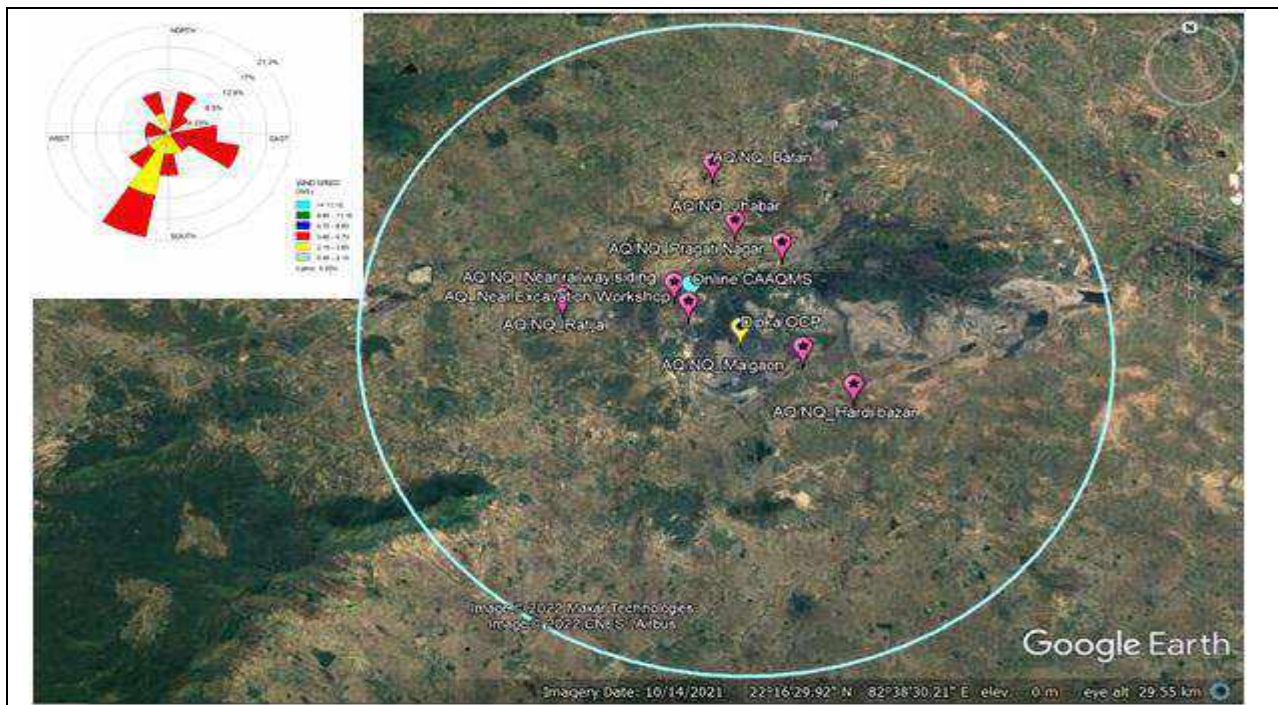
Source: Environmental Monitoring Report 2021, Dipka OCP

**A-III 3: Average Concentration of NQ parameters reported at various stations of Dipka OCP**

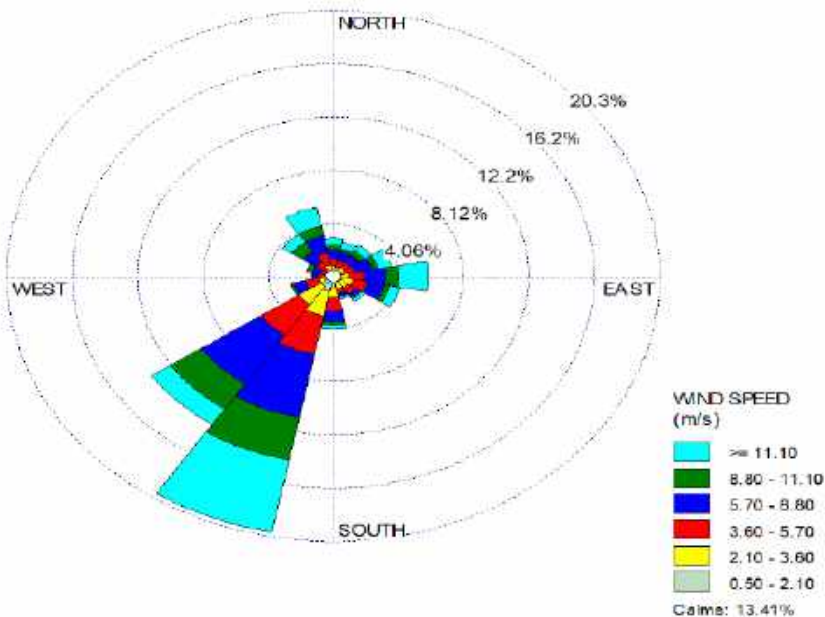
S. No.	Monitoring Station	Station Cat.	Avg. Leq in dB(A)	
			Day	Night
1	Malgaon Village	C	47.4	41.9
2	Near Railway Siding	A	60.7	56.5
3	New Excv. Workshop	A	58.1	54.8
4	Pragati Nagar	C	47.6	44.1
5	Hardi Bazar	C	48.2	42.2
6	Batari	C	45.8	39.9
7	Jhabar	C	46.6	41.5
8	Ratiya	C	44.5	39.7

Source: Environmental Monitoring Report 2021, Dipka OCP






**A-III 4:** AAQ/NQ Monitoring Stations (Purple colour) of Dipka OCP (Yellow colour) with wind rose (WR), dominant wind blowing from SSW to NNE direction (Source: WR for a period of April-June 2016 from EIA/EMP report of Dipka OCP, Oct 2017), online CAAQMS denoted as dark sky blue colour, 10 km Buffer zone denoted as light sky blue colour



**A-III 5:** WR for a period for Jan 2020-June 2022 from Online CAAQMS weather data of Dipka OCP)


**Month of February, 2022**

Date	Vibration Readings in BPV				
	1	2	3	4	5
01.02.2022	2.773	2.775	2.781	2.777	
02.02.2022	2.883	2.818	2.791	2.783	2.778
03.02.2022	2.923	2.813	2.791	2.783	2.778
04.02.2022	2.943	2.791			
05.02.2022	2.748	2.873	2.778	2.778	2.778
06.02.2022	2.738				
07.02.2022	2.827	2.775	2.801	2.794	2.804
08.02.2022	2.724	2.791	2.809	2.794	2.807
09.02.2022	2.838				
10.02.2022	2.838	2.823	2.817	2.81	
11.02.2022	2.806	2.827	2.823	2.825	2.827
12.02.2022	2.877	2.853	2.855	2.857	2.853
13.02.2022	2.859				
14.02.2022	2.821	2.828	2.827		
15.02.2022	2.821	2.81	2.81		
16.02.2022	2.821	2.81	2.81		
17.02.2022	2.821	2.81	2.81		
18.02.2022	2.821	2.81	2.81		
19.02.2022	2.821	2.81	2.81		
20.02.2022	2.821	2.81	2.81		
21.02.2022	2.821	2.81	2.81		
22.02.2022	2.821	2.81	2.81		
23.02.2022	2.821	2.81	2.81		
24.02.2022	2.821	2.81	2.81		
25.02.2022	2.821	2.81	2.81		
26.02.2022	2.821	2.81	2.81		
27.02.2022	2.821	2.81	2.81		
28.02.2022	2.821	2.81	2.81		
29.02.2022	2.821	2.81	2.81		
30.02.2022	2.821	2.81	2.81		

  
 Mining In-charge  
 MEL, Bilaspur Excavation Project

**NOV. 2021**

S.NO.	LOCATION	DB
1	002 गोरखगढ़ क्षेत्र में	75
2	003 गोरखगढ़ क्षेत्र में	72
3	महानगर क्षेत्र में गोरखगढ़ क्षेत्र में	66
4	029 गोरखगढ़ 20 मीटर से	82
5	014 गोरखगढ़ 20 मीटर से	82
6	क्षेत्र 001 गोरखगढ़ क्षेत्र में	68
7	P.R.R. क्षेत्र में	82
8	क्षेत्र में 0112 गोरखगढ़ क्षेत्र में	80
9	P.C. क्षेत्र गोरखगढ़ क्षेत्र में	80
10	क्षेत्र 1508 गोरखगढ़ क्षेत्र में	82
11	क्षेत्र 007 गोरखगढ़ क्षेत्र में	75
12	क्षेत्र 141 गोरखगढ़ क्षेत्र में	75
13	क्षेत्र में 226 गोरखगढ़ क्षेत्र में	76

  
 Mining In-charge  
 MEL, Bilaspur Excavation Project

Scanned with CamScanner

**A-III 6: Ground vibration survey report**

**A-III 7: Work site noise in mine premises**

Form 55  
(See rules 119(2))

**Pollution Under Control Certificate**  
 Authorized By  
 Government of Chhattisgarh

Date: 06/04/2022  
 Time: 14:19:24 PM  
 Validity upto: 05/10/2022

Certificate No. CGD110002000205  
 Registration No. CG1231954  
 Date of Issuance: 22/Dec/2013  
 Make & Year of Manufacturing: MITSUBISHI  
 Make Model Number: 4M70  
 Engine No.: BHARAT STAGE III  
 Fuel: DIESEL  
 PUC Code: CGM19002  
 CATE: M120.001C51 DE (BOPRABH)  
 Power: 85

Vehicle Photo with Registration plate  
 60 mm x 30 mm

Sr. No.	Pollutant (as applicable)	Units (as applicable)	Emission limits	Measured Value (upto 2 decimal places)
1	Carbon Monoxide (CO)	percentage (%)		
	Hydrocarbon (THMHC)	ppm		
2	CO	percentage (%)	2500 ± 20%	
	SPM	SPM	1.9 0.03	
3	Exhaust	litre/mile	2.45	1.22
	Light absorption coefficient			

This PUC certificate is system generated through the national register of motor vehicles and does not require any signature.

Note: 1. Vehicle owners to link their vehicle numbers to registered vehicle by logging in [www.vehicles.mca.gov.in](http://www.vehicles.mca.gov.in)

Form 55  
(See rules 119(2))

**Pollution Under Control Certificate**  
 Authorized By  
 Government of Chhattisgarh

Date: 06/04/2022  
 Time: 14:19:13 PM  
 Validity upto: 05/10/2022

Certificate No. CGD110002000205  
 Registration No. CG1231954  
 Date of Issuance: 22/Dec/2013  
 Make & Year of Manufacturing: MITSUBISHI  
 Make Model Number: 4M70  
 Engine No.: BHARAT STAGE III  
 Fuel: DIESEL  
 PUC Code: CGM19002  
 CATE: M120.001C51 DE (BOPRABH)  
 Power: 85

Vehicle Photo with Registration plate  
 60 mm x 30 mm

Sr. No.	Pollutant (as applicable)	Units (as applicable)	Emission limits	Measured Value (upto 2 decimal places)
1	Carbon Monoxide (CO)	percentage (%)		
	Hydrocarbon (THMHC)	ppm		
2	CO	percentage (%)	2500 ± 20%	
	SPM	SPM	1.9 0.03	
3	Exhaust	litre/mile	2.45	1.22
	Light absorption coefficient			

This PUC certificate is system generated through the national register of motor vehicles and does not require any signature.

Note: 1. Vehicle owners to link their vehicle numbers to registered vehicle by logging in [www.vehicles.mca.gov.in](http://www.vehicles.mca.gov.in)

Note: 2. Signature with stamp of PUC operator

**A-III 8: PUC Certificate of outsourcing trucks**

**A-III 9:** PDS survey report in work site in Dipka OCP

PPE kits provided in the year 2021-22		
S.No	PPE kit Particulars	Provided No's
1	Helmet	1100
2	Gumboot	400
3	Canvas Shoes	490
4	Lather Shoes	NIL
5	Ankle Shoes	1000
6	Dust Mask & EAR Plug	713
7	Cotton Hand Gloves	1081 pairs
8	Flourescent Jacket	192
9	Rubber Hand Gloves	42
10	Safety Belt	201
11	Welding Goggal	218
12	Oprator Seat Belt	219
13	First Aid Box	46
14	Fkst Aid Kit	160

**A-III 10:** PPE Kits issued details

Illumination Survey Month of March-2022				ANNEXURE-15	
Sl.No. & Date	LOCATION	SPT. OR Illumination		Intensity of Lux (lx)	Intensity of Lux (lx)
		Foot-candle	Value		
1-16/3/22	TRG I Road	15	15	26.7	27.4
	TRG II Road	15	15	27.8	26.2
2-17/3/22	Old Dipk Coal Tr Road	15	15	7.2	10.8
3-18/3/22	Main Dump LK I	40		26.2	29.4
4-19/3/22	Dumper Head Stand	50		18.8	22.9
5-20/3/22	OB Fenc Old Dipk	15	15	7.2	9.8
6-21/3/22	Along Road Path way	20		5.4	8.2
7-22/3/22	11-12 Coal Tr Road	15	15	6.9	10.3
8-25/3/22	At Tanker Point Road	15	15	9.8	12.7
9-24/3/22	Gravel Concr Sec	100	50	33.2	36.8
10-25/3/22	OB D Yard OB rd	15	15	12.4	15.2
11-27/3/22	Main Coal Tr Road	15	15	10.2	13.6
12-29/3/22	Head WTK I Road	15	15	11.8	14.2
13-30/3/22	30th 15th WTK Road	100	50	12.8	16.9
14-30/3/22	Jan & P.O. Road	15	15	11.5	14.6

**A-III 11:** Illumination survey report



**WELL INVENTORY (WINTER PERIOD) - 28<sup>th</sup> & 29<sup>th</sup> Jan 2021**

S.N.	Village Name	Well Owner	Depth to Water from Measuring Point	Remarks
1	Bilaspur	Bilaspur	1.50 m	
2	Bilaspur (Dwarika)	Govt. Well	0.30 m	
3	Bilaspur	Chhatra Singh	2.00 m	
4	Bilaspur	Govt. Well	7.00 m	Well closed
5	Harid Basar	Bansidra Kishore	7.00 m	No water
6	Bilaspur	Govt. Well	7.00 m	Well closed
7	Bilaspur	Chhatra Singh	7.00 m	More required
8	Malgona	Narayan Singh	7.00 m	Well closed
9	Nehra Nagar	SECL Well	4.00 m	
10	New Garabohari	Vikram Singh	4.00 m	
11	Bowansahar	Govt. Well	3.00 m	
12	Phulbari	Arjun Singh (Govt II)	2.00 m	
13	Rajapur	Govt. Well	2.00 m	
14	Bilaspur	Govt. Well	2.00 m	
15	Bilaspur	Govt. Well	2.00 m	
16	Bilaspur	Govt. Well	2.00 m	
17	Bilaspur	Govt. Well	2.00 m	
18	Bilaspur	Govt. Well	2.00 m	
19	Bilaspur	Govt. Well	2.00 m	
20	Bilaspur	Govt. Well	2.00 m	
21	Bilaspur	Govt. Well	2.00 m	
22	DIPKA	Ayazul Maharaaj Chaud	7.00 m	Closed

Asst. Manager (Env), Dipka Area  
Nodal Officer (Env), Dipka Area

**WELL INVENTORY (SUMMER PERIOD) - 7<sup>th</sup> & 8<sup>th</sup> June 2021**

S.N.	Village Name	Well Owner	Depth to Water from Measuring Point	Remarks
1	Bilaspur	Bilaspur	1.50 m	
2	Bilaspur (Dwarika)	Govt. Well	0.30 m	
3	Bilaspur	Chhatra Singh	2.00 m	
4	Bilaspur	Govt. Well	7.00 m	Well closed
5	Harid Basar	Bansidra Kishore	7.00 m	No water
6	Bilaspur	Govt. Well	7.00 m	Well closed
7	Bilaspur	Chhatra Singh	7.00 m	More required
8	Malgona	Narayan Singh	7.00 m	Well closed
9	Nehra Nagar	SECL Well	4.00 m	
10	New Garabohari	Vikram Singh	4.00 m	
11	Bowansahar	Govt. Well	3.00 m	
12	Phulbari	Arjun Singh (Govt II)	2.00 m	
13	Rajapur	Govt. Well	2.00 m	
14	Bilaspur	Govt. Well	2.00 m	
15	Bilaspur	Govt. Well	2.00 m	
16	Bilaspur	Govt. Well	2.00 m	
17	Bilaspur	Govt. Well	2.00 m	
18	Bilaspur	Govt. Well	2.00 m	
19	Bilaspur	Govt. Well	2.00 m	
20	Bilaspur	Govt. Well	2.00 m	
21	Bilaspur	Govt. Well	2.00 m	
22	DIPKA	Ayazul Maharaaj Chaud	7.00 m	Closed

Asst. Manager (Env), Dipka Area  
Nodal Officer (Env), Dipka Area

**WELL INVENTORY (MONSOON PERIOD) - 24<sup>th</sup> & 25<sup>th</sup> August 2021**

S.N.	Village Name	Well Owner	Depth to Water from Measuring Point	Remarks
1	Bilaspur	Bilaspur	1.00 m	
2	Bilaspur (Dwarika)	Govt. Well	2.30 m	
3	Bilaspur	Chhatra Singh	1.60 m	
4	Bilaspur	Govt. Well	Well Closed	Well closed
5	Harid Basar	Bansidra Kishore	No Water	No water
6	Bilaspur	Govt. Well	Well Closed	Well closed
7	Bilaspur	Chhatra Singh	Well Closed	More required
8	Malgona	Narayan Singh	Well Closed	Well closed
9	Nehra Nagar	SECL Well	1.20 m	
10	New Garabohari	Vikram Singh	1.30 m	
11	Bowansahar	Govt. Well	1.20 m	
12	Phulbari	Arjun Singh (Govt II)	2.00 m	
13	Rajapur	Govt. Well	2.00 m	
14	Bilaspur	Govt. Well	2.00 m	
15	Bilaspur	Govt. Well	1.50 m	
16	Bilaspur	H/O Shankar Lal	0.10 m	
17	Bilaspur	Govt. Well	1.90 m	
18	Bilaspur	SECL Well	2.70 m	
19	Thawra-1	Govt. Well in Kasa hadi	2.90 m	
20	Thawra	Rudhrala Kumar s/o Himan Singh Kumar	2.00 m	
21	Champur Nagar	SECL Well	1.60 m	
22	DIPKA	Ayazul Maharaaj Chaud	Well Closed	Closed

Asst. Manager (Env), Dipka Area  
Nodal Officer (Env), Dipka Area

**WELL INVENTORY - 10<sup>th</sup> & 11<sup>th</sup> Nov 2021**

S.N.	Village Name	Well Owner	Depth to Water from Measuring Point	Remarks
1	Bilaspur	Bilaspur	2.80 m	
2	Bilaspur (Dwarika)	Govt. Well	3.50 m	
3	Bilaspur	Chhatra Singh	2.90 m	
4	Bilaspur	Govt. Well	--	Well closed
5	Harid Basar	Bansidra Kishore	--	No water
6	Bilaspur	Govt. Well	--	Well closed
7	Bilaspur	Chhatra Singh	--	More required
8	Malgona	Narayan Singh	--	Well closed
9	Nehra Nagar	SECL Well	2.90 m	
10	New Garabohari	Vikram Singh	4.00 m	
11	Bowansahar	Govt. Well	2.90 m	
12	Phulbari	Arjun Singh (Govt II)	7.00 m	
13	Rajapur	Govt. Well	4.90 m	
14	Bilaspur	Govt. Well	4.90 m	
15	Bilaspur	Govt. Well	2.80 m	
16	Bilaspur (S. Inwara)	H/O Shankar Lal	3.20 m	
17	Bilaspur	Govt. Well	2.90 m	
18	Bilaspur	SECL Well	4.30 m	
19	Thawra-1	Govt. Well in Kasa hadi	4.70 m	
20	Thawra	Rudhrala Kumar s/o Himan Singh Kumar	2.70 m	
21	Champur Nagar	SECL Well	1.90 m	
22	DIPKA	Ayazul Maharaaj Chaud	--	Closed

Asst. Manager (Env), Dipka Area  
Nodal Officer (Env), Dipka Area


A-III 13: Ground water-Well inventory report of Dipka OCP

**SECL, DIPKA AREA**  
**FOODWATER SUPPLY DETAILS: 2021-22 & 2022-23**

MONTH	FY 2021-22		FY 2022-23		NTR (ML)	NTR OFF (ML)		MICHOR ROAD		PSA ROAD		TOTAL IN 2021-22	TOTAL IN 2022-23
	REQD	ISSUED	REQD	ISSUED		2021-22	2022-23	2021-22	2022-23	2021-22	2022-23		
APRIL	142000.00	103877.33	180470.22	85827.40	1138607.00		100000.00	100000.00	0.00	100000.00	100000.00	100000.00	100000.00
MAY	161000.00	126037.74	195034.91	108837.60	1200774.00		100000.00	100000.00	0.00	100000.00	100000.00	100000.00	100000.00
JUNE	175410.00	130070.20	181001.47	102004.57	1481000.00		100000.00	100000.00	0.00	100000.00	100000.00	100000.00	100000.00
JULY	184000.00	140000.00	194432.21	100000.00	1500000.00		100000.00	100000.00	0.00	100000.00	100000.00	100000.00	100000.00
AUG	180000.00	130000.00	190000.00	100000.00	1600000.00		100000.00	100000.00	0.00	100000.00	100000.00	100000.00	100000.00
SEPT	190000.00	130000.00	190000.00	100000.00	1700000.00		100000.00	100000.00	0.00	100000.00	100000.00	100000.00	100000.00
OCT	190000.00	130000.00	190000.00	100000.00	1800000.00		100000.00	100000.00	0.00	100000.00	100000.00	100000.00	100000.00
NOV	190000.00	130000.00	190000.00	100000.00	1900000.00		100000.00	100000.00	0.00	100000.00	100000.00	100000.00	100000.00
DEC	190000.00	130000.00	190000.00	100000.00	2000000.00		100000.00	100000.00	0.00	100000.00	100000.00	100000.00	100000.00
JAN	190000.00	130000.00	190000.00	100000.00	2100000.00		100000.00	100000.00	0.00	100000.00	100000.00	100000.00	100000.00
FEB	190000.00	130000.00	190000.00	100000.00	2200000.00		100000.00	100000.00	0.00	100000.00	100000.00	100000.00	100000.00
MAR	190000.00	130000.00	190000.00	100000.00	2300000.00		100000.00	100000.00	0.00	100000.00	100000.00	100000.00	100000.00
TOTAL	1100000.00	800000.00	1000000.00	500000.00	12000000.00		1000000.00	1000000.00	0.00	1000000.00	1000000.00	1000000.00	1000000.00
% Deviation	16.18	-6.26		6.26			0.00%	-0.00%		14.29		16.18	6.26


*Ca*  
श्री वीर विक्रम प्रसाद  
एग्जीक्यूटिव, दीपका क्षेत्र


**A-III 12: Coal dispatch details of Dipka OCP**

CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED							
 <b>cmpdi</b> A Mini-Ratna Company		<b>Environment Laboratory, Regional Institute-V</b> <b>DRINKING WATER ANALYSIS REPORT</b>		CMPDI Complex, Songanga Colony Bilaspur (C.G.)- 495 006 Phone: (07752) 258485 email: hk.gour@coalindia.in; mr.singh@coalindia.in			
Month	February	2022	Area	Dipka	Report No.	FB21DK	
Customer	South Eastern Coalfields Ltd (SECL), Bilaspur				Date of Issue	06-03-2022 1E:22	
Project	Dipka OC		Sample Ref. No.	CMPDI/E7A/60, Date:- 31/02/2022			
Sampling Stations	vi		LK - 1		Date of Sampling	23-Feb-2021	
	vii		LK - 2		Date of Sampling	23-Feb-2021	
			Date of Analysis		25-Feb-2022 to 6-Mar-2022		
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500: 2012		Uncertainty of Measurement (at 95% Confidence Level & K= 1.96)
			vi	vii	Acceptable Limit (Max)*	Permissible Limit in the Absence of Alternate source (Max)	
1	Colour, Hazen LDL: 1.0 Hazen	APHA, 23rd Edition, 2017, 2120. C. Spectrometric single wavelength method	5	8	5	15	±1.05+ Hazen at 49.86 Hazen
2	Odour	IS 3025 (Part 5):1983, Physical (Qualitative)	Agreeable	Agreeable	Agreeable	Agreeable	None
3	Phenolic compounds, mg/l LDL: 0.001 mg/l	APHA, 23rd Edition, 2017, 5530. C, Chloroform Extraction Method	BDL	BDL	0.001	0.001	+0.0204 mg/l at 0.100 mg/l
4	Turbidity, NTU LDL: 1.0 NTU	IS 3025 (Part 10):1984, R : 2006, Nephelometric Method	3	3	1	5	±0.855 NTU at 41.58 NTU
5	pH LDL: 4.00	IS 3025 (Part 11):1983, R : 2012, Electrometric Method	7.16	7.44	6.5-8.5	No relaxation	±0.1272 at 7.01
6	Alkalinity, mg/l as CaCO <sub>3</sub> LDL: 5.0 mg/l	IS 3025 (Part 20):1986, R 2003 Titration Method	195	165	100	600	±0.19696 mg/l at 10.0 mg/l
7	Total Hardness, mg/l as CaCO <sub>3</sub> LDL: 4.0 mg/l	IS 3025 (Part 21):2000, EDTA Method	752	466	100	600	+11.545 mg/l at 612.8 mg/l
8	Iron, mg/l LDL: 0.05 mg/l	IS 3025 (Part 53) :2003, R-2009 AAS-Flame Method	BDL	BDL	0.3	No relaxation	+0.0782 mg/l at 7.95 mg/l
9	Chlorides, mg/l LDL: 5.0 mg/l	IS 3025 (Part 32):1988, R : 2007, Argentometric Method	37.0	89.5	150	1000	+6.551 mg/l at 253.5 mg/l
10	Residual free Chlorine, mg/l LDL: 0.1 mg/l	APHA, 23rd Edition, 2017, 4500G. DPD Colorimetric Method	BDL	BDL	0.2	1	+0.0082 mg/l at 0.1 mg/l
11	Total Dissolved Solids, mg/l LDL: 30.0 mg/l	IS 3025 (Part 16):1984 R : 2006, Gravimetric Method	1306	970	500	2000	+4.473 mg/l at 502.0 mg/l
12	Calcium, mg/l LDL: 5.0 mg/l	IS 3025 (Part 45): 1901, R : 2009, EDTA Method	67.2	96.0	75	200	+2.512 mg/l at 99.8 mg/l
13	Copper, mg/l LDL: 0.03 mg/l	IS 3025 (Part 42) : 1992 R : 2009, AAS-Flame Method	BDL	BDL	0.05	1.5	+0.131 mg/l at 4.90 mg/l
14	Manganese, mg/l LDL: 0.05 mg/l	IS 3025 (Part 58) : 2006, AAS-Flame Method	0.17	0.10	0.1	0.3	+0.026 mg/l at 2.44 mg/l
15	Sulphate, mg/l LDL: 2.0 mg/l	APHA, 23rd Edition, 2017, 4500-SO42- E Turbidimetric Method	123	114	100	400	+0.640 mg/l at 19.88 mg/l
16	Nitrate, mg/l LDL: 0.5 mg/l	APHA, 23rd Edition, 2017, 4500. B UV-Spectrophotometric Method	4.46	51.58	45	No relaxation	+0.528 mg/l at 20.41 mg/l
17	Fluoride, mg/l LDL: 0.1 mg/l	APHA, 23rd Edition, 2017, 4500, F-D SPADNS Method	0.88	0.80	1	1.5	+0.014 mg/l at 0.98 mg/l
18	Selenium, mg/l LDL: 0.001 mg/l	IS 3025 (Part 56):2003 AAS- VGA Method	BDL	BDL	0.01	No relaxation	+0.000938 mg/l at 0.001 mg/l
19	Arsenic, mg/l LDL: 0.001 mg/l	IS 3025 (Part 37):1989, R 2003, AAS- VGA Method	BDL	BDL	0.01	0.05	+ 0.081 mg/l at 0.018 mg/l
20	Lead, mg/l LDL: 0.005 mg/l	APHA, 23rd Edition, 2017, 3113B, AAS-GTA Method	BDL	BDL	0.01	No relaxation	+0.003266 mg/l at 0.005 mg/l
21	Zinc, mg/l LDL: 0.01 mg/l	IS 3025 ( Part 49 ) : 1994, R : 2009, AAS-Flame Method	0.03	0.05	5	15	+0.0013 mg/l at 0.01 mg/l
22	Total Chromium, mg/l LDL: 0.05 mg/l	IS 3025 ( Part 52 ) : 2003, AAS-Flame Method	BDL	BDL	0.05	No relaxation	+0.004 mg/l at 0.05 mg/l
23	Total Coliform, MPN/100 ml	APHA, 22nd Edition, 9221 Multiple Tube Fermentation Tech.	NIL	NIL	NIL	No relaxation	---
24	Boron, mg/l LDL: 0.5 mg/l	APHA, 23rd Edition, 2017, 4500-B, Carmine Method	BDL	BDL	0.5	1	+0.310 mg/l at 5.16 mg/l

\*Except Sl. No. 10 for which Acceptable Limit is Min

LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit

  
 Poojpa Pandey  
 Junior Scientific Asst

  
 M. Saugan Singh  
 Technical Manager

Note: The results above relate to the samples tested as received. This report cannot be reproduced in part or full without the written permission of the HOD (Env), CMPDI, R-V. The Green, Yellow and Red color highlights in observed values indicate acceptable values, values exceeding acceptable limits but below permissible limits and values exceeding permissible limits respectively.

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**A-III 14: Ground water report**

## Annexure-IV

### Recommended Indigenous Plant Species for Afforestation in Dipka Open Cast Coal Mine of M/s. SECL, Dipka Village, Katghora Tehsil, Korba District, Chhattisgarh State

Reclamation by afforestation is necessary to maintain biodiversity and ecological balances as well to combat the issues of drought, land degradation, desertification the consequent global warming. The roots of the plant species help to hold the soil layer firmly and prevents erosion. Thus, by planting more and more plants, the top layer of the soil becomes less prone to erosion by wind, water or anything likely. The plants absorb toxic chemicals effectively and filtering these pollutants from the air. Also, planting more trees increases active carbon sinks that absorb and store carbon from the earth. Hence, afforestation and reforestation can ensure social, economic and environmental improvements, contribute to the sustainable development.

The Dipka OCP area including waste dumps, safety zone/greenbelt and infrastructure as well as colony/township/avenue/transport roads has been profusely planted with exotic tree species viz., *Cassia siamea* and *Leucaena leucocephala* followed by to some extent with *Acacia auriculiformis*, *Acacia holosericea*, *Eucalyptus* spp., *Simarouba glauca*, etc. However, these exotic tree species were planted during initial period but should not be considered in future afforestation activities, because of their potential high regeneration and colonization efficiency that harm the proliferation of indigenous/native plant communities leading to biodiversity loss of important undergrowth herbs and shrubs.

Based on the physiographic features and natural vegetation in and around the mine lease areas, the following local plant species recommended for afforestation along the haul/approach/transportation roads, township/avenue areas, on safety zone/greenbelt, de-coaled backfilled areas/external OB dumps are given in **Table 1**. Being purely native to the area, the following listed plant species can establish very fast and colonize the areas successfully.

#### 1. Afforestation/Avenue Plantation along Approach/Transportation Roads

Mine Approach/Haulage/Transportation roads should be maintained properly by regularly sprinkled with water to avoid dust pollution during transportation. Proper drainage system all along the haul/approach/transportation roads are to be made and maintained properly. Suitable fast growing and tall seedlings of broad leaved avenue tree species should be planted (maximum of four rows on either side) to suppress the dust pollution all along on both sides of the roads.

#### 2. Township Plantations

Besides the common fruit bearing and flowering plants, the plant species recommended in the list can be considered for planting in the Township/Colony areas.





### 3. Safety Zone (Greenbelt) Plantations

Green cover in mining areas not only helps in reducing air, water and noise pollution level, but also improves the ecological conditions & aesthetic value and beneficially influences the microclimate of the surroundings to a great extent. In order to minimize the impact of mining on environment outside the mine lease area, thick greenbelt should be established in the safety zone within the lease area as well as around the infrastructure areas such as Silo, CHP, Coal Stock Yards, etc., as per the EC/FC conditions. Hence, thick greenbelt can also be established around the township to prevent the pollutants entering into the residential colony. The greenbelt establishment will also benefit suitable habitat both for flora and fauna in the mine lease area as well as people living in the residential colonies. It is essentially important to use tall seedlings (>1 m height) of fast growing native species (combination of different plant species) for greenbelt development so as to hasten the process of greening the area quickly. Also, the plant species selected for greenbelt should have fast growth, ever green, large crown volume and small/pendulous leaves with smooth surface. ***It is advisable to maintain the safety zone of a minimum of 7.5 m width along the mine boundary with greenbelt of mixed native tree species planted preferably in four rows of 2.5 x 2.5 m spacing.*** The recommended local plant species for establishing greenbelt (safety zone) is given in **Table 1**.

### 4. OB Waste Dumps

As per the physical features of the terrain, OB waste dumping should be carried out by adopting retreating method *i.e.*, starting from bottom and reaching to the top by providing proper terraces/benches/lifts of appropriate/recommended height and width. The overall height and slope of the dump should not exceed the permitted limits as per the EC conditions of MoEF & CC. Berms should be provided at the toe of each terrace to avoid water flow over the dump slopes. Wherever necessary, Retaining Wall/Toe Wall followed by Garland Drains with stone pitching should be provided on all waste dumps. The terraces and the drains of the dumps should be connected to the appropriate/specified water harvesting structures such as Silt Settling Tanks (SSTs), Siltation Ponds, Mine Sump, etc. for proper settlement of sediments and other waste materials. Only clear water from the mine areas should be allowed to let out to the natural water course outside the mine lease. It is recommended that the dump slope stabilization plantation has to be initiated immediately after completion of dumping in the lower terrace in case external dumping followed by further dumping on the top, without disturbing the slope areas (whereas it has to be carried out on the top terrace of backfilled OB dump).

**Table 1: Plant species recommended for afforestation in specified areas belong to the Dipka OCP, SECL, Korba**

I. No.	Species (Common Name)	Specific Locations to be Planted			
		1	2	3	4
1	<i>Acacia catechu</i> (Khair)				OB
2	<i>Acacia nilotica</i> (Babul)				OB
3	<i>Aegle marmelos</i> (Bel)		Township	Greenbelt	OB



I. No.	Species (Common Name)	Specific Locations to be Planted			
4	<i>Ailanthus excelsa</i> (Maharuk)			Greenbelt	OB
5	<i>Albizia lebbek</i> (Siris)	Road	Township	Greenbelt	OB
6	<i>Albizia odoratissima</i> (Kala Siris)	Road	Township	Greenbelt	OB
7	<i>Albizia procera</i> (Safed Siris)	Road	Township	Greenbelt	OB
8	<i>Alstonia scholaris</i> (Sathpathri)	Road	Township		
9	<i>Anogeissus latifolia</i> (Dhaora)				OB
10	<i>Artocarpus heterophyllus</i> (Jack fruit)		Township		
11	<i>Azadirachta indica</i> (Neem)	Road	Township	Greenbelt	OB
12	<i>Bauhinia purpurea</i> (Kaniyar)	Road	Township	Greenbelt	OB
13	<i>Bauhinia variegata</i> (Kachnar)	Road	Township	Greenbelt	OB
14	<i>Bombax ceiba</i> (Semul)		Township	Greenbelt	OB
15	<i>Buchanania lanzan</i> (Chironj)			Greenbelt	OB
16	<i>Butea monosperma</i> (Palas)	Road	Township	Greenbelt	OB
17	<i>Cassia fistula</i> (Amaltas)	Road	Township	Greenbelt	OB
18	<i>Ceiba pentandra</i> (Semul)			Greenbelt	OB
19	<i>Cordia dichotoma</i> (Gunda, Lasora)		Township	Greenbelt	OB
20	<i>Dalbergia latifolia</i> (Kala shisham)			Greenbelt	OB
21	<i>Dalbergia paniculata</i> (Takoli)			Greenbelt	OB
22	<i>Dalbergia sissoo</i> (Shisham)	Road	Township	Greenbelt	OB
23	<i>Dendrocalamus strictus</i> (Bans)			Greenbelt	OB
24	<i>Diospyros melanoxylon</i> (Tendu)			Greenbelt	OB
25	<i>Ficus benghalensis</i> (Bargat)	Road	Township	Greenbelt	OB
26	<i>Ficus racemosa</i> (Gular)	Road	Township	Greenbelt	OB
27	<i>Ficus religiosa</i> (Pipal)	Road	Township	Greenbelt	OB
28	<i>Gardenia latifolia</i> (Papda/Kurlu)	Road			OB
29	<i>Gmelina arborea</i> (Ghamar)	Road	Township	Greenbelt	OB
30	<i>Grewia tiliifolia</i> (Dhaman)			Greenbelt	OB
31	<i>Haldina cordifolia</i> (Haldu)	Road		Greenbelt	OB
32	<i>Holarrhena pubescens</i> (Kuda)	Road		Greenbelt	OB
33	<i>Holoptelea integrifolia</i> (Papri, Kanju)	Road		Greenbelt	OB
34	<i>Lagerstroemia parviflora</i> (Lendia)			Greenbelt	OB
35	<i>Lagerstroemia speciosa</i> (Jarul)			Greenbelt	OB
36	<i>Lannea coromandelica</i> (Mohin)			Greenbelt	OB
37	<i>Limonia acidissima</i> (Kaith)			Greenbelt	OB
38	<i>Madhuca longifolia</i> var. <i>latifolia</i> (Mahua)	Road	Township	Greenbelt	OB
39	<i>Mangifera indica</i> (Aam)	Road	Township	Greenbelt	OB
40	<i>Melia dubia</i> (Bakain)			Greenbelt	
41	<i>Mitragyna parvifolia</i> (Kaim/Faldu)	Road		Greenbelt	OB
42	<i>Morinda pubescens</i> (Aal/Achu/Pindra)		Township	Greenbelt	OB
43	<i>Moringa oleifera</i> (Saijna)		Township		
44	<i>Morus alba</i> (Shahatut)		Township		OB
45	<i>Neolamarckia cadamba</i> (Kadam)	Road	Township	Greenbelt	OB
46	<i>Nyctanthes arbor-trystis</i> (Parijat)		Township		OB
48	<i>Pterocarpus marsupium</i> (Bijasal)		Township	Greenbelt	OB
49	<i>Phyllanthus emblica</i> (Amla)		Township	Greenbelt	OB
50	<i>Pithecellobium dulce</i> (Junglee Jilebi)		Township	Greenbelt	OB
51	<i>Pongamia pinnata</i> (Karanj)	Road	Township	Greenbelt	OB
52	<i>Samanea saman</i> (Rain tree)	Road	Township		
53	<i>Schleichera oleosa</i>	Road			OB
54	<i>Semecarpus anacardium</i> (Bhilava)	Road		Greenbelt	OB
55	<i>Shorea robusta</i> (Sal)	Road		Greenbelt	OB
56	<i>Syzygium cumini</i> (Jamun)	Road	Township	Greenbelt	OB



I. No.	Species (Common Name)	Specific Locations to be Planted			
		Road	Township	Greenbelt	OB
57	<i>Tamarindus indica</i> (Imli)	Road	Township	Greenbelt	OB
58	<i>Tectona grandis</i> (Teak)	Road	Township	Greenbelt	OB
59	<i>Terminalia alata</i> (Asan)	Road		Greenbelt	OB
60	<i>Terminalia arjuna</i> (Arjun)	Road	Township	Greenbelt	OB
61	<i>Terminalia bellirica</i> (Behra)	Road	Township	Greenbelt	OB
62	<i>Terminalia chebula</i> (Harra)	Road	Township	Greenbelt	OB
63	<i>Terminalia catappa</i>		Township		
64	<i>Trema orientalis</i> (Gio/Jivanthi)			Greenbelt	OB
65	<i>Vitex negundo</i> (Shamal)		Township		OB
66	<i>Woodfordia fruticosa</i> (Dawi, Dhaura)				OB
67	<i>Ziziphus mauritiana</i> (Ber)		Township	Greenbelt	OB
<b>Total</b>		<b>34</b>	<b>39</b>	<b>52</b>	<b>60</b>

### Grasses as soil moisture conservation and slope stabilization

Many studies have documented the positive role of grasses as a nurse crop. Plants of the grass family have a fibrous root system and these fibrous roots spread through the soil and help to hold the soil more firmly than tap roots of dicot plants. This helps prevent washing away of soil and thus, helps in conserving soil.

Grasses help to stabilize dump slopes in many ways by providing root strength and by modifying the saturated soil water regime. The native grass species can establish very fast in soil having low nutrients and stressful environment as usually experienced in OB waste dumps and other degraded areas in the mining lease. Grasses can offer protection to the soil from impacts of drought due to their well-established fibrous root system which significantly reduce soil erosion and eventually produce a layer of organic soil that facilitate early succession of secondary colonizing plant species.

The grass species selected should be excellent soil binders and are to be planted in the form of slips and root stocks. Slips have to be planted in the contours along slope at a distance of one foot apart. Slips can be separated from the clumps of the grasses collected from surrounding natural areas. Also, the grasses can easily be multiplied in the nursery by vegetative means and can be employed for large scale planting. The grasses recommended for the purpose are listed in **Table 2.**

**Table 2: 0Grass species recommended for Soil Moisture Conservation (SMC) and Stabilization of OB material along steep slopes of waste dumps**

Sl. No.	Botanical name	Propagation material
1.	<i>Apluda mutica</i>	Slips
2.	<i>Aristida setacea</i>	Slips
3.	<i>Bambusa bamboos</i>	Rhizome/Seeds/Seedlings
4.	<i>Bothriochloa odorata</i>	Seeds
5.	<i>Bothriochloa pertusa</i>	Seeds
6.	<i>Chloris barbata</i>	Seeds
7.	<i>Cymbopogon flexuosus</i>	Slips
8.	<i>Cymbopogon martinii</i>	Slips
9.	<i>Cymbopogon nardus</i>	Slips



Sl. No.	Botanical name	Propagation material
10.	<i>Dactyloctenium aegyptium</i>	Slips
11.	<i>Dendrocalamus strictus</i>	Rhizome/ Seeds/Seedlings
12.	<i>Dichanthium annulatum</i>	Seeds
13.	<i>Digitaria ciliaris</i>	Slips
14.	<i>Eragrostis viscosa</i>	Slips
15.	<i>Eulaliopsis binata</i>	Slips
16.	<i>Saccharum spontaneum</i>	Slips
17.	<i>Vetiveria zizanioides</i>	Slips

### Importance of leguminous plant species

Legumes play an important role in increasing the soil nitrogen content through symbiotic association of nitrogen fixing bacteria such as species of *Rhizobium* and *Bradyrhizobium* within their root nodules. When the plant dies, fixed nitrogen is released on to soil and will then made available to other plants and thus helps to improve soil fertility. These species can be collected with less effort from adjacent areas or from the seed/selling stores and be utilized for the purpose. Depending on their habit and seed size, the leguminous plant species can be propagated by various means such as direct seed sowing, seed mix soil ball or even by seedling planting as in the case of tree species. The different leguminous plant species recommended for afforestation of different mining areas of Dipka OCP are listed in **Table 3**.

**Table 3: Recommended Leguminous Plant Species for Afforestation of Dipka OCP**

Sl. No.	Botanical name	Habit	Local name
1.	<i>Acacia catechu</i>	Tree	Khair
2.	<i>Acacia nilotica</i>	Tree	Babul
3.	<i>Albizia lebeck</i>	Tree	Siris
4.	<i>Albizia odoratissima</i>	Tree	Kala Siris
5.	<i>Albizia procera</i>	Tree	Safed Siris
6.	<i>Bauhinia purpurea</i>	Tree	Katchnar
7.	<i>Bauhinia variegata</i>	Tree	Katchnar
8.	<i>Cajanus scarabaeoides</i>	Herb	Jangli Tur
10.	<i>Crotalaria juncea</i>	Herb	Sun Hemp
11.	<i>Crotalaria verrucosa</i>	Herb	Bamshan
12.	<i>Dalbergia latifolia</i>	Tree	Kala Shisham
13.	<i>Dalbergia sissoo</i>	Tree	Shisham
14.	<i>Indigofera cassioides</i>	Shrub	Saknya, Kathi
15.	<i>Mimosa pudica</i>	Herb	Lajwanti
16.	<i>Pithecellobium dulce</i>	Tree	Junglee Jilebi
17.	<i>Pongamia pinnata</i>	Tree	Karanj
21.	<i>Stylosanthes fruticosa</i>	Herb	Shrubby pencil flower
22.	<i>Stylosanthes hamata</i>	Herb	Hamata grass
23.	<i>Tephrosia purpurea</i>	Herb	Saraphonk

### Gully control measures over the dumps and other reclaimed areas

Control of erosion is important for both during mining and post mining period as the waste materials emanating from the fragmented areas such as mine pit and waste dumps can cause damages to the local environment including soil, water, air, agriculture, etc. The main objective of the gully control measures is to protect the reclaimed area from erosion/runoff due to rain



water flow. The gully control measures are effective in retaining silt/sediment/boulders behind it and allow only water to flow towards downstream. Due to silt/sediment retention, the channel gradient, flow velocity and consequently carrying capacity of the water course will be reduced and thus control the further advancement of gully. Engineering measures are the first line of defence in controlling erosion and they also facilitate quick re-establishment of vegetation over the disturbed areas. The major types of gully control measures are detailed as follows:

- i. **Loose Boulder Check Dam (LBCD):** (Dry Random Rubble): The LBCDs are usually proposed for gullies having a width of about 5-10 m and their bed slope less than 10%.
- ii. **Log Wood Check Dam (LWCD):** This structure is proposed for narrow gullies having a width of about 3-6 m. Wooden logs of sprouting species such as *Lannea coromandelica*, *Bombax ceiba*, *Erythrina suberosa*, *E. indica*, *Ficus benghalensis*, *F. hispida*, *F. mollis*, *F. racemosa*, *F. religiosa*, *Madhuca longifolia* var. *latifolia*, *Semecarpus anacardium*, *Vitex negundu*, etc., needs be inserted up to a depth of about 30 cm on the dump terrace in series at distance of about 30 cm from centre to centre. Boulders of 40 cm size and above may be hand packed between risers and logs up to 1.0 m depth.
- iii. **Brush Wood Check Dam (BWCD):** It is proposed for narrow gullies of about 1-3 m wide and is suitable for the areas where boulders are not available. It is essentially like logwood check dam and in this, brushwood such as branches, twigs, climbers, etc., are used instead of wooden logs.





**Environmental Management Division**

**Directorate of Extension**

**Indian Council of Forestry Research and Education (ICFRE)**

*(An Autonomous Body of Ministry of Environment, Forest & Climate Change, Govt. of India)*

**P.O. New Forest- 248 006, Dehradun (U.K.)**

[www.icfre.org](http://www.icfre.org)



साउथ ईस्टर्न कोलफिल्ड्स लिमिटेड  
 South Eastern Coalfields Limited  
 (कोल इंडिया का एक अंश/A Subsidiary Of Coal India Ltd)  
 कार्यालय:- महाप्रबंधक, दीपिका क्षेत्र  
 OFFICE OF THE GENERAL MANAGER, DIPKA AREA  
 P.O.: Dipka, Distt.: Korba (CG)-495452  
 Tel: 07815-239011, 263300, 263301 Fax: 07815239002  
 e-mail: gmdp@secl.coalindia.in



क्रमांक: एस.ई.सी.एल/दी.क्षे./पर्या./2023/3125  
 प्रति,

दिनांक: 30.09.2023

Deputy Director General of Forests (C),  
 Integrated Regional Office,  
 Ministry of Environment, Forest and Climate Change,  
 Aranya Bhawan, North Block, Sector-19,  
 Naya Raipur, Atal Nagar, Chhattisgarh.  
 Email: [iro.raipur-mefcc@gov.in](mailto:iro.raipur-mefcc@gov.in)

**विषय:** Submission of Environmental Audit Statement for FY 2022-23 of Dipka Expansion Project, Dipka Area of SECL-Reg.

महोदय,

Please find enclosed herewith the Environmental Audit Statement of FY 2022-23 of Dipka Expansion Project, Dipka Area of SECL. This is for your kind information please.

धन्यवाद,

भवदीय,

महाप्रबंधक,

दीपिका क्षेत्र, एस.ई.सी.एल.।

प्रतिलिपि,

1. सदस्य सचिव, छ.ग.पर्यावरण संरक्षण मंडल, रायपुर.
2. क्षेत्रीय अधिकारी, छ.ग.पर्यावरण संरक्षण मंडल, कोरबा.
3. क्षेत्रीय निर्देशक, आर.आई-V, सी.एम.पि.डि.आई., बिलासपुर.
4. महाप्रबंधक (पर्यावरण), एस.ई.सी.एल. बिलासपुर.
5. नोडल अधिकारी (पर्यावरण), दीपिका क्षेत्र, एस.ई.सी.एल.।



# **ENVIRONMENTAL AUDIT STATEMENT**

**2022-23**

**For**

## **DIPKA EXPANSION PROJECT**

**Under**

**(DIPKA AREA)**

**South Eastern Coalfields Limited**

*(A Mini Ratna Company)*

**Year of establishment – 2006**

**Capacity of Mine - 37.50 MTPA**

**Project Area - 1999.293 Ha. (As per EC)**

**Central Mine Planning & Design Institute Limited  
Regional Institute – V, CMPDI Complex, Seepat Road,  
BILASPUR (C.G.)**



# ENVIRONMENTAL AUDIT STATEMENT (2022 – 23)

## DIPKA EXPANSION PROJECT

### CHAPTER-I

TABLE-1.1

<b>1.0</b>	<b>General Information</b>	:	
<b>a)</b>	<b>Extractable Reserves (as on 01.04.2023)</b>	:	132.78 MT
<b>b)</b>	<b>Target output &amp; grade of coal (2023-24)</b>	:	Target: 40.00 MTY; Grade: G-10 & G-11
<b>c)</b>	<b>Seams Worked</b>	:	Lower Kusmunda, Upper Kusmunda and E&F Seam
<b>d)</b>	<b>Thickness of Seam Worked (in metres.)</b>	:	Upper Kusmunda: 24.69 – 35.82 Lower Kusmunda(Top): 34.70- 44.85 m Lower Kusmunda (Bottom): 2.19- 24.50m Seam E&F: 12.70-19.05m
<b>e)</b>	<b>Depth of Seams from the surface</b>  Minimum : Maximum:	:	50m 160m
<b>f)</b>	<b>Av. Stripping ratio mining purpose</b>	:	1:2
<b>g)</b>	<b>No. of villages/ families</b>	:	12 Villages
<b>h)</b>	<b>(i) Mining area (in Ha.)</b>	:	1002.053 Ha
	<b>(ii) Leasehold area other than mining purpose (in Ha.)</b>	:	997.24 Ha
	<b>(iii) Total Leasehold Area (in Ha.)</b>	:	1999.293 Ha

1.1	<b>Brief Geology of Mine</b>	:	The Upper Kusmunda seam is at a shallow depth of alluvium, Coarse-grained sand stone with carbonaceous shale. The parting consists of coarse to medium grained sand stone and shale. The general strike of the strata is E.W with certain swing towards NW-SE at places. The normal dip of the strata is about 1 in 11.5 towards south. Three sets of faults have been established in lease hold area of the project.																					
1.2	<b>Mining Method Description</b>	:	The overburden is being removed by shovel and dumper combination 42 cu.m shovel and 240 T Rear dumpers, 10 cu.m shovel with 120 T and 100 T Rear dumpers are deployed in O.B. Coal winning is done by Surface Miners. Wherever practical difficulties arise (like hard band) coal and OB are removed by conventional drilling and blasting. Tippers and pay loaders have been deployed on coal benches. Feeder breaker, In-pit Crusher & belt conveyor system is used to load into tippers.																					
1.3	<b>Present Status of the mine</b>	:	Active Mine																					
1.	<b>Production Figures</b>	:																						
	<table border="1"> <thead> <tr> <th>Year</th> <th>Coal Production (in Tonnes/ MT)</th> <th>OB in (CUM/ M CUM) FOR OC MINES</th> </tr> </thead> <tbody> <tr> <td>2018-19</td> <td>35.00 MTY</td> <td>19.15 Mm<sup>3</sup></td> </tr> <tr> <td>2019-20</td> <td>25.179 MTY</td> <td>22.34 Mm<sup>3</sup></td> </tr> <tr> <td>2020-21</td> <td>34.354 MTY</td> <td>25.782 Mm<sup>3</sup></td> </tr> <tr> <td>2021-22</td> <td>34.375 MTY</td> <td>19.304 Mm<sup>3</sup></td> </tr> <tr> <td>2022-23</td> <td>32.149 MTY</td> <td>29.544 Mm<sup>3</sup></td> </tr> <tr> <td><b>2023-24 (Target)</b></td> <td>40.00 MTY</td> <td>54.00 Mm<sup>3</sup></td> </tr> </tbody> </table>			Year	Coal Production (in Tonnes/ MT)	OB in (CUM/ M CUM) FOR OC MINES	2018-19	35.00 MTY	19.15 Mm <sup>3</sup>	2019-20	25.179 MTY	22.34 Mm <sup>3</sup>	2020-21	34.354 MTY	25.782 Mm <sup>3</sup>	2021-22	34.375 MTY	19.304 Mm <sup>3</sup>	2022-23	32.149 MTY	29.544 Mm <sup>3</sup>	<b>2023-24 (Target)</b>	40.00 MTY	54.00 Mm <sup>3</sup>
Year	Coal Production (in Tonnes/ MT)	OB in (CUM/ M CUM) FOR OC MINES																						
2018-19	35.00 MTY	19.15 Mm <sup>3</sup>																						
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<b>2023-24 (Target)</b>	40.00 MTY	54.00 Mm <sup>3</sup>																						
2.	<b>No. of Inclines (Running)</b>	:	N.A																					
3.	<b>Shafts</b>	:	N.A																					

<b>4.</b>	<b>No. of quarries</b>	<b>:</b>	01
<b>5.</b>	<b>Overburden</b>	<b>:</b>	Number of External Dump- 03 Nos Number of Internal Dump- 03 Nos
<b>6.</b>	<b>Main Consumers</b>	<b>:</b>	Power plants
<b>7.</b>	<b>Mode of dispatch</b>	<b>:</b>	Silo, Rail & Road

## CHAPTER-II

### FORM-V (See rule 14)

Environmental Statement for the Financial Year ending

31<sup>st</sup> March 2023

#### PART-A

(i)	<b>Name and address of the mine</b>	:	Dipka Expansion Project, Dipka Area, Pragati Nagar, Post-Dipka, District-Korba (C.G.).
(ii)	<b>Industry category Primary (SIC Code) or Secondary (SIC Code)</b>	:	Primary
(iii)	<b>Production capacity units</b>	:	1996 (for 10.00 MTY), 2001-02 for 20.00 MTY 2009-10 for 25.00 MTY 2012-13 for 30.00 MTY 2014-15 for 31.00MTY 2017-18 for 35.00 MTY 2018-19 for 35.00 MTY 2019-20 for 35.00MTY 2020-21 for 35.00MTY 2021-22 for 35.00MTY 2022-23 for 37.50MTY
(iv)	<b>Year of establishment</b>	:	1 <sup>st</sup> July, 2006
(v)	<b>Date of the last environmental Statement Submitted</b>	:	September 2022

## PART-B

### Water and Raw Materials Consumption

#### (i) Water Consumption (KLD)

**Industrial consumption:** Rainy Season-1885.93 KLD,  
Non-Rainy Season- 2200.89 KLD

**Domestic consumption:** 1050.00 KLD

Name of Products	Process water consumption per product output	
	During the previous financial year 2021-22	During the current financial year 2022-23
Coal	Water is not required during coal production	

#### (ii) Raw materials consumption

*Name of raw materials	Name of products	Consumption of raw material per unit of output	
		During the previous financial year 2021-22	During the current financial year 2022-23
Explosive	Coal	0.447 kg/tonne	0.66 kg/tonne
P.O.L	Coal	0.472 lit/tonne	0.477 lit/tonne

\*Industry may use codes if disclosing details of raw materials would violate contractual obligations, otherwise all industries have to name the raw materials used.

## PART-C

### POLLUTANT DISCHARGED TO ENVIRONMENT/ UNIT OF OUTPUT (Parameters as specified in the consent issued)

Pollutants (Including mine & colony discharge of water)	Quantity of pollutants discharged (mass/day)	Concentrations of pollutants in discharges (mass/ volume)	Percentage of variation from prescribed standards with reasons
(a) Air	Not Quantified	Environmental Monitoring report Enclosed.	Environmental Monitoring report Enclosed.
(b) Water			
(i) Mine water pumped out	6314.82 KLD		
(ii) Industrial water discharged	Nil		
(iii) Colony water discharged	Nil		
(c) Noise	Not Quantified		

## PART-D

### HAZARDOUS WASTES

(As specified under Hazardous Wastes/ Management Handling Rule, 1989)

Hazardous Wastes	Total quantity	
	During the previous financial year 2021-22	During the current financial year 2022-23
From Process	Used/burnt oil: 155.88 KL	Used/burnt oil: 161.13 KL
	Used oil waste filters: 2.00 T	Used oil waste filters: 15.47 T

Neither liquid nor solid hazardous wastes are generated during underground coal mining.

## PART-E

### SOLID WASTES

Removal of overburden	Total quantity	
	During the previous financial year 2021-22	During the current financial year 2022-23
Total O.B.	19.304 Mm <sup>3</sup>	29.544 Mm <sup>3</sup>
Total O.B. For back filling	19.304 Mm <sup>3</sup>	29.544 Mm <sup>3</sup>
Total O.B. disposed	Nil	Nil

## PART-F

Please specify the characterization (in terms of composition and quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

Description	Qty. MT / Year (22-23)	Collection Method
Steel Scrap	2444.18 T	Deposited by different user dept. and sent to recyclers through auction.
Copper Scrap	10000 kg	
Brass Scrap	2500 kg	
Aluminum Scrap	--	--
Used Oil	161.13 KL	Deposited by different user dept. and sent to recyclers through auction.

## PART-G

### **Impact of the pollution abatement measure taken on conservation of natural resources and on the cost of production.**

---

#### **Air Pollution, Control & Conservation Measures:**

1. 458 Nos. of fixed sprinklers has been installed on approximately 7.5 Km of coal transport road and 28 Nos. at railway siding and is working satisfactory.
2. 09 no. 70KL and 07 no. 28 KL water tankers have been deployed on haul roads for suppression of dust emission.
3. Every year extensive plantation is being done both on plain and dump area by Chhattisgarh Van Vikas Nigam (a state government organization) and till date about 23.17 lakh no's of plant planted. During the FY 2022-23, 80,000 No's. of plants have been planted as gap plantation.
4. 04 no. rain guns have been provided in Coal transportation road and 11 Nos. in railway siding for effective dust suppression.
5. Concreting of coal transport road from BSES chowk to Shramik chowk to Dipka police station chowk and concreting of road from Shramik chowk to Gandhinagar and Shramik chowk to Railway siding has been done to avoid fugitive dust emission.
6. In-pit belt conveyor system has been commissioned with mist spray systems and is working satisfactorily.
7. Mist spray and conventional system of spray has been installed in the feeder breaker of CHP. Wetting of coal before handling in CHP during handling in CHP and finally in loading operations is practiced.
8. Mobile Water sprinkling on coal stock is practiced diligently.
9. The dust and mud accumulation along the haul road and service roads are periodically cleaned to curb fugitive dust emission.
10. CAAQMS has been installed/commissioned on 18/01/2014 at Dipka Area and is working satisfactorily.
11. Adequate green belts have been developed in and around the Pragati Nagar residential colony, office complexes etc.
12. Surface Miners deployment since 2009-2010 has largely reduced the dust emission which was emitting through drilling, blasting and crushers.
13. Long Range Fogging Machine has been deployed during April 2019 in Dipka OCP for dust suppression.
14. Mechanized Sweeping Machine has been deployed during Nov 2019 at Dipka OCP for dust suppression at township and colony roads.

**Water Pollution, Control & Conservation Measures:**

1. The sedimentation ponds are provided for treating the mine water discharge. The treated mine water is used for dust suppression activities. There are 02 sedimentation ponds namely Sirki and Chainpur. Pragati nagar pond and Silo Pond acts as ground water recharge pond.
2. O&G trap of 110KL capacity has been installed in workshop area for the treatment of effluent generated after washing the HEMM trough oil and grease trap in effluent treatment plant. The treated effluent is re-used for washing HEMM's in workshop.
3. 3.2km pucca catch drain has been constructed around dump no 3&5 to control soil erosion and water pollution. Regular de-siltation of drains is carried out before monsoon.
4. Domestic effluent treatment plant of 3.00 MLD capacity was constructed at Gevra. The plant is combined with the Gevra project.
5. Storm water drains have been constructed in the office buildings and colony.
6. Rainwater harvesting have been installed in the colony and office buildings.
7. Garland drains being made around the periphery of the quarry to drain off the rain water away from the workings in order to maintain surface water drainage.

**Noise Pollution Control Measures:**

1. Every year extensive plantation is being done both on plain and dump area by Chhattisgarh van vikas nigam (a state government organization) and till date about 23.17 lakh plants have been planted.
2. Reduced quantity of blasting has resulted in lower noise levels.
3. Lined chutes in silo to reduce noise.
4. Surface miner deployed to eliminate coal crushing will reduce noise.
5. Provision of ear muffs/ear plugs to workers subjected to noise level above recommended limits.
6. Regular monitoring of noise level of project area.

**Hazardous Wastes Management:**

1. Oil and grease filters are stored in a drum placed on cemented concrete floor to prevent contamination of soil & ground water. The storage area of Hazardous Wastes is marked by erecting danger sign boards outside.
  2. The waste oil is stored in a container in the workshop for proper disposal.
  3. Used oil/burnt oil are stored in specified drums at work sites on concrete floors.
  4. Oil & grease generated at workshop after treatment by oil & grease trap is safely stored and disposed.
-



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## **PART-H**

### **Additional measures/ investment proposals for environmental protection including abatement of pollution, prevention of pollution.**

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1. During the FY 2022-23, 80000 no. of plants have been planted.
  2. Long Range Fogging Machine has been has been deployed from Aril 2019 in Dipka OCP for dust suppression around railway siding and coal stock areas in Dipka project.
  3. Mechanized sweeping machine has been deployed from November 2019 by the project for dust control in the township and colony roads.
- 

## **PART-I**

### **Any other particulars for improving the quality of the environment.**

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1. Long Range Fogging Machine has been deployed in Dipka OCP for dust suppression around railway siding and coal stock areas in Dipka project.
  2. Mechanized sweeping machine has been deployed by the project for dust control in the township and colony roads.
- 

\*\*\*\*\*

# **ENVIRONMENTAL MONITORING REPORT**

**CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED**

Environment Laboratory, Regional Institute-V,  
 Phone: (07815) 271646, email: [rdri5.cmpdi@coalindia.in](mailto:rdri5.cmpdi@coalindia.in),  
 website: [www.cmpdi.co.in](http://www.cmpdi.co.in)

**AIR QUALITY REPORT**

Month	JANUARY	Area	DIPKA	Report No	BSP/2023/01/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	16.02.2023
Name of the Project	DIPKA OC	Sample Reference No.	1-2

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
1-Malgaon Village	B	03.01.2023	09.01.2023	139	77	44	29	31		
		07.01.2023	11.01.2023	142	86	52	30	33		
		10.01.2023	17.01.2023	156	74	46	34	39		
		13.01.2023	20.01.2023	163	63	39	37	33		
		17.01.2023	23.01.2023	157	69	48	35	39		
		20.01.2023	30.01.2023	166	71	33	29	30		
		23.01.2023	01.02.2023	173	73	47	37	34		
		25.01.2023	03.02.2023	141	56	40	30	39		
		28.01.2023	05.02.2023	176	78	39	22	24		
2-Near Railway Siding	A-O	03.01.2023	09.01.2023	439	239	66	34	26		
		07.01.2023	11.01.2023	481	247	70	29	30		
		10.01.2023	17.01.2023	433	243	73	34	36		
		13.01.2023	20.01.2023	569	256	65	39	42		
		17.01.2023	23.01.2023	481	247	73	26	31		
		20.01.2023	30.01.2023	556	269	67	37	40		
		23.01.2023	01.02.2023	469	273	76	32	36		
		25.01.2023	03.02.2023	469	259	74	29	34		
		28.01.2023	05.02.2023	547	279	69	31	35		

*Normal*  
Analyzed by

*Deepanjita*  
Checked by

*C.K. Vel*  
Manager -Environment

**CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED**

Environment Laboratory, Regional Institute-V,  
Phone: (07815) 271646, email: [rdr15.cmpdi@coalindia.in](mailto:rdr15.cmpdi@coalindia.in),  
website: [www.cmpdi.co.in](http://www.cmpdi.co.in)

**AIR QUALITY REPORT**

Month	JANUARY	Area	DIPKA	Report No	BSP/2023/01/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	16.02.2023
Name of the Project	DIPKA OC	Sample Reference No.	3-4

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
3-Near Excv. Workshop	A-O	03.01.2023	09.01.2023	435	230	77	33	39		
		07.01.2023	11.01.2023	416	219	64	30	36		
		10.01.2023	17.01.2023	457	251	69	32	37		
		13.01.2023	20.01.2023	439	249	79	36	39		
		17.01.2023	23.01.2023	478	237	63	30	33		
		20.01.2023	30.01.2023	430	232	79	29	31		
		23.01.2023	01.02.2023	456	249	71	37	39		
		25.01.2023	03.02.2023	526	265	79	34	30		
		28.01.2023	05.02.2023	461	256	78	30	39		
4-Pragati Nagar	B	03.01.2023	09.01.2023	167	79	37	36	39		
		07.01.2023	11.01.2023	151	60	35	37	38		
		10.01.2023	17.01.2023	156	73	41	30	27		
		13.01.2023	20.01.2023	148	61	36	36	39		
		17.01.2023	23.01.2023	159	76	32	27	30		
		20.01.2023	30.01.2023	143	67	37	34	39		
		23.01.2023	01.02.2023	139	61	36	30	33		
		25.01.2023	03.02.2023	170	79	34	36	38		
		28.01.2023	05.02.2023	131	63	35	33	31		

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**AIR QUALITY REPORT**

Month	JANUARY	Area	DIPKA	Report No	BSP/2023/01/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	16.02.2023
Name of the Project	DIPKA OC	Sample Reference No.	5-6

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
5-Hardi Bazar	B	03.01.2023	09.01.2023	154	63	37	32	36		
		07.01.2023	11.01.2023	153	59	35	29	33		
		10.01.2023	17.01.2023	157	73	46	30	35		
		13.01.2023	20.01.2023	144	69	49	29	34		
		17.01.2023	23.01.2023	169	61	47	30	36		
		20.01.2023	30.01.2023	147	68	39	29	33		
		23.01.2023	01.02.2023	159	73	40	34	39		
		25.01.2023	03.02.2023	169	72	46	29	37		
		28.01.2023	05.02.2023	153	76	44	26	39		
6-Batari	B	03.01.2023	09.01.2023	176	67	39	24	27		
		07.01.2023	11.01.2023	165	79	40	27	29		
		10.01.2023	17.01.2023	149	65	45	34	36		
		13.01.2023	20.01.2023	176	67	40	26	29		
		17.01.2023	23.01.2023	169	63	37	23	25		
		20.01.2023	30.01.2023	176	79	39	25	30		
		23.01.2023	01.02.2023	162	67	45	31	34		
		25.01.2023	03.02.2023	179	74	40	26	29		
		28.01.2023	05.02.2023	154	70	39	34	38		

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**AIR QUALITY REPORT**

Month	JANUARY	Area	DIPKA	Report No	BSP/2023/01/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	16.02.2023
Name of the Project	DIPKA OC	Sample Reference No.	7-8

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
7-Jhabar	B	03.01.2023	09.01.2023	169	76	41	26	32		
		07.01.2023	11.01.2023	157	62	43	29	33		
		10.01.2023	17.01.2023	166	70	41	26	30		
		13.01.2023	20.01.2023	153	67	39	29	33		
		17.01.2023	23.01.2023	157	66	43	30	35		
		20.01.2023	30.01.2023	169	63	42	27	32		
		23.01.2023	01.02.2023	158	60	49	25	29		
		25.01.2023	03.02.2023	173	76	42	30	33		
		28.01.2023	05.02.2023	165	71	43	27	26		
8-Ratija	B	03.01.2023	09.01.2023	160	76	39	31	34		
		07.01.2023	11.01.2023	144	63	47	29	32		
		10.01.2023	17.01.2023	177	64	43	27	29		
		13.01.2023	20.01.2023	150	67	44	30	34		
		17.01.2023	23.01.2023	173	71	39	27	30		
		20.01.2023	30.01.2023	157	66	44	26	33		
		23.01.2023	01.02.2023	166	79	39	28	33		
		25.01.2023	03.02.2023	154	63	50	26	32		
		28.01.2023	05.02.2023	143	70	63	30	26		

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**NOISE QUALITY REPORT**

Month	JANUARY	Area	DIPKA	Report No	BSP/2023/01/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	16.02.2023
Name of the Project	DIPKA OC	Sample Reference No.	N39-N46

Parameter			The Noise Pollution (R & C) rules, 2000		Remarks
			Day Time	Night Time	
Limit (in dB(A) Leq	Industrial area	A	75	70	
	Commercial area	B	65	55	
	Residential Area	C	55	45	
	Silence Zone	D	50	40	
Method of analysis	CPCB Protocol For Ambient Level Noise Monitoring				
Station (Code) Station Name	Station category	Date of measurement	Value in dB(A)	Value in dB(A)	
1-Malgaon Village	C	09.01.2023	49.4	41.5	
		24.01.2023	46.0	40.5	
2-Near Railway Siding	A	09.01.2023	59.9	57.5	
		24.01.2023	60.4	56.1	
3-New Excv. Workshop	A	09.01.2023	60.7	56.5	
		24.01.2023	59.7	56.3	
4-Pragati Nagar	C	09.01.2023	51.3	40.4	
		24.01.2023	48.3	39.3	
5-Hardi Bazar	C	09.01.2023	48.8	40.2	
		24.01.2023	47.3	40.2	
6-Batari	C	09.01.2023	48.3	40.3	
		24.01.2023	44.8	37.4	
7-Jhabar	C	09.01.2023	51.3	38.4	
		24.01.2023	47.4	38.3	
8-Ratija	C	09.01.2023	49.4	38.5	
		24.01.2023	44.6	36.7	

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**AIR QUALITY REPORT**

Month	FEBRUARY	Area	DIPKA	Report No	BSP/2023/02/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	09.03.2023
Name of the Project	DIPKA OC	Sample Reference No.	1-2

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
1-Malgaon Village	B	02.02.2023	06.02.2023	141	70	43	23	26		
		07.02.2023	13.02.2023	133	68	52	29	31		
		09.02.2023	15.02.2023	166	79	44	33	37		
		15.02.2023	20.02.2023	153	60	37	24	29		
		17.02.2023	23.02.2023	170	69	45	36	38		
		22.02.2023	27.02.2023	173	73	37	30	34		
		24.02.2023	28.02.2023	162	70	40	37	40		
		28.02.2023	01.03.2023	170	66	37	31	34		
2-Near Railway Siding	A-O	03.02.2023	07.02.2023	449	233	69	39	42		
		07.02.2023	14.02.2023	476	249	67	30	34		
		10.02.2023	16.02.2023	436	240	75	37	40		
		13.02.2023	22.02.2023	567	258	63	29	34		
		17.02.2023	24.02.2023	488	249	71	36	39		
		21.02.2023	27.02.2023	471	270	69	28	31		
		24.02.2023	28.02.2023	463	265	76	34	37		
		28.02.2023	02.03.2023	557	269	70	25	30		

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 Checked by

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 Manager -Environment

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**AIR QUALITY REPORT**

Month	FEBRUARY	Area	DIPKA	Report No	BSP/2023/02/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	09.03.2023
Name of the Project	DIPKA OC	Sample Reference No.	3-4

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
3-Near Excv. Workshop	A-O	02.02.2023	06.02.2023	445	232	75	37	40		
		07.02.2023	13.02.2023	426	229	61	33	36		
		09.02.2023	15.02.2023	437	241	63	30	37		
		15.02.2023	20.02.2023	440	239	76	36	39		
		17.02.2023	23.02.2023	469	247	65	33	36		
		22.02.2023	27.02.2023	443	238	80	38	40		
		24.02.2023	28.02.2023	516	260	77	36	39		
		28.02.2023	01.03.2023	473	257	73	30	34		
4-Pragati Nagar	B	02.02.2023	07.02.2023	177	87	39	29	31		
		07.02.2023	14.02.2023	153	63	33	27	30		
		09.02.2023	16.02.2023	146	76	43	22	26		
		15.02.2023	22.02.2023	158	67	39	30	33		
		17.02.2023	24.02.2023	159	77	30	29	34		
		22.02.2023	27.02.2023	153	68	36	27	29		
		24.02.2023	28.02.2023	144	66	39	30	36		
		28.02.2023	02.03.2023	140	60	38	27	30		

*Atul*  
Analyzed by

*Deeparatna*  
Checked by

*C.K. Vel*  
Manager - Environment

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**AIR QUALITY REPORT**

Month	FEBRUARY	Area	DIPKA	Report No	BSP/2023/02/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	09.03.2023
Name of the Project	DIPKA OC	Sample Reference No.	5-6

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
5-Hardi Bazar	B	02.02.2023	06.02.2023	139	60	37	27	30		
		07.02.2023	13.02.2023	151	61	35	22	26		
		09.02.2023	15.02.2023	137	74	46	20	25		
		15.02.2023	20.02.2023	154	70	39	22	25		
		17.02.2023	23.02.2023	166	66	40	27	30		
		22.02.2023	27.02.2023	144	68	37	26	31		
		24.02.2023	28.02.2023	159	73	42	29	30		
		28.02.2023	01.03.2023	139	76	46	34	37		
6-Batari	B	03.02.2023	07.02.2023	146	67	34	26	30		
		07.02.2023	14.02.2023	161	79	42	31	34		
		10.02.2023	16.02.2023	139	65	40	27	33		
		13.02.2023	22.02.2023	170	67	43	26	29		
		17.02.2023	24.02.2023	159	63	39	22	28		
		21.02.2023	27.02.2023	172	79	37	26	30		
		24.02.2023	28.02.2023	164	67	47	27	31		
		28.02.2023	02.03.2023	139	70	33	26	34		

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**AIR QUALITY REPORT**

Month	FEBRUARY	Area	DIPKA	Report No	BSP/2023/02/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	09.03.2023
Name of the Project	DIPKA OC	Sample Reference No.	7-8

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
7-Jhabar	B	03.02.2023	06.02.2023	149	71	39	29	25		
		07.02.2023	13.02.2023	152	62	44	22	26		
		10.02.2023	15.02.2023	144	70	37	30	34		
		13.02.2023	20.02.2023	150	69	42	27	29		
		17.02.2023	23.02.2023	149	61	40	25	28		
		21.02.2023	27.02.2023	136	64	47	22	26		
		24.02.2023	28.02.2023	158	63	44	27	29		
		28.02.2023	01.03.2023	161	75	39	26	30		
8 -Ratija	B	03.02.2023	07.02.2023	150	73	33	27	31		
		07.02.2023	14.02.2023	143	64	40	26	34		
		10.02.2023	16.02.2023	171	66	38	27	30		
		13.02.2023	22.02.2023	157	60	46	32	34		
		17.02.2023	24.02.2023	163	73	38	22	29		
		21.02.2023	27.02.2023	153	69	44	29	34		
		24.02.2023	28.02.2023	150	60	39	26	30		
		28.02.2023	02.03.2023	141	58	43	25	29		

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**NOISE QUALITY REPORT**

Month	FEBRUARY	Area	DIPKA	Report No	BSP/2023/02/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	
Name of the Project	DIPKA OC	Sample Reference No.	N39-N46

Parameter			The Noise Pollution (R & C) rules, 2000		Remarks
			Day Time	Night Time	
Limit (in dB(A) Leq	Industrial area	A	75	70	
	Commercial area	B	65	55	
	Residential Area	C	55	45	
	Silence Zone	D	50	40	
Method of analysis	CPCB Protocol For Ambient Level Noise Monitoring				
Station (Code) Station Name	Station category	Date of measurement	Value in dB(A)	Value in dB(A)	
1-Malgaon Village	C	09.02.2023	43.5	38.6	
		24.02.2023	46.0	38.4	
2-Near Railway Siding	A	09.02.2023	65.0	57.0	
		24.02.2023	66.5	57.4	
3-New Excv. Workshop	A	09.02.2023	64.5	56.1	
		24.02.2023	65.9	55.7	
4-Pragati Nagar	C	09.02.2023	45.4	37.4	
		24.02.2023	45.3	36.0	
5-Hardi Bazar	C	09.02.2023	46.0	37.1	
		24.02.2023	45.7	35.6	
6-Batari	C	09.02.2023	41.1	37.2	
		24.02.2023	43.1	35.5	
7-Jhabar	C	09.02.2023	44.8	37.4	
		24.02.2023	45.4	36.6	
8-Ratija	C	09.02.2023	41.3	36.2	
		24.02.2023	43.3	36.1	

*[Signature]*  
**Sampled by**

*[Signature]*  
**Checked by**

*[Signature]*  
**Manager-Environment**

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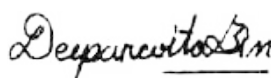
**AIR QUALITY REPORT**


Month	MARCH	Area	DIPKA	Report No	BSP/2023/03/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	02.04.2023
Name of the Project	DIPKA OC	Sample Reference No.	1-2

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
	Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80		80
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
1-Malgaon Village	B	02.03.2023	07.03.2023	131	63	40	26	29		
		06.03.2023	14.03.2023	137	60	53	32	36		
		09.03.2023	16.03.2023	160	87	46	31	35		
		12.03.2023	21.03.2023	153	63	39	21	23		
		16.03.2023	23.03.2023	172	62	47	36	38		
		21.03.2023	29.03.2023	167	70	33	33	39		
		24.03.2023	30.03.2023	159	72	42	34	36		
		27.03.2023	02.04.2023	138	63	36	30	33		
29.03.2023	02.04.2023	173	60	39	33	37				
2-Near Railway Siding	A-O	02.03.2023	07.03.2023	455	231	70	33	40		
		06.03.2023	14.03.2023	479	250	66	33	30		
		09.03.2023	16.03.2023	438	241	77	31	43		
		12.03.2023	21.03.2023	570	253	60	29	34		
		16.03.2023	23.03.2023	480	250	73	33	37		
		21.03.2023	29.03.2023	473	271	69	28	30		
		24.03.2023	30.03.2023	460	262	76	31	36		
		27.03.2023	02.04.2023	391	237	69	30	33		
29.03.2023	02.04.2023	553	263	70	27	33				

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Note: 1) The results above relate to the samples tested.

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 website: [www.cmpdi.co.in](http://www.cmpdi.co.in)

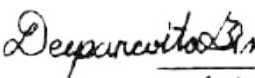
**AIR QUALITY REPORT**


Month	MARCH	Area	DIPKA	Report No	BSP/2023/03/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	02.04.2023
Name of the Project	DIPKA OC	Sample Reference No.	3-4

Parameter		PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)	A-O	600	300	-	120		120
		A-N	500	250	-	120		120
	Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)	B	200	100	60	80		80
Method of analysis		IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )			±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis					
3-Near Excv. Workshop	A-O	02.03.2023	07.03.2023	440	230	75	37	40
		06.03.2023	14.03.2023	429	220	61	33	36
		09.03.2023	16.03.2023	431	243	63	30	37
		12.03.2023	21.03.2023	430	234	70	33	39
		16.03.2023	23.03.2023	442	233	76	36	39
		21.03.2023	29.03.2023	464	247	65	33	36
		24.03.2023	30.03.2023	440	236	80	38	40
		27.03.2023	02.04.2023	519	263	77	36	39
4-Pragati Nagar	B	02.03.2023	07.03.2023	179	87	33	29	31
		06.03.2023	14.03.2023	157	66	37	27	30
		09.03.2023	16.03.2023	141	70	46	22	26
		12.03.2023	21.03.2023	153	66	43	30	33
		16.03.2023	23.03.2023	144	60	33	31	33
		21.03.2023	29.03.2023	150	79	37	32	34
		24.03.2023	30.03.2023	153	65	36	27	29
		27.03.2023	02.04.2023	146	60	33	30	36
29.03.2023	02.04.2023	143	63	39	29	33		

  
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Note: 1) The results above relate to the samples tested.

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**AIR QUALITY REPORT**

Month	MARCH	Area	DIPKA	Report No	BSP/2023/03/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	02.04.2023
Name of the Project	DIPKA OC	Sample Reference No.	5-6

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
5-Hardi Bazar	B	02.03.2023	06.03.2023	129	62	40	29	33		
		06.03.2023	13.03.2023	150	63	37	25	30		
		10.03.2023	15.03.2023	136	76	40	22	26		
		13.03.2023	20.03.2023	150	71	33	25	29		
		17.03.2023	22.03.2023	160	69	46	27	32		
		22.03.2023	27.03.2023	146	64	39	26	33		
		25.03.2023	28.03.2023	161	76	43	29	36		
		28.03.2023	01.04.2023	153	67	30	24	31		
30.03.2023	02.04.2023	136	79	47	35	39				
6-Batari	B	02.03.2023	06.03.2023	140	61	37	28	32		
		06.03.2023	13.03.2023	160	80	40	33	36		
		10.03.2023	15.03.2023	144	67	43	28	34		
		13.03.2023	20.03.2023	176	69	47	26	29		
		17.03.2023	22.03.2023	143	66	33	31	34		
		22.03.2023	27.03.2023	150	69	36	25	28		
		25.03.2023	28.03.2023	173	87	39	26	33		
		28.03.2023	01.04.2023	166	69	45	29	35		
30.03.2023	02.04.2023	141	73	39	30	33				

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**AIR QUALITY REPORT**


Month	MARCH	Area	DIPKA	Report No	BSP/2023/03/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	02.04.2023
Name of the Project	DIPKA OC	Sample Reference No.	7-8

Parameter				PM <sub>100</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Remarks	
Limit (in $\mu\text{g}/\text{m}^3$ )-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)			A-O	600	300	-	120		120
				A-N	500	250	-	120		120
Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), 02.04.1996)			B	200	100	60	80	80		
Method of analysis				IS-5182 PART 4:2005	IS-5182 PART 23:2006	USEPA CFR 40, Appendix L to Part 50	IS-5182 PART 2:2001	IS-5182 PART 6:2006		
Uncertainty Range (in $\mu\text{g}/\text{m}^3$ )					±19.04		±0.0687	±0.4420		
Station Name (Code)	Station category	Date of sampling	Date of analysis							
7-Jhabar	B	02.03.2023	06.03.2023	144	70	37	32	35		
		06.03.2023	13.03.2023	150	66	49	24	27		
		10.03.2023	15.03.2023	141	73	38	30	34		
		13.03.2023	20.03.2023	134	67	43	33	37		
		17.03.2023	22.03.2023	145	76	40	29	32		
		22.03.2023	27.03.2023	140	63	46	29	32		
		25.03.2023	28.03.2023	139	76	49	27	36		
		28.03.2023	01.04.2023	151	63	47	30	33		
30.03.2023	02.04.2023	160	75	37	29	32				
8-Ratija	B	02.03.2023	06.03.2023	152	73	36	29	33		
		06.03.2023	13.03.2023	140	66	44	29	37		
		10.03.2023	15.03.2023	173	60	37	26	31		
		13.03.2023	20.03.2023	151	76	49	34	36		
		17.03.2023	22.03.2023	160	75	36	27	32		
		22.03.2023	27.03.2023	157	69	47	30	35		
		25.03.2023	28.03.2023	136	58	43	33	37		
		28.03.2023	01.04.2023	153	63	38	29	31		
30.03.2023	02.04.2023	147	65	40	33	36				

  
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 Checked by

  
 Manager - Environment

Note: 1) The results above relate to the samples tested.

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 website: [www.cmpdi.co.in](http://www.cmpdi.co.in)

**NOISE QUALITY REPORT**

Month	MARCH	Area	DIPKA	Report No	BSP/2023/03/04
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	02.04.2023
Name of the Project	DIPKA OC	Sample Reference No.	N1-N8

Parameter			The Noise Pollution (R & C) rules, 2000		Remarks
			Day Time	Night Time	
Limit (in dB(A) Leq	Industrial area	A	75	70	
	Commercial area	B	65	55	
	Residential Area	C	55	45	
	Silence Zone	D	50	40	
Method of analysis	CPCB Protocol For Ambient Level Noise Monitoring				
Station (Code) Station Name	Station category	Date of measurement	Value in dB(A)	Value in dB(A)	
1-Malgaon Village	C	09.03.2023	50.1	39.6	
		24.03.2023	41.4	39.5	
2-Near Railway Siding	A	09.03.2023	62.0	59.3	
		24.03.2023	58.2	58.4	
3-New Excv. Workshop	A	09.03.2023	61.3	58.4	
		24.03.2023	58.5	56.4	
4-Pragati Nagar	C	09.03.2023	52.9	38.4	
		24.03.2023	46.6	38.8	
5-Hardi Bazar	C	09.03.2023	58.6	38.3	
		24.03.2023	51.4	37.6	
6-Batari	C	09.03.2023	50.5	37.6	
		24.03.2023	43.7	37.4	
7-Jhabar	C	09.03.2023	49.8	39.3	
		24.03.2023	45.1	38.6	
8-Ratija	C	09.03.2023	49.2	37.6	
		24.03.2023	41.1	37.5	

Sampled by

Checked by

Manager-Environment

Note: 1) The results above relate to the samples tested.

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**TEST & SAMPLING REPORT OF (DRINKING WATER)**

<b>Unique Report No.</b>	23619	<b>Report Issue Date</b>	21-02-2023
<b>Customer Name</b>	South Estern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>	SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	NITESH	<b>Date of Sampling</b>	07-01-2023
<b>Sampling Location</b>	Dipka colony drinking water Guest House Dipka O/C	<b>Sampling Plan</b>	AS PER MONTHLY PLAN
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	09-01-2023
		<b>Sample ID</b>	15370
		<b>Sampling Method</b>	CMPDIL/BSP/LSOP
		<b>Date of Analysis</b>	From 09-01-2023 To 18-01-2023

Sr. No	Parameter	Test At	Method of Analysis	Range of Testing	IS 10500:2012		Observed Value	UOM (at 95% C.L&K=1.96)
					Acceptable Limit	Permissible Limit		
1	Alkalinity mg/l as CaCO3	Main	IS 3025(Part 23):1986,R 2003	5.0 - 1000.0	200	1000	115.00	±0.19696@10.0
2	Arsenic mg/l	Main	IS 3025 (Part 37):1988,R 2003	0.002 - 0.040	0.01	0.05	BDL	±0.0081@0.018
3	Boron mg/l	Main	APHA, 23rd Edition,2017, 4500-B	0.5 - 14.0	0.5	1	BDL	±0.310@5.16
4	Calcium mg/l	Main	IS 3025 (Part 40): 1991, R : 2009	5.0 - 500.0	75	200	32.866	±2.512@99.8
5	Chlorides mg/l	Main	IS 3025(Part 32):1988 , R : 2007	5.0 - 1000.0	250	1000	44.99	±6.551@253.5
6	Colour Hazen	Main	APHA, 23rd Edition,2017, 2120.C	1.0 - 500	5	15	3.38	±1.05@ 49.86
7	Copper mg/l	Main	IS 3025 (Part 42) : 1992 R : 2009	0.03 - 10.0	0.05	1.5	BDL	±0.13@4.90
8	Fluoride mg/l	Main	APHA, 23rd Edition,2017, 4500, F- D	0.1 - 5.0	1.0	1.5	0.75	±0.014@0.98
9	Iron mg/l	Main	IS 3025 (Part 53) :2003, R:2009	0.05 - 15.0	0.3	No Relaxation	0.06	±0.0782@7.95
10	Lead mg/l	Main	APHA, 23rd Edition,2017, 3113B	0.0050 - 0.1000	0.01	No relaxation	BDL	±0.000266@0.005
11	Manganese mg/l	Main	IS 3025 (Part 59) : 2006	0.05 - 5.0	0.1	0.3	0.06	±0.026@2.44
12	Nitrate mg/l	Main	APHA, 23rd Edition,2017, 4500, B	0.5 - 45	45	No Relaxation	14.36	±0.528@20.41
13	Odour none	Main	IS 3025 (Part 5):1983	-	Agreeable	Agreeable	Agreeable	Not applicable
14	pH Value none	Main	IS 3025 (Part 11):1983, R : 2012	4.00 - 10.00	6.5 - 8.5	No Relaxation	7.06	±0.127@7.01
15	Phenolic compounds mg/l	Main	APHA, 23rd Edition,2017, 5530.C	0.001 - 0.2	0.001	0.002	BDL	±0.0204 at 0.1004
16	Residual Free Chlorine mg/l	Main	APHA, 23rd Edition,2017, 4500G	0.1 - 10.0	0.2	1	BDL	±0.0082@0.1
17	Selenium mg/l	Main	IS 3025 (Part 56):2003	0.001 - 0.040	0.01	No Relaxation	BDL	±0.000938@0.001
18	Sulphate mg/l	Main	APHA, 23rd Edition,2017, 4500-SO42- E	2.0 - 40.0	200	400	8.17	±0.640@19.88
19	Total Chromium mg/l	Main	IS 3025 ( Part 52 ) : 2003	0.05 - 15.0	0.05	No relaxation	BDL	±0.004@0.05
20	Total Coliform MPN/100 ml	Main	APHA, 23rd Edition, 9221 B	-	Nil	No Relaxation	BDL	Not specified
21	Total Dissolved Solids mg/l	Main	IS 3025 (Part 16):1984 R : 2006	30.0 - 2000.0	500	2000	312.00	±4.473@592.0
22	Total Hardness mg/l as CaCO3	Main	IS 3025 (Part 21):2009	4.0 - 2000.0	200	600	142.00	±11.545@612.8
23	Turbidity NTU	Main	IS 3025 (Part 10):1984, R : 2006	1.0 - 100.0	1	5	3.57	±0.855@41.58
24	Zinc mg/l	Main	IS 3025 ( Part 49 ) : 1994, R : 2009	0.01 - 2.0	5	15	BDL	±0.0013@0.01

----- END OF THE REPORT -----

Reported By  
Santosh Kumar Singh      Deepanwita Bin

Reviewed and Approved  
M. Reagan  
Manager (Env)  
Date&Time :21-02-2023 12:13:47

JSA

Note:

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- a. The results relate only to the item sampled and tested.
- b. This report shall not be reproduced except in full without approval of the laboratory.



**TEST & SAMPLING REPORT OF (DRINKING WATER)**

<b>Unique Report No.</b>	23628	<b>Report Issue Date</b>	21-02-2023
<b>Customer Name</b>	South Estern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>	SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	NITESH	<b>Date of Sampling</b>	07-01-2023
<b>Sampling Location</b>	Dipka water from CGM office Dipka Dipka O/C	<b>Sampling Plan</b>	AS PER MONTHLY PLAN
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	09-01-2023
		<b>Sample ID</b>	15371
		<b>Sampling Method</b>	CMPDIL/BSP/LSOP
		<b>Date of Analysis</b>	From 09-01-2023 To 18-01-2023

Sr. No	Parameter	Test At	Method of Analysis	Range of Testing	IS 10500:2012		Observed Value	UOM (at 95% C.L&K=1.96)
					Acceptable Limit	Permissible Limit		
1	Alkalinity mg/l as CaCO3	Main	IS 3025(Part 23):1986,R 2003	5.0 - 1000.0	200	1000	115.00	±0.19696@10.0
2	Arsenic mg/l	Main	IS 3025 (Part 37):1988,R 2003	0.002 - 0.040	0.01	0.05	BDL	±0.0081@0.018
3	Boron mg/l	Main	APHA, 23rd Edition,2017, 4500-B	0.5 - 14.0	0.5	1	BDL	±0.310@5.16
4	Calcium mg/l	Main	IS 3025 (Part 40): 1991, R : 2009	5.0 - 500.0	75	200	25.651	±2.512@99.8
5	Chlorides mg/l	Main	IS 3025(Part 32):1988 , R : 2007	5.0 - 1000.0	250	1000	16.00	±6.551@253.5
6	Colour Hazen	Main	APHA, 23rd Edition,2017, 2120.C	1.0 - 500	5	15	4.92	±1.05@ 49.86
7	Copper mg/l	Main	IS 3025 (Part 42) : 1992 R : 2009	0.03 - 10.0	0.05	1.5	BDL	±0.13@4.90
8	Fluoride mg/l	Main	APHA, 23rd Edition,2017, 4500, F- D	0.1 - 5.0	1.0	1.5	0.57	±0.014@0.98
9	Iron mg/l	Main	IS 3025 (Part 53) :2003, R:2009	0.05 - 15.0	0.3	No Relaxation	0.07	±0.0782@7.95
10	Lead mg/l	Main	APHA, 23rd Edition,2017, 3113B	0.0050 - 0.1000	0.01	No relaxation	BDL	±0.000266@0.005
11	Manganese mg/l	Main	IS 3025 (Part 59) : 2006	0.05 - 5.0	0.1	0.3	BDL	±0.026@2.44
12	Nitrate mg/l	Main	APHA, 23rd Edition,2017, 4500, B	0.5 - 45	45	No Relaxation	7.51	±0.528@20.41
13	Odour none	Main	IS 3025 (Part 5):1983	-	Agreeable	Agreeable	Agreeable	Not applicable
14	pH Value none	Main	IS 3025 (Part 11):1983, R : 2012	4.00 - 10.00	6.5 - 8.5	No Relaxation	7.35	±0.127@7.01
15	Phenolic compounds mg/l	Main	APHA, 23rd Edition,2017, 5530.C	0.001 - 0.2	0.001	0.002	BDL	±0.0204 at 0.1004
16	Residual Free Chlorine mg/l	Main	APHA, 23rd Edition,2017, 4500G	0.1 - 10.0	0.2	1	BDL	±0.0082@0.1
17	Selenium mg/l	Main	IS 3025 (Part 56):2003	0.001 - 0.040	0.01	No Relaxation	BDL	±0.000938@0.001
18	Sulphate mg/l	Main	APHA, 23rd Edition,2017, 4500-SO42- E	2.0 - 40.0	200	400	3.99	±0.640@19.88
19	Total Chromium mg/l	Main	IS 3025 ( Part 52 ) : 2003	0.05 - 15.0	0.05	No relaxation	BDL	±0.004@0.05
20	Total Coliform MPN/100 ml	Main	APHA, 23rd Edition, 9221 B	-	Nil	No Relaxation	BDL	Not specified
21	Total Dissolved Solids mg/l	Main	IS 3025 (Part 16):1984 R : 2006	30.0 - 2000.0	500	2000	240.00	±4.473@592.0
22	Total Hardness mg/l as CaCO3	Main	IS 3025 (Part 21):2009	4.0 - 2000.0	200	600	113.19	±11.545@612.8
23	Turbidity NTU	Main	IS 3025 (Part 10):1984, R : 2006	1.0 - 100.0	1	5	3.22	±0.855@41.58
24	Zinc mg/l	Main	IS 3025 ( Part 49 ) : 1994, R : 2009	0.01 - 2.0	5	15	0.17	±0.0013@0.01

----- END OF THE REPORT -----

Reported By  
Santosh Kumar Singh      Deepanwita Bin

Reviewed and Approved  
M. Reagan  
Manager (Env)  
Date&Time :21-02-2023 12:13:47

JSA

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**TEST & SAMPLING REPORT OF (DRINKING WATER)**

<b>Unique Report No.</b>		26337		<b>Report Issue Date</b>			
<b>Customer Name</b>		South Estern Coal Field Ltd Bilaspur		<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927	
<b>Sampling By</b>	Nitesh	<b>Date of Sampling</b>	05-02-2023	<b>Sample ID</b>	15797		
<b>Sampling Location</b>	Dipka colony drinking water Guest House Dipka O/C	<b>Sampling Plan</b>	As per monthly plan	<b>Sampling Method</b>	CMPDI/BSP/LSOP		
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	06-02-2023	<b>Date of Analysis</b>	From 06-02-2023 To 10-03-2023		

Sr. No	Parameter	Test At	Method of Analysis	Range of Testing	IS 10500:2012		Observed Value	UOM (at 95% C.L&K=1.96)
					Acceptable Limit	Permissible Limit		
1	Alkalinity mg/l as CaCO3	Main	IS 3025(Part 23):1986,R 2003	5.0 - 1000.0	200	1000	25.00	±0.19696@10.0
2	Arsenic mg/l	Main	IS 3025 (Part 37):1988,R 2003	0.002 - 0.040	0.01	0.05	BDL	±0.0081@0.018
3	Boron mg/l	Main	APHA, 23rd Edition,2017, 4500-B	0.5 - 14.0	0.5	1	BDL	±0.310@5.16
4	Calcium mg/l	Main	IS 3025 (Part 40): 1991, R : 2009	5.0 - 500.0	75	200	8.818	±2.512@99.8
5	Chlorides mg/l	Main	IS 3025(Part 32):1988 , R : 2007	5.0 - 1000.0	250	1000	13.50	±6.551@253.5
6	Colour Hazen	Main	APHA, 23rd Edition,2017, 2120.C	1.0 - 500	5	15	4.92	±1.05@ 49.86
7	Copper mg/l	Main	IS 3025 (Part 42) : 1992 R : 2009	0.03 - 10.0	0.05	1.5	BDL	±0.13@4.90
8	Fluoride mg/l	Main	APHA, 23rd Edition,2017, 4500, F- D	0.1 - 5.0	1.0	1.5	0.82	±0.014@0.98
9	Iron mg/l	Main	IS 3025 (Part 53) :2003, R:2009	0.05 - 15.0	0.3	No Relaxation	BDL	±0.0782@7.95
10	Lead mg/l	Main	APHA, 23rd Edition,2017, 3113B	0.0050 - 0.1000	0.01	No relaxation	BDL	±0.000266@0.005
11	Manganese mg/l	Main	IS 3025 (Part 59) : 2006	0.05 - 5.0	0.1	0.3	BDL	±0.026@2.44
12	Nitrate mg/l	Main	APHA, 23rd Edition,2017, 4500, B	0.5 - 45	45	No Relaxation	13.77	±0.528@20.41
13	Odour none	Main	IS 3025 (Part 5):1983	-	Agreeable	Agreeable	Agreeable	Not applicable
14	pH Value none	Main	IS 3025 (Part 11):1983, R : 2012	4.00 - 10.00	6.5 - 8.5	No Relaxation	7.25	±0.127@7.01
15	Phenolic compounds mg/l	Main	APHA, 23rd Edition,2017, 5530.C	0.001 - 0.2	0.001	0.002	BDL	±0.0204 at 0.1004
16	Residual Free Chlorine mg/l	Main	APHA, 23rd Edition,2017, 4500G	0.1 - 10.0	0.2	1	NIL	±0.0082@0.1
17	Selenium mg/l	Main	IS 3025 (Part 56):2003	0.001 - 0.040	0.01	No Relaxation	BDL	±0.000938@0.001
18	Sulphate mg/l	Main	APHA, 23rd Edition,2017, 4500-SO42- E	2.0 - 40.0	200	400	3.23	±0.640@19.88
19	Total Chromium mg/l	Main	IS 3025 ( Part 52 ) : 2003	0.05 - 15.0	0.05	No relaxation	BDL	±0.004@0.05
20	Total Coliform MPN/100 ml	Main	APHA, 23rd Edition, 9221 B	-	Nil	No Relaxation	BDL	Not specified
21	Total Dissolved Solids mg/l	Main	IS 3025 (Part 16):1984 R : 2006	30.0 - 2000.0	500	2000	200.00	±4.473@592.0
22	Total Hardness mg/l as CaCO3	Main	IS 3025 (Part 21):2009	4.0 - 2000.0	200	600	8.03	±11.545@612.8
23	Turbidity NTU	Main	IS 3025 (Part 10):1984, R : 2006	1.0 - 100.0	1	5	3.28	±0.855@41.58
24	Zinc mg/l	Main	IS 3025 ( Part 49 ) : 1994, R : 2009	0.01 - 2.0	5	15	BDL	±0.0013@0.01

----- END OF THE REPORT -----

Reported By  
Santosh Kumar Singh

Reviewed and Approved  
M. Reagan  
Manager (Env)  
Date&Time :

JSA

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**TEST & SAMPLING REPORT OF (DRINKING WATER)**

<b>Unique Report No.</b>	26343	<b>Report Issue Date</b>		
<b>Customer Name</b>	South Estern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>		SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	Nitesh	<b>Date of Sampling</b>	05-02-2023	<b>Sample ID</b> 15798
<b>Sampling Location</b>	Dipka water from CGM office Dipka Dipka O/C	<b>Sampling Plan</b>	As per monthly plan	<b>Sampling Method</b> CMPDI/BSP/LSOP
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	06-02-2023	<b>Date of Analysis</b> From 06-02-2023 To 10-03-2023

Sr. No	Parameter	Test At	Method of Analysis	Range of Testing	IS 10500:2012		Observed Value	UOM (at 95% C.L&K=1.96)
					Acceptable Limit	Permissible Limit		
1	Alkalinity mg/l as CaCO3	Main	IS 3025(Part 23):1986,R 2003	5.0 - 1000.0	200	1000	100.00	±0.19696@10.0
2	Arsenic mg/l	Main	IS 3025 (Part 37):1988,R 2003	0.002 - 0.040	0.01	0.05	BDL	±0.0081@0.018
3	Boron mg/l	Main	APHA, 23rd Edition,2017, 4500-B	0.5 - 14.0	0.5	1	BDL	±0.310@5.16
4	Calcium mg/l	Main	IS 3025 (Part 40): 1991, R : 2009	5.0 - 500.0	75	200	25.651	±2.512@99.8
5	Chlorides mg/l	Main	IS 3025(Part 32):1988 , R : 2007	5.0 - 1000.0	250	1000	44.49	±6.551@253.5
6	Colour Hazen	Main	APHA, 23rd Edition,2017, 2120. C	1.0 - 500	5	15	2.62	±1.05@ 49.86
7	Copper mg/l	Main	IS 3025 (Part 42) : 1992 R : 2009	0.03 - 10.0	0.05	1.5	BDL	±0.13@4.90
8	Fluoride mg/l	Main	APHA, 23rd Edition,2017, 4500, F- D	0.1 - 5.0	1.0	1.5	0.39	±0.014@0.98
9	Iron mg/l	Main	IS 3025 (Part 53) :2003, R:2009	0.05 - 15.0	0.3	No Relaxation	BDL	±0.0782@7.95
10	Lead mg/l	Main	APHA, 23rd Edition,2017, 3113B	0.0050 - 0.1000	0.01	No relaxation	BDL	±0.000266@0.005
11	Manganese mg/l	Main	IS 3025 (Part 59) : 2006	0.05 - 5.0	0.1	0.3	0.10	±0.026@2.44
12	Nitrate mg/l	Main	APHA, 23rd Edition,2017, 4500, B	0.5 - 45	45	No Relaxation	7.63	±0.528@20.41
13	Odour none	Main	IS 3025 (Part 5):1983	-	Agreeable	Agreeable	Agreeable	Not applicable
14	pH Value none	Main	IS 3025 (Part 11):1983, R : 2012	4.00 - 10.00	6.5 - 8.5	No Relaxation	7.18	±0.127@7.01
15	Phenolic compounds mg/l	Main	APHA, 23rd Edition,2017, 5530. C	0.001 - 0.2	0.001	0.002	BDL	±0.0204 at 0.1004
16	Residual Free Chlorine mg/l	Main	APHA, 23rd Edition,2017, 4500G	0.1 - 10.0	0.2	1	NIL	±0.0082@0.1
17	Selenium mg/l	Main	IS 3025 (Part 56):2003	0.001 - 0.040	0.01	No Relaxation	BDL	±0.000938@0.001
18	Sulphate mg/l	Main	APHA, 23rd Edition,2017, 4500-SO42- E	2.0 - 40.0	200	400	4.05	±0.640@19.88
19	Total Chromium mg/l	Main	IS 3025 ( Part 52 ) : 2003	0.05 - 15.0	0.05	No relaxation	BDL	±0.004@0.05
20	Total Coliform MPN/100 ml	Main	APHA, 23rd Edition, 9221 B	-	Nil	No Relaxation	BDL	Not specified
21	Total Dissolved Solids mg/l	Main	IS 3025 (Part 16):1984 R : 2006	30.0 - 2000.0	500	2000	209.00	±4.473@592.0
22	Total Hardness mg/l as CaCO3	Main	IS 3025 (Part 21):2009	4.0 - 2000.0	200	600	38.15	±11.545@612.8
23	Turbidity NTU	Main	IS 3025 (Part 10):1984, R : 2006	1.0 - 100.0	1	5	3.51	±0.855@41.58
24	Zinc mg/l	Main	IS 3025 ( Part 49 ) : 1994, R : 2009	0.01 - 2.0	5	15	0.10	±0.0013@0.01

----- END OF THE REPORT -----

Reported By  
Santosh Kumar Singh

Reviewed and Approved  
M. Reagan  
Manager (Env)  
Date&Time :

JSA

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### TEST & SAMPLING REPORT OF (DRINKING WATER)

Unique Report No.	27133	Report Issue Date	27-03-2023
Customer Name	South Eastern Coal Field Ltd Bilaspur	Address & Contact Details	SEEPAT ROAD BILASPUR 7752241927
Sampling By	Bharat Kumar, Sunil Kumar	Date of Sampling	04-03-2023
Sampling Location	Dipka colony drinking water Guest House Dipka O/C	Sampling Plan	As per monthly plan
Sample Condition	APPROPRIATE	Date of Receipt of Sample	06-03-2023
		Sample ID	16154
		Sampling Method	CMPDI/BSP/LSOP
		Date of Analysis	From 04-03-2023 To 22-03-2023

Sr. No	Parameter	Test At	Method of Analysis	Range of Testing	IS 10500:2012		Observed Value	UOM (at 95% C.L&K=1.96)
					Acceptable Limit	Permissible Limit		
1	Alkalinity mg/l as CaCO <sub>3</sub>	Main	IS 3025(Part 23):1986,R 2003	5.0 - 1000.0	200	1000	100.00	±0.19696@10.0
2	Arsenic mg/l	Main	IS 3025 (Part 37):1988,R 2003	0.002 - 0.040	0.01	0.05	BDL	±0.0081@0.018
3	Boron mg/l	Main	APHA, 23rd Edition,2017, 4500-B	0.5 - 14.0	0.5	1	BDL	±0.310@5.16
4	Calcium mg/l	Main	IS 3025 (Part 40): 1991, R : 2009	5.0 - 500.0	75	200	21.908	±2.512@99.8
5	Chlorides mg/l	Main	IS 3025(Part 32):1988 , R : 2007	5.0 - 1000.0	250	1000	14.78	±6.551@253.5
6	Colour Hazen	Main	APHA, 23rd Edition,2017, 2120. C	1.0 - 500	5	15	1.08	±1.05@ 49.86
7	Copper mg/l	Main	IS 3025 (Part 42) : 1992 R : 2009	0.03 - 10.0	0.05	1.5	BDL	±0.13@4.90
8	Fluoride mg/l	Main	APHA, 23rd Edition,2017, 4500, F- D	0.1 - 5.0	1.0	1.5	0.31	±0.014@0.98
9	Iron mg/l	Main	IS 3025 (Part 53) :2003, R:2009	0.05 - 15.0	0.3	No Relaxation	BDL	±0.0782@7.95
10	Lead mg/l	Main	APHA, 23rd Edition,2017, 3113B	0.0050 - 0.1000	0.01	No relaxation	BDL	±0.000266@0.005
11	Manganese mg/l	Main	IS 3025 (Part 59) : 2006	0.05 - 5.0	0.1	0.3	BDL	±0.026@2.44
12	Nitrate mg/l	Main	APHA, 23rd Edition,2017, 4500, B	0.5 - 45	45	No Relaxation	6.13	±0.528@20.41
13	Odour none	Site	IS 3025 (Part 5):1983	-	Agreeable	Agreeable	Agreeable	Not applicable
14	pH Value none	Site	IS 3025 (Part 11):1983, R : 2012	4.00 - 10.00	6.5 - 8.5	No Relaxation	6.65	±0.127@7.01
15	Phenolic compounds mg/l	Main	APHA, 23rd Edition,2017, 5530. C	0.001 - 0.2	0.001	0.002	BDL	±0.0204 at 0.1004
16	Residual Free Chlorine mg/l	Site	APHA, 23rd Edition,2017, 4500G	0.1 - 10.0	0.2	1	BDL	±0.0082@0.1
17	Selenium mg/l	Main	IS 3025 (Part 56):2003	0.001 - 0.040	0.01	No Relaxation	BDL	±0.000938@0.001
18	Sulphate mg/l	Main	APHA, 23rd Edition,2017, 4500-SO42- E	2.0 - 40.0	200	400	7.02	±0.640@19.88
19	Total Chromium mg/l	Main	IS 3025 ( Part 52 ) : 2003	0.05 - 15.0	0.05	No relaxation	BDL	±0.004@0.05
20	Total Coliform MPN/100 ml	Site	APHA, 23rd Edition, 9221 B	-	Nil	No Relaxation	BDL	Not specified
21	Total Dissolved Solids mg/l	Main	IS 3025 (Part 16):1984 R : 2006	30.0 - 2000.0	500	2000	153.00	±4.473@592.0
22	Total Hardness mg/l as CaCO <sub>3</sub>	Main	IS 3025 (Part 21):2009	4.0 - 2000.0	200	600	100.84	±11.545@612.8
23	Turbidity NTU	Main	IS 3025 (Part 10):1984, R : 2006	1.0 - 100.0	1	5	3.94	±0.855@41.58
24	Zinc mg/l	Main	IS 3025 ( Part 49 ) : 1994, R : 2009	0.01 - 2.0	5	15	BDL	±0.0013@0.01

----- END OF THE REPORT -----

Reported By  
R.K Thakur Santosh Kumar Singh

Reviewed and Approve  
KUMARAVEL.C  
Manager (Env)  
Date&Time :27-03-2023 03:49:40

JSA

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### TEST & SAMPLING REPORT OF (DRINKING WATER)

<b>Unique Report No.</b>	27142	<b>Report Issue Date</b>	27-03-2023
<b>Customer Name</b>	South Eastern Coal Field Ltd Bilaspur	<b>Address &amp; Contact Details</b>	SEEPAT ROAD BILASPUR 7752241927
<b>Sampling By</b>	Bharat Kumar, Sunil Kumar	<b>Date of Sampling</b>	04-03-2023
<b>Sampling Location</b>	Dipka water from CGM office Dipka Dipka O/C	<b>Sampling Plan</b>	As per monthly plan
<b>Sample Condition</b>	APPROPRIATE	<b>Date of Receipt of Sample</b>	06-03-2023
		<b>Sample ID</b>	16155
		<b>Sampling Method</b>	CMPDI/BSP/LSOP
		<b>Date of Analysis</b>	From 04-03-2023 To 22-03-2023

Sr. No	Parameter	Test At	Method of Analysis	Range of Testing	IS 10500:2012		Observed Value	UOM (at 95% C.L&K=1.96)
					Acceptable Limit	Permissible Limit		
1	Alkalinity mg/l as CaCO <sub>3</sub>	Main	IS 3025(Part 23):1986,R 2003	5.0 - 1000.0	200	1000	135.00	±0.19696@10.0
2	Arsenic mg/l	Main	IS 3025 (Part 37):1988,R 2003	0.002 - 0.040	0.01	0.05	BDL	±0.0081@0.018
3	Boron mg/l	Main	APHA, 23rd Edition,2017, 4500-B	0.5 - 14.0	0.5	1	BDL	±0.310@5.16
4	Calcium mg/l	Main	IS 3025 (Part 40): 1991, R : 2009	5.0 - 500.0	75	200	37.324	±2.512@99.8
5	Chlorides mg/l	Main	IS 3025(Part 32):1988 , R : 2007	5.0 - 1000.0	250	1000	14.29	±6.551@253.5
6	Colour Hazen	Main	APHA, 23rd Edition,2017, 2120. C	1.0 - 500	5	15	1.85	±1.05@ 49.86
7	Copper mg/l	Main	IS 3025 (Part 42) : 1992 R : 2009	0.03 - 10.0	0.05	1.5	BDL	±0.13@4.90
8	Fluoride mg/l	Main	APHA, 23rd Edition,2017, 4500, F- D	0.1 - 5.0	1.0	1.5	0.43	±0.014@0.98
9	Iron mg/l	Main	IS 3025 (Part 53) :2003, R:2009	0.05 - 15.0	0.3	No Relaxation	0.06	±0.0782@7.95
10	Lead mg/l	Main	APHA, 23rd Edition,2017, 3113B	0.0050 - 0.1000	0.01	No relaxation	BDL	±0.000266@0.005
11	Manganese mg/l	Main	IS 3025 (Part 59) : 2006	0.05 - 5.0	0.1	0.3	0.06	±0.026@2.44
12	Nitrate mg/l	Main	APHA, 23rd Edition,2017, 4500, B	0.5 - 45	45	No Relaxation	6.48	±0.528@20.41
13	Odour none	Site	IS 3025 (Part 5):1983	-	Agreeable	Agreeable	Agreeable	Not applicable
14	pH Value none	Site	IS 3025 (Part 11):1983, R : 2012	4.00 - 10.00	6.5 - 8.5	No Relaxation	6.71	±0.127@7.01
15	Phenolic compounds mg/l	Main	APHA, 23rd Edition,2017, 5530. C	0.001 - 0.2	0.001	0.002	BDL	±0.0204 at 0.1004
16	Residual Free Chlorine mg/l	Site	APHA, 23rd Edition,2017, 4500G	0.1 - 10.0	0.2	1	BDI	±0.0082@0.1
17	Selenium mg/l	Main	IS 3025 (Part 56):2003	0.001 - 0.040	0.01	No Relaxation	BDL	±0.000938@0.001
18	Sulphate mg/l	Main	APHA, 23rd Edition,2017, 4500-SO42- E	2.0 - 40.0	200	400	7.26	±0.640@19.88
19	Total Chromium mg/l	Main	IS 3025 ( Part 52 ) : 2003	0.05 - 15.0	0.05	No relaxation	BDL	±0.004@0.05
20	Total Coliform MPN/100 ml	Site	APHA, 23rd Edition, 9221 B	-	Nil	No Relaxation	BDL	Not specified
21	Total Dissolved Solids mg/l	Main	IS 3025 (Part 16):1984 R : 2006	30.0 - 2000.0	500	2000	193.00	±4.473@592.0
22	Total Hardness mg/l as CaCO <sub>3</sub>	Main	IS 3025 (Part 21):2009	4.0 - 2000.0	200	600	139.94	±11.545@612.8
23	Turbidity NTU	Main	IS 3025 (Part 10):1984, R : 2006	1.0 - 100.0	1	5	3.94	±0.855@41.58
24	Zinc mg/l	Main	IS 3025 ( Part 49 ) : 1994, R : 2009	0.01 - 2.0	5	15	0.06	±0.0013@0.01

----- END OF THE REPORT -----

Reported By  
R.K Thakur Santosh Kumar Singh

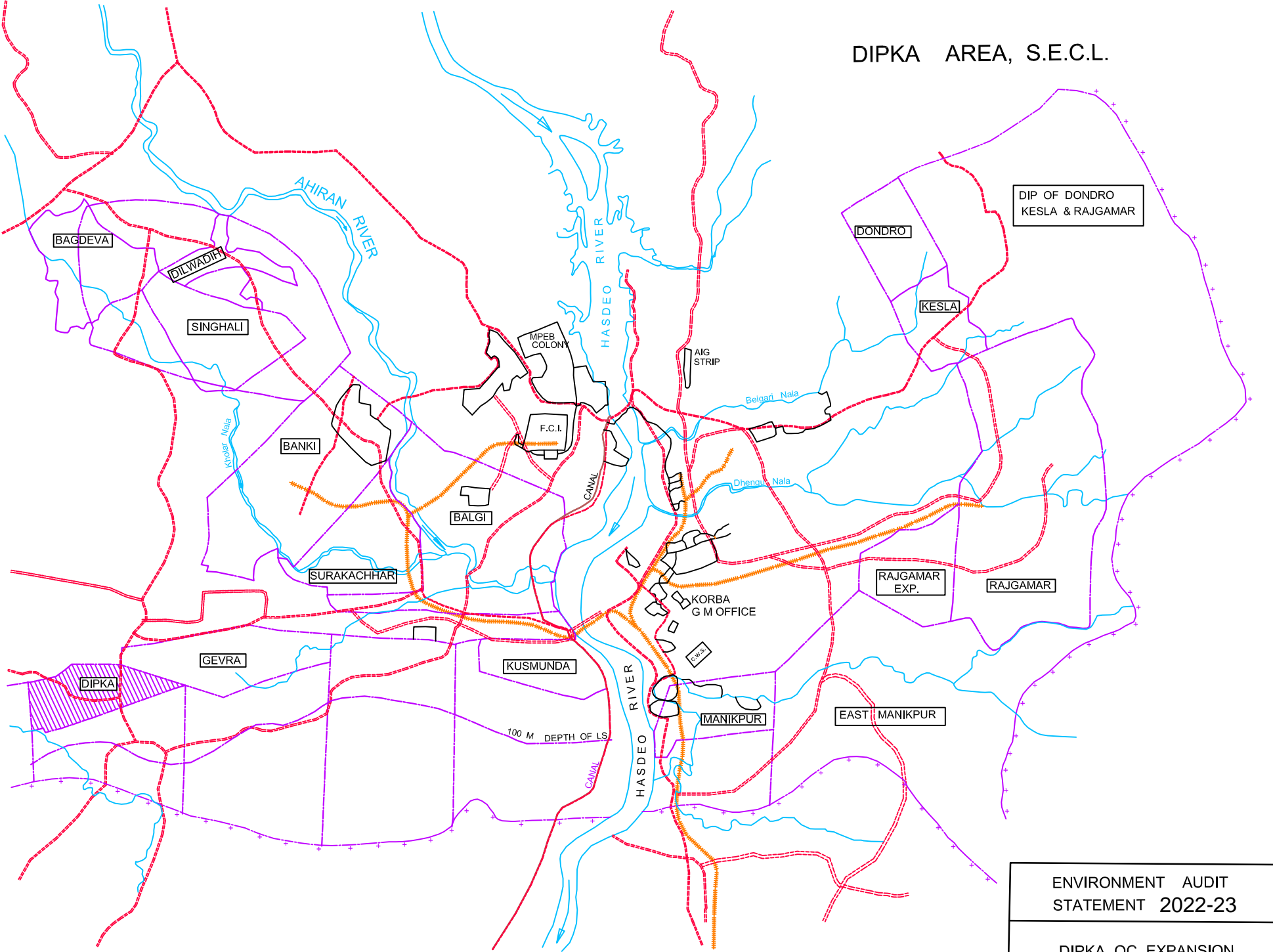
Reviewed and Approve  
KUMARAVEL.C  
Manager (Env)  
Date&Time :27-03-2023 03:49:40

JSA

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DIPKA AREA, S.E.C.L.



ENVIRONMENT AUDIT  
STATEMENT 2022-23

DIPKA OC EXPANSION





El: - /Korba/23  
Date: - ---/---/2023

**CHHATTISGARH ENVIRONMENT CONSERVATION BOARD**  
**Paryavas Bhawan, North Block, Sector - 19,**  
**Nava Raipur Atal Nagar, District - Raipur (C.G.)**  
**e-mail - hocecb@gmail.com**

No. **8690/TS/CECB/2023**

Nava Raipur Atal Nagar, Raipur Dated **15/03/2023**

To,

The Chief General Manager,  
M/s Dipka Expansion Project,  
South Eastern Coal Fields Limited,  
Dipka Area, Tehsil-Katghora,  
**District - Korba (C.G).**

Sub.: - Grant of "Consent to Establish cum Consent to Operate" for expansion under section 25 of the Water (Prevention and Control of Pollution) Act, 1974 and under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981.

- Ref.: - 1. Environmental Clearance issued by Ministry of Environment, Forests and Climate Change (Impact Assessment Division), Government of India vide letter no. EC Identification No. – EC22A042CG110382, File No. – J-11015/487/2007-IA-II(M), Dated 06/09/2022 for expansion of Dipka Opencast Coal Mine project from 35 MTPA to 37.5 MTPA (increase of 10 % w.r.t. 25 MTPA) in an ML area of 1999.293 ha.
2. Your online application No. 10854309, dated: 19/10/2022 and subsequent correspondence ending dated: 21/12/2022.

---: 00 :---

With reference to your above application, consents under section 25 of the Water (Prevention and Control of Pollution) Act, 1974 and under section 21 of the Air (Prevention and Control of Pollution) Act, 1981 are hereby granted for period of **one year from the date of issue of this consent** of the mine, subject to the fulfillment of the terms and conditions annexed hereto as **PART 'A' & 'B'** respectively.

These consents are valid for following products & production capacity :-

<b>Product</b>	<b>Production Capacity</b>
Mining of Coal	37.5 Million Tonne/Annum (Thirty Seven Point Five Million Tonne per Annum)

**Note:** - The above production capacity includes the existing production capacity of Mining of Coal – 35 Million Tonne/Annum for which consent has already been granted under section 25 of the Water (Prevention and Control of Pollution) Act, 1974 vide letter no. 6797/TS/CECB/2018, Raipur dated: 01/03/2018 and under section 21 of the Air (Prevention and Control of Pollution) Act, 1981 vide letter no. 6799/TS/CECB/2018, Raipur dated: 01/03/2018. The consent vide letter no. 6797, 6799/TS/CECB/2018, Raipur dated: 01/03/2018 shall be treated as cancelled from the date of issue of this consent.

Please acknowledge the receipt of this letter.

For & on behalf of  
Chhattisgarh Environment Conservation Board

**Sd/-**  
**Member Secretary**  
Chhattisgarh Environment Conservation Board  
Nava Raipur Atal Nagar, Raipur (C.G.)

Endt. No. **8691/TS/CECB/2023** Nava Raipur Atal Nagar, Raipur Dated **15/03/2023**  
Copy to: -

Regional Officer, Regional Office, Chhattisgarh Environment Conservation Board, Korba (C.G.). Please ensure compliance and report, if any condition/conditions are violated by the Mine management.

**Sd/-**  
**Member Secretary**  
Chhattisgarh Environment Conservation Board  
Nava Raipur Atal Nagar, Raipur (C.G.)

## PART-A

### CONSENT LETTER

Sub: Grant of "Consent to establish cum operate" for expansion to **M/s Dipka Expansion Project, South Eastern Coal Fields Limited** for the discharge of effluent under section 25 of the Water (Prevention & Control of Pollution) Act, 1974.

Ref: Online application No. 10854309, dated: 19/10/2022 and subsequent correspondence ending dated: 21/12/2022 **M/s Dipka Expansion Project, South Eastern Coal Fields Limited**.

1. With reference to the above application for consent to discharge effluent into the natural water courses under the Water (Prevention & Control of Pollution) Act, 1974, here-in-after referred to as the Act **M/s Dipka Expansion Project, South Eastern Coal Fields Limited** is authorized by the State Board to discharge its industrial and other effluents arising out of their premises into the local stream/river/well in accordance with the general and special conditions as mentioned in the Annexure.
2. This consent shall be valid for period of **one year from the date of issue of this consent** of the mine.

This consent is valid for following products & production capacity: -

<b>Product</b>	<b>Production Capacity</b>
Mining of Coal	37.5 Million Tonne/Annum (Thirty Seven Point Five Million Tonne per Annum)

**Note:** - The above production capacity includes the existing production capacity of Mining of Coal – 35 Million Tonne/Annum for which consent has already been granted under section 25 of the Water (Prevention and Control of Pollution) Act, 1974 vide letter no. 6797/TS/CECB/2018, Raipur dated: 01/03/2018 and under section 21 of the Air (Prevention and Control of Pollution) Act, 1981 vide letter no. 6799/TS/CECB/2018, Raipur dated: 01/03/2018. The consent vide letter no. 6797, 6799/TS/CECB/2018, Raipur dated: 01/03/2018 shall be treated as cancelled from the date of issue of this consent.

For & on behalf of  
Chhattisgarh Environment Conservation Board

**Sd/-**  
**Member Secretary**  
Chhattisgarh Environment Conservation Board  
Nava Raipur Atal Nagar, Raipur (C.G.)

Seal  
Enclosure: Annexure

**(I)**  
**ANNEXURE**

**M/s Dipka Expansion Project, South Eastern Coal Fields Limited**

**Location of Factory:** Village-Chainpur, Betikri, Jhingatpur, Jhabar, Sirki, Renki, Suwabhondi, Ratija, Malgaon, Hardibajar, Amgaon and Dipka and Nagar Palika Parishad Dipka, Tehsil-Katghora, District-Korba (C.G.)

**Vide consent no. 14/EI/Korba/CECB/2023, Dt 15/03/2023.**

**A. GENERAL CONDITIONS: -**

1. All discharges authorized shall be consistent with terms and conditions of this Consent Facility expansions, production increases or process Modifications which result in new or increased discharges of pollutants must be reported by submission of a new Consent, application or if such new, or increased discharge does not violate the effluent limitations specified in the Consent, by submission to the Board details of such new or increased discharges of pollutants in which case the consent may be modified to specify effluent limitations for any pollutants not identified and limited here in the discharge of any pollutant more frequently than or at a level in excess of that identified and authorized by the Consent shall constitute a violation of the terms and conditions of the Consent.
2. After notice and opportunity for the hearing, this consent may be modified, suspended or revoked by the Board in whole or in part during its term for cause including, but not limited to the following: -
  - (a) Violation of any terms and conditions of this Consent.
  - (b) Obtaining this Consent by misrepresentation of failure to disclose fully all relevant facts.
  - (c) A change in any condition that requires temporary or permanent reduction or elimination of the authorized discharge.
3. Notwithstanding para(2) above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established for a toxic pollutant which is present in the discharge authorized here in and such standard or prohibition is more stringent than any limitation upon such pollutant in this Consent the Consent shall be revised or modified in accordance with the toxic effluent standard or prohibition that the Board may consider and the applicant shall be so notified.

4. The applicant shall allow the staff of Chhattisgarh Environment Conservation Board and/or their authorized representative, upon the Presentation of credentials:
  - (a) To enter upon the applicant's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this Consent.
  - (b) To have access to and copy at reasonable time any records required to be kept under the terms and conditions of this Consent.
  - (c) To inspect at reasonable time any monitoring equipment or monitoring method required in this Consent; or
  - (d) To sample at reasonable time any discharge of pollutants.
5. The applicant shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities of system installed or used by him to achieve compliance with the terms and conditions of this Consent.
6. The issuance of this Consent does not convey any property rights in either real or personal property or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Central, State or local laws or regulation.
7. **The Consent does not authorize or approve the construction of any physical structures or facilities or the undertaking of any work in any water course.**
8. The specific effluent limitations and other pollution controls applicable to the discharge permitted here in are set forth below as specific conditions. Also set forth below are self-monitoring and reporting requirements. Unless otherwise specified, the applicant shall submit duplicate original copies of all reports to the Chhattisgarh Environment Conservation Board. Except for data determined to be confidential all such reports shall be available for public inspection at the office of the Chhattisgarh Environment Conservation Board. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provide for in section 42 of the Act.

**B. SPECIAL CONDITIONS: -**

1. Initial Effluent limitation during the period beginning on the effective date of this consent and lasting until one calendar year discharge

from outfalls shall be limited and monitored by the applicant as specified below: -

(a) The following shall be limited by the applicant as specified.

S.No.	Effluent Characteristics	Discharge Limitation				Monitoring Requirements	
		Average		Maximum		Frequency of Measurement	Type of Sample
		Mg/l	Kg/Day	Mg/l	Kg/Day		

Daily/Weekly/Monthly/Tri-monthly.

Grab/ 24 Hours Composite

In Addition to above discharge shall be limited and monitored as specified below:

S.No.	Effluent Characteristics	Discharge Limitation				Monitoring Requirements	
		Average		Maximum		Frequency of Measurement*	Type of Sample †
		Mg/l	Kg/Day	Mg/l	Kg/Day		

Daily/Weekly/Monthly/Tri-monthly.

Grab/ 24 Hours Composite

For the purpose of this sub-section, the daily average discharge is the total discharge by weight during the calendar month divided by the number of days in month the production or commercial facility was operating for the purpose of the sub-section the daily maximum discharge means the total discharge by weight during any calendar day.

(b) The pH shall not be less than 5.5 or greater than 9.0

- Final effluent Limitation: - During the period beginning from 1st day of month of commissioning of the plant with expanded capacity and lasting until the date of expiration of this Consent, discharge from the outfalls shall be limited and monitored by the applicant as specified below:-

- (a) The following shall be limited and monitored by the applicant as specified.

S. No.	Effluent Characteristics	Discharge Limitation				Monitoring Requirements	
		Average		Maximum		Frequency of Measurement*	Type of Sample †
		Mg/l	Kg/Day	Mg/l	Kg/Day		
1	B.O.D.	--	--	30	.....	Monthly	24 hours
2	C.O.D.	--	--	250	.....		Composite
3	S.S.	--	--	100	.....		
	pH 5.5 to 9.0 Flow : ..... Cum/Day (Industrial and Domestic)				Daily	Grab	

\* Daily/Weekly/Monthly/Tri-monthly.

† Grab/ 24 Hours Composite

Additional, outfalls shall be monitored as follows:

- (i) Flow, Temperature and Total solids: One per month
- (ii) Grab Samples Maximum discharge temperature above upstream receiving water shall be in accordance with the standard of ISI at 40°C.
- (iii) Uniform as per ISI 2490 at 40°C.

The temperature shall be monitored once per month of each outfall. For the purpose of the sub-section the daily average is the total discharge by weight during calendar month divided by the number of days in month that the production or commercial facility was operating for the purpose of this sub-section, the daily maximum discharge means the total discharge by weight during any calendar day.

- (b) The pH shall not be less than 5.5 or greater than 9.0 for outfalls. The samples are taken as monthly, grab samples.

3. Schedule of Compliance for effluent Limitation:-The applicant shall achieve compliance with the effluent limitation: specified above for discharge from outfalls in accordance with the following schedule:

- (i) Report of Progress : Monthly
- (ii) Completion of final plans by .....
- (iii) Award of contract of other commitment of financing .....
- (iv) Commencement of construction by .....
- (v) Report of construction progress .....
- (vi) Completion of construction by .....
- (vii) Attainment of operational level by .....

- (b) The applicant shall submit to the Consent issuing Authority the required report of progress or where a specific action is required in (a) above to be taken by a certain date a written

notice of compliance or non-compliance with each of the above scheduled dates, post marked not later than 14 days following each elapsed date. Each notice of compliance shall include the following: -

- (1) A short description of the non-compliance.
- (2) A description of any action taken or proposed by the applicant to comply with the elapsed scheduled requirement without further delay.
- (3) An estimate of any factor which tend to explain or mitigate the non-compliance, and
- (4) An estimate of the date, the applicant will comply with the elapsed scheduled requirement and assessment of the possibility that the applicant will meet the next scheduled requirement time.

#### 4. Compilation of monitoring Data

- (a) Samples and measurements taken to meet the monitoring requirements specified above shall be representative of the volume and nature of monitored discharge.
- (b) Following promulgation of guidelines establishing test procedures for the analysis of pollutants, all sampling and analytical methods used to meet monitoring requirements specified above shall conform to such guidelines. Unless otherwise specified sampling and analytical methods shall conform to the latest edition of the Indian Standard specifications and where it is not specified the guidelines as per standard methods for the examination of Water & Waste Water 13<sup>th</sup> Edition of the American Public Health Association, New York U.S.A. shall be used.
- (c) The applicant shall take samples and measurement to meet the monthly requirements specified above at the location indicated below:

#### **POINT OF SAMPLING**

- (i) Outfalls of waste.
- (ii) 100 meters from point of confluence, down stream to river or lake.

#### 5. Recording of Monitoring activities and Results:

- (a) The applicant shall make and maintain records of all information resulting from monitoring activities by this Consent.



- (b) The applicant shall record for each measurement of sample taken pursuant to the requirements of this Consent the following information:
- (1) The date, exact place and time of sampling
  - (2) The dates on which analysis was performed.
  - (3) Who performed the analysis?
  - (4) The analytical techniques or methods used and
  - (5) The result of all required analysis.
- (c) If applicant monitors any pollutant more frequently as is required by this Consent he shall include the results of such monitoring in the calculation and reporting of values required in the discharge monitoring reports which may be prescribed by the Board, such increased frequency shall be indicated on the Discharge Monitoring Report form.
- (d) The applicant shall retain for a minimum of 3 years all records of monitoring activities and result including all records of calibration and maintenance of instrumentation and original strip chart regarding continuous monitoring instrumentation. The period of retention shall be the extent during the course of any unresolved litigation regarding the discharge of pollutants by the applicant or when requested by the Central or State Board.
6. Reporting of Monitoring Results:
- (a) Monitoring information required by this Consent shall be summarized and reported by submitting a Discharge Monitoring Report form duly filled in and signed, to the Board's office at the following address:
- CHHATTISGARH ENVIRONMENT CONSERVATION BOARD**  
**Paryavas Bhawan, North Block, Sector - 19,**  
**Nava Raipur Atal Nagar, District - Raipur (C.G.)**
- (b) Each submitted Discharge Monitoring Report shall be signed as follows:
- (i) If submitted by Corporation by a Principal Executive Officer of at least the level of Vice-President or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the discharge described in the discharge Monitoring Report originates,
  - (ii) If submitted by a partnership firm, by a general partner.
  - (iii) If submitted by a sole proprietor, the proprietor,
  - (iv) If submitted by a Municipal, State or Central Government or other public enterprises, by a Principal Executive Officer, ranking elected official commanding officer, or other duly authorized employee.

- (c) All information submitted on the Discharge Monitoring From shall be based upon measurements and sampling carried out during the three previous calendar months. The first Discharge Monitoring Report shall be submitted for a period ending 60 days from issuance. Thereafter reporting period shall end on the last date of each month. The applicant shall submit a Discharge Monitoring Report post marked no later than 28th day of the month following each completed reporting period.
7. Limitation of Discharge of Oil Hazardous Substance in harmful quantities: The applicant shall not discharge oil in quantities defined as harmful in regulations. In addition the applicant shall not discharge hazardous substance into natural water course in quantities defined as harmful in regulations promulgated by the Board. Nothing in this Consent shall be deemed to preclude the institution of any legal action nor relieve the applicant from any responsibilities, liabilities, or penalties to which the applicant is or may be subject to clauses.
8. Limitation of visible Floating Solids and Foam: During the period beginning date of issuance and lasting until the date of expiration of this Consent the applicant shall not discharge floating solids or visible foam.
9. Disposal of Collected Solids:
- a) Intake Water Treatment: Solid Sludge's, dirt, silt or other pollutant separated from or resulting from treatment of intake or supply waters prior to use by the applicant shall be disposed off in such a manner as to prevent any pollutant from such materials from entering any such water Any live fish or other animals collected or trapped as a result of intake water screening or treatment may be returned to water,
- b) Waste water Treatment, Solid sludge's, filter backwash or other pollutant removed from or resulting from treatment or control of waste waster shall be disposed of in such a manner as to prevent any pollutants from such materials from entering natural water.
10. Non-compliance with Effluent Limitations:
- (a) If for any reason the applicant does not comply with or will be unable to comply with or will be unable to comply with any daily maximum effluent limitations specified in this Consent the applicant shall immediately notify the Consent issuing authority or his designee by telephone No. 0771-2443923/2443934 and provide the Consent issuing Authority with the following information in writing within 5 days of such notification:
- i) Cause of non-compliance.
- ii) A description of the non-complying discharge including its impact upon the receiving water.

- iii) Anticipated time, of non compliance is expected to continue or if such condition has been corrected, the duration of non-compliance.
  - iv) Steps taken by the applicant to reduce and eliminate the non-complying discharge and;
  - v) Steps to be taken by the applicant to prevent recurrence of conditions of non compliance.
- (b) The applicant shall take all responsible steps to minimize any adverse impact to natural waters resulting from non-compliance with any effluent limitation specified in this Consent including such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge.
  - (c) Nothing in this Consent shall be construed to relieve the applicant from civil or criminal penalties for non-compliance, whether or not such non-compliance is due to factors beyond his control such as equipment break down electric power failure, accident or natural disaster.

Limitation of Batch Discharge.

### **SPECIAL CONDITIONS**

- 11. Provision for Electric Power Failure: The applicant shall either-
  - (a) No later than ..... certify in writing to the consent issuing authority that applicant has installed or provided for an alternative electric power source sufficient to operate all facilities utilized by the applicant to maintain compliance with the terms and conditions of the Consent or.
  - (b) No later than 30 days after the effective date of his Consent, certify in writing to the consent issuing authority that upon the reduction, loss, or failure of one or more of the primary sources of electric power to any facilities utilized by the applicant to maintain compliance with the terms and conditions of his consent, the applicant shall halt, reduce or otherwise Control production and/or all discharges in order to maintain compliance with the terms & conditions of this Consent.
  
- 12. Prohibition of By pass of Treatment Facilities: The diversion or by-pass of any discharge from facility utilized by the applicant to maintain compliance with the terms and conditions of this Consent is prohibited except:
  - (i) Where unavoidable to prevent loss of life severe property damage, or
  - (ii) Where excessive storm drainage or run off would damage any facilities necessary for compliance with the terms and conditions of this Consent. The applicant shall immediately notify the consent issuing authorities in writing of each such

diversion or by-pass in accordance with the procedure specified above for reporting non-compliance.

13. Spill Prevention and Containment Plan: Within 90 days of the effective date of the Consent the applicant shall prepare and submit to the consent issuing authority; a Spill Prevention; Containment and Countermeasure Plan for the facility covered by this Consent. Such plan shall include the following information and procedures relating to the prevention of spills and unauthorized discharges or oil and hazardous substances;
  - (a) A description of a reporting system to be used to notify immediately persons responsible for management of a facility and appropriate State and Central authorities;
  - (b) A description of equipment or facilities (including overall facility) for the prevention, containment of spills and unauthorized discharge;
  - (c) A list of all oil and hazardous materials used processed or stored at the facility including the normal quantity maintained on the premises for each listed material;
  - (d) A brief description of any spills or unauthorized discharge which occurred during the 36 months period preceding the effective date of this Consent and subsequent measures taken by the applicant or reduce the possibility of further spills or unauthorized discharges; and.
  - (e) An implementation schedule for additional equipment or facilities which might be required for sub para (b) above but which are not yet operational.

## SPECIAL CONDITIONS

1. The mine management shall comply with all the terms and conditions of Environmental Clearance issued by Ministry of Environment, Forests and Climate Change (Impact Assessment Division), Government of India vide letter no. EC Identification No. – EC22A042CG110382, File No. – J-11015/487/2007-IA-II(M), Dated 06/09/2022.
2. Mine management shall complete the work as mentioned in action plan submitted along with bank guarantee vide letter dated 17/02/2018. In case the mine management fails to complete above works in the stipulated time period, the bank guarantee submitted by the mine management may be forfeited.
3. The total mining lease area shall not exceed 1999.293 hectares.
4. Mine Management shall transport the coal through mechanically covered vehicles on or before 12/07/2023. Mean while transportation of coal shall be carried out through vehicles safely and securely covered with tarpaulin or any other suitable materials.
5. Mine Management shall install separate digital meter for measurement of ground & surface water used.
6. Mine Management shall ensure maximum reuse of non-potable water.
7. Mine management shall comply with guidelines issued by CPCB for railway siding for pollution control and environmental conservation.
8. Mine management shall comply the provisions of notification dated 31/12/2021 (As amended up to date) issued by MoEF & CC regarding utilization of fly ash in mixing with over burden back filling of mine.
9. Mine management shall construct coal sludge settling tank with garland drain and wind breaking screen all around coal stack yard and workshop area.
10. Mine management shall ensure the continuous, proper and efficient working of effluent treatment plant, sewage treatment plant, and other facilities for industrial and domestic effluent generated due to mining activities. Mine management shall ensure that the treated effluent quality meet the standards prescribed by Board published in Gazette Notification dated 25/03/88. Mine management shall ensure proper arrangement of suitable drains/pipe networks to ensure adequate flow for full utilization of treated effluent generated inside the premises due to proposed expansion. Treated effluent shall be utilized either in process or for land application as far as possible. No effluent shall be discharged outside of the premises in any circumstance. Chhattisgarh Environment Conservation Board may further stipulate stringent limit depending upon environmental conditions.
11. Mine management shall provide suitable arrangement of drains/pipe networks to ensure adequate flow for utilization of treated effluent inside the mining lease area. The mine discharge water/domestic effluent after proper treatment shall be utilized in plantation, dust suppression, sprinkling on roads or other useful purposes.
12. All the solid waste industrial and domestic shall be disposed off in environment friendly manner as per rule.
13. All the internal roads shall be maintained pucca. Roads shall be cleaned regularly. Dust, muck and sludge collected from roads shall be disposed properly.

14. Mine Management shall provide safe and scientific arrangement for handling, collection, storage, transportation and disposal of all solid wastes and over burden etc. Mine management shall obtain letter of authorization under Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 from the Board. Appropriate arrangement shall be provided as per law for collection/treatment/storage/ transportation/ disposal of hazardous wastes. Mine Management shall comply with rule.
15. All the slope of external dumps shall be maintained at a maximum of 28 degrees. Top soil shall be stacked properly in a dump with proper slope at earmarked site(s) with adequate measures and should be used for reclamation and rehabilitation of mined out area and for green belt development.
16. External over burden should be stacked at earmarked dump site(s) only and should not be kept active for long period. Monitoring of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted on yearly basis.
17. Mine management shall submit NOC issued by CGWA for ground water withdrawal.
18. Regular monitoring of ground water level and quality shall be carried out by establishing a network of existing wells and constructing new piezometers at suitable locations at the proponent's cost in and around mine area. Regular monitoring of surface and ground water quality shall be carried out by establishing a network of stations at suitable locations in mine area/adjacent to mine area. The frequency of monitoring (quality and quantity) shall be four time a year - pre-monsoon (April/May), monsoon (August), post-monsoon (November) and winter (January) seasons. Data generated from groundwater regime monitoring will be submitted to Board on an annual basis.
19. Extensive tree plantation with local plant species in and around mine lease area, coal handling plant, roads, over burden dump sites etc. and in the open areas available within the premises shall be carried out. Adequate wide green belt of broad leaf local plant species shall be developed along the mine lease area especially towards residential area/villages. At least 2500 plants species per hectare shall be planted. Mine management shall abide by the decisions taken by Ministry of Environment and Forests, Government of India / Central Pollution Control Board/ State Government /Chhattisgarh Environment Conservation Board from time to time in this regard.
20. Mine management shall construct rain water harvesting structure for recharge of ground water. Mine management shall develop roof water and rainwater harvesting structures to harvest the rain water for utilization in the lean season as well as to recharge the ground water table before onset of monsoon.
21. Mine management shall use fly ash brick, fly ash block and fly ash based products in the construction/repairing activities. Mine management shall also use fly ash/bottom ash for filling low lying areas within premises and mined out areas.
22. Mine Management shall establish an environmental management cell to carryout function relating to environmental management under the supervision of senior executive who will directly report to the head of organization.
23. Necessary fund shall be provided for implementation above conditions for environmental safeguards. The funds earmarked for environmental protection measures shall be kept in separate account and not diverted for any other purpose.

24. Mine management shall obtain statutory clearances/licenses from concerned Central/State Government Departments, Boards, Bodies and Corporations etc. Mine management shall follow direction issued by Central/ State Government, Central Pollution Control Board/Chhattisgarh Environment Conservation Board from time to time regarding control of water & air pollution and for environmental conservation.
25. The issuance of 'Consent to Establish cum Consent to Operate' does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Central, State or local laws or regulations.
26. Any change in product, production/mining capacity, process, raw materials used, project profile (mining technology and scope of working) etc. shall be intimated to the Board and prior permission of the Board shall be obtained for the same.
27. Board may amend/cancel any of the conditions and add new conditions to be incorporated in the permission to establish and consent to operate and further stringent the emission/effluent limit as and when deemed necessary in the interest of environmental protection, change in the project profile or non-satisfactory implementation of the stipulated conditions etc.

This consent is valid for the stated period and has to be renewed every year. Online application with annual license fee in this regard shall reach the office 02 months before the expiry of this consent.

For & on behalf of  
Chhattisgarh Environment Conservation Board

**sd/-**  
**Member Secretary**  
Chhattisgarh Environment Conservation Board  
Nava Raipur Atal Nagar, Raipur (C.G.)

## Part-B

### CONSENT LETTER

Sub: Grant of "Consent to establish cum operate" for expansion to **M/s Dipka Expansion Project, South Eastern Coal Fields Limited** under section 21 of the Air (Prevention & Control of Pollution) Act, 1981.

Ref: Online application No. 10854309, dated: 19/10/2022 and subsequent correspondence ending dated: 21/12/2022 **M/s Dipka Expansion Project, South Eastern Coal Fields Limited**.

With reference to the above application, consent under the Air (Prevention & Control of Pollution) Act, 1981 to **M/s Dipka Expansion Project, South Eastern Coal Fields Limited** is hereby granted by the State Board in accordance with the terms and conditions as mentioned below.

This consent shall be valid for period of **one year from the date of issue of this consent** of the mine.

This consent is valid for following products & production capacity: -

<b>Product</b>	<b>Production Capacity</b>
Mining of Coal	37.5 Million Tonne/Annum (Thirty Seven Point Five Million Tonne per Annum)

**Note: -** The above production capacity includes the existing production capacity of Mining of Coal – 35 Million Tonne/Annum for which consent has already been granted under section 25 of the Water (Prevention and Control of Pollution) Act, 1974 vide letter no. 6797/TS/CECB/2018, Raipur dated: 01/03/2018 and under section 21 of the Air (Prevention and Control of Pollution) Act, 1981 vide letter no. 6799/TS/CECB/2018, Raipur dated: 01/03/2018. The consent vide letter no. 6797, 6799/TS/CECB/2018, Raipur dated: 01/03/2018 shall be treated as cancelled from the date of issue of this consent.

### Terms & Conditions: -

1. The mine management shall comply with all the terms and conditions of Environmental Clearance issued by Ministry of Environment, Forests and Climate Change (Impact Assessment Division), Government of India vide letter no. EC Identification No. – EC22A042CG110382, File No. – J-11015/487/2007-IA-II(M), Dated 06/09/2022.
2. Mine management shall complete the work as mentioned in action plan submitted along with bank guarantee vide letter dated 17/02/2018. In case the mine management fails to complete above works in the stipulated time period, the bank guarantee submitted by the mine management may be forfeited.
3. The total mining lease area shall not exceed 1999.293 hectares.
4. Mine Management shall transport the coal through mechanically covered vehicles on or before 12/07/2023. Mean while transportation of coal shall be carried out through vehicles safely and securely covered with tarpaulin or any other suitable materials.
5. **Mine management shall construct separate shed for storage of used oil and filter materials.**
6. **Mine Management shall provide necessary pollution control arrangements for railway siding as per the guideline issued by CPCB for the same.**



7. Calibration & data validation shall be carried out of CAAQMS and mine management shall ensure availability of real time data in CECB/CPCB server.
8. Mine management shall comply the provisions of notification dated 31/12/2021 (As amended upto date) issued by MoEF & CC regarding utilization of fly ash in mixing with over burden and back filling.
9. All the solid waste industrial and domestic shall be disposed off in environment friendly manner as per rule.
10. All the internal roads shall be maintained pucca. Roads shall be cleaned regularly. Dust, muck and sludge collected from roads shall be disposed properly.
11. Effective steps shall be taken to avoid fugitive emissions during excavation, handling and transportation etc. of coal and other waste materials. Adequate water spraying arrangements shall be made during transportation of coal and other waste materials on haul road.
12. Mine Management shall provide adequate air pollution control arrangement such as bag filter, water spraying arrangement at all point of emission. Emission of particulate matter from point sources shall not exceed 50 mg/NM<sup>3</sup>. Effective steps shall also be taken to avoid fugitive emission during excavation, handling and transportation etc. of coal and other waste materials. All transfer points/junction points and conveying system shall be covered. Coal handling plant (if any) shall be provided with adequate number of high efficiency dust extraction or suppression system. Loading and unloading areas including all the transfer points/junction points shall also have efficient dust control arrangements. Adequate Control arrangements shall be provided to control fugitive emission during handling, transportation etc. activities. The coal shall not be transported in open vehicles to avoid dust emission. Adequate water Spraying arrangement on haul roads, loading point etc. shall be provided and properly maintained. Use of long range fogging machined and mechanized sweeping machine shall be insured.
13. Ambient air quality within the mine area shall not exceed the standards prescribed by the Board. Mine management shall ensure the concentration of pollutants in ambient air within standards prescribed for residential, rural areas in the nearby residential/rural areas. Mine management shall follow provisions of notification issued by Ministry of Environment & Forests, Government of India in this regard from time to time.
14. Mine Management shall establish ambient air quality monitoring stations in the core zone as well as buffer zone for PM10, PM 2.5, NOx and SO<sub>2</sub>. Location and number of the ambient air quality stations shall be decided based on meteorological data, topographical features, environmentally and ecologically sensitive targets and the frequency of monitoring shall be undertaken in consultation with the Board. Regular monitoring of air quality shall be carried out in and around the mine lease area and records be maintained.
15. Mine Management shall provide safe and scientific arrangement for handling, collection, storage, transportation and disposal of all solid wastes and over burden etc. Mine management shall obtain letter of authorization under Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 from the Board. Appropriate arrangement shall be provided as per law for collection/treatment/storage/ transportation/ disposal of hazardous wastes. Mine Management shall comply with rule.
16. All internal road shall be made pucca as for as possible. Water spraying arrangements shall be made during transportation of coal and other waste

materials on haul roads. Good house keeping practices shall be adopted by the management.

17. Mine Management shall take due precaution and appropriate measures to arrest and minimize vibration and noise effects during mining activities. Mine management shall provide proper arrangement to control the noise pollution. Mine management shall install appropriate noise barriers/ control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation to control the noise. **Workers engaged in blasting and drilling operations, operations of heavy earth moving machinery (HEMM) etc. shall be provided with ear plugs/muffs.** The ambient noise level shall be maintained 75 dB (A) during day time and 70 dB (A) during night time within premises. Adequate measures shall be taken for control of noise levels below 85 dB (A) in the work environment. Occupational exposure limit of noise specified by Director General of Mines Safety (DGMS) shall be complied.
18. All the slope of external dumps shall be maintained at a maximum of 28 degrees. Top soil shall be stacked properly in a dump with proper slope at earmarked site(s) with adequate measures and should be used for reclamation and rehabilitation of mined out area and for green belt development.
19. Extensive tree plantation with local plant species in and around mine lease area, coal handling plant, roads, over burden dump sites etc. and in the open areas available within the premises shall be carried out. Adequate wide green belt of broad leaf local plant species shall be developed along the mine lease area especially towards residential area/villages. At least 2500 plants species per hectare shall be planted. Mine management shall abide by the decisions taken by Ministry of Environment and Forests, Government of India / Central Pollution Control Board/ State Government /Chhattisgarh Environment Conservation Board from time to time in this regard.
20. Mine Management shall use fly ash brick, fly ash block and fly ash based products in the construction/repairing activities. Mine management shall also use fly ash/bottom ash for filling low lying areas within premises and mined out areas as per notification/guideline/direction of Ministry of Environment and Forests, Government of India/ Central Government/ Central Pollution Control Board/State Government/ Chhattisgarh Environment Conservation Board. Mine management shall ensure transportation of fly ash for back filling / beneficial uses by covered vehicles to prevent emission during transportation.
21. Mine Management shall establish an environmental management cell to carryout function relating to environmental management under the supervision of senior executive who will directly report to the head of organization.
22. Necessary fund shall be provided for implementation above conditions for environmental safeguards. The funds earmarked for environmental protection measures shall be kept in separate account and not diverted for any other purpose.
23. Mine Management shall obtain statutory clearances/licenses from concerned Central/State Government Departments, Boards, Bodies and Corporations etc. Mine management shall follow direction issued by Central/ State Government, Central Pollution Control Board/Chhattisgarh Environment Conservation Board from time to time regarding control of water & air pollution and for environmental conservation.
24. The issuance of 'Consent to Establish cum Consent to Operate' does not convey any property rights in either real or personal property, or any exclusive privileges,

nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Central, State or local laws or regulations.

25. Any change in product, production/mining capacity, process, raw materials used, project profile (mining technology and scope of working) etc. shall be intimated to the Board and prior permission of the Board shall be obtained for the same.
26. Board may amend/cancel any of the conditions and add new conditions to be incorporated in the permission to establish and consent to operate and further stringent the emission/effluent limit as and when deemed necessary in the interest of environmental protection, change in the project profile or non-satisfactory implementation of the stipulated conditions etc.


This consent is valid for the stated period and has to be renewed every year. Online application with annual license fee in this regard shall reach the office 02 months before the expiry of this consent.

For & on behalf of  
Chhattisgarh Environment Conservation Board

**Sd/-**  
**Member Secretary**  
Chhattisgarh Environment Conservation Board  
Nava Raipur Atal Nagar, Raipur (C.G.)

PIEZOMETER DATA IN RESPECT OF DIPKA EXPANSION PROJECT								
Month	Location of Peizometer							
	Sneh Milan		C.G.M Office		Suwabhondi		Hardi Bazaar	
	Shallow (m)	Deep (m)	Shallow (m)	Deep (m)	Shallow (m)	Deep (m)	Shallow (m)	Deep (m)
APRIL 2023	4.20	22.58	11.37	8.90	10.20	10.60	7.30	23.20
MAY 2023	4.10	23.42	11.42	9.40	10.50	10.90	7.70	23.70
JUNE 2023	3.50	24.58	11.66	8.40	10.40	10.80	8.50	24.40
JULY 2023	2.40	24.47	10.85	6.70	9.80	10.15	7.90	24.00
AUGUST 2023	1.45	22.10	9.39	6.80	6.95	6.45	6.30	23.30
SEPTEMBER 2023	1.80	19.78	8.38	6.40	5.60	6.10	5.45	21.90

*Jw*  
*DATE*

  
Project Engineer (Civil)  
Dipka Expansion Project

Ground Water Quality Report  
**April to June 2023**

of



**South Eastern Coalfields Ltd.**

Dipka Area

Through



*cmpdi*  
*A Mini Ratna Company*

Central Mine Planning and Design Institute  
(RI-V) Bilaspur

**Prepared by**



**NETEL (INDIA) LIMITED**  
**ENVIRONMENT MANAGEMENT SERVICES**

W-408, Pipeline Road, Rabale MIDC,  
TTC Industrial Area, Navi Mumbai – 400 701

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Email: [ems@netel-india.com](mailto:ems@netel-india.com)

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# Netel (India) Limited

## GROUND WATER QUALITY REPORT (April to June - 2023)

Month	May, 2023	Area	Dipka	Report No.	NIL/CMPDI/RPT/23/05/067
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur		Date of Issue	28-May-2023	
Project	Dipka Mine	Sample Ref. No.	NIL/W005/23/129-130		
Sampling Stations	1	Jhabar - Lagan Singh (Lat.: 22.35389 N, Long.: 82.52778 E)		Date of Sampling	18-May-2023
	2	Tiwarta-1 - Karam sai (Lat.: 22.36083 N, Long.: 82.50111 E)		Date of Sampling	18-May-2023
Page No. 1 of 2	Date of Analysis		22-May-2023		to 26-May-2023

Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)
			1	2	Acceptable Limit (Max)*	Permissible Limit** (Max)	
1	pH : --- LDL : 0.5 - 13	IS 3025 (Part 11) Electrometric Method	7.42	7.22	6.5 - 8.5	No relaxation	7 ± 0.2
2	Turbidity : NTU LDL : 1	IS 3025 (Part 10) Nephelometric Method	<1	1.3	1	5	2 NTU ± 0.5NTU
3	Conductivity : µs/cm LDL : 0.5	APHA 2510-B, 23 <sup>rd</sup> Edition Laboratory Method	596	510	---	---	19.3 umhos ± 0.05 umhos
4	TDS : mg/L LDL : 5	IS 3025 (Part 16) Gravimetric Method	397	340	500	2000	2135.8mg/l ± 59.8mg/l
5	Total Alkalinity : mg/L LDL : 5	IS 3025 (Part 23) Indicator Method	156	144	200	600	500 mg/l ± 8.6mg/l
6	Chloride (Cl <sup>-</sup> ) : mg/L LDL : 2.5	IS 3025 (Part 32) Argentometric Method	166	158	250	1000	873.5 ± 7.4mg/l
7	Hardness : mg/L LDL : 5	IS 3025 (Part 21) EDTA Method	196	152	200	600	300mg/l ± 7.3mg/l
8	Sulphate (SO <sub>4</sub> ) : mg/L LDL : 1	IS 3025 (Part 24) Turbidimetric Method	10.1	9.4	200	400	11.07 ± 0.45
9	Phosphate (PO <sub>4</sub> ) : mg/L LDL : 1	APHA 2510-P-C, 23 <sup>rd</sup> Edition Colorimetric Method	<1	<1	---	---	1mg/l ± 0.022 mg/l
10	Nitrates : mg/L LDL : 0.5	IS 3025 (Part 34) Chromotropic acid method	9.9	9.6	45	No relaxation	NA
11	Fluoride : mg/L LDL : 0.2	IS 3025 (Part 60) Zirconium Alizarin Method	<0.2	<0.2	1	1.5	0.49 mg/l ± 0.05 mg/l
12	Phenols : mg/L LDL : 0.001	APHA 5530-D, 23 <sup>rd</sup> Edition Direct Photometric Method	<0.001	<0.001	0.001	0.002	3mg/l ± 0.4mg/l
13	BOD : mg/L LDL : 5	IS 3025 (Part 44) Oxygen Depletion Method	<5	<5	---	---	24.89mg/l ± 4.88 mg/l
14	COD : mg/L LDL : 10	APHA 5220-B, 23 <sup>rd</sup> Edition Open Reflux Method	<10	<10	---	---	49.5mg/l ± 4.6 mg/l
15	Boron : mg/L LDL : 0.1	IS 3025 (Part 57) Colorimetric curcumin Method	<0.1	<0.1	0.5	1	0.6 mg/l ± 0.04mg/l
16	Chromium : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.05	No relaxation	0.53 mg/l ± 0.02mg/l
17	Iron : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.3	No relaxation	0.5 mg/l ± 0.05mg/l
18	Zinc : mg/L LDL : 0.2	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.2	<0.2	5	15	0.05 ± 0.006mg/l
19	Copper : mg/L LDL : 0.04	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.04	<0.04	0.05	1.5	0.1 mg/l ± 0.01 mg/l
20	Cadmium : mg/L LDL : 0.001	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.001	<0.001	0.003	No relaxation	0.05mg/l ± 0.005mg/l
21	Lead : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.01	No relaxation	0.5mg/l ± 0.02mg/l
22	Manganese : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.1	0.3	0.1 mg/l ± 0.01mg/l
23	Nickel : mg/L LDL : 0.02	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.02	<0.02	0.02	No relaxation	1 mg/l ± 0.04mg/l
24	Sodium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	10.2	20.1	---	---	0.1 mg/l ± 0.004mg/l
25	Potassium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	7.7	10.5	---	---	1 mg/l ± 0.1mg/l
26	Aluminium : mg/L LDL : 0.03	APHA 3111-D, 23 <sup>rd</sup> Edition Nitrous Oxide- Acetylene Flame Method	<0.03	<0.03	0.03	0.2	5 mg/l ± 0.2mg/l

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (April to June - 2023)

Month	May, 2023	Area	Dipka	Report No.	NIL/CMPDI/RPT/23/05/067		
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur		Date of Issue	28-May-2023			
Project	Dipka Mine	Sample Ref. No.	NIL/W/005/23/129-130				
Sampling Stations	1	Jhabar - Lagan Singh (Lat.: 22.35389 N, Long.: 82.52778 E)	Date of Sampling	18-May-2023			
	2	Tiwarta-1 - Karam sai (Lat.: 22.36083 N, Long.: 82.50111 E)	Date of Sampling	18-May-2023			
Page No. 2 of 2		Date of Analysis	22-May-2023	to 26-May-2023			
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)
			1	2	Acceptable Limit (Max)*	Permissible Limit** (Max)	
27	Temperature : °C LDL : 0.1	IS 3025 (Part 9) Direct Measurement Method	32.2	31.8	---	---	NA
28	Colour : Hazen LDL : 5	IS 3025 (Part 4) Platinum cobalt Method	<5.0	<5.0	5	15	NA
29	Ca** : mg/L LDL : 5	IS 3025 (Part 40) EDTA method	81	72	---	---	200 mg/l±3.98 mg/l
30	Mg** : mg/L LDL : 5	IS 3025 (Part 46) Calculation Method	38	33	---	---	120 mg/l±3 mg/l
31	Carbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	0	0	---	---	500 mg/l±8.6mg/l
32	Bicarbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	156	144	---	---	500 mg/l±8.6mg/l
33	Dissolved Oxygen (DO) : mg/L LDL : 0.5	APHA 4500-O(B), 23 <sup>rd</sup> Edition Iodometric method	6.6	6.7	---	---	NA
34	Mercury : mg/L LDL : 0.001	IS 3025 (Part 48) Atomic Absorption Method	<0.001	<0.001	0.001	No relaxation	NA
35	Selenium : mg/L LDL : 0.01	IS 3025 (Part 56) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA
36	Arsenic : mg/L LDL : 0.01	IS 3025 (Part 37) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA
37	Barium : mg/L LDL : 0.5	IS 13428 (Annex F) Nitrous Oxide- Acetylene Flame Method	<0.5	<0.5	0.7	No relaxation	5mg/l±0.62mg/l
38	Total Coliforms : MPN/100ml LDL : 0	IS 1622-1981 ---	Not detected	Not detected	Absent	No relaxation	NA
39	Ion Balance : --- LDL : ---	By Calculation ---	1.24	1.89	---	---	NA

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory







# Netel (India) Limited

## GROUND WATER QUALITY REPORT (April to June - 2023)

Month	May, 2023	Area	Dipka	Report No.	NIL/CMPDI/RPT/23/05/068
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur		Date of Issue	28-May-2023	
Project	Dipka Mine	Sample Ref. No.	NIL/W005/23/131-132		
Sampling Stations	3	Kerachachhar - Govt well (Lat.: 22.39500 N, Long.: 82.46611 E)	Date of Sampling	18-May-2023	
	4	Jawali - Govt. Well (Lat.: 22.42083 N, Long.: 82.54222 E)	Date of Sampling	18-May-2023	
Page No. 1 of 2	Date of Analysis		22-May-2023	to 26-May-2023	

Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)
			3	4	Acceptable Limit (Max)*	Permissible Limit** (Max)	
1	pH : --- LDL : 0.5 - 13	IS 3025 (Part 11) Electrometric Method	7.42	8.12	6.5 - 8.5	No relaxation	7 ± 0.2
2	Turbidity : NTU LDL : 1	IS 3025 (Part 10) Nephelometric Method	2.1	<1	1	5	2 NTU ± 0.5NTU
3	Conductivity : µs/cm LDL : 0.5	APHA 2510-B, 23 <sup>rd</sup> Edition Laboratory Method	335	1799	---	---	19.3 umhos ± 0.05 umhos
4	TDS : mg/L LDL : 5	IS 3025 (Part 16) Gravimetric Method	223	1200	500	2000	2135.8mg/l ± 59.8mg/l
5	Total Alkalinity : mg/L LDL : 5	IS 3025 (Part 23) Indicator Method	72	434	200	600	500 mg/l ± 8.6mg/l
6	Chloride (Cl <sup>-</sup> ) : mg/L LDL : 2.5	IS 3025 (Part 32) Argentometric Method	88	450	250	1000	873.5 ± 7.4mg/l
7	Hardness : mg/L LDL : 5	IS 3025 (Part 21) EDTA Method	76	493	200	600	300mg/l ± 7.3mg/l
8	Sulphate (SO <sub>4</sub> ) : mg/L LDL : 1	IS 3025 (Part 24) Turbidimetric Method	7.5	16.2	200	400	11.07 ± 0.45
9	Phosphate (PO <sub>4</sub> ) : mg/L LDL : 1	APHA 2510-P-C, 23 <sup>rd</sup> Edition Colorimetric Method	<1	<1	---	---	1mg/l ± 0.022 mg/l
10	Nitrates : mg/L LDL : 0.5	IS 3025 (Part 34) Chromotropic acid method	4.5	21.6	45	No relaxation	NA
11	Fluoride : mg/L LDL : 0.2	IS 3025 (Part 60) Zirconium Alizarin Method	<0.2	<0.2	1	1.5	0.49 mg/l ± 0.05 mg/l
12	Phenols : mg/L LDL : 0.001	APHA 5530-D, 23 <sup>rd</sup> Edition Direct Photometric Method	<0.001	<0.001	0.001	0.002	3mg/l ± 0.4mg/l
13	BOD : mg/L LDL : 5	IS 3025 (Part 44) Oxygen Depletion Method	<5	<5	---	---	24.89mg/l ± 4.88 mg/l
14	COD : mg/L LDL : 10	APHA 5220-B, 23 <sup>rd</sup> Edition Open Reflux Method	<10	<10	---	---	49.5mg/l ± 4.6 mg/l
15	Boron : mg/L LDL : 0.1	IS 3025 (Part 57) Colorimetric curcumin Method	<0.1	<0.1	0.5	1	0.6 mg/l ± 0.04mg/l
16	Chromium : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.05	No relaxation	0.53 mg/l ± 0.02mg/l
17	Iron : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.3	No relaxation	0.5 mg/l ± 0.05mg/l
18	Zinc : mg/L LDL : 0.2	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.2	<0.2	5	15	0.05 ± 0.006mg/l
19	Copper : mg/L LDL : 0.04	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.04	<0.04	0.05	1.5	0.1 mg/l ± 0.01 mg/l
20	Cadmium : mg/L LDL : 0.001	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.001	<0.001	0.003	No relaxation	0.05mg/l ± 0.005mg/l
21	Lead : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.01	No relaxation	0.5mg/l ± 0.02mg/l
22	Manganese : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.1	0.3	0.1 mg/l ± 0.01mg/l
23	Nickel : mg/L LDL : 0.02	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.02	<0.02	0.02	No relaxation	1 mg/l ± 0.04mg/l
24	Sodium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	16.2	24.1	---	---	0.1 mg/l ± 0.004mg/l
25	Potassium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	15.8	9.3	---	---	1 mg/l ± 0.1mg/l
26	Aluminium : mg/L LDL : 0.03	APHA 3111-D, 23 <sup>rd</sup> Edition Nitrous Oxide- Acetylene Flame Method	<0.03	<0.03	0.03	0.2	5 mg/l ± 0.2mg/l

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (April to June - 2023)

Month	May, 2023	Area	Dipka	Report No.	NIL/CMPDI/RPT/23/05/068		
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur		Date of Issue	28-May-2023			
Project	Dipka Mine	Sample Ref. No.	NIL/W005/23/131-132				
Sampling Stations	3	Kerachachhar - Govt well (Lat.: 22.39500 N, Long.: 82.46611 E)	Date of Sampling	18-May-2023			
	4	Jawali - Govt. Well (Lat.: 22.42083 N, Long.: 82.54222 E)	Date of Sampling	18-May-2023			
Page No. 2 of 2		Date of Analysis	22-May-2023	to 26-May-2023			
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)
			3	4	Acceptable Limit (Max)*	Permissible Limit** (Max)	
27	Temperature : °C LDL : 0.1	IS 3025 (Part 9) Direct Measurement Method	32.1	30.7	---	---	NA
28	Colour : Hazen LDL : 5	IS 3025 (Part 4) Platinum cobalt Method	<5.0	<5.0	5	15	NA
29	Ca** : mg/L LDL : 5	IS 3025(Part 40) EDTA method	31	196	---	---	200 mg/l±3.98 mg/l
30	Mg** : mg/L LDL : 5	IS 3025(Part 46) Calculation Method	14	120	---	---	120 mg/l±3 mg/l
31	Carbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	0	0	---	---	500 mg/l±8.6mg/l
32	Bicarbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	72	434	---	---	500 mg/l±8.6mg/l
33	Dissolved Oxygen (DO) : mg/L LDL : 0.5	APHA 4500-O(B), 23 <sup>rd</sup> Edition Iodometric method	5.9	6.1	---	---	NA
34	Mercury : mg/L LDL : 0.001	IS 3025 (Part 48) Atomic Absorption Method	<0.001	<0.001	0.001	No relaxation	NA
35	Selenium : mg/L LDL : 0.01	IS 3025 (Part 56) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA
36	Arsenic : mg/L LDL : 0.01	IS 3025 (Part 37) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA
37	Barium : mg/L LDL : 0.5	IS 13428 (Annex F) Nitrous Oxide- Acetylene Flame Method	<0.5	<0.5	0.7	No relaxation	5mg/l±0.62mg/l
38	Total Coliforms : MPN/100ml LDL : 0	IS 1622-1981 ---	Not detected	Not detected	Absent	No relaxation	NA
39	Ion Balance : --- LDL : ---	By Calculation ---	-1.2	1.06	---	---	NA

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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For NETEL INDIA LIMITED

Shradha Kere  
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## GROUND WATER QUALITY REPORT (April to June - 2023)

Month	May, 2023	Area	Dipka	Report No.	NIL/CMPDI/RPT/23/05/069
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur		Date of Issue	28-May-2023	
Project	Dipka Mine	Sample Ref. No.	NIL/W005/23/133-134		
Sampling Stations	5	Hardibajar - Avinash Paikra (Lat.: 22.31083 N, Long.: 82.54861 E)		Date of Sampling	18-May-2023
	6	Dhatura - Heera Lal Kaushik (Lat.: 22.26167 N, Long.: 82.54750 E)		Date of Sampling	18-May-2023
Page No. 1 of 2	Date of Analysis		22-May-2023 to 26-May-2023		

Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)
			5	6	Acceptable Limit (Max)*	Permissible Limit** (Max)	
1	pH : --- LDL : 0.5 - 13	IS 3025 (Part 11) Electrometric Method	7.84	7.52	6.5 - 8.5	No relaxation	7 ± 0.2
2	Turbidity : NTU LDL : 1	IS 3025 (Part 10) Nephelometric Method	2.7	1	1	5	2 NTU ± 0.5NTU
3	Conductivity : µs/cm LDL : 0.5	APHA 2510-B, 23 <sup>rd</sup> Edition Laboratory Method	1576	1834	---	---	19.3 umhos ± 0.05 umhos
4	TDS : mg/L LDL : 5	IS 3025 (Part 16) Gravimetric Method	1051	1223	500	2000	2135.8mg/l ± 59.8mg/l
5	Total Alkalinity : mg/L LDL : 5	IS 3025 (Part 23) Indicator Method	396	448	200	600	500 mg/l ± 8.6mg/l
6	Chloride (Cl <sup>-</sup> ) : mg/L LDL : 2.5	IS 3025 (Part 32) Argentometric Method	384	460	250	1000	873.5 ± 7.4mg/l
7	Hardness : mg/L LDL : 5	IS 3025 (Part 21) EDTA Method	420	536	200	600	300mg/l ± 7.3mg/l
8	Sulphate (SO <sub>4</sub> ) : mg/L LDL : 1	IS 3025 (Part 24) Turbidimetric Method	21.4	10.6	200	400	11.07 ± 0.45
9	Phosphate (PO <sub>4</sub> ) : mg/L LDL : 1	APHA 2510-P-C, 23 <sup>rd</sup> Edition Colorimetric Method	<1	<1	---	---	1mg/l ± 0.022 mg/l
10	Nitrates : mg/L LDL : 0.5	IS 3025 (Part 34) Chromotropic acid method	12.8	14.5	45	No relaxation	NA
11	Fluoride : mg/L LDL : 0.2	IS 3025 (Part 60) Zirconium Alizarin Method	0.23	0.22	1	1.5	0.49 mg/l ± 0.05 mg/l
12	Phenols : mg/L LDL : 0.001	APHA 5530-D, 23 <sup>rd</sup> Edition Direct Photometric Method	<0.001	<0.001	0.001	0.002	3mg/l ± 0.4mg/l
13	BOD : mg/L LDL : 5	IS 3025 (Part 44) Oxygen Depletion Method	<5	<5	---	---	24.89mg/l ± 4.88 mg/l
14	COD : mg/L LDL : 10	APHA 5220-B, 23 <sup>rd</sup> Edition Open Reflux Method	<10	<10	---	---	49.5mg/l ± 4.6 mg/l
15	Boron : mg/L LDL : 0.1	IS 3025 (Part 57) Colorimetric curcumin Method	<0.1	<0.1	0.5	1	0.6 mg/l ± 0.04mg/l
16	Chromium : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.05	No relaxation	0.53 mg/l ± 0.02mg/l
17	Iron : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.3	No relaxation	0.5 mg/l ± 0.05mg/l
18	Zinc : mg/L LDL : 0.2	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.2	<0.2	5	15	0.05 ± 0.006mg/l
19	Copper : mg/L LDL : 0.04	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.04	<0.04	0.05	1.5	0.1 mg/l ± 0.01 mg/l
20	Cadmium : mg/L LDL : 0.001	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.001	<0.001	0.003	No relaxation	0.05mg/l ± 0.005mg/l
21	Lead : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.01	No relaxation	0.5mg/l ± 0.02mg/l
22	Manganese : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.1	0.3	0.1 mg/l ± 0.01mg/l
23	Nickel : mg/L LDL : 0.02	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.02	<0.02	0.02	No relaxation	1 mg/l ± 0.04mg/l
24	Sodium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	17.8	15.4	---	---	0.1 mg/l ± 0.004mg/l
25	Potassium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	7.5	7.6	---	---	1 mg/l ± 0.1mg/l
26	Aluminium : mg/L LDL : 0.03	APHA 3111-D, 23 <sup>rd</sup> Edition Nitrous Oxide- Acetylene Flame Method	<0.03	<0.03	0.03	0.2	5 mg/l ± 0.2mg/l

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (April to June - 2023)

Month	May, 2023	Area	Dipka	Report No.	NIL/CMPDI/RPT/23/05/069		
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur		Date of Issue	28-May-2023			
Project	Dipka Mine	Sample Ref. No.	NIL/W005/23/133-134				
Sampling Stations	5	Hardibajar - Avinash Paikra (Lat.: 22.31083 N, Long.: 82.54861 E)	Date of Sampling	18-May-2023			
	6	Dhatura - Heera Lal Kaushik (Lat.: 22.26167 N, Long.: 82.54750 E)	Date of Sampling	18-May-2023			
Page No. 2 of 2		Date of Analysis	22-May-2023	to 26-May-2023			
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)
			5	6	Acceptable Limit (Max)*	Permissible Limit** (Max)	
27	Temperature : °C LDL : 0.1	IS 3025 (Part 9) Direct Measurement Method	29.9	30.7	---	---	NA
28	Colour : Hazen LDL : 5	IS 3025 (Part 4) Platinum cobalt Method	<5.0	<5.0	5	15	NA
29	Ca <sup>++</sup> : mg/L LDL : 5	IS 3025 (Part 40) EDTA method	168	226	---	---	200 mg/l±3.98 mg/l
30	Mg <sup>++</sup> : mg/L LDL : 5	IS 3025 (Part 46) Calculation Method	104	114	---	---	120 mg/l±3 mg/l
31	Carbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	0	0	---	---	500 mg/l±8.6mg/l
32	Bicarbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	396	448	---	---	500 mg/l±8.6mg/l
33	Dissolved Oxygen (DO) : mg/L LDL : 0.5	APHA 4500-O(B), 23 <sup>rd</sup> Edition Iodometric method	7.2	5.8	---	---	NA
34	Mercury : mg/L LDL : 0.001	IS 3025 (Part 48) Atomic Absorption Method	<0.001	<0.001	0.001	No relaxation	NA
35	Selenium : mg/L LDL : 0.01	IS 3025 (Part 56) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA
36	Arsenic : mg/L LDL : 0.01	IS 3025 (Part 37) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA
37	Barium : mg/L LDL : 0.5	IS 13428 (Annex F) Nitrous Oxide- Acetylene Flame Method	<0.5	<0.5	0.7	No relaxation	5mg/l±0.62mg/l
38	Total Coliforms : MPN/100ml LDL : 0	IS 1622-1981 ---	Not detected	Not detected	Absent	No relaxation	NA
39	Ion Balance : --- LDL : ---	By Calculation ---	-0.22	1.74	---	---	NA

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (April to June - 2023)

Month	May, 2023	Area	Dipka	Report No.	NIL/CMPDI/RPT/23/05/070
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur		Date of Issue	28-May-2023	
Project	Dipka Mine	Sample Ref. No.	NIL/W005/23/135-136		
Sampling Stations	7	Dholpur - Manoranjan singh (Lat.: 22.22194 N, Long.: 82.56167 E)		Date of Sampling	18-May-2023
	8	Panora - Sunil Banjare (Lat.: 22.20417 N, Long.: 82.52083 E)		Date of Sampling	18-May-2023
Page No. 1 of 2	Date of Analysis		22-May-2023	to 26-May-2023	

Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)
			7	8	Acceptable Limit (Max)*	Permissible Limit** (Max)	
1	pH : --- LDL : 0.5 - 13	IS 3025 (Part 11) Electrometric Method	7.88	7.13	6.5 - 8.5	No relaxation	7 ± 0.2
2	Turbidity : NTU LDL : 1	IS 3025 (Part 10) Nephelometric Method	1.5	<1	1	5	2 NTU ± 0.5NTU
3	Conductivity : µs/cm LDL : 0.5	APHA 2510-B, 23 <sup>rd</sup> Edition Laboratory Method	1140	2285	---	---	19.3 umhos ± 0.05 umhos
4	TDS : mg/L LDL : 5	IS 3025 (Part 16) Gravimetric Method	760	1524	500	2000	2135.8mg/l ± 59.8mg/l
5	Total Alkalinity : mg/L LDL : 5	IS 3025 (Part 23) Indicator Method	354	650	200	600	500 mg/l ± 8.6mg/l
6	Chloride (Cl <sup>-</sup> ) : mg/L LDL : 2.5	IS 3025 (Part 32) Argentometric Method	332	678	250	1000	873.5 ± 7.4mg/l
7	Hardness : mg/L LDL : 5	IS 3025 (Part 21) EDTA Method	372	743	200	600	300mg/l ± 7.3mg/l
8	Sulphate (SO <sub>4</sub> ) : mg/L LDL : 1	IS 3025 (Part 24) Turbidimetric Method	21.7	30.1	200	400	11.07 ± 0.45
9	Phosphate (PO <sub>4</sub> ) : mg/L LDL : 1	APHA 2510-P-C, 23 <sup>rd</sup> Edition Colorimetric Method	<1	<1	---	---	1mg/l ± 0.022 mg/l
10	Nitrates : mg/L LDL : 0.5	IS 3025 (Part 34) Chromotropic acid method	20.3	23.4	45	No relaxation	NA
11	Fluoride : mg/L LDL : 0.2	IS 3025 (Part 60) Zirconium Alizarin Method	0.25	0.34	1	1.5	0.49 mg/l ± 0.05 mg/l
12	Phenols : mg/L LDL : 0.001	APHA 5530-D, 23 <sup>rd</sup> Edition Direct Photometric Method	<0.001	<0.001	0.001	0.002	3mg/l ± 0.4mg/l
13	BOD : mg/L LDL : 5	IS 3025 (Part 44) Oxygen Depletion Method	<5	<5	---	---	24.89mg/l ± 4.88 mg/l
14	COD : mg/L LDL : 10	APHA 5220-B, 23 <sup>rd</sup> Edition Open Reflux Method	<10	<10	---	---	49.5mg/l ± 4.6 mg/l
15	Boron : mg/L LDL : 0.1	IS 3025 (Part 57) Colorimetric curcumin Method	<0.1	<0.1	0.5	1	0.6 mg/l ± 0.04mg/l
16	Chromium : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.05	No relaxation	0.53 mg/l ± 0.02mg/l
17	Iron : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.3	No relaxation	0.5 mg/l ± 0.05mg/l
18	Zinc : mg/L LDL : 0.2	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.2	<0.2	5	15	0.05 ± 0.006mg/l
19	Copper : mg/L LDL : 0.04	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.04	<0.04	0.05	1.5	0.1 mg/l ± 0.01 mg/l
20	Cadmium : mg/L LDL : 0.001	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.001	<0.001	0.003	No relaxation	0.05mg/l ± 0.005mg/l
21	Lead : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.01	No relaxation	0.5mg/l ± 0.02mg/l
22	Manganese : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.1	0.3	0.1 mg/l ± 0.01mg/l
23	Nickel : mg/L LDL : 0.02	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.02	<0.02	0.02	No relaxation	1 mg/l ± 0.04mg/l
24	Sodium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	29.1	25.5	---	---	0.1 mg/l ± 0.004mg/l
25	Potassium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	10.1	11.6	---	---	1 mg/l ± 0.1mg/l
26	Aluminium : mg/L LDL : 0.03	APHA 3111-D, 23 <sup>rd</sup> Edition Nitrous Oxide- Acetylene Flame Method	<0.03	<0.03	0.03	0.2	5 mg/l ± 0.2mg/l

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (April to June - 2023)

Month	May, 2023	Area	Dipka	Report No.	NIL/CMPDI/RPT/23/05/070		
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur		Date of Issue	28-May-2023			
Project	Dipka Mine	Sample Ref. No.	NIL/W005/23/135-136				
Sampling Stations	7	Dholpur - Manoranjan singh (Lat.: 22.22194 N, Long.: 82.56167 E)		Date of Sampling	18-May-2023		
	8	Panora - Sunil Banjare (Lat.: 22.20417 N, Long.: 82.52083 E)		Date of Sampling	18-May-2023		
Page No. 2 of 2			Date of Analysis	22-May-2023	to 26-May-2023		
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)
			7	8	Acceptable Limit (Max)*	Permissible Limit** (Max)	
27	Temperature : °C LDL : 0.1	IS 3025 (Part 9) Direct Measurement Method	31.4	32	---	---	NA
28	Colour : Hazen LDL : 5	IS 3025 (Part 4) Platinum cobalt Method	<5.0	<5.0	5	15	NA
29	Ca <sup>++</sup> : mg/L LDL : 5	IS 3025 (Part 40) EDTA method	147	290	---	---	200 mg/l±3.98 mg/l
30	Mg <sup>++</sup> : mg/L LDL : 5	IS 3025 (Part 46) Calculation Method	94	181	---	---	120 mg/l±3 mg/l
31	Carbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	0	0	---	---	500 mg/l±8.6mg/l
32	Bicarbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	354	650	---	---	500 mg/l±8.6mg/l
33	Dissolved Oxygen (DO) : mg/L LDL : 0.5	APHA 4500-O(B), 23 <sup>rd</sup> Edition Iodometric method	6.5	6.9	---	---	NA
34	Mercury : mg/L LDL : 0.001	IS 3025 (Part 48) Atomic Absorption Method	<0.001	<0.001	0.001	No relaxation	NA
35	Selenium : mg/L LDL : 0.01	IS 3025 (Part 56) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA
36	Arsenic : mg/L LDL : 0.01	IS 3025 (Part 37) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA
37	Barium : mg/L LDL : 0.5	IS 13428 (Annex F) Nitrous Oxide- Acetylene Flame Method	<0.5	<0.5	0.7	No relaxation	5mg/l±0.62mg/l
38	Total Coliforms : MPN/100ml LDL : 0	IS 1622-1981 ---	Not detected	Not detected	Absent	No relaxation	NA
39	Ion Balance : --- LDL : ---	By Calculation ---	1.95	-0.05	---	---	NA

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (April to June - 2023)

Month	May, 2023	Area	Dipka	Report No.	NIL/CMPDI/RPT/23/05/071
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur		Date of Issue	28-May-2023	
Project	Dipka Mine	Sample Ref. No.	NIL/W005/23/137-138		
Sampling Stations	9	Nawadih - Puspendra Prasad Sukla (Lat.: 22.25889 N, Long.: 82.49972 E)		Date of Sampling	18-May-2023
	10	Boida - Govt. Well (Lat.: 22.24528 N, Long.: 82.44722 E)		Date of Sampling	18-May-2023
Page No. 1 of 2	Date of Analysis		22-May-2023	to 26-May-2023	

Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)
			9	10	Acceptable Limit (Max)*	Permissible Limit** (Max)	
1	pH : --- LDL : 0.5 - 13	IS 3025 (Part 11) Electrometric Method	7.42	7.71	6.5 - 8.5	No relaxation	7 ± 0.2
2	Turbidity : NTU LDL : 1	IS 3025 (Part 10) Nephelometric Method	<1	2.1	1	5	2 NTU ± 0.5NTU
3	Conductivity : µs/cm LDL : 0.5	APHA 2510-B, 23 <sup>rd</sup> Edition Laboratory Method	789	652	---	---	19.3 umhos ± 0.05 umhos
4	TDS : mg/L LDL : 5	IS 3025 (Part 16) Gravimetric Method	526	435	500	2000	2135.8mg/l ± 59.8mg/l
5	Total Alkalinity : mg/L LDL : 5	IS 3025 (Part 23) Indicator Method	190	190	200	600	500 mg/l ± 8.6mg/l
6	Chloride (Cl <sup>-</sup> ) : mg/L LDL : 2.5	IS 3025 (Part 32) Argentometric Method	210	174	250	1000	873.5 ± 7.4mg/l
7	Hardness : mg/L LDL : 5	IS 3025 (Part 21) EDTA Method	204	200	200	600	300mg/l ± 7.3mg/l
8	Sulphate (SO <sub>4</sub> ) : mg/L LDL : 1	IS 3025 (Part 24) Turbidimetric Method	6.3	10.5	200	400	11.07 ± 0.45
9	Phosphate (PO <sub>4</sub> ) : mg/L LDL : 1	APHA 2510-P-C, 23 <sup>rd</sup> Edition Colorimetric Method	<1	<1	---	---	1mg/l ± 0.022 mg/l
10	Nitrates : mg/L LDL : 0.5	IS 3025 (Part 34) Chromotrophic acid method	5.6	6.7	45	No relaxation	NA
11	Fluoride : mg/L LDL : 0.2	IS 3025 (Part 60) Zirconium Alizarin Method	<0.2	<0.2	1	1.5	0.49 mg/l ± 0.05 mg/l
12	Phenols : mg/L LDL : 0.001	APHA 5530-D, 23 <sup>rd</sup> Edition Direct Photometric Method	<0.001	<0.001	0.001	0.002	3mg/l ± 0.4mg/l
13	BOD : mg/L LDL : 5	IS 3025 (Part 44) Oxygen Depletion Method	<5	<5	---	---	24.89mg/l ± 4.88 mg/l
14	COD : mg/L LDL : 10	APHA 5220-B, 23 <sup>rd</sup> Edition Open Reflux Method	<10	<10	---	---	49.5mg/l ± 4.6 mg/l
15	Boron : mg/L LDL : 0.1	IS 3025 (Part 57) Colorimetric curcumin Method	<0.1	<0.1	0.5	1	0.6 mg/l ± 0.04mg/l
16	Chromium : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.05	No relaxation	0.53 mg/l ± 0.02mg/l
17	Iron : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.3	No relaxation	0.5 mg/l ± 0.05mg/l
18	Zinc : mg/L LDL : 0.2	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.2	<0.2	5	15	0.05 ± 0.006mg/l
19	Copper : mg/L LDL : 0.04	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.04	<0.04	0.05	1.5	0.1 mg/l ± 0.01 mg/l
20	Cadmium : mg/L LDL : 0.001	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.001	<0.001	0.003	No relaxation	0.05mg/l ± 0.005mg/l
21	Lead : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.01	No relaxation	0.5mg/l ± 0.02mg/l
22	Manganese : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.1	0.3	0.1 mg/l ± 0.01mg/l
23	Nickel : mg/L LDL : 0.02	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.02	<0.02	0.02	No relaxation	1 mg/l ± 0.04mg/l
24	Sodium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	18.6	19.5	---	---	0.1 mg/l ± 0.004mg/l
25	Potassium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	8.4	9.2	---	---	1 mg/l ± 0.1mg/l
26	Aluminium : mg/L LDL : 0.03	APHA 3111-D, 23 <sup>rd</sup> Edition Nitrous Oxide- Acetylene Flame Method	<0.03	<0.03	0.03	0.2	5 mg/l ± 0.2mg/l

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

*Shraddha Kere*

Shraddha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (April to June - 2023)

Month	May, 2023	Area	Dipka	Report No.	NIL/CMPDI/RPT/23/05/071		
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur		Date of Issue	28-May-2023			
Project	Dipka Mine	Sample Ref. No.	NIL/W/005/23/137-138				
Sampling Stations	9	Nawadih - Puspendra Prasad Sukla (Lat.: 22.25889 N, Long.: 82.49972 E)	Date of Sampling	18-May-2023			
	10	Boida - Govt. Well (Lat.: 22.24528 N, Long.: 82.44722 E)	Date of Sampling	18-May-2023			
Page No. 2 of 2		Date of Analysis	22-May-2023	to 26-May-2023			
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)
			9	10	Acceptable Limit (Max)*	Permissible Limit** (Max)	
27	Temperature : °C LDL : 0.1	IS 3025 (Part 9) Direct Measurement Method	31.8	30.4	---	---	NA
28	Colour : Hazen LDL : 5	IS 3025 (Part 4) Platinum cobalt Method	<5.0	<5.0	5	15	NA
29	Ca** : mg/L LDL : 5	IS 3025 (Part 40) EDTA method	91	82	---	---	200 mg/l±3.98 mg/l
30	Mg** : mg/L LDL : 5	IS 3025 (Part 46) Calculation Method	43	40	---	---	120 mg/l±3 mg/l
31	Carbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	0	0	---	---	500 mg/l±8.6mg/l
32	Bicarbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	190	190	---	---	500 mg/l±8.6mg/l
33	Dissolved Oxygen (DO) : mg/L LDL : 0.5	APHA 4500-O(B), 23 <sup>rd</sup> Edition Iodometric method	5.8	6.2	---	---	NA
34	Mercury : mg/L LDL : 0.001	IS 3025 (Part 48) Atomic Absorption Method	<0.001	<0.001	0.001	No relaxation	NA
35	Selenium : mg/L LDL : 0.01	IS 3025 (Part 56) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA
36	Arsenic : mg/L LDL : 0.01	IS 3025 (Part 37) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA
37	Barium : mg/L LDL : 0.5	IS 13428 (Annex F) Nitrous Oxide- Acetylene Flame Method	<0.5	<0.5	0.7	No relaxation	5mg/l±0.62mg/l
38	Total Coliforms : MPN/100ml LDL : 0	IS 1622-1981 ---	Not detected	Not detected	Absent	No relaxation	NA
39	Ion Balance : --- LDL : ---	By Calculation ---	-0.89	0.65	---	---	NA

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
2. \*Except Sl. No. 10 which Acceptable limit is Min  
3. \*\*Permissible Limit in the Absence of Alternate Source

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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

Shraddha Kere  
Authorised Signatory







# Netel (India) Limited

## GROUND WATER QUALITY REPORT (April to June - 2023)

Month	May, 2023	Area	Dipka	Report No.	NIL/CMPDI/RPT/23/05/072
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur		Date of Issue	28-May-2023	
Project	Dipka Mine	Sample Ref. No.	NIL/W005/23/139-140		
Sampling Stations	11	Chonrha - Govt. Well (Lat.: 22.30444 N, Long.: 82.46944 E)		Date of Sampling	18-May-2023
	12	Urtla - Gokran Singh (Lat.: 22.32000 N, Long.: 82.42944 E)		Date of Sampling	18-May-2023
Page No. 1 of 2	Date of Analysis		22-May-2023	to 26-May-2023	

Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)
			11	12	Acceptable Limit (Max)*	Permissible Limit** (Max)	
1	pH : --- LDL : 0.5 - 13	IS 3025 (Part 11) Electrometric Method	7.23	7.23	6.5 - 8.5	No relaxation	7 ± 0.2
2	Turbidity : NTU LDL : 1	IS 3025 (Part 10) Nephelometric Method	3.4	2.1	1	5	2 NTU ± 0.5NTU
3	Conductivity : µs/cm LDL : 0.5	APHA 2510-B, 23 <sup>rd</sup> Edition Laboratory Method	284	862	---	---	19.3 umhos ± 0.05 umhos
4	TDS : mg/L LDL : 5	IS 3025 (Part 16) Gravimetric Method	189	575	500	2000	2135.8mg/l ± 59.8mg/l
5	Total Alkalinity : mg/L LDL : 5	IS 3025 (Part 23) Indicator Method	76	228	200	600	500 mg/l ± 8.6mg/l
6	Chloride (Cl <sup>-</sup> ) : mg/L LDL : 2.5	IS 3025 (Part 32) Argentometric Method	64	240	250	1000	873.5 ± 7.4mg/l
7	Hardness : mg/L LDL : 5	IS 3025 (Part 21) EDTA Method	86	272	200	600	300mg/l ± 7.3mg/l
8	Sulphate (SO <sub>4</sub> ) : mg/L LDL : 1	IS 3025 (Part 24) Turbidimetric Method	9.4	7.7	200	400	11.07 ± 0.45
9	Phosphate (PO <sub>4</sub> ) : mg/L LDL : 1	APHA 2510-P-C, 23 <sup>rd</sup> Edition Colorimetric Method	<1	<1	---	---	1mg/l ± 0.022 mg/l
10	Nitrates : mg/L LDL : 0.5	IS 3025 (Part 34) Chromotropic acid method	7.6	9.8	45	No relaxation	NA
11	Fluoride : mg/L LDL : 0.2	IS 3025 (Part 60) Zirconium Alizarin Method	0.21	0.26	1	1.5	0.49 mg/l ± 0.05 mg/l
12	Phenols : mg/L LDL : 0.001	APHA 5530-D, 23 <sup>rd</sup> Edition Direct Photometric Method	<0.001	<0.001	0.001	0.002	3mg/l ± 0.4mg/l
13	BOD : mg/L LDL : 5	IS 3025 (Part 44) Oxygen Depletion Method	<5	<5	---	---	24.89mg/l ± 4.88 mg/l
14	COD : mg/L LDL : 10	APHA 5220-B, 23 <sup>rd</sup> Edition Open Reflux Method	<10	<10	---	---	49.5mg/l ± 4.6 mg/l
15	Boron : mg/L LDL : 0.1	IS 3025 (Part 57) Colorimetric curcumin Method	<0.1	<0.1	0.5	1	0.6 mg/l ± 0.04mg/l
16	Chromium : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.05	No relaxation	0.53 mg/l ± 0.02mg/l
17	Iron : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.3	No relaxation	0.5 mg/l ± 0.05mg/l
18	Zinc : mg/L LDL : 0.2	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.2	<0.2	5	15	0.05 ± 0.006mg/l
19	Copper : mg/L LDL : 0.04	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.04	<0.04	0.05	1.5	0.1 mg/l ± 0.01 mg/l
20	Cadmium : mg/L LDL : 0.001	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.001	<0.001	0.003	No relaxation	0.05mg/l ± 0.005mg/l
21	Lead : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.01	No relaxation	0.5mg/l ± 0.02mg/l
22	Manganese : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.1	0.3	0.1 mg/l ± 0.01mg/l
23	Nickel : mg/L LDL : 0.02	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.02	<0.02	0.02	No relaxation	1 mg/l ± 0.04mg/l
24	Sodium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	17.3	20.3	---	---	0.1 mg/l ± 0.004mg/l
25	Potassium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	8.8	9.6	---	---	1 mg/l ± 0.1mg/l
26	Aluminium : mg/L LDL : 0.03	APHA 3111-D, 23 <sup>rd</sup> Edition Nitrous Oxide- Acetylene Flame Method	<0.03	<0.03	0.03	0.2	5 mg/l ± 0.2mg/l

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (April to June - 2023)

Month	May, 2023		Area	Dipka		Report No.	NIL/CMPDI/RPT/23/05/072	
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur					Date of Issue	28-May-2023	
Project	Dipka Mine		Sample Ref. No.		NIL/W005/23/139-140			
Sampling Stations	11	Chonrha - Govt. Well (Lat.: 22.30444 N, Long.: 82.46944 E)			Date of Sampling		18-May-2023	
	12	Urtla - Gokran Singh (Lat.: 22.32000 N, Long.: 82.42944 E)			Date of Sampling		18-May-2023	
Page No. 2 of 2			Date of Analysis		22-May-2023		to 26-May-2023	
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)	
			11	12	Acceptable Limit (Max)*	Permissible Limit** (Max)		
27	Temperature : °C LDL : 0.1	IS 3025 (Part 9) Direct Measurement Method	30.5	32.1	---	---	NA	
28	Colour : Hazen LDL : 5	IS 3025 (Part 4) Platinum cobalt Method	<5.0	<5.0	5	15	NA	
29	Ca** : mg/L LDL : 5	IS 3025 (Part 40) EDTA method	28	118	---	---	200 mg/l±3.98 mg/l	
30	Mg** : mg/L LDL : 5	IS 3025 (Part 46) Calculation Method	13	52	---	---	120 mg/l±3 mg/l	
31	Carbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	0	0	---	---	500 mg/l±8.6mg/l	
32	Bicarbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	76	228	---	---	500 mg/l±8.6mg/l	
33	Dissolved Oxygen (DO) : mg/L LDL : 0.5	APHA 4500-O(B), 23 <sup>rd</sup> Edition Iodometric method	6.5	5.9	---	---	NA	
34	Mercury : mg/L LDL : 0.001	IS 3025 (Part 48) Atomic Absorption Method	<0.001	<0.001	0.001	No relaxation	NA	
35	Selenium : mg/L LDL : 0.01	IS 3025 (Part 56) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA	
36	Arsenic : mg/L LDL : 0.01	IS 3025 (Part 37) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA	
37	Barium : mg/L LDL : 0.5	IS 13428 (Annex F) Nitrous Oxide- Acetylene Flame Method	<0.5	<0.5	0.7	No relaxation	5mg/l±0.62mg/l	
38	Total Coliforms : MPN/100ml LDL : 0	IS 1622-1981 ---	Not detected	Not detected	Absent	No relaxation	NA	
39	Ion Balance : --- LDL : ---	By Calculation ---	0.94	2.06	---	---	NA	

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

Shraddha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (April to June - 2023)

Month	May, 2023	Area	Dipka	Report No.	NIL/CMPDI/RPT/23/05/073
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur			Date of Issue	28-May-2023
Project	Dipka Mine		Sample Ref. No.	NIL/W005/23/141-142	
Sampling Stations	13	Nunera - Basant Kumar (Lat.: 22.35361 N, Long.: 82.42639 E)		Date of Sampling	18-May-2023
	14	Nonbirra - Usha Vishwakarma (Lat.: 22.34000 N, Long.: 82.45889 E)		Date of Sampling	18-May-2023
Page No. 1 of 2			Date of Analysis	22-May-2023	to 26-May-2023

Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)
			13	14	Acceptable Limit (Max)*	Permissible Limit** (Max)	
1	pH : --- LDL : 0.5 - 13	IS 3025 (Part 11) Electrometric Method	7.31	7.33	6.5 - 8.5	No relaxation	7 ± 0.2
2	Turbidity : NTU LDL : 1	IS 3025 (Part 10) Nephelometric Method	2.8	3.2	1	5	2 NTU ± 0.5NTU
3	Conductivity : µs/cm LDL : 0.5	APHA 2510-B, 23 <sup>rd</sup> Edition Laboratory Method	567	294	---	---	19.3 umhos ± 0.05 umhos
4	TDS : mg/L LDL : 5	IS 3025 (Part 16) Gravimetric Method	378	196	500	2000	2135.8mg/l ± 59.8mg/l
5	Total Alkalinity : mg/L LDL : 5	IS 3025 (Part 23) Indicator Method	198	80	200	600	500 mg/l ± 8.6mg/l
6	Chloride (Cl <sup>-</sup> ) : mg/L LDL : 2.5	IS 3025 (Part 32) Argentometric Method	180	94	250	1000	873.5 ± 7.4mg/l
7	Hardness : mg/L LDL : 5	IS 3025 (Part 21) EDTA Method	174	80	200	600	300mg/l ± 7.3mg/l
8	Sulphate (SO <sub>4</sub> ) : mg/L LDL : 1	IS 3025 (Part 24) Turbidimetric Method	6.8	6.6	200	400	11.07 ± 0.45
9	Phosphate (PO <sub>4</sub> ) : mg/L LDL : 1	APHA 2510-P-C, 23 <sup>rd</sup> Edition Colorimetric Method	<1	<1	---	---	1mg/l ± 0.022 mg/l
10	Nitrates : mg/L LDL : 0.5	IS 3025 (Part 34) Chromotrophic acid method	8.7	5.6	45	No relaxation	NA
11	Fluoride : mg/L LDL : 0.2	IS 3025 (Part 60) Zirconium Alizarin Method	<0.2	0.25	1	1.5	0.49 mg/l ± 0.05 mg/l
12	Phenols : mg/L LDL : 0.001	APHA 5530-D, 23 <sup>rd</sup> Edition Direct Photometric Method	<0.001	<0.001	0.001	0.002	3mg/l ± 0.4mg/l
13	BOD : mg/L LDL : 5	IS 3025 (Part 44) Oxygen Depletion Method	<5	<5	---	---	24.89mg/l ± 4.88 mg/l
14	COD : mg/L LDL : 10	APHA 5220-B, 23 <sup>rd</sup> Edition Open Reflux Method	<10	<10	---	---	49.5mg/l ± 4.6 mg/l
15	Boron : mg/L LDL : 0.1	IS 3025 (Part 57) Colorimetric curcumin Method	<0.1	<0.1	0.5	1	0.6 mg/l ± 0.04mg/l
16	Chromium : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.05	No relaxation	0.53 mg/l ± 0.02mg/l
17	Iron : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.3	No relaxation	0.5 mg/l ± 0.05mg/l
18	Zinc : mg/L LDL : 0.2	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.2	<0.2	5	15	0.05 ± 0.006mg/l
19	Copper : mg/L LDL : 0.04	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.04	<0.04	0.05	1.5	0.1 mg/l ± 0.01 mg/l
20	Cadmium : mg/L LDL : 0.001	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.001	<0.001	0.003	No relaxation	0.05mg/l ± 0.005mg/l
21	Lead : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.01	No relaxation	0.5mg/l ± 0.02mg/l
22	Manganese : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.1	0.3	0.1 mg/l ± 0.01mg/l
23	Nickel : mg/L LDL : 0.02	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.02	<0.02	0.02	No relaxation	1 mg/l ± 0.04mg/l
24	Sodium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	16.5	23.4	---	---	0.1 mg/l ± 0.004mg/l
25	Potassium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	6.4	7.8	---	---	1 mg/l ± 0.1mg/l
26	Aluminium : mg/L LDL : 0.03	APHA 3111-D, 23 <sup>rd</sup> Edition Nitrous Oxide- Acetylene Flame Method	<0.03	<0.03	0.03	0.2	5 mg/l ± 0.2mg/l

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (April to June - 2023)

Month	May, 2023	Area	Dipka	Report No.	NIL/CMPDI/RPT/23/05/073		
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur		Date of Issue	28-May-2023			
Project	Dipka Mine	Sample Ref. No.	NIL/W005/23/141-142				
Sampling Stations	13	Nunera - Basant Kumar (Lat.: 22.35361 N, Long.: 82.42639 E)	Date of Sampling	18-May-2023			
	14	Nonbirra - Usha Vishwakarma (Lat.: 22.34000 N, Long.: 82.45889 E)	Date of Sampling	18-May-2023			
Page No. 2 of 2		Date of Analysis	22-May-2023	to 26-May-2023			
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)
			13	14	Acceptable Limit (Max)*	Permissible Limit** (Max)	
27	Temperature : °C LDL : 0.1	IS 3025 (Part 9) Direct Measurement Method	31.8	31.2	---	---	NA
28	Colour : Hazen LDL : 5	IS 3025 (Part 4) Platinum cobalt Method	<5.0	<5.0	5	15	NA
29	Ca** : mg/L LDL : 5	IS 3025 (Part 40) EDTA method	85	33	---	---	200 mg/l±3.98 mg/l
30	Mg** : mg/L LDL : 5	IS 3025 (Part 46) Calculation Method	45	17	---	---	120 mg/l±3 mg/l
31	Carbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	0	0	---	---	500 mg/l±8.6mg/l
32	Bicarbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	198	80	---	---	500 mg/l±8.6mg/l
33	Dissolved Oxygen (DO) : mg/L LDL : 0.5	APHA 4500-O(B), 23 <sup>rd</sup> Edition Iodometric method	6.4	6.9	---	---	NA
34	Mercury : mg/L LDL : 0.001	IS 3025 (Part 48) Atomic Absorption Method	<0.001	<0.001	0.001	No relaxation	NA
35	Selenium : mg/L LDL : 0.01	IS 3025 (Part 56) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA
36	Arsenic : mg/L LDL : 0.01	IS 3025 (Part 37) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA
37	Barium : mg/L LDL : 0.5	IS 13428 (Annex F) Nitrous Oxide- Acetylene Flame Method	<0.5	<0.5	0.7	No relaxation	5mg/l±0.62mg/l
38	Total Coliforms : MPN/100ml LDL : 0	IS 1622-1981 ---	Not detected	Not detected	Absent	No relaxation	NA
39	Ion Balance : --- LDL : ---	By Calculation ---	1.23	0.7	---	---	NA

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

Shraddha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (April to June - 2023)

Month	May, 2023	Area	Dipka	Report No.	NIL/CMPDI/RPT/23/05/074
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur		Date of Issue	28-May-2023	
Project	Dipka Mine	Sample Ref. No.	NIL/W005/23/143-144		
Sampling Stations	15	Renki - Shankar Patel (Lat.: 22.30417 N, Long.: 82.51139 E)		Date of Sampling	18-May-2023
	16	Phujhar - Anjor Singh (Lat.: 22.38917 N, Long.: 82.52389 E)		Date of Sampling	18-May-2023
Page No. 1 of 2			Date of Analysis	22-May-2023	to 26-May-2023

Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)
			15	16	Acceptable Limit (Max)*	Permissible Limit** (Max)	
1	pH : --- LDL : 0.5 - 13	IS 3025 (Part 11) Electrometric Method	7.79	7.78	6.5 - 8.5	No relaxation	7 ± 0.2
2	Turbidity : NTU LDL : 1	IS 3025 (Part 10) Nephelometric Method	1.4	<1	1	5	2 NTU ± 0.5NTU
3	Conductivity : µs/cm LDL : 0.5	APHA 2510-B, 23 <sup>rd</sup> Edition Laboratory Method	252	633	---	---	19.3 umhos ± 0.05 umhos
4	TDS : mg/L LDL : 5	IS 3025 (Part 16) Gravimetric Method	168	422	500	2000	2135.8mg/l ± 59.8mg/l
5	Total Alkalinity : mg/L LDL : 5	IS 3025 (Part 23) Indicator Method	74	166	200	600	500 mg/l ± 8.6mg/l
6	Chloride (Cl <sup>-</sup> ) : mg/L LDL : 2.5	IS 3025 (Part 32) Argentometric Method	78	176	250	1000	873.5 ± 7.4mg/l
7	Hardness : mg/L LDL : 5	IS 3025 (Part 21) EDTA Method	68	198	200	600	300mg/l ± 7.3mg/l
8	Sulphate (SO <sub>4</sub> ) : mg/L LDL : 1	IS 3025 (Part 24) Turbidimetric Method	5.4	11.2	200	400	11.07 ± 0.45
9	Phosphate (PO <sub>4</sub> ) : mg/L LDL : 1	APHA 2510-P-C, 23 <sup>rd</sup> Edition Colorimetric Method	<1	<1	---	---	1mg/l ± 0.022 mg/l
10	Nitrates : mg/L LDL : 0.5	IS 3025 (Part 34) Chromotrophic acid method	8.4	11.5	45	No relaxation	NA
11	Fluoride : mg/L LDL : 0.2	IS 3025 (Part 60) Zirconium Alizarin Method	<0.2	0.39	1	1.5	0.49 mg/l ± 0.05 mg/l
12	Phenols : mg/L LDL : 0.001	APHA 5530-D, 23 <sup>rd</sup> Edition Direct Photometric Method	<0.001	<0.001	0.001	0.002	3mg/l ± 0.4mg/l
13	BOD : mg/L LDL : 5	IS 3025 (Part 44) Oxygen Depletion Method	<5	<5	---	---	24.89mg/l ± 4.88 mg/l
14	COD : mg/L LDL : 10	APHA 5220-B, 23 <sup>rd</sup> Edition Open Reflux Method	<10	<10	---	---	49.5mg/l ± 4.6 mg/l
15	Boron : mg/L LDL : 0.1	IS 3025 (Part 57) Colorimetric curcumin Method	<0.1	<0.1	0.5	1	0.6 mg/l ± 0.04mg/l
16	Chromium : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.05	No relaxation	0.53 mg/l ± 0.02mg/l
17	Iron : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.3	No relaxation	0.5 mg/l ± 0.05mg/l
18	Zinc : mg/L LDL : 0.2	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.2	<0.2	5	15	0.05 ± 0.006mg/l
19	Copper : mg/L LDL : 0.04	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.04	<0.04	0.05	1.5	0.1 mg/l ± 0.01 mg/l
20	Cadmium : mg/L LDL : 0.001	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.001	<0.001	0.003	No relaxation	0.05mg/l ± 0.005mg/l
21	Lead : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.01	No relaxation	0.5mg/l ± 0.02mg/l
22	Manganese : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.1	0.3	0.1 mg/l ± 0.01mg/l
23	Nickel : mg/L LDL : 0.02	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.02	<0.02	0.02	No relaxation	1 mg/l ± 0.04mg/l
24	Sodium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	19.3	13.8	---	---	0.1 mg/l ± 0.004mg/l
25	Potassium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	7.6	6.2	---	---	1 mg/l ± 0.1mg/l
26	Aluminium : mg/L LDL : 0.03	APHA 3111-D, 23 <sup>rd</sup> Edition Nitrous Oxide- Acetylene Flame Method	<0.03	<0.03	0.03	0.2	5 mg/l ± 0.2mg/l

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (April to June - 2023)

Month	May, 2023		Area	Dipka		Report No.	NIL/CMPDI/RPT/23/05/074	
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur					Date of Issue	28-May-2023	
Project	Dipka Mine		Sample Ref. No.		NIL/W005/23/143-144			
Sampling Stations	15	Renki - Shankar Patel (Lat.: 22.30417 N, Long.: 82.51139 E)			Date of Sampling	18-May-2023		
	16	Phujihar - Anjor Singh (Lat.: 22.38917 N, Long.: 82.52389 E)			Date of Sampling	18-May-2023		
Page No. 2 of 2			Date of Analysis		22-May-2023		to	26-May-2023
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)	
			15	16	Acceptable Limit (Max)*	Permissible Limit** (Max)		
27	Temperature : °C LDL : 0.1	IS 3025 (Part 9) Direct Measurement Method	30.5	29.5	---	---	NA	
28	Colour : Hazen LDL : 5	IS 3025 (Part 4) Platinum cobalt Method	<5.0	<5.0	5	15	NA	
29	Ca** : mg/L LDL : 5	IS 3025 (Part 40) EDTA method	30	86	---	---	200 mg/l±3.98 mg/l	
30	Mg** : mg/L LDL : 5	IS 3025 (Part 46) Calculation Method	15	40	---	---	120 mg/l±3 mg/l	
31	Carbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	0	0	---	---	500 mg/l±8.6mg/l	
32	Bicarbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	74	166	---	---	500 mg/l±8.6mg/l	
33	Dissolved Oxygen (DO) : mg/L LDL : 0.5	APHA 4500-O(B), 23 <sup>rd</sup> Edition Iodometric method	5.6	6.8	---	---	NA	
34	Mercury : mg/L LDL : 0.001	IS 3025 (Part 48) Atomic Absorption Method	<0.001	<0.001	0.001	No relaxation	NA	
35	Selenium : mg/L LDL : 0.01	IS 3025 (Part 56) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA	
36	Arsenic : mg/L LDL : 0.01	IS 3025 (Part 37) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA	
37	Barium : mg/L LDL : 0.5	IS 13428 (Annex F) Nitrous Oxide- Acetylene Flame Method	<0.5	<0.5	0.7	No relaxation	5mg/l±0.62mg/l	
38	Total Coliforms : MPN/100ml LDL : 0	IS 1622-1981 ---	Not detected	Not detected	Absent	No relaxation	NA	
39	Ion Balance : --- LDL : ---	By Calculation ---	1.29	1.32	---	---	NA	

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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For NETEL INDIA LIMITED

Shraddha Kere  
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# Netel (India) Limited

## GROUND WATER QUALITY REPORT (April to June - 2023)

Month	May, 2023	Area	Dipka	Report No.	NIL/CMPDI/RPT/23/05/075
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur		Date of Issue	29-May-2023	
Project	Dipka Mine	Sample Ref. No.	NIL/W/005/23/145		
Sampling Stations	17	Chainpur - Govt. Borewell (Lat.: 22.33528 N, Long.: 82.50944 E)	Date of Sampling	19-May-2023	
	---	---	Date of Sampling	---	

Page No. 1 of 2 Date of Analysis 23-May-2023 to 27-May-2023

Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)
			17	---	Acceptable Limit (Max)*	Permissible Limit** (Max)	
1	pH : --- LDL : 0.5 - 13	IS 3025 (Part 11) Electrometric Method	7.54	---	6.5 - 8.5	No relaxation	7 ± 0.2
2	Turbidity : NTU LDL : 1	IS 3025 (Part 10) Nephelometric Method	<1	---	1	5	2 NTU ± 0.5NTU
3	Conductivity : µs/cm LDL : 0.5	APHA 2510-B, 23 <sup>rd</sup> Edition Laboratory Method	508	---	---	---	19.3 umhos ± 0.05 umhos
4	TDS : mg/L LDL : 5	IS 3025 (Part 16) Gravimetric Method	339	---	500	2000	2135.8mg/l ± 59.8mg/l
5	Total Alkalinity : mg/L LDL : 5	IS 3025 (Part 23) Indicator Method	180	---	200	600	500 mg/l ± 8.6mg/l
6	Chloride (Cl <sup>-</sup> ) : mg/L LDL : 2.5	IS 3025 (Part 32) Argentometric Method	164	---	250	1000	873.5 ± 7.4mg/l
7	Hardness : mg/L LDL : 5	IS 3025 (Part 21) EDTA Method	156	---	200	600	300mg/l ± 7.3mg/l
8	Sulphate (SO <sub>4</sub> ) : mg/L LDL : 1	IS 3025 (Part 24) Turbidimetric Method	7.3	---	200	400	11.07 ± 0.45
9	Phosphate (PO <sub>4</sub> ) : mg/L LDL : 1	APHA 2510-P-C, 23 <sup>rd</sup> Edition Colorimetric Method	<1	---	---	---	1mg/l ± 0.022 mg/l
10	Nitrates : mg/L LDL : 0.5	IS 3025 (Part 34) Chromotrophic acid method	9.1	---	45	No relaxation	NA
11	Fluoride : mg/L LDL : 0.2	IS 3025 (Part 60) Zirconium Alizarin Method	0.15	---	1	1.5	0.49 mg/l ± 0.05 mg/l
12	Phenols : mg/L LDL : 0.001	APHA 5530-D, 23 <sup>rd</sup> Edition Direct Photometric Method	<0.001	---	0.001	0.002	3mg/l ± 0.4mg/l
13	BOD : mg/L LDL : 5	IS 3025 (Part 44) Oxygen Depletion Method	<5	---	---	---	24.89mg/l ± 4.88 mg/l
14	COD : mg/L LDL : 10	APHA 5220-B, 23 <sup>rd</sup> Edition Open Reflux Method	<10	---	---	---	49.5mg/l ± 4.6 mg/l
15	Boron : mg/L LDL : 0.1	IS 3025 (Part 57) Colorimetric curcumin Method	<0.1	---	0.5	1	0.6 mg/l ± 0.04mg/l
16	Chromium : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	---	0.05	No relaxation	0.53 mg/l ± 0.02mg/l
17	Iron : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	---	0.3	No relaxation	0.5 mg/l ± 0.05mg/l
18	Zinc : mg/L LDL : 0.2	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.2	---	5	15	0.05 ± 0.006mg/l
19	Copper : mg/L LDL : 0.04	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.04	---	0.05	1.5	0.1 mg/l ± 0.01 mg/l
20	Cadmium : mg/L LDL : 0.001	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.001	---	0.003	No relaxation	0.05mg/l ± 0.005mg/l
21	Lead : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	---	0.01	No relaxation	0.5mg/l ± 0.02mg/l
22	Manganese : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	---	0.1	0.3	0.1 mg/l ± 0.01mg/l
23	Nickel : mg/L LDL : 0.02	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.02	---	0.02	No relaxation	1 mg/l ± 0.04mg/l
24	Sodium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	15.8	---	---	---	0.1 mg/l ± 0.004mg/l
25	Potassium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	7.1	---	---	---	1 mg/l ± 0.1mg/l
26	Aluminium : mg/L LDL : 0.03	APHA 3111-D, 23 <sup>rd</sup> Edition Nitrous Oxide- Acetylene Flame Method	<0.03	---	0.03	0.2	5 mg/l ± 0.2mg/l

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (April to June - 2023)

Month	May, 2023	Area	Dipka	Report No.	NIL/CMPDI/RPT/23/05/075		
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur		Date of Issue	29-May-2023			
Project	Dipka Mine	Sample Ref. No.	NIL/W/005/23/145				
Sampling Stations	17	Chainpur - Govt. Borewell (Lat.: 22.33528 N, Long.: 82.50944 E)	Date of Sampling	19-May-2023			
	---	---	Date of Sampling	---			
Page No. 2 of 2		Date of Analysis	23-May-2023	to 27-May-2023			
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)
			17	---	Acceptable Limit (Max)*	Permissible Limit** (Max)	
27	Temperature : °C LDL : 0.1	IS 3025 (Part 9) Direct Measurement Method	30.2	---	---	---	NA
28	Colour : Hazen LDL : 5	IS 3025 (Part 4) Platinum cobalt Method	<5.0	---	5	15	NA
29	Ca** : mg/L LDL : 5	IS 3025 (Part 40) EDTA method	74	---	---	---	200 mg/l±3.98 mg/l
30	Mg** : mg/L LDL : 5	IS 3025 (Part 46) Calculation Method	38	---	---	---	120 mg/l±3 mg/l
31	Carbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	0	---	---	---	500 mg/l±8.6mg/l
32	Bicarbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	180	---	---	---	500 mg/l±8.6mg/l
33	Dissolved Oxygen (DO) : mg/L LDL : 0.5	APHA 4500-O(B), 23 <sup>rd</sup> Edition Iodometric method	6.7	---	---	---	NA
34	Mercury : mg/L LDL : 0.001	IS 3025 (Part 48) Atomic Absorption Method	<0.001	---	0.001	No relaxation	NA
35	Selenium : mg/L LDL : 0.01	IS 3025 (Part 56) Atomic Absorption Method	<0.01	---	0.01	No relaxation	NA
36	Arsenic : mg/L LDL : 0.01	IS 3025 (Part 37) Atomic Absorption Method	<0.01	---	0.01	No relaxation	NA
37	Barium : mg/L LDL : 0.5	IS 13428 (Annex F) Nitrous Oxide- Acetylene Flame Method	<0.5	---	0.7	No relaxation	5mg/l±0.62mg/l
38	Total Coliforms : MPN/100ml LDL : 0	IS 1622-1981 ---	Not detected	---	Absent	No relaxation	NA
39	Ion Balance : --- LDL : ---	By Calculation ---	-1.25	---	---	---	NA

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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For NETEL INDIA LIMITED

Shraddha Kere  
Authorised Signatory





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**DIPKA MINE**

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5	Hardibajar	Avinash Paikra	05 - 06
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8	Panora	Sunil Banjare	07 - 08
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# Netel (India) Limited

## GROUND WATER QUALITY REPORT (July to September - 2023)

Month	August, 2023		Area	Dipka		Report No.	NIL/CMPDI/RPT/23/08/067	
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur				Date of Issue	12-Aug-2023		
Project	Dipka Mine		Sample Ref. No.	NIL/W/008/23/129-130				
Sampling Stations	1	Jhabar - Lagan Singh (Lat.: 22.35389 N, Long.: 82.52778 E)			Date of Sampling	02-Aug-2023		
	2	Tiwarta-1 - Karam sai (Lat.: 22.36083 N, Long.: 82.50111 E)			Date of Sampling	02-Aug-2023		
Page No. 1 of 2				Date of Analysis	06-Aug-2023		to 10-Aug-2023	
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)	
			1	2	Acceptable Limit (Max)*	Permissible Limit** (Max)		
1	pH : --- LDL : 0.5 - 13	IS 3025 (Part 11) Electrometric Method	7.03	7.12	6.5 - 8.5	No relaxation	7 ± 0.2	
2	Turbidity : NTU LDL : 1	IS 3025 (Part 10) Nephelometric Method	<1	1.5	1	5	2 NTU ± 0.5NTU	
3	Conductivity : µs/cm LDL : 0.5	APHA 2510-B, 23 <sup>rd</sup> Edition Laboratory Method	442	462	---	---	19.3 umhos ± 0.05 umhos	
4	TDS : mg/L LDL : 5	IS 3025 (Part 16) Gravimetric Method	295	308	500	2000	2135.8mg/l ± 59.8mg/l	
5	Total Alkalinity : mg/L LDL : 5	IS 3025 (Part 23) Indiacator Method	102	126	200	600	500 mg/l ± 8.6mg/l	
6	Chloride (Cl <sup>-</sup> ) : mg/L LDL : 2.5	IS 3025 (Part 32) Argentometric Method	118	138	250	1000	873.5 ± 7.4mg/l	
7	Hardness : mg/L LDL : 5	IS 3025 (Part 21) EDTA Method	140	152	200	600	300mg/l ± 7.3mg/l	
8	Sulphate (SO <sub>4</sub> ) : mg/L LDL : 1	IS 3025 (Part 24) Turbidimetric Method	7.5	5.5	200	400	11.07 ± 0.45	
9	Phosphate (PO <sub>4</sub> ) : mg/L LDL : 1	APHA 2510-P-C, 23 <sup>rd</sup> Edition Colorimetric Method	<1	<1	---	---	1mg/l ± 0.022 mg/l	
10	Nitrates : mg/L LDL : 0.5	IS 3025 (Part 34) Chromotrophic acid method	6.8	6.2	45	No relaxation	NA	
11	Fluoride : mg/L LDL : 0.2	IS 3025 (Part 60) Zirconium Alizarin Method	<0.2	<0.2	1	1.5	0.49 mg/l ± 0.05 mg/l	
12	Phenols : mg/L LDL : 0.001	APHA 5530-D, 23 <sup>rd</sup> Edition Direct Photometric Method	<0.001	<0.001	0.001	0.002	3mg/l ± 0.4mg/l	
13	BOD : mg/L LDL : 5	IS 3025 (Part 44) Oxygen Depletion Method	<5	<5	---	---	24.89mg/l ± 4.88 mg/l	
14	COD : mg/L LDL : 10	APHA 5220-B, 23 <sup>rd</sup> Edition Open Reflux Method	<10	<10	---	---	49.5mg/l ± 4.6 mg/l	
15	Boron : mg/L LDL : 0.1	IS 3025 (Part 57) Colorimetric curcumin Method	<0.1	<0.1	0.5	1	0.6 mg/l ± 0.04mg/l	
16	Chromium : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.05	No relaxation	0.53 mg/l ± 0.02mg/l	
17	Iron : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.3	No relaxation	0.5 mg/l ± 0.05mg/l	
18	Zinc : mg/L LDL : 0.2	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.2	<0.2	5	15	0.05 ± 0.006mg/l	
19	Copper : mg/L LDL : 0.04	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.04	<0.04	0.05	1.5	0.1 mg/l ± 0.01 mg/l	
20	Cadmium : mg/L LDL : 0.001	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.001	<0.001	0.003	No relaxation	0.05mg/l ± 0.005mg/l	
21	Lead : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.01	No relaxation	0.5mg/l ± 0.02mg/l	
22	Manganese : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.1	0.3	0.1 mg/l ± 0.01mg/l	
23	Nickel : mg/L LDL : 0.02	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.02	<0.02	0.02	No relaxation	1 mg/l ± 0.04mg/l	
24	Sodium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	8.8	17.5	---	---	0.1 mg/l ± 0.004mg/l	
25	Potassium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	5.2	7.6	---	---	1 mg/l ± 0.1mg/l	
26	Aluminium : mg/L LDL : 0.03	APHA 3111-D, 23 <sup>rd</sup> Edition Nitrous Oxide- Acetylene Flame Method	<0.03	<0.03	0.03	0.2	5 mg/l ± 0.2mg/l	

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For NETEL INDIA LIMITED

  
Shradha Kere  
Authorised Signatory





# Netel (India) Limited

Month	August, 2023		Area	Dipka		Report No.	NIL/CMPDI/RPT/23/08/067	
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur				Date of Issue	12-Aug-2023		
Project	Dipka Mine		Sample Ref. No.	NIL/W/008/23/129-130				
Sampling Stations	1	Jhabar - Lagan Singh (Lat.: 22.35389 N, Long.: 82.52778 E)			Date of Sampling	02-Aug-2023		
	2	Tiwarta-1 - Karam sai (Lat.: 22.36083 N, Long.: 82.50111 E)			Date of Sampling	02-Aug-2023		
Page No. 2 of 2				Date of Analysis	06-Aug-2023		to 10-Aug-2023	
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)	
			1	2	Acceptable Limit (Max)*	Permissible Limit** (Max)		
27	Temperature : °C LDL : 0.1	IS 3025 (Part 9) Direct Measurement Method	26.7	26.3	---	---	NA	
28	Colour : Hazen LDL : 5	IS 3025 (Part 4) Platinum cobalt Method	<5.0	<5.0	5	15	NA	
29	Ca <sup>++</sup> : mg/L LDL : 5	IS 3025(Part 40) EDTA method	50	56	---	---	200 mg/l±3.98 mg/l	
30	Mg <sup>++</sup> : mg/L LDL : 5	IS 3025(Part 46) Calculation Method	26	30	---	---	120 mg/l±3 mg/l	
31	Carbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	0	0	---	---	500 mg/l±8.6mg/l	
32	Bicarbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	102	126	---	---	500 mg/l±8.6mg/l	
33	Dissolved Oxygen (DO) : mg/L LDL : 0.5	APHA 4500-O(B), 23 <sup>rd</sup> Edition Iodometric method	5.3	5.8	---	---	NA	
34	Mercury : mg/L LDL : 0.001	IS 3025 (Part 48) Atomic Absorption Method	<0.001	<0.001	0.001	No relaxation	NA	
35	Selenium : mg/L LDL : 0.01	IS 3025 (Part 56) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA	
36	Arsenic : mg/L LDL : 0.01	IS 3025 (Part 37) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA	
37	Barium : mg/L LDL : 0.5	IS 13428 (Annex F) Nitrous Oxide- Acetylene Flame Method	<0.5	<0.5	0.7	No relaxation	5mg/l±0.62mg/l	
38	Total Coliforms : MPN/100ml LDL : 0	IS 1622-1981 ---	Not detected	Not detected	Absent	No relaxation	NA	
39	Ion Balance : --- LDL : ---	By Calculation ---	-1.18	0.32	---	---	NA	

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
2. \*Except Sl. No. 10 which Acceptable limit is Min  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (July to September - 2023)

Month	August, 2023		Area	Dipka		Report No.	NIL/CMPDI/RPT/23/08/068	
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur				Date of Issue	14-Aug-2023		
Project	Dipka Mine		Sample Ref. No.	NIL/W/008/23/131-132				
Sampling Stations	3	Kerachchar - Govt well (Lat.: 22.39500 N, Long.: 82.46611 E)			Date of Sampling	01-Aug-2023		
	4	Jawali - Govt. Well (Lat.: 22.42083 N, Long.: 82.54222 E)			Date of Sampling	04-Aug-2023		
Page No. 1 of 2				Date of Analysis	08-Aug-2023		to 12-Aug-2023	
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)	
			3	4	Acceptable Limit (Max)*	Permissible Limit** (Max)		
1	pH : --- LDL : 0.5 - 13	IS 3025 (Part 11) Electrometric Method	7.26	7.81	6.5 - 8.5	No relaxation	7 ± 0.2	
2	Turbidity : NTU LDL : 1	IS 3025 (Part 10) Nephelometric Method	2.4	<1	1	5	2 NTU ± 0.5NTU	
3	Conductivity : µs/cm LDL : 0.5	APHA 2510-B, 23 <sup>rd</sup> Edition Laboratory Method	252	1645	---	---	19.3 umhos ± 0.05 umhos	
4	TDS : mg/L LDL : 5	IS 3025 (Part 16) Gravimetric Method	168	1097	500	2000	2135.8mg/l ± 59.8mg/l	
5	Total Alkalinity : mg/L LDL : 5	IS 3025 (Part 23) Indiacator Method	46	370	200	600	500 mg/l ± 8.6mg/l	
6	Chloride (Cl <sup>-</sup> ) : mg/L LDL : 2.5	IS 3025 (Part 32) Argentometric Method	56	396	250	1000	873.5 ± 7.4mg/l	
7	Hardness : mg/L LDL : 5	IS 3025 (Part 21) EDTA Method	48	428	200	600	300mg/l ± 7.3mg/l	
8	Sulphate (SO <sub>4</sub> ) : mg/L LDL : 1	IS 3025 (Part 24) Turbidimetric Method	4.6	13.5	200	400	11.07 ± 0.45	
9	Phosphate (PO <sub>4</sub> ) : mg/L LDL : 1	APHA 2510-P-C, 23 <sup>rd</sup> Edition Colorimetric Method	<1	<1	---	---	1mg/l ± 0.022 mg/l	
10	Nitrates : mg/L LDL : 0.5	IS 3025 (Part 34) Chromotrophic acid method	2.3	17.2	45	No relaxation	NA	
11	Fluoride : mg/L LDL : 0.2	IS 3025 (Part 60) Zirconium Alizarin Method	<0.2	<0.2	1	1.5	0.49 mg/l ± 0.05 mg/l	
12	Phenols : mg/L LDL : 0.001	APHA 5530-D, 23 <sup>rd</sup> Edition Direct Photometric Method	<0.001	<0.001	0.001	0.002	3mg/l ± 0.4mg/l	
13	BOD : mg/L LDL : 5	IS 3025 (Part 44) Oxygen Depletion Method	<5	<5	---	---	24.89mg/l ± 4.88 mg/l	
14	COD : mg/L LDL : 10	APHA 5220-B, 23 <sup>rd</sup> Edition Open Reflux Method	<10	<10	---	---	49.5mg/l ± 4.6 mg/l	
15	Boron : mg/L LDL : 0.1	IS 3025 (Part 57) Colorimetric curcumin Method	<0.1	<0.1	0.5	1	0.6 mg/l ± 0.04mg/l	
16	Chromium : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.05	No relaxation	0.53 mg/l ± 0.02mg/l	
17	Iron : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.3	No relaxation	0.5 mg/l ± 0.05mg/l	
18	Zinc : mg/L LDL : 0.2	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.2	<0.2	5	15	0.05 ± 0.006mg/l	
19	Copper : mg/L LDL : 0.04	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.04	<0.04	0.05	1.5	0.1 mg/l ± 0.01 mg/l	
20	Cadmium : mg/L LDL : 0.001	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.001	<0.001	0.003	No relaxation	0.05mg/l ± 0.005mg/l	
21	Lead : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.01	No relaxation	0.5mg/l ± 0.02mg/l	
22	Manganese : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.1	0.3	0.1 mg/l ± 0.01mg/l	
23	Nickel : mg/L LDL : 0.02	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.02	<0.02	0.02	No relaxation	1 mg/l ± 0.04mg/l	
24	Sodium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	13.6	22.4	---	---	0.1 mg/l ± 0.004mg/l	
25	Potassium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	12.5	7.2	---	---	1 mg/l ± 0.1mg/l	
26	Aluminium : mg/L LDL : 0.03	APHA 3111-D, 23 <sup>rd</sup> Edition Nitrous Oxide- Acetylene Flame Method	<0.03	<0.03	0.03	0.2	5 mg/l ± 0.2mg/l	

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (July to September - 2023)

Month	August, 2023		Area	Dipka		Report No.	NIL/CMPDI/RPT/23/08/068	
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur				Date of Issue	14-Aug-2023		
Project	Dipka Mine		Sample Ref. No.	NIL/W/008/23/131-132				
Sampling Stations	3	Kerakachhar - Govt well (Lat.: 22.39500 N, Long.: 82.46611 E)			Date of Sampling	01-Aug-2023		
	4	Jawali - Govt. Well (Lat.: 22.42083 N, Long.: 82.54222 E)			Date of Sampling	04-Aug-2023		
Page No. 2 of 2				Date of Analysis	08-Aug-2023		to	12-Aug-2023
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)	
			3	4	Acceptable Limit (Max)*	Permissible Limit** (Max)		
27	Temperature : °C LDL : 0.1	IS 3025 (Part 9) Direct Measurement Method	25.9	27.1	---	---	NA	
28	Colour : Hazen LDL : 5	IS 3025 (Part 4) Platinum cobalt Method	<5.0	<5.0	5	15	NA	
29	Ca <sup>++</sup> : mg/L LDL : 5	IS 3025(Part 40) EDTA method	18	186	---	---	200 mg/l±3.98 mg/l	
30	Mg <sup>++</sup> : mg/L LDL : 5	IS 3025(Part 46) Calculation Method	9	86	---	---	120 mg/l±3 mg/l	
31	Carbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	0	0	---	---	500 mg/l±8.6mg/l	
32	Bicarbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	46	370	---	---	500 mg/l±8.6mg/l	
33	Dissolved Oxygen (DO) : mg/L LDL : 0.5	APHA 4500-O(B), 23 <sup>rd</sup> Edition Iodometric method	5.4	6.1	---	---	NA	
34	Mercury : mg/L LDL : 0.001	IS 3025 (Part 48) Atomic Absorption Method	<0.001	<0.001	0.001	No relaxation	NA	
35	Selenium : mg/L LDL : 0.01	IS 3025 (Part 56) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA	
36	Arsenic : mg/L LDL : 0.01	IS 3025 (Part 37) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA	
37	Barium : mg/L LDL : 0.5	IS 13428 (Annex F) Nitrous Oxide- Acetylene Flame Method	<0.5	<0.5	0.7	No relaxation	5mg/l±0.62mg/l	
38	Total Coliforms : MPN/100ml LDL : 0	IS 1622-1981 ---	Not detected	Not detected	Absent	No relaxation	NA	
39	Ion Balance : --- LDL : ---	By Calculation ---	1.51	-0.8	---	---	NA	

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (July to September - 2023)

Month	August, 2023		Area	Dipka		Report No.	NIL/CMPDI/RPT/23/08/069	
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur				Date of Issue	12-Aug-2023		
Project	Dipka Mine		Sample Ref. No.		NIL/W/008/23/133-134			
Sampling Stations	5	Hardibajar - Avinash Paikra (Lat.: 22.31083 N, Long.: 82.54861 E)			Date of Sampling	02-Aug-2023		
	6	Dhatura - Heera Lal Kaushik (Lat.: 22.26167 N, Long.: 82.54750 E)			Date of Sampling	02-Aug-2023		
Page No. 1 of 2				Date of Analysis	06-Aug-2023		to 10-Aug-2023	
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)	
			5	6	Acceptable Limit (Max)*	Permissible Limit** (Max)		
1	pH : --- LDL : 0.5 - 13	IS 3025 (Part 11) Electrometric Method	7.69	7.98	6.5 - 8.5	No relaxation	7 ± 0.2	
2	Turbidity : NTU LDL : 1	IS 3025 (Part 10) Nephelometric Method	3.3	1.2	1	5	2 NTU ± 0.5NTU	
3	Conductivity : µs/cm LDL : 0.5	APHA 2510-B, 23 <sup>rd</sup> Edition Laboratory Method	1415	1669	---	---	19.3 umhos ± 0.05 umhos	
4	TDS : mg/L LDL : 5	IS 3025 (Part 16) Gravimetric Method	944	1113	500	2000	2135.8mg/l ± 59.8mg/l	
5	Total Alkalinity : mg/L LDL : 5	IS 3025 (Part 23) Indiacator Method	310	376	200	600	500 mg/l ± 8.6mg/l	
6	Chloride (Cl <sup>-</sup> ) : mg/L LDL : 2.5	IS 3025 (Part 32) Argentometric Method	338	406	250	1000	873.5 ± 7.4mg/l	
7	Hardness : mg/L LDL : 5	IS 3025 (Part 21) EDTA Method	344	536	200	600	300mg/l ± 7.3mg/l	
8	Sulphate (SO <sub>4</sub> ) : mg/L LDL : 1	IS 3025 (Part 24) Turbidimetric Method	17.2	7.4	200	400	11.07 ± 0.45	
9	Phosphate (PO <sub>4</sub> ) : mg/L LDL : 1	APHA 2510-P-C, 23 <sup>rd</sup> Edition Colorimetric Method	<1	<1	---	---	1mg/l ± 0.022 mg/l	
10	Nitrates : mg/L LDL : 0.5	IS 3025 (Part 34) Chromotrophic acid method	9.3	11.8	45	No relaxation	NA	
11	Fluoride : mg/L LDL : 0.2	IS 3025 (Part 60) Zirconium Alizarin Method	<0.2	0.21	1	1.5	0.49 mg/l ± 0.05 mg/l	
12	Phenols : mg/L LDL : 0.001	APHA 5530-D, 23 <sup>rd</sup> Edition Direct Photometric Method	<0.001	<0.001	0.001	0.002	3mg/l ± 0.4mg/l	
13	BOD : mg/L LDL : 5	IS 3025 (Part 44) Oxygen Depletion Method	<5	<5	---	---	24.89mg/l ± 4.88 mg/l	
14	COD : mg/L LDL : 10	APHA 5220-B, 23 <sup>rd</sup> Edition Open Reflux Method	<10	<10	---	---	49.5mg/l ± 4.6 mg/l	
15	Boron : mg/L LDL : 0.1	IS 3025 (Part 57) Colorimetric curcumin Method	<0.1	<0.1	0.5	1	0.6 mg/l ± 0.04mg/l	
16	Chromium : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.05	No relaxation	0.53 mg/l ± 0.02mg/l	
17	Iron : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.3	No relaxation	0.5 mg/l ± 0.05mg/l	
18	Zinc : mg/L LDL : 0.2	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.2	<0.2	5	15	0.05 ± 0.006mg/l	
19	Copper : mg/L LDL : 0.04	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.04	<0.04	0.05	1.5	0.1 mg/l ± 0.01 mg/l	
20	Cadmium : mg/L LDL : 0.001	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.001	<0.001	0.003	No relaxation	0.05mg/l ± 0.005mg/l	
21	Lead : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.01	No relaxation	0.5mg/l ± 0.02mg/l	
22	Manganese : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.1	0.3	0.1 mg/l ± 0.01mg/l	
23	Nickel : mg/L LDL : 0.02	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.02	<0.02	0.02	No relaxation	1 mg/l ± 0.04mg/l	
24	Sodium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	16.6	12.4	---	---	0.1 mg/l ± 0.004mg/l	
25	Potassium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	6.1	5.1	---	---	1 mg/l ± 0.1mg/l	
26	Aluminium : mg/L LDL : 0.03	APHA 3111-D, 23 <sup>rd</sup> Edition Nitrous Oxide- Acetylene Flame Method	<0.03	<0.03	0.03	0.2	5 mg/l ± 0.2mg/l	

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

  
Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (July to September - 2023)

Month	August, 2023		Area	Dipka		Report No.	NIL/CMPDI/RPT/23/08/069	
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur				Date of Issue	12-Aug-2023		
Project	Dipka Mine		Sample Ref. No.	NIL/W/008/23/133-134				
Sampling Stations	5	Hardibajar - Avinash Paikra (Lat.: 22.31083 N, Long.: 82.54861 E)			Date of Sampling	02-Aug-2023		
	6	Dhatura - Heera Lal Kaushik (Lat.: 22.26167 N, Long.: 82.54750 E)			Date of Sampling	02-Aug-2023		
Page No. 2 of 2				Date of Analysis	06-Aug-2023		to	10-Aug-2023
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)	
			5	6	Acceptable Limit (Max)*	Permissible Limit** (Max)		
27	Temperature : °C LDL : 0.1	IS 3025 (Part 9) Direct Measurement Method	25.9	26.8	---	---	NA	
28	Colour : Hazen LDL : 5	IS 3025 (Part 4) Platinum cobalt Method	<5.0	<5.0	5	15	NA	
29	Ca <sup>++</sup> : mg/L LDL : 5	IS 3025(Part 40) EDTA method	162	190	---	---	200 mg/l±3.98 mg/l	
30	Mg <sup>++</sup> : mg/L LDL : 5	IS 3025(Part 46) Calculation Method	74	90	---	---	120 mg/l±3 mg/l	
31	Carbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	0	0	---	---	500 mg/l±8.6mg/l	
32	Bicarbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	310	376	---	---	500 mg/l±8.6mg/l	
33	Dissolved Oxygen (DO) : mg/L LDL : 0.5	APHA 4500-O(B), 23 <sup>rd</sup> Edition Iodometric method	5.8	6.4	---	---	NA	
34	Mercury : mg/L LDL : 0.001	IS 3025 (Part 48) Atomic Absorption Method	<0.001	<0.001	0.001	No relaxation	NA	
35	Selenium : mg/L LDL : 0.01	IS 3025 (Part 56) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA	
36	Arsenic : mg/L LDL : 0.01	IS 3025 (Part 37) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA	
37	Barium : mg/L LDL : 0.5	IS 13428 (Annex F) Nitrous Oxide- Acetylene Flame Method	<0.5	<0.5	0.7	No relaxation	5mg/l±0.62mg/l	
38	Total Coliforms : MPN/100ml LDL : 0	IS 1622-1981 ---	Not detected	Not detected	Absent	No relaxation	NA	
39	Ion Balance : --- LDL : ---	By Calculation ---	-0.27	-1.17	---	---	NA	

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (July to September - 2023)

Month	August, 2023		Area	Dipka		Report No.	NIL/CMPDI/RPT/23/08/070	
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur				Date of Issue	12-Aug-2023		
Project	Dipka Mine			Sample Ref. No.	NIL/W/008/23/135-136			
Sampling Stations	7	Dholpur - Manoranjan singh (Lat.: 22.22194 N, Long.: 82.56167 E)			Date of Sampling	02-Aug-2023		
	8	Panora - Sunil Banjare (Lat.: 22.20417 N, Long.: 82.52083 E)			Date of Sampling	02-Aug-2023		
Page No. 1 of 2				Date of Analysis	06-Aug-2023		to 10-Aug-2023	
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)	
			7	8	Acceptable Limit (Max)*	Permissible Limit** (Max)		
1	pH : --- LDL : 0.5 - 13	IS 3025 (Part 11) Electrometric Method	7.68	6.78	6.5 - 8.5	No relaxation	7 ± 0.2	
2	Turbidity : NTU LDL : 1	IS 3025 (Part 10) Nephelometric Method	1.3	<1	1	5	2 NTU ± 0.5NTU	
3	Conductivity : µs/cm LDL : 0.5	APHA 2510-B, 23 <sup>rd</sup> Edition Laboratory Method	975	2114	---	---	19.3 umhos ± 0.05 umhos	
4	TDS : mg/L LDL : 5	IS 3025 (Part 16) Gravimetric Method	650	1410	500	2000	2135.8mg/l ± 59.8mg/l	
5	Total Alkalinity : mg/L LDL : 5	IS 3025 (Part 23) Indiacator Method	300	570	200	600	500 mg/l ± 8.6mg/l	
6	Chloride (Cl <sup>-</sup> ) : mg/L LDL : 2.5	IS 3025 (Part 32) Argentometric Method	288	648	250	1000	873.5 ± 7.4mg/l	
7	Hardness : mg/L LDL : 5	IS 3025 (Part 21) EDTA Method	324	702	200	600	300mg/l ± 7.3mg/l	
8	Sulphate (SO <sub>4</sub> ) : mg/L LDL : 1	IS 3025 (Part 24) Turbidimetric Method	18.4	26.8	200	400	11.07 ± 0.45	
9	Phosphate (PO <sub>4</sub> ) : mg/L LDL : 1	APHA 2510-P-C, 23 <sup>rd</sup> Edition Colorimetric Method	<1	<1	---	---	1mg/l ± 0.022 mg/l	
10	Nitrates : mg/L LDL : 0.5	IS 3025 (Part 34) Chromotrophic acid method	17.6	19.2	45	No relaxation	NA	
11	Fluoride : mg/L LDL : 0.2	IS 3025 (Part 60) Zirconium Alizarin Method	0.2	0.3	1	1.5	0.49 mg/l ± 0.05 mg/l	
12	Phenols : mg/L LDL : 0.001	APHA 5530-D, 23 <sup>rd</sup> Edition Direct Photometric Method	<0.001	<0.001	0.001	0.002	3mg/l ± 0.4mg/l	
13	BOD : mg/L LDL : 5	IS 3025 (Part 44) Oxygen Depletion Method	<5	<5	---	---	24.89mg/l ± 4.88 mg/l	
14	COD : mg/L LDL : 10	APHA 5220-B, 23 <sup>rd</sup> Edition Open Reflux Method	<10	<10	---	---	49.5mg/l ± 4.6 mg/l	
15	Boron : mg/L LDL : 0.1	IS 3025 (Part 57) Colorimetric curcumin Method	<0.1	<0.1	0.5	1	0.6 mg/l ± 0.04mg/l	
16	Chromium : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.05	No relaxation	0.53 mg/l ± 0.02mg/l	
17	Iron : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.3	No relaxation	0.5 mg/l ± 0.05mg/l	
18	Zinc : mg/L LDL : 0.2	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.2	<0.2	5	15	0.05 ± 0.006mg/l	
19	Copper : mg/L LDL : 0.04	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.04	<0.04	0.05	1.5	0.1 mg/l ± 0.01 mg/l	
20	Cadmium : mg/L LDL : 0.001	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.001	<0.001	0.003	No relaxation	0.05mg/l ± 0.005mg/l	
21	Lead : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.01	No relaxation	0.5mg/l ± 0.02mg/l	
22	Manganese : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.1	0.3	0.1 mg/l ± 0.01mg/l	
23	Nickel : mg/L LDL : 0.02	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.02	<0.02	0.02	No relaxation	1 mg/l ± 0.04mg/l	
24	Sodium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	27.3	24.4	---	---	0.1 mg/l ± 0.004mg/l	
25	Potassium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	7.6	8.5	---	---	1 mg/l ± 0.1mg/l	
26	Aluminium : mg/L LDL : 0.03	APHA 3111-D, 23 <sup>rd</sup> Edition Nitrous Oxide- Acetylene Flame Method	<0.03	<0.03	0.03	0.2	5 mg/l ± 0.2mg/l	

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

  
Shradha Kere  
Authorised Signatory







# Netel (India) Limited

## GROUND WATER QUALITY REPORT (July to September - 2023)

Month	August, 2023		Area	Dipka		Report No.	NIL/CMPDI/RPT/23/08/070	
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur				Date of Issue	12-Aug-2023		
Project	Dipka Mine		Sample Ref. No.	NIL/W/008/23/135-136				
Sampling Stations	7	Dholpur - Manoranjan singh (Lat.: 22.22194 N, Long.: 82.56167 E)			Date of Sampling	02-Aug-2023		
	8	Panora - Sunil Banjare (Lat.: 22.20417 N, Long.: 82.52083 E)			Date of Sampling	02-Aug-2023		
Page No. 2 of 2				Date of Analysis	06-Aug-2023		to 10-Aug-2023	
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)	
			7	8	Acceptable Limit (Max)*	Permissible Limit** (Max)		
27	Temperature : °C LDL : 0.1	IS 3025 (Part 9) Direct Measurement Method	26.7	25.9	---	---	NA	
28	Colour : Hazen LDL : 5	IS 3025 (Part 4) Platinum cobalt Method	<5.0	<5.0	5	15	NA	
29	Ca <sup>++</sup> : mg/L LDL : 5	IS 3025(Part 40) EDTA method	132	258	---	---	200 mg/l±3.98 mg/l	
30	Mg <sup>++</sup> : mg/L LDL : 5	IS 3025(Part 46) Calculation Method	64	162	---	---	120 mg/l±3 mg/l	
31	Carbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	0	0	---	---	500 mg/l±8.6mg/l	
32	Bicarbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	300	570	---	---	500 mg/l±8.6mg/l	
33	Dissolved Oxygen (DO) : mg/L LDL : 0.5	APHA 4500-O(B), 23 <sup>rd</sup> Edition Iodometric method	6.6	5.4	---	---	NA	
34	Mercury : mg/L LDL : 0.001	IS 3025 (Part 48) Atomic Absorption Method	<0.001	<0.001	0.001	No relaxation	NA	
35	Selenium : mg/L LDL : 0.01	IS 3025 (Part 56) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA	
36	Arsenic : mg/L LDL : 0.01	IS 3025 (Part 37) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA	
37	Barium : mg/L LDL : 0.5	IS 13428 (Annex F) Nitrous Oxide- Acetylene Flame Method	<0.5	<0.5	0.7	No relaxation	5mg/l±0.62mg/l	
38	Total Coliforms : MPN/100ml LDL : 0	IS 1622-1981 ---	Not detected	Not detected	Absent	No relaxation	NA	
39	Ion Balance : --- LDL : ---	By Calculation ---	-1.79	-1.83	---	---	NA	

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (July to September - 2023)

Month	August, 2023		Area	Dipka		Report No.	NIL/CMPDI/RPT/23/08/071	
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur				Date of Issue	12-Aug-2023		
Project	Dipka Mine		Sample Ref. No.	NIL/W/008/23/137-138				
Sampling Stations	9	Nawadih - Puspendra Prasad Sukla (Lat.: 22.25889 N, Long.: 82.49972 E)			Date of Sampling	02-Aug-2023		
	10	Boida - Govt. Well (Lat.: 22.24528 N, Long.: 82.44722 E)			Date of Sampling	02-Aug-2023		
Page No. 1 of 2				Date of Analysis	06-Aug-2023		to	10-Aug-2023
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)	
			9	10	Acceptable Limit (Max)*	Permissible Limit** (Max)		
1	pH : --- LDL : 0.5 - 13	IS 3025 (Part 11) Electrometric Method	7.25	7.58	6.5 - 8.5	No relaxation	7 ± 0.2	
2	Turbidity : NTU LDL : 1	IS 3025 (Part 10) Nephelometric Method	<1	2.5	1	5	2 NTU ± 0.5NTU	
3	Conductivity : µs/cm LDL : 0.5	APHA 2510-B, 23 <sup>rd</sup> Edition Laboratory Method	642	525	---	---	19.3 umhos ± 0.05 umhos	
4	TDS : mg/L LDL : 5	IS 3025 (Part 16) Gravimetric Method	428	350	500	2000	2135.8mg/l ± 59.8mg/l	
5	Total Alkalinity : mg/L LDL : 5	IS 3025 (Part 23) Indiacator Method	162	150	200	600	500 mg/l ± 8.6mg/l	
6	Chloride (Cl <sup>-</sup> ) : mg/L LDL : 2.5	IS 3025 (Part 32) Argentometric Method	158	124	250	1000	873.5 ± 7.4mg/l	
7	Hardness : mg/L LDL : 5	IS 3025 (Part 21) EDTA Method	228	154	200	600	300mg/l ± 7.3mg/l	
8	Sulphate (SO <sub>4</sub> ) : mg/L LDL : 1	IS 3025 (Part 24) Turbidimetric Method	3.5	8.1	200	400	11.07 ± 0.45	
9	Phosphate (PO <sub>4</sub> ) : mg/L LDL : 1	APHA 2510-P-C, 23 <sup>rd</sup> Edition Colorimetric Method	<1	<1	---	---	1mg/l ± 0.022 mg/l	
10	Nitrates : mg/L LDL : 0.5	IS 3025 (Part 34) Chromotrophic acid method	2.9	3.1	45	No relaxation	NA	
11	Fluoride : mg/L LDL : 0.2	IS 3025 (Part 60) Zirconium Alizarin Method	<0.2	<0.2	1	1.5	0.49 mg/l ± 0.05 mg/l	
12	Phenols : mg/L LDL : 0.001	APHA 5530-D, 23 <sup>rd</sup> Edition Direct Photometric Method	<0.001	<0.001	0.001	0.002	3mg/l ± 0.4mg/l	
13	BOD : mg/L LDL : 5	IS 3025 (Part 44) Oxygen Depletion Method	<5	<5	---	---	24.89mg/l ± 4.88 mg/l	
14	COD : mg/L LDL : 10	APHA 5220-B, 23 <sup>rd</sup> Edition Open Reflux Method	<10	<10	---	---	49.5mg/l ± 4.6 mg/l	
15	Boron : mg/L LDL : 0.1	IS 3025 (Part 57) Colorimetric curcumin Method	<0.1	<0.1	0.5	1	0.6 mg/l ± 0.04mg/l	
16	Chromium : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.05	No relaxation	0.53 mg/l ± 0.02mg/l	
17	Iron : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.3	No relaxation	0.5 mg/l ± 0.05mg/l	
18	Zinc : mg/L LDL : 0.2	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.2	<0.2	5	15	0.05 ± 0.006mg/l	
19	Copper : mg/L LDL : 0.04	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.04	<0.04	0.05	1.5	0.1 mg/l ± 0.01 mg/l	
20	Cadmium : mg/L LDL : 0.001	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.001	<0.001	0.003	No relaxation	0.05mg/l ± 0.005mg/l	
21	Lead : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.01	No relaxation	0.5mg/l ± 0.02mg/l	
22	Manganese : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.1	0.3	0.1 mg/l ± 0.01mg/l	
23	Nickel : mg/L LDL : 0.02	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.02	<0.02	0.02	No relaxation	1 mg/l ± 0.04mg/l	
24	Sodium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	15.4	16.1	---	---	0.1 mg/l ± 0.004mg/l	
25	Potassium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	5.6	7.1	---	---	1 mg/l ± 0.1mg/l	
26	Aluminium : mg/L LDL : 0.03	APHA 3111-D, 23 <sup>rd</sup> Edition Nitrous Oxide- Acetylene Flame Method	<0.03	<0.03	0.03	0.2	5 mg/l ± 0.2mg/l	

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

  
Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (July to September - 2023)

Month	August, 2023		Area	Dipka		Report No.	NIL/CMPDI/RPT/23/08/071	
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur					Date of Issue	12-Aug-2023	
Project	Dipka Mine		Sample Ref. No.	NIL/W/008/23/137-138				
Sampling Stations	9	Nawadih - Puspendra Prasad Sukla (Lat.: 22.25889 N, Long.: 82.49972 E)			Date of Sampling	02-Aug-2023		
	10	Boida - Govt. Well (Lat.: 22.24528 N, Long.: 82.44722 E)			Date of Sampling	02-Aug-2023		
Page No. 2 of 2		Date of Analysis		06-Aug-2023		to		10-Aug-2023
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)	
			9	10	Acceptable Limit (Max)*	Permissible Limit** (Max)		
27	Temperature : °C LDL : 0.1	IS 3025 (Part 9) Direct Measurement Method	27.1	26.3	---	---	NA	
28	Colour : Hazen LDL : 5	IS 3025 (Part 4) Platinum cobalt Method	<5.0	<5.0	5	15	NA	
29	Ca <sup>++</sup> : mg/L LDL : 5	IS 3025(Part 40) EDTA method	70	62	---	---	200 mg/l±3.98 mg/l	
30	Mg <sup>++</sup> : mg/L LDL : 5	IS 3025(Part 46) Calculation Method	36	28	---	---	120 mg/l±3 mg/l	
31	Carbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	0	0	---	---	500 mg/l±8.6mg/l	
32	Bicarbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	162	150	---	---	500 mg/l±8.6mg/l	
33	Dissolved Oxygen (DO) : mg/L LDL : 0.5	APHA 4500-O(B), 23 <sup>rd</sup> Edition Iodometric method	6.8	7	---	---	NA	
34	Mercury : mg/L LDL : 0.001	IS 3025 (Part 48) Atomic Absorption Method	<0.001	<0.001	0.001	No relaxation	NA	
35	Selenium : mg/L LDL : 0.01	IS 3025 (Part 56) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA	
36	Arsenic : mg/L LDL : 0.01	IS 3025 (Part 37) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA	
37	Barium : mg/L LDL : 0.5	IS 13428 (Annex F) Nitrous Oxide- Acetylene Flame Method	<0.5	<0.5	0.7	No relaxation	5mg/l±0.62mg/l	
38	Total Coliforms : MPN/100ml LDL : 0	IS 1622-1981 ---	Not detected	Not detected	Absent	No relaxation	NA	
39	Ion Balance : --- LDL : ---	By Calculation ---	0.21	0.79	---	---	NA	

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (July to September - 2023)

Month	August, 2023		Area	Dipka		Report No.	NIL/CMPDI/RPT/23/08/072	
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur				Date of Issue	12-Aug-2023		
Project	Dipka Mine		Sample Ref. No.	NIL/W/008/23/139-140				
Sampling Stations	11	Chonrha - Govt. Well (Lat.: 22.30444 N, Long.: 82.46944 E)			Date of Sampling	02-Aug-2023		
	12	Urta - Gokran Singh (Lat.: 22.32000 N, Long.: 82.42944 E)			Date of Sampling	02-Aug-2023		
Page No. 1 of 2				Date of Analysis	06-Aug-2023		to 10-Aug-2023	
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)	
			11	12	Acceptable Limit (Max)*	Permissible Limit** (Max)		
1	pH : --- LDL : 0.5 - 13	IS 3025 (Part 11) Electrometric Method	6.91	6.88	6.5 - 8.5	No relaxation	7 ± 0.2	
2	Turbidity : NTU LDL : 1	IS 3025 (Part 10) Nephelometric Method	3.9	2.3	1	5	2 NTU ± 0.5NTU	
3	Conductivity : µs/cm LDL : 0.5	APHA 2510-B, 23 <sup>rd</sup> Edition Laboratory Method	187	720	---	---	19.3 umhos ± 0.05 umhos	
4	TDS : mg/L LDL : 5	IS 3025 (Part 16) Gravimetric Method	125	480	500	2000	2135.8mg/l ± 59.8mg/l	
5	Total Alkalinity : mg/L LDL : 5	IS 3025 (Part 23) Indiacator Method	56	162	200	600	500 mg/l ± 8.6mg/l	
6	Chloride (Cl <sup>-</sup> ) : mg/L LDL : 2.5	IS 3025 (Part 32) Argentometric Method	40	178	250	1000	873.5 ± 7.4mg/l	
7	Hardness : mg/L LDL : 5	IS 3025 (Part 21) EDTA Method	56	202	200	600	300mg/l ± 7.3mg/l	
8	Sulphate (SO <sub>4</sub> ) : mg/L LDL : 1	IS 3025 (Part 24) Turbidimetric Method	5.1	4.8	200	400	11.07 ± 0.45	
9	Phosphate (PO <sub>4</sub> ) : mg/L LDL : 1	APHA 2510-P-C, 23 <sup>rd</sup> Edition Colorimetric Method	<1	<1	---	---	1mg/l ± 0.022 mg/l	
10	Nitrates : mg/L LDL : 0.5	IS 3025 (Part 34) Chromotrophic acid method	5.8	7.2	45	No relaxation	NA	
11	Fluoride : mg/L LDL : 0.2	IS 3025 (Part 60) Zirconium Alizarin Method	<0.2	0.21	1	1.5	0.49 mg/l ± 0.05 mg/l	
12	Phenols : mg/L LDL : 0.001	APHA 5530-D, 23 <sup>rd</sup> Edition Direct Photometric Method	<0.001	<0.001	0.001	0.002	3mg/l ± 0.4mg/l	
13	BOD : mg/L LDL : 5	IS 3025 (Part 44) Oxygen Depletion Method	<5	<5	---	---	24.89mg/l ± 4.88 mg/l	
14	COD : mg/L LDL : 10	APHA 5220-B, 23 <sup>rd</sup> Edition Open Reflux Method	<10	<10	---	---	49.5mg/l ± 4.6 mg/l	
15	Boron : mg/L LDL : 0.1	IS 3025 (Part 57) Colorimetric curcumin Method	<0.1	<0.1	0.5	1	0.6 mg/l ± 0.04mg/l	
16	Chromium : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.05	No relaxation	0.53 mg/l ± 0.02mg/l	
17	Iron : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.3	No relaxation	0.5 mg/l ± 0.05mg/l	
18	Zinc : mg/L LDL : 0.2	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.2	<0.2	5	15	0.05 ± 0.006mg/l	
19	Copper : mg/L LDL : 0.04	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.04	<0.04	0.05	1.5	0.1 mg/l ± 0.01 mg/l	
20	Cadmium : mg/L LDL : 0.001	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.001	<0.001	0.003	No relaxation	0.05mg/l ± 0.005mg/l	
21	Lead : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.01	No relaxation	0.5mg/l ± 0.02mg/l	
22	Manganese : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.1	0.3	0.1 mg/l ± 0.01mg/l	
23	Nickel : mg/L LDL : 0.02	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.02	<0.02	0.02	No relaxation	1 mg/l ± 0.04mg/l	
24	Sodium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	14.2	17.2	---	---	0.1 mg/l ± 0.004mg/l	
25	Potassium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	6.1	7.2	---	---	1 mg/l ± 0.1mg/l	
26	Aluminium : mg/L LDL : 0.03	APHA 3111-D, 23 <sup>rd</sup> Edition Nitrous Oxide- Acetylene Flame Method	<0.03	<0.03	0.03	0.2	5 mg/l ± 0.2mg/l	

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

  
Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (July to September - 2023)

Month	August, 2023		Area	Dipka		Report No.	NIL/CMPDI/RPT/23/08/072	
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur				Date of Issue	12-Aug-2023		
Project	Dipka Mine		Sample Ref. No.	NIL/W/008/23/139-140				
Sampling Stations	11	Chonrha - Govt. Well (Lat.: 22.30444 N, Long.: 82.46944 E)			Date of Sampling	02-Aug-2023		
	12	Urta - Gokran Singh (Lat.: 22.32000 N, Long.: 82.42944 E)			Date of Sampling	02-Aug-2023		
Page No. 2 of 2				Date of Analysis	06-Aug-2023		to	10-Aug-2023
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)	
			11	12	Acceptable Limit (Max)*	Permissible Limit** (Max)		
27	Temperature : °C LDL : 0.1	IS 3025 (Part 9) Direct Measurement Method	26.9	26.4	---	---	NA	
28	Colour : Hazen LDL : 5	IS 3025 (Part 4) Platinum cobalt Method	<5.0	<5.0	5	15	NA	
29	Ca <sup>++</sup> : mg/L LDL : 5	IS 3025(Part 40) EDTA method	16	78	---	---	200 mg/l±3.98 mg/l	
30	Mg <sup>++</sup> : mg/L LDL : 5	IS 3025(Part 46) Calculation Method	8	34	---	---	120 mg/l±3 mg/l	
31	Carbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	0	0	---	---	500 mg/l±8.6mg/l	
32	Bicarbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	56	162	---	---	500 mg/l±8.6mg/l	
33	Dissolved Oxygen (DO) : mg/L LDL : 0.5	APHA 4500-O(B), 23 <sup>rd</sup> Edition Iodometric method	5.9	5.4	---	---	NA	
34	Mercury : mg/L LDL : 0.001	IS 3025 (Part 48) Atomic Absorption Method	<0.001	<0.001	0.001	No relaxation	NA	
35	Selenium : mg/L LDL : 0.01	IS 3025 (Part 56) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA	
36	Arsenic : mg/L LDL : 0.01	IS 3025 (Part 37) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA	
37	Barium : mg/L LDL : 0.5	IS 13428 (Annex F) Nitrous Oxide- Acetylene Flame Method	<0.5	<0.5	0.7	No relaxation	5mg/l±0.62mg/l	
38	Total Coliforms : MPN/100ml LDL : 0	IS 1622-1981 ---	Not detected	Not detected	Absent	No relaxation	NA	
39	Ion Balance : --- LDL : ---	By Calculation ---	-0.56	-1.81	---	---	NA	

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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (July to September - 2023)

Month	August, 2023		Area	Dipka		Report No.	NIL/CMPDI/RPT/23/08/073	
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur				Date of Issue	12-Aug-2023		
Project	Dipka Mine		Sample Ref. No.	NIL/W/008/23/141-142				
Sampling Stations	13	Nunera - Basant Kumar (Lat.: 22.35361 N, Long.: 82.42639 E)			Date of Sampling	02-Aug-2023		
	14	Nonbirra - Usha Vishwakarma (Lat.: 22.34000 N, Long.: 82.45889 E)			Date of Sampling	01-Aug-2023		
Page No. 1 of 2				Date of Analysis	06-Aug-2023		to 10-Aug-2023	
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)	
			13	14	Acceptable Limit (Max)*	Permissible Limit** (Max)		
1	pH : --- LDL : 0.5 - 13	IS 3025 (Part 11) Electrometric Method	7.21	7.31	6.5 - 8.5	No relaxation	7 ± 0.2	
2	Turbidity : NTU LDL : 1	IS 3025 (Part 10) Nephelometric Method	2.9	4.1	1	5	2 NTU ± 0.5NTU	
3	Conductivity : µs/cm LDL : 0.5	APHA 2510-B, 23 <sup>rd</sup> Edition Laboratory Method	466	196	---	---	19.3 umhos ± 0.05 umhos	
4	TDS : mg/L LDL : 5	IS 3025 (Part 16) Gravimetric Method	311	131	500	2000	2135.8mg/l ± 59.8mg/l	
5	Total Alkalinity : mg/L LDL : 5	IS 3025 (Part 23) Indiacator Method	140	54	200	600	500 mg/l ± 8.6mg/l	
6	Chloride (Cl <sup>-</sup> ) : mg/L LDL : 2.5	IS 3025 (Part 32) Argentometric Method	132	60	250	1000	873.5 ± 7.4mg/l	
7	Hardness : mg/L LDL : 5	IS 3025 (Part 21) EDTA Method	132	60	200	600	300mg/l ± 7.3mg/l	
8	Sulphate (SO <sub>4</sub> ) : mg/L LDL : 1	IS 3025 (Part 24) Turbidimetric Method	3.9	3.2	200	400	11.07 ± 0.45	
9	Phosphate (PO <sub>4</sub> ) : mg/L LDL : 1	APHA 2510-P-C, 23 <sup>rd</sup> Edition Colorimetric Method	<1	<1	---	---	1mg/l ± 0.022 mg/l	
10	Nitrates : mg/L LDL : 0.5	IS 3025 (Part 34) Chromotrophic acid method	6.1	3.1	45	No relaxation	NA	
11	Fluoride : mg/L LDL : 0.2	IS 3025 (Part 60) Zirconium Alizarin Method	<0.2	0.2	1	1.5	0.49 mg/l ± 0.05 mg/l	
12	Phenols : mg/L LDL : 0.001	APHA 5530-D, 23 <sup>rd</sup> Edition Direct Photometric Method	<0.001	<0.001	0.001	0.002	3mg/l ± 0.4mg/l	
13	BOD : mg/L LDL : 5	IS 3025 (Part 44) Oxygen Depletion Method	<5	<5	---	---	24.89mg/l ± 4.88 mg/l	
14	COD : mg/L LDL : 10	APHA 5220-B, 23 <sup>rd</sup> Edition Open Reflux Method	<10	<10	---	---	49.5mg/l ± 4.6 mg/l	
15	Boron : mg/L LDL : 0.1	IS 3025 (Part 57) Colorimetric curcumin Method	<0.1	<0.1	0.5	1	0.6 mg/l ± 0.04mg/l	
16	Chromium : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.05	No relaxation	0.53 mg/l ± 0.02mg/l	
17	Iron : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.3	No relaxation	0.5 mg/l ± 0.05mg/l	
18	Zinc : mg/L LDL : 0.2	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.2	<0.2	5	15	0.05 ± 0.006mg/l	
19	Copper : mg/L LDL : 0.04	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.04	<0.04	0.05	1.5	0.1 mg/l ± 0.01 mg/l	
20	Cadmium : mg/L LDL : 0.001	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.001	<0.001	0.003	No relaxation	0.05mg/l ± 0.005mg/l	
21	Lead : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.01	No relaxation	0.5mg/l ± 0.02mg/l	
22	Manganese : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.1	0.3	0.1 mg/l ± 0.01mg/l	
23	Nickel : mg/L LDL : 0.02	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.02	<0.02	0.02	No relaxation	1 mg/l ± 0.04mg/l	
24	Sodium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	13.6	20.1	---	---	0.1 mg/l ± 0.004mg/l	
25	Potassium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	4.1	5.9	---	---	1 mg/l ± 0.1mg/l	
26	Aluminium : mg/L LDL : 0.03	APHA 3111-D, 23 <sup>rd</sup> Edition Nitrous Oxide- Acetylene Flame Method	<0.03	<0.03	0.03	0.2	5 mg/l ± 0.2mg/l	

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

  
Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (July to September - 2023)

Month	August, 2023		Area	Dipka		Report No.	NIL/CMPDI/RPT/23/08/073	
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur				Date of Issue	12-Aug-2023		
Project	Dipka Mine		Sample Ref. No.	NIL/W/008/23/141-142				
Sampling Stations	13	Nunera - Basant Kumar (Lat.: 22.35361 N, Long.: 82.42639 E)			Date of Sampling	02-Aug-2023		
	14	Nonbirra - Usha Vishwakarma (Lat.: 22.34000 N, Long.: 82.45889 E)			Date of Sampling	01-Aug-2023		
Page No. 2 of 2				Date of Analysis	06-Aug-2023		to	10-Aug-2023
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)	
			13	14	Acceptable Limit (Max)*	Permissible Limit** (Max)		
27	Temperature : °C LDL : 0.1	IS 3025 (Part 9) Direct Measurement Method	25.8	27.4	---	---	NA	
28	Colour : Hazen LDL : 5	IS 3025 (Part 4) Platinum cobalt Method	<5.0	<5.0	5	15	NA	
29	Ca <sup>++</sup> : mg/L LDL : 5	IS 3025(Part 40) EDTA method	62	20	---	---	200 mg/l±3.98 mg/l	
30	Mg <sup>++</sup> : mg/L LDL : 5	IS 3025(Part 46) Calculation Method	27	9	---	---	120 mg/l±3 mg/l	
31	Carbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	0	0	---	---	500 mg/l±8.6mg/l	
32	Bicarbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	140	54	---	---	500 mg/l±8.6mg/l	
33	Dissolved Oxygen (DO) : mg/L LDL : 0.5	APHA 4500-O(B), 23 <sup>rd</sup> Edition Iodometric method	4.9	6.1	---	---	NA	
34	Mercury : mg/L LDL : 0.001	IS 3025 (Part 48) Atomic Absorption Method	<0.001	<0.001	0.001	No relaxation	NA	
35	Selenium : mg/L LDL : 0.01	IS 3025 (Part 56) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA	
36	Arsenic : mg/L LDL : 0.01	IS 3025 (Part 37) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA	
37	Barium : mg/L LDL : 0.5	IS 13428 (Annex F) Nitrous Oxide- Acetylene Flame Method	<0.5	<0.5	0.7	No relaxation	5mg/l±0.62mg/l	
38	Total Coliforms : MPN/100ml LDL : 0	IS 1622-1981 ---	Not detected	Not detected	Absent	No relaxation	NA	
39	Ion Balance : --- LDL : ---	By Calculation ---	-1.57	1.08	---	---	NA	

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (July to September - 2023)

Month	August, 2023		Area	Dipka		Report No.	NIL/CMPDI/RPT/23/08/074	
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur				Date of Issue	14-Aug-2023		
Project	Dipka Mine		Sample Ref. No.	NIL/W/008/23/143-144				
Sampling Stations	15	Renki - Shankar Patel (Lat.: 22.30417 N, Long.: 82.51139 E)			Date of Sampling	02-Aug-2023		
	16	Phuljhar - Anjor Singh (Lat.: 22.38917 N, Long.: 82.52389 E)			Date of Sampling	04-Aug-2023		
Page No. 1 of 2				Date of Analysis	08-Aug-2023		to 12-Aug-2023	
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)	
			15	16	Acceptable Limit (Max)*	Permissible Limit** (Max)		
1	pH : --- LDL : 0.5 - 13	IS 3025 (Part 11) Electrometric Method	7.68	7.31	6.5 - 8.5	No relaxation	7 ± 0.2	
2	Turbidity : NTU LDL : 1	IS 3025 (Part 10) Nephelometric Method	1.9	<1	1	5	2 NTU ± 0.5NTU	
3	Conductivity : µs/cm LDL : 0.5	APHA 2510-B, 23 <sup>rd</sup> Edition Laboratory Method	172	481	---	---	19.3 umhos ± 0.05 umhos	
4	TDS : mg/L LDL : 5	IS 3025 (Part 16) Gravimetric Method	115	321	500	2000	2135.8mg/l ± 59.8mg/l	
5	Total Alkalinity : mg/L LDL : 5	IS 3025 (Part 23) Indiacator Method	50	98	200	600	500 mg/l ± 8.6mg/l	
6	Chloride (Cl <sup>-</sup> ) : mg/L LDL : 2.5	IS 3025 (Part 32) Argentometric Method	44	118	250	1000	873.5 ± 7.4mg/l	
7	Hardness : mg/L LDL : 5	IS 3025 (Part 21) EDTA Method	42	154	200	600	300mg/l ± 7.3mg/l	
8	Sulphate (SO <sub>4</sub> ) : mg/L LDL : 1	IS 3025 (Part 24) Turbidimetric Method	4.1	8.4	200	400	11.07 ± 0.45	
9	Phosphate (PO <sub>4</sub> ) : mg/L LDL : 1	APHA 2510-P-C, 23 <sup>rd</sup> Edition Colorimetric Method	<1	<1	---	---	1mg/l ± 0.022 mg/l	
10	Nitrates : mg/L LDL : 0.5	IS 3025 (Part 34) Chromotrophic acid method	5.7	8.4	45	No relaxation	NA	
11	Fluoride : mg/L LDL : 0.2	IS 3025 (Part 60) Zirconium Alizarin Method	<0.2	0.32	1	1.5	0.49 mg/l ± 0.05 mg/l	
12	Phenols : mg/L LDL : 0.001	APHA 5530-D, 23 <sup>rd</sup> Edition Direct Photometric Method	<0.001	<0.001	0.001	0.002	3mg/l ± 0.4mg/l	
13	BOD : mg/L LDL : 5	IS 3025 (Part 44) Oxygen Depletion Method	<5	<5	---	---	24.89mg/l ± 4.88 mg/l	
14	COD : mg/L LDL : 10	APHA 5220-B, 23 <sup>rd</sup> Edition Open Reflux Method	<10	<10	---	---	49.5mg/l ± 4.6 mg/l	
15	Boron : mg/L LDL : 0.1	IS 3025 (Part 57) Colorimetric curcumin Method	<0.1	<0.1	0.5	1	0.6 mg/l ± 0.04mg/l	
16	Chromium : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.05	No relaxation	0.53 mg/l ± 0.02mg/l	
17	Iron : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.3	No relaxation	0.5 mg/l ± 0.05mg/l	
18	Zinc : mg/L LDL : 0.2	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.2	<0.2	5	15	0.05 ± 0.006mg/l	
19	Copper : mg/L LDL : 0.04	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.04	<0.04	0.05	1.5	0.1 mg/l ± 0.01 mg/l	
20	Cadmium : mg/L LDL : 0.001	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.001	<0.001	0.003	No relaxation	0.05mg/l ± 0.005mg/l	
21	Lead : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	<0.01	0.01	No relaxation	0.5mg/l ± 0.02mg/l	
22	Manganese : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	<0.1	0.1	0.3	0.1 mg/l ± 0.01mg/l	
23	Nickel : mg/L LDL : 0.02	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.02	<0.02	0.02	No relaxation	1 mg/l ± 0.04mg/l	
24	Sodium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	16.1	10.1	---	---	0.1 mg/l ± 0.004mg/l	
25	Potassium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	4.2	3.3	---	---	1 mg/l ± 0.1mg/l	
26	Aluminium : mg/L LDL : 0.03	APHA 3111-D, 23 <sup>rd</sup> Edition Nitrous Oxide- Acetylene Flame Method	<0.03	<0.03	0.03	0.2	5 mg/l ± 0.2mg/l	

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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Shradha Kere  
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# Netel (India) Limited

## GROUND WATER QUALITY REPORT (July to September - 2023)

Month	August, 2023		Area	Dipka		Report No.	NIL/CMPDI/RPT/23/08/074	
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur				Date of Issue	14-Aug-2023		
Project	Dipka Mine		Sample Ref. No.	NIL/W/008/23/143-144				
Sampling Stations	15	Renki - Shankar Patel (Lat.: 22.30417 N, Long.: 82.51139 E)		Date of Sampling	02-Aug-2023			
	16	Phuljhar - Anjor Singh (Lat.: 22.38917 N, Long.: 82.52389 E)		Date of Sampling	04-Aug-2023			
Page No. 2 of 2			Date of Analysis	08-Aug-2023		to	12-Aug-2023	
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)	
			15	16	Acceptable Limit (Max)*	Permissible Limit** (Max)		
27	Temperature : °C LDL : 0.1	IS 3025 (Part 9) Direct Measurement Method	25.8	26.4	---	---	NA	
28	Colour : Hazen LDL : 5	IS 3025 (Part 4) Platinum cobalt Method	<5.0	<5.0	5	15	NA	
29	Ca <sup>++</sup> : mg/L LDL : 5	IS 3025(Part 40) EDTA method	16	48	---	---	200 mg/l±3.98 mg/l	
30	Mg <sup>++</sup> : mg/L LDL : 5	IS 3025(Part 46) Calculation Method	8	26	---	---	120 mg/l±3 mg/l	
31	Carbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	0	0	---	---	500 mg/l±8.6mg/l	
32	Bicarbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	50	98	---	---	500 mg/l±8.6mg/l	
33	Dissolved Oxygen (DO) : mg/L LDL : 0.5	APHA 4500-O(B), 23 <sup>rd</sup> Edition Iodometric method	6.3	5.7	---	---	NA	
34	Mercury : mg/L LDL : 0.001	IS 3025 (Part 48) Atomic Absorption Method	<0.001	<0.001	0.001	No relaxation	NA	
35	Selenium : mg/L LDL : 0.01	IS 3025 (Part 56) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA	
36	Arsenic : mg/L LDL : 0.01	IS 3025 (Part 37) Atomic Absorption Method	<0.01	<0.01	0.01	No relaxation	NA	
37	Barium : mg/L LDL : 0.5	IS 13428 (Annex F) Nitrous Oxide- Acetylene Flame Method	<0.5	<0.5	0.7	No relaxation	5mg/l±0.62mg/l	
38	Total Coliforms : MPN/100ml LDL : 0	IS 1622-1981 ---	Not detected	Not detected	Absent	No relaxation	NA	
39	Ion Balance : --- LDL : ---	By Calculation ---	0.47	-1.97	---	---	NA	

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
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For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (July to September - 2023)

Month	August, 2023	Area	Dipka	Report No.	NIL/CMPDI/RPT/23/08/075
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur		Date of Issue	12-Aug-2023	
Project	Dipka Mine	Sample Ref. No.	NIL/W/008/23/145		
Sampling Stations	17	Chainpur - Govt. Borewell (Lat.: 22.33528 N, Long.: 82.50944 E)	Date of Sampling	02-Aug-2023	
	---	---	Date of Sampling	---	

Page No. 1 of 2 Date of Analysis 06-Aug-2023 to 10-Aug-2023

Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)
			17	---	Acceptable Limit (Max)*	Permissible Limit** (Max)	
1	pH : --- LDL : 0.5 - 13	IS 3025 (Part 11) Electrometric Method	7.64	---	6.5 - 8.5	No relaxation	7 ± 0.2
2	Turbidity : NTU LDL : 1	IS 3025 (Part 10) Nephelometric Method	<1	---	1	5	2 NTU ± 0.5NTU
3	Conductivity : µs/cm LDL : 0.5	APHA 2510-B, 23 <sup>rd</sup> Edition Laboratory Method	401	---	---	---	19.3 umhos ± 0.05 umhos
4	TDS : mg/L LDL : 5	IS 3025 (Part 16) Gravimetric Method	267	---	500	2000	2135.8mg/l ± 59.8mg/l
5	Total Alkalinity : mg/L LDL : 5	IS 3025 (Part 23) Indiacator Method	84	---	200	600	500 mg/l ± 8.6mg/l
6	Chloride (Cl <sup>-</sup> ) : mg/L LDL : 2.5	IS 3025 (Part 32) Argentometric Method	98	---	250	1000	873.5 ± 7.4mg/l
7	Hardness : mg/L LDL : 5	IS 3025 (Part 21) EDTA Method	100	---	200	600	300mg/l ± 7.3mg/l
8	Sulphate (SO <sub>4</sub> ) : mg/L LDL : 1	IS 3025 (Part 24) Turbidimetric Method	6.9	---	200	400	11.07 ± 0.45
9	Phosphate (PO <sub>4</sub> ) : mg/L LDL : 1	APHA 2510-P-C, 23 <sup>rd</sup> Edition Colorimetric Method	<1	---	---	---	1mg/l ± 0.022 mg/l
10	Nitrates : mg/L LDL : 0.5	IS 3025 (Part 34) Chromotrophic acid method	9.5	---	45	No relaxation	NA
11	Fluoride : mg/L LDL : 0.2	IS 3025 (Part 60) Zirconium Alizarin Method	<0.2	---	1	1.5	0.49 mg/l ± 0.05 mg/l
12	Phenols : mg/L LDL : 0.001	APHA 5530-D, 23 <sup>rd</sup> Edition Direct Photometric Method	<0.001	---	0.001	0.002	3mg/l ± 0.4mg/l
13	BOD : mg/L LDL : 5	IS 3025 (Part 44) Oxygen Depletion Method	<5	---	---	---	24.89mg/l ± 4.88 mg/l
14	COD : mg/L LDL : 10	APHA 5220-B, 23 <sup>rd</sup> Edition Open Reflux Method	<10	---	---	---	49.5mg/l ± 4.6 mg/l
15	Boron : mg/L LDL : 0.1	IS 3025 (Part 57) Colorimetric curcumin Method	<0.1	---	0.5	1	0.6 mg/l ± 0.04mg/l
16	Chromium : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	---	0.05	No relaxation	0.53 mg/l ± 0.02mg/l
17	Iron : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	---	0.3	No relaxation	0.5 mg/l ± 0.05mg/l
18	Zinc : mg/L LDL : 0.2	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.2	---	5	15	0.05 ± 0.006mg/l
19	Copper : mg/L LDL : 0.04	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.04	---	0.05	1.5	0.1 mg/l ± 0.01 mg/l
20	Cadmium : mg/L LDL : 0.001	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.001	---	0.003	No relaxation	0.05mg/l ± 0.005mg/l
21	Lead : mg/L LDL : 0.01	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.01	---	0.01	No relaxation	0.5mg/l ± 0.02mg/l
22	Manganese : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.1	---	0.1	0.3	0.1 mg/l ± 0.01mg/l
23	Nickel : mg/L LDL : 0.02	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	<0.02	---	0.02	No relaxation	1 mg/l ± 0.04mg/l
24	Sodium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	7.7	---	---	---	0.1 mg/l ± 0.004mg/l
25	Potassium : mg/L LDL : 0.1	APHA 3111-B, 23 <sup>rd</sup> Edition Air-Acetylene flame AAS method	4.5	---	---	---	1 mg/l ± 0.1mg/l
26	Aluminium : mg/L LDL : 0.03	APHA 3111-D, 23 <sup>rd</sup> Edition Nitrous Oxide- Acetylene Flame Method	<0.03	---	0.03	0.2	5 mg/l ± 0.2mg/l

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
 2. \*Except Sl. No. 10 which Acceptable limit is Min  
 3. \*\*Permissible Limit in the Absence of Alternate Source  
 4. This Test Report shall not be reproduced except in full, without written approval of the Laboratory.  
 5. This Test Report refers only to the sample tested.  
 6. The complaint register is available with the Laboratory as per Environment Protection Act, 1986.

\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

  
 Shradha Kere  
 Authorised Signatory





# Netel (India) Limited

## GROUND WATER QUALITY REPORT (July to September - 2023)

Month	August, 2023		Area	Dipka		Report No.	NIL/CMPDI/RPT/23/08/075	
Customer	South Eastern Coalfields Ltd. (SECL), Bilaspur				Date of Issue	12-Aug-2023		
Project	Dipka Mine		Sample Ref. No.	NIL/W/008/23/145				
Sampling Stations	17	Chainpur - Govt. Borewell (Lat.: 22.33528 N, Long.: 82.50944 E)			Date of Sampling	02-Aug-2023		
	---	---			Date of Sampling	---		
Page No. 2 of 2				Date of Analysis	06-Aug-2023		to	10-Aug-2023
Sl. No.	Parameter	Method of Analysis	Observed Values		IS 10500:2012		Measurement Uncertainty (@ 95% Confidence level & K=1.96)	
			17	---	Acceptable Limit (Max)*	Permissible Limit** (Max)		
27	Temperature : °C LDL : 0.1	IS 3025 (Part 9) Direct Measurement Method	25.9	---	---	---	NA	
28	Colour : Hazen LDL : 5	IS 3025 (Part 4) Platinum cobalt Method	<5.0	---	5	15	NA	
29	Ca <sup>++</sup> : mg/L LDL : 5	IS 3025(Part 40) EDTA method	41	---	---	---	200 mg/l±3.98 mg/l	
30	Mg <sup>++</sup> : mg/L LDL : 5	IS 3025(Part 46) Calculation Method	22	---	---	---	120 mg/l±3 mg/l	
31	Carbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	0	---	---	---	500 mg/l±8.6mg/l	
32	Bicarbonates : mg/L LDL : ---	IS 3025 (Part 23) Indicator Method	84	---	---	---	500 mg/l±8.6mg/l	
33	Dissolved Oxygen (DO) : mg/L LDL : 0.5	APHA 4500-O(B), 23 <sup>rd</sup> Edition Iodometric method	6.4	---	---	---	NA	
34	Mercury : mg/L LDL : 0.001	IS 3025 (Part 48) Atomic Absorption Method	<0.001	---	0.001	No relaxation	NA	
35	Selenium : mg/L LDL : 0.01	IS 3025 (Part 56) Atomic Absorption Method	<0.01	---	0.01	No relaxation	NA	
36	Arsenic : mg/L LDL : 0.01	IS 3025 (Part 37) Atomic Absorption Method	<0.01	---	0.01	No relaxation	NA	
37	Barium : mg/L LDL : 0.5	IS 13428 (Annex F) Nitrous Oxide- Acetylene Flame Method	<0.5	---	0.7	No relaxation	5mg/l±0.62mg/l	
38	Total Coliforms : MPN/100ml LDL : 0	IS 1622-1981 ---	Not detected	---	Absent	No relaxation	NA	
39	Ion Balance : --- LDL : ---	By Calculation ---	-1.63	---	---	---	NA	

Note : 1. LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit  
2. \*Except Sl. No. 10 which Acceptable limit is Min  
3. \*\*Permissible Limit in the Absence of Alternate Source

4. This Test Report shall not be reproduced except in full, without written approval of the Laboratory.  
5. This Test Report refers only to the sample tested.  
6. The complaint register is available with the Laboratory as per Environment Protection Act, 1986.

\*\*\*End of Report\*\*\*

For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory





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# ENVIRONMENTAL MONITORING REPORT

## AIR (HEAVY METALS)

(DIPKA AREA)



# Environmental Monitoring

**1<sup>st</sup> Half Year of 2023**

**SOUTH EASTERN COALFIELDS LIMITED**

***(A Mini Ratna Company)***

**Central Mine Planning & Design Institute Limited  
Regional Institute – V, CMPDI Complex,  
BILASPUR (C.G.)**

# ENVIRONMENTAL MONITORING REPORT

## DIPKA AREA

### INDEX

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2	Near Railway Siding	1	1
3	New Excv. Workshop	1	1
4	Pragati Nagar	1	1
5	Hardi Bazar	1	1
6	Batari	1	1
7	Jhabhar	1	1
8	Ratija	1	1
	<b>Total</b>	8	



**REPORT OF AMBIENT AIR QUALITY MONITORING  
FOR HEAVY METALS  
DIPKA AREA  
1<sup>st</sup> HALF YEAR OF 2023**

**Report No  
AIR/23-02**

Name of the Customer		South Eastern Coalfields Ltd, Bilaspur			Date of issue	14.03.2023	
Name of the Project	DIPKA	Sample Reference No.		CMPDI/NA Date: 06.03.2023			
		Date of Analysis		06.03.2023 to 13.03.2023			
Parameter	Copper ( $\mu\text{g}/\text{m}^3$ )	Lead ( $\mu\text{g}/\text{m}^3$ )	Nickel ( $\text{ng}/\text{m}^3$ )	Total Chromium ( $\mu\text{g}/\text{m}^3$ )	Cadmium ( $\text{ng}/\text{m}^3$ )	Iron ( $\text{ng}/\text{m}^3$ )	
LDL	0.01 $\mu\text{g}/\text{m}^3$	0.01 $\mu\text{g}/\text{m}^3$	1.0 $\text{ng}/\text{m}^3$	1.0 $\text{ng}/\text{m}^3$	1.0 $\text{ng}/\text{m}^3$	1.0 $\text{ng}/\text{m}^3$	
Uncertainty of Measurement (95% C.L & K=1.96)	$\pm 1.185 \mu\text{g}/\text{m}^3$ at 51.034 $\mu\text{g}/\text{m}^3$	$\pm 1.185 \mu\text{g}/\text{m}^3$ at 51.034 $\mu\text{g}/\text{m}^3$	$\pm 0.146 \text{ng}/\text{m}^3$ at 9.917 $\text{ng}/\text{m}^3$	$\pm 0.146 \text{ng}/\text{m}^3$ at 9.917 $\text{ng}/\text{m}^3$	$\pm 0.146 \text{ng}/\text{m}^3$ at 9.917 $\text{ng}/\text{m}^3$	$\pm 1.185 \mu\text{g}/\text{m}^3$ at 51.034 $\mu\text{g}/\text{m}^3$	
Method of Analysis	USEPA Method IO-3.2	USEPA Method IO-3.2	USEPA Method IO-3.2	USEPA Method IO-3.2	USEPA Method IO-3.2	USEPA Method IO-3.2	
National Ambient Air Quality Standard (NAAQS), 2009 (For (a) industrial, residential, rural & other area (b) Ecologically sensitive area as notified by Central Govt.)	---	1.0 ( $\mu\text{g}/\text{m}^3$ )	20 ( $\text{ng}/\text{m}^3$ )	---	---	---	
Name of the Station	Date of Sampling	Observed Value					
1. Malgaon Village	24.02.2023	BDL	BDL	1.11	BDL	BDL	BDL
2. Near Railway siding	24.02.2023	BDL	0.11	BDL	BDL	BDL	BDL
3. Near Excav. Workshop	24.02.2023	BDL	BDL	BDL	BDL	BDL	BDL
4. Pragati Nagar	24.02.2023	BDL	BDL	BDL	BDL	BDL	BDL
5. Hardi Bazar	24.02.2023	BDL	BDL	BDL	BDL	BDL	BDL
6. Batari	24.02.2023	BDL	BDL	BDL	BDL	BDL	BDL
7. Jhabhar	24.02.2023	BDL	BDL	BDL	BDL	BDL	BDL
8. Ratija	24.02.2023	BDL	BDL	BDL	BDL	BDL	BDL

S.K. Singh  
Jr.Sc.Asst

M. Reagan Singh  
Lab Co-ordinator

**Note:** 1) The results above relate to the samples tested as received.  
2) This report can not be reproduced in part or full without the written permission of the HOD (Env), CMPDI, RI-V.

● LDL indicates Lower Detection Limit  
● BDL indicates Below Detection Limit



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# **ENVIRONMENTAL MONITORING REPORT**

**AIR (HEAVY METALS)**

**(DIPKA AREA)**



***Environmental  
Monitoring***

**2<sup>nd</sup> Half Year of 2023**

**SOUTH EASTERN COALFIELDS LIMITED**

*(A Mini Ratna Company)*

**Central Mine Planning & Design Institute Limited**

**Regional Institute – V, CMPDI Complex,**

**BILASPUR (C.G.)**

**ENVIRONMENTAL MONITORING REPORT**  
**DIPKA AREA**  
**INDEX**

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1	Malgaon Village		01	1
2	Near Railway Siding		01	1
3	New Excv. Workshop		01	1
4	Pragati Nagar		01	1
5	Hardi Bazar		01	1
6	Batari		01	1
7	Jhabhar		01	1
8	Ratija		01	1
	Total		08	





**REPORT OF AMBIENT AIR QUALITY MONITORING  
 FOR HEAVY METALS  
 DIPKA AREA**

**Report No  
 AIRHM/23-08**

Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of issue				23.09.2023	
Name of the Project	DIPKA OC	Sample Reference No.			CMPDI/NA, Dated: 16.08.2023		
		Date of Analysis			16.08.2023 to 15.09.2023		
Parameter	Arsenic (ng/m <sup>3</sup> )	Lead (µg/ m <sup>3</sup> )	Nickel (ng/ m <sup>3</sup> )	Total Chromium (ng/ m <sup>3</sup> )	Selenium (ng/m <sup>3</sup> )	Cadmium (ng/ m <sup>3</sup> )	
LDL	1.0 ng/m <sup>3</sup>	0.01 µg/ m <sup>3</sup>	1.0 ng/m <sup>3</sup>	1.0 ng/m <sup>3</sup>	1.0 ng/m <sup>3</sup>	1.0 ng/m <sup>3</sup>	
Uncertainty of Measurement (95% C.L & K=1.96)	±0.818 ng/m <sup>3</sup> at 18.4ng/m <sup>3</sup>	±1.185 µg/m <sup>3</sup> at 51.034µg/m <sup>3</sup>	±0.146 ng/m <sup>3</sup> at 9.917ng/m <sup>3</sup>	±0.146 ng/m <sup>3</sup> at 9.917 ng/m <sup>3</sup>	±0.818 ng/m <sup>3</sup> at 18.4 ng/m <sup>3</sup>	±0.146 ng/m <sup>3</sup> at 9.917 ng/m <sup>3</sup>	
Method of Analysis	USEPA Method IO-3.5: 1999	USEPA Method IO-3.2	USEPA Method IO-3.2	USEPA Method IO-3.2	USEPA Method IO-3.2	USEPA Method IO-3.2	
National Ambient Air Quality Standard (NAAQS), 2009 (For (a) industrial, residential, rural & other area (b) Ecologically sensitive area as notified by Central Govt.)	---	1.0 (µg/m <sup>3</sup> )	20 (ng/m <sup>3</sup> )	---	---	---	
Name of the Station	Date of Sampling	Observed Value					
1. Malgaon Village	01.08.2023	BDL	BDL	BDL	BDL	BDL	BDL
2. Near Railway Siding	02.08.2023	BDL	0.06	BDL	BDL	BDL	BDL
3. New Excv. Workshop	01.08.2023	1.19	BDL	BDL	BDL	BDL	BDL
4. Pragati Nagar	01.08.2023	BDL	0.22	BDL	BDL	BDL	BDL
5. Hardi Bazar	01.08.2023	BDL	BDL	BDL	BDL	BDL	BDL
6 Batari	02.08.2023	BDL	BDL	BDL	BDL	BDL	BDL
7. Jhabhar	02.08.2023	BDL	0.19	BDL	BDL	BDL	BDL
8. Ratija	02.08.2023	BDL	BDL	BDL	BDL	BDL	BDL

S.K.Singh  
 Jr.Sc.Asst

C. Kumaravel.  
 Manager-Environment

**Note:** 1) The results above relate to the samples tested as received.  
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●LDL indicates Lower Detection Limit  
 ●BDL indicates Below Detection Limit

Ground Water Depth Report  
**April to June 2023**

of



South Eastern Coalfields Ltd.

Dipka Area

Through



*cmpdi*  
*A Mini Ratna Company*

Central Mine Planning and Design Institute  
(RI-V) Bilaspur

Prepared by



**NETEL (INDIA) LIMITED**  
**ENVIRONMENT MANAGEMENT SERVICES**

W-408, Pipeline Road, Rabale MIDC,  
TTC Industrial Area, Navi Mumbai – 400 701

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## Netel (India) Limited

### GROUND WATER DEPTH REPORT (April to June - 2023)

Customer Name : South Eastern Coalfields Ltd. (SECL), Bilaspur		Area : Dipka							
Report No. : NIL/CMPDI/RPT/23/04/188		Method : Direct Measurement Method							
Parameter : Water Level (Below ground level)									
Sr. No.	Location	Sampling Date	Source	Coordinates		Water Level (meter)	Diameter (meter)	Boundary (meter)	Depth (meter)
				Latitude	Longitude				
Dipka Mine									
1	Jhabar - Lagan Singh	18.05.2023	Open well	22.35389" N	82.52778" E	4.80	5.00	0.20	8.20
2	Tiwarta-1 - Karam sai	18.05.2023	Open well	22.36083" N	82.50111" E	6.40	2.90	1.00	7.30
3	Kerachhar - Govt well	18.05.2023	Open well	22.39500" N	82.46611" E	4.90	3.20	0.10	5.10
4	Jawali - Govt. Well	18.05.2023	Open well	22.42083" N	82.54222" E	8.10	5.00	0.25	11.50
5	Hardibajar - Avinash Paikra	18.05.2023	Open well	22.31083" N	82.54861" E	4.40	1.70	0.40	6.20
6	Dhatura - Heera Lal Kaushik	18.05.2023	Open well	22.26167" N	82.54750" E	7.60	3.30	0.75	10.50
7	Dholpur - Manoranjan singh	18.05.2023	Open well	22.22194" N	82.56167" E	7.10	5.10	0.45	9.80
8	Panora - Sunil Banjare	18.05.2023	Open well	22.20417" N	82.52083" E	6.40	3.30	0.45	13.40
9	Nawadih - Puspendra Prasad Sukla	18.05.2023	Open well	22.25889" N	82.49972" E	5.10	3.60	0.20	7.20
10	Boida - Govt. Well	18.05.2023	Open well	22.24528" N	82.44722" E	4.80	1.85	0.00	5.00
11	Chonrha - Govt. Well	18.05.2023	Open well	22.30444" N	82.46944" E	6.70	2.10	0.20	9.00
12	Urta - Gokran Singh	18.05.2023	Open well	22.32000" N	82.42944" E	6.50	4.60	0.00	18.50
13	Nunera - Basant Kumar	18.05.2023	Open well	22.35361" N	82.42639" E	5.30	2.50	0.00	7.50
14	Nonbirra - Usha Vishwakarma	18.05.2023	Open well	22.34000" N	82.45889" E	7.70	5.70	0.30	10.80
15	Renki - Shankar Patel	18.05.2023	Open well	22.30417" N	82.51139" E	9.10	5.10	0.30	11.20
16	Phuljhar - Anjor Singh	18.05.2023	Open well	22.38917" N	82.52389" E	7.60	7.50	0.00	25.10
17	Chainpur - Govt. Borewell	19.05.2023	Borewell	22.33528" N	82.50944" E	24.00	---	---	47.20

For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory





# Netel (India) Limited

## GROUND WATER DEPTH REPORT July to September - 2023)

<b>Customer Name</b> : South Eastern Coalfields Ltd. (SECL), Bilaspur		<b>Area</b> : Dipka							
<b>Report No.</b> : NIL/CMPDI/RPT/23/04/188		<b>Method</b> : Direct Measurement Method							
<b>Parameter</b> : Water Level (Below ground level)									
Sr. No.	Location	Sampling Date	Source	Coordinates		Water Level (meter)	Diameter (meter)	Boundary (meter)	Depth (meter)
				Latitude	Longitude				
<b>Dipka Mine</b>									
1	Jhabar - Lagan Singh	02.08.2023	Open well	22.35389" N	82.52778" E	2.20	5.00	0.20	8.20
2	Tiwarta-1 - Karam sai	02.08.2023	Open well	22.36083" N	82.50111" E	3.11	2.90	1.00	7.30
3	Kerakachhar - Govt well	01.08.2023	Open well	22.39500" N	82.46611" E	1.90	3.20	0.10	5.10
4	Jawali - Govt. Well	04.08.2023	Open well	22.42083" N	82.54222" E	3.80	5.00	0.25	11.50
5	Hardibajar - Avinash Paikra	02.08.2023	Open well	22.31083" N	82.54861" E	2.10	1.70	0.40	6.20
6	Dhatura - Heera Lal Kaushik	02.08.2023	Open well	22.26167" N	82.54750" E	4.00	3.30	0.75	10.50
7	Dholpur - Manoranjan singh	02.08.2023	Open well	22.22194" N	82.56167" E	3.70	5.10	0.45	9.80
8	Panora - Sunil Banjare	02.08.2023	Open well	22.20417" N	82.52083" E	2.80	3.30	0.45	13.40
9	Nawadih - Puspendra Prasad Sukla	02.08.2023	Open well	22.25889" N	82.49972" E	2.20	3.60	0.20	7.20
10	Boida - Govt. Well	02.08.2023	Open well	22.24528" N	82.44722" E	1.70	1.85	0.00	5.00
11	Chonrha - Govt. Well	02.08.2023	Open well	22.30444" N	82.46944" E	3.20	2.10	0.20	9.00
12	Urta - Gokran Singh	02.08.2023	Open well	22.32000" N	82.42944" E	3.80	4.60	0.00	18.50
13	Nunera - Basant Kumar	02.08.2023	Open well	22.35361" N	82.42639" E	2.40	2.50	0.00	7.50
14	Nonbirra - Usha Vishwakarma	01.08.2023	Open well	22.34000" N	82.45889" E	4.10	5.70	0.30	10.80
15	Renki - Shankar Patel	02.08.2023	Open well	22.30417" N	82.51139" E	4.50	5.10	0.30	11.20
16	Phuljhar - Anjor Singh	04.08.2023	Open well	22.38917" N	82.52389" E	3.30	7.50	0.00	25.10
17	Chainpur - Govt. Borewell	02.08.2023	Borewell	22.33528" N	82.50944" E	19.20	0.00	0.00	47.20

For NETEL INDIA LIMITED

Shradha Kere  
Authorised Signatory





साउथ ईस्टर्न कोलफिल्ड्स लिमिटेड  
South Eastern Coalfields Limited  
(कोल इंडिया का एक अंश/A Subsidiary Of Coal India Ltd)  
कार्यालय:- महाप्रबंधक, दीपका क्षेत्र  
OFFICE OF THE GENERAL MANAGER, DIPKA AREA  
P.O.: Dipka, Dist.: Korba (CG)-495452  
Tel: 07815-239011, 263300, 263301 Fax: 07815239002  
e-mail: gm@secl@coalindia.in

क्रमांक: एस.ई.सी.एल/दी.क्षे./पर्या./2022/ 2720

दिनांक: 12.09.2022

प्रति  
कलेक्टर महोदय,  
जिला-कोरबा, कोरबा (छ.ग.)

विषय:- एस.ई.सी.एल. दीपका विस्तार परियोजना को 35.00 मिलियन टन से 37.50 मिलियन टन क्षमता विस्तार हेतु पर्यावरण स्वीकृति बावत।

संदर्भ:- I-11015/487/2007-IA-II.(M) दिनांक 05.09.2022

महोदय,

भारत सरकार - पर्यावरण एवं वन जलवायु परिवर्तन मंत्रालय के द्वारा पत्र क्रमांक I-11015/487/2007-IA-II.(M) दिनांक 05.09.2022 के माध्यम से दीपका विस्तार परियोजना, दीपका क्षेत्र, एस.ई.सी.एल. की पर्यावरण स्वीकृति 35.00 मिलियन टन से 37.50 मिलियन टन तक क्षमता विस्तार बढ़ा दी गयी है।

पर्यावरण स्वीकृति आपके सूचनार्थ हेतु सादर प्रेषित है।

भवदीय

महाप्रबंधक,

दीपका क्षेत्र, एस.ई.सी.एल.

प्रतिलिपि:

1. सदस्य सचिव, छ.ग.पर्या.संरक्षण मंडल, रायपुर.
  2. अनुविभागीय अधिकारी- कटघोरा और पाली, जिला-कोरबा.
  3. क्षेत्रीय अधिकारी, छ.ग.पर्या.संरक्षण मंडल, कोरबा.
  4. तहसीलदार-कटघोरा, जिला-कोरबा.
  5. नगरपालिका अध्यक्ष, नगर पालिका दीपका
  6. नायब तहसीलदार-दीपका और हरदोबाजार, जिला-कोरबा.
- सरपंच- हरदोबाजार, सुवाभोडी, मालगांव, रेंकि, रतिजा, सिरकी, झावर, वेलदिकिरी.



शरपंच  
श.पं.झावर, ज.पं.कटघोरा  
जिला-कोरबा (छ.ग.)

शरपंच  
श.पं.सुवाभोडी, सिरकी, दुई  
ज.पं.प.जी.जि.कोरबा (छ.ग.)





## इच्छा मृत्यु किसी भी समस्या का समाधान नहीं... कलेक्टर श्री झा ने जनचौपाल में आये भू विस्थापित बंशी दास को दिया समझाईश

मौके पर ही जीएम को फोन लगाकर उनके पुत्र को निजी एजेंसी में नौकरी दिलाने दिये निर्देश, जनचौपाल में 94 लोगों ने दिये आवेदन

कोरबा। कलेक्टर संजीव झा ने जन चौपाल में इच्छा मृत्यु की मांग करने आये विजय नगर कोसमंदा निवासी बंशी दास महंत को समझाईश दिया। कलेक्टर ने बंशी दास को समझाईश देते हुए कहा कि इच्छा मृत्यु किसी भी समस्या का समाधान नहीं है। समस्याओं के कारणों को जानकर उनका निराकरण करके ही समस्या को सुलझाया जाता है।

कलेक्टर श्री झा ने बंशी दास की रोजगार और परिवार के पालन पोषण से संबंधित समस्याओं के निराकरण के लिए उनके पुत्र को एसईसीएल कुसमुण्डा कोयला खदान क्षेत्र में किसी निजी एजेंसी में नौकरी दिलाने के निर्देश एसईसीएल के अधिकारी को दिये। कलेक्टर ने जन चौपाल में ही एसईसीएल कुसमुण्डा के महाप्रबंधक को फोन लगाकर तत्काल बंशी दास के पुत्र को एजेंसी के माध्यम से नियोजित करने के निर्देश दिये। दरअसल बंशी दास काफी लंबे समय से एसईसीएल द्वारा भूमि अधिग्रहण के पश्चात् नौकरी नहीं दिये जाने की

समस्या को बताते हुए इच्छा मृत्यु की मांग करने कलेक्टर के समक्ष आवेदन प्रस्तुत किये थे। उन्होंने स्वयं के दिव्यांग होने के कारण परिवार के भरण पोषण में आ रही कठिनाईयों से अवगत कराया। कलेक्टर श्री झा ने बंशी दास को बड़ी ही शालीनता से समझाते हुए कहा कि उनके भूमि अधिग्रहण से संबंधित प्रकरण हाईकोर्ट में लंबित है। प्रकरण के हाईकोर्ट से निराकरण पश्चात् नियमानुसार प्रबंधन द्वारा रोजगार एवं बसाहट के संबंध में कार्यवाही की जाएगी। तब तक प्रशासन द्वारा परिवार के भरण पोषण में सहयोग के लिए उनके पुत्र को निजी एजेंसी में नियोजित करने में सहयोग किया जा रहा है।

कलेक्टर सभा कक्ष में आयोजित जनचौपाल में कलेक्टर श्री झा ने लोगों की समस्याएं सुनी और उनके त्वरित निदान के लिए उपस्थित अधिकारियों को निर्देश दिए। जन चौपाल में 94 लोगों ने कलेक्टर को अपनी समस्याओं-सुझावों से अवगत कराया। जनचौपाल

में डीएफओ कोरबा श्रीमती प्रियंका पाण्डेय, डीएफओ कटघोरा श्रीमती प्रेमलता यादव, अपर कलेक्टर विजेन्द्र पाटले, जिला पंचायत के सी.ई.ओ. नूतन कंवर, नगर निगम आयुक्त प्रभाकर पाण्डेय सहित सभी विभागीय अधिकारीगण मौजूद रहे।

जनचौपाल में गरुड नगर गेवरा प्रोजेक्ट निवासी सुश्री दुर्गा रानी नायक ने सीपेट में रोजगारमुखी पाठ्यक्रम में प्रवेश दिलाने के लिए आवेदन प्रस्तुत किया। दुर्गा रानी सीपेट में डीपीटी कोर्स में प्रवेश लेना चाहती है। उन्होंने कमजोर आर्थिक स्थिति का हवाला देते हुए सीपेट द्वारा निर्धारित शैक्षणिक शुल्क जमा करने में असमर्थता जताई। उन्होंने उक्त कोर्स में प्रवेश दिलाने के लिए आर्थिक सहायता प्रदान करने कलेक्टर के समक्ष निवेदन किया।

कलेक्टर श्री झा ने आवेदिका की बातों को सुनकर लाईवलीहुड के सहायक परियोजना अधिकारी को दुर्गा रानी का एडमिशन सीपेट में करवाने के निर्देश दिये। जन चौपाल में सरावुदिया के कुछ दुकानदारों

ने फोरलेन सड़क निर्माण में दुकानों के प्रभावित होने की शिकायत करते हुए दुकान की क्षतिपूर्ति राशि तथा गांव में दूसरे जगह पर दुकान निर्माण करने अनुमति प्रदान करने के संबंध में आवेदन प्रस्तुत किये।

कलेक्टर श्री झा ने दुकानदारों की आवेदन पर संज्ञान लेते हुए अपर कलेक्टर को इस संबंध में उपयुक्त कार्यवाही करने के निर्देश दिये। इसी प्रकार ग्राम सेमीपाली निवासी श्रीमती फूलबाई ने भूमि मुआवजा राशि के बंटवारा में आ रही पारिवारिक समस्या को दूर मुआवजा राशि का तीन हिस्सों में बंटवारा करवाने आवेदन प्रस्तुत किया। उन्होंने बताया कि रेल परियोजना के तहत अधिग्रहित भूमि की मुआवजा राशि लगभग 27 लाख रुपये प्राप्त हुए हैं। फूलबाई के पति की मृत्यु हो चुकी है। वह मुआवजा राशि को स्वयं और अपने दोनो पुत्रों के बीच बराबर तीन हिस्सों में बांटना चाहती है। आवेदन पत्र संज्ञान लेते हुए कलेक्टर श्री झा ने तहसीलदार को आवेदिका की मदद करते हुए आवश्यक कार्यवाही करने के निर्देश दिये।

## जिले के गौठानों में प्रतिदिन कम से कम दो किंवटल गोबर खरीदी करें सुनिश्चित : कलेक्टर

कलेक्टर ने साप्ताहिक समीक्षा बैठक में दिए निर्देश, नये स्वीकृत गौठानों में अधोसंरचना के कार्यों को तेजी से करें पूर्ण



कोरबा।

कलेक्टर संजीव झा ने जिले में विकसित किये गये गौठानों में गोधन न्याय योजना अंतर्गत गोबर खरीदी बढ़ाने के निर्देश दिये हैं। उन्होंने गौठानों में प्रतिदिन कम से कम दो किंवटल गोबर खरीदी सुनिश्चित करने के निर्देश दिये हैं।

समय सीमा की साप्ताहिक समीक्षा बैठक में कलेक्टर श्री झा ने गौठानों में संचालित किये जा रहे विभिन्न गतिविधियों की

जानकारी ली। उन्होंने गोबर खरीदी, वर्मीकम्पोस्ट निर्माण एवं आजीविका संवर्धन के कार्यों की विस्तृत समीक्षा की।

कलेक्टर ने गौठानों में सभी पंजीकृत गोबर विक्रेताओं को सक्रिय करने तथा खुले में गोबर नहीं खरीदने के निर्देश अधिकारियों को दिये। उन्होंने जिले में नये स्वीकृत गौठानों में अधोसंरचना के कार्यों की भी जानकारी ली। निर्माणाधीन गौठानों में सभी निर्माण कार्यों को तेजी से पूरा करने के निर्देश

अधिकारियों को दिये। कलेक्टर श्री झा ने बैठक में जिले में निवासरत विशेष पिछड़ी जनजाति सदस्यों के आय, जाति, निवास प्रमाण पत्र एवं पेंशन और वन अधिकार पत्र बनाने के निर्देश दिये।

समय-सीमा की साप्ताहिक समीक्षा बैठक में डीएफओ कोरबा श्रीमती प्रियंका पाण्डेय, डीएफओ कटघोरा श्रीमती प्रेमलता यादव, अपर कलेक्टर विजेन्द्र पाटले, जिला पंचायत के सी.ई.ओ. नूतन कंवर सहित सभी

विभागीय अधिकारीगण मौजूद रहे। समय सीमा की बैठक में कलेक्टर श्री झा ने बैठक में बिना पूर्व सूचना के अनुपस्थित रहने के कारण पोड़ी उपरोड़ा के एसएडीओ को कारण बताओ नोटिस जारी करने के निर्देश दिये। कलेक्टर ने कहा कि शासन के महत्वपूर्ण योजना नरवा, गरुवा, चुरुवा, बाड़ी के अंतर्गत विकसित किये गये गौठानों की सतत् निगरानी के लिए सप्ताह में पांच गौठानों का भ्रमण सुनिश्चित करें। साथ ही गौठानों में चल रहे

आजीविका गतिविधियों, महिला समूहों के कार्यों, वर्मीकम्पोस्ट निर्माण का भी निरीक्षण सुनिश्चित करें। उन्होंने गौठानों के निरीक्षण के संबंध में निरीक्षण पंजी भी संधारित करने के निर्देश सभी जनपद पंचायत के मुख्य कार्यपालन अधिकारियों को दिये। कलेक्टर श्री झा ने बैठक में किसानों के ई के वाईसी, आयुष्मान कार्ड निर्माण एवं कोविड वैक्सीनेशन महा अभियान की भी समीक्षा की। उन्होंने ई के वाईसी और आयुष्मान कार्ड के कार्यों में प्रगति लाने के निर्देश दिये। साथ ही सभी एसडीएम और जनपद सीईओ को इसकी लगातार मानिट्रिंग करने के भी निर्देश दिये। कलेक्टर श्री झा ने जिले के सभी शासकीय राशन दुकानों में महीने के 30 तारीख तक राशन भण्डारण सुनिश्चित करने के निर्देश दिये। उन्होंने सभी दिन राशन दुकानों को खोलने तथा हितग्राहियों को नियमित रूप से राशन वितरण भी सुनिश्चित करने के निर्देश दिये।

## राजस्व मंत्री जयसिंह अग्रवाल ने केन्द्रीय सड़क परिवहन मंत्री नितिन गडकरी को लिखा पत्र



कोरबा। फोरलेन सड़क की मांग को लेकर छत्तीसगढ़ के राजस्व मंत्री जयसिंह अग्रवाल ने केन्द्रीय सड़क परिवहन मंत्री नितिन गडकरी को पत्र लिखा है। पत्र के माध्यम से कटघोरा अंबिकापुर सड़क पर हो रही दुर्घटनाओं का जिक्र है साथ ही टू-लेन सड़क को फोरलेन करने का आग्रह किया है। छत्तीसगढ़ प्रदेश अंतर्गत औद्योगिक एवं एशिया का सर्वाधिक कोयला उत्पादक तथा पॉवर हब कोरबा जिला के कटघोरा से आरंभ होकर राष्ट्रीय राजमार्ग एन.एच.-130 को सरगुजा जिला अंतर्गत अंबिकापुर तक राष्ट्रीय राजमार्ग 43 के सम्मिलन बिन्दु तक

टू-लेन सड़क प्रस्ताव को मंजूरी मिली थी, जो निर्माणाधीन है। कटघोरा से शिवनगर तक सड़क निर्माण का कार्य मेसर्स दिलीप बिल्डकन निर्माण एजेंसी द्वारा लगभग 5 वर्ष पूर्व विभाग द्वारा दिए गए ड्राइंग डिजाईन के आधार पर निर्धारित समय सीमा में पूर्ण कर दिया गया था। शिवनगर से अंबिकापुर (सरगुजा) तक का कार्य मेसर्स गाँवर कंस्ट्रक्शन कम्पनी द्वारा लम्बे समय से कार्य को लम्बित रखा गया है।

इस सड़क निर्माण कार्य के लिए निर्माण पूर्व ड्राइंग डिजाईन में तकनीकी चूक (सुपरिलेवेशन की कमी, रोड टर्मिंग का अभाव, सड़क का सीधापन एवं उचित लेवलिंग का अभाव) होने की वजह से आए दिन गंभीर दुर्घटनाएं घटित हो रही हैं। 12 सितम्बर, 2022 की सुबह इसी राष्ट्रीय राजमार्ग पर हुई सड़क दुर्घटना में 7 लोगों की मौत हो गई जबकि 3 अन्य गम्भीर रूप से घायल हो गए। यह कोई पहला वाक्या नहीं है, इससे पूर्व भी इस

राजमार्ग पर अनेकों गंभीर दुर्घटनाएं हो चुकी हैं जिनमें अनेक जानें गई हैं। एक रिपोर्ट के अनुसार विगत 8 माह के भीतर इस राष्ट्रीय राजमार्ग पर 75 दुर्घटनाएं घटित हो चुकी हैं जिनमें से 50 लोग अपनी जान गंवा चुके हैं। इस राजमार्ग पर घटित होने वाली सड़क दुर्घटना अब तो आम बात हो गई है। कहा जा सकता है कि इस राजमार्ग पर सड़क निर्माण कार्य में बरती गई तकनीकी लापरवाहियों का खामियाख बड़े पैमाने पर आम जनता को भुगतना पड़ रहा है और राष्ट्र को धन-जन की भारी क्षति हो रही है।

इस राष्ट्रीय राजमार्ग में औद्योगिक नगर कोरबा सहित छत्तीसगढ़ राज्य में निवासरत उत्तर प्रदेश, बिहार एवं झारखण्ड राज्य के निवासियों का आवागमन एवं औद्योगिक परिवहन सहित पूर्वोत्तर भारत के राज्यों से आने वाले व्यावसायिक परिवहन का एकमात्र मार्ग है। अभी तक इस राजमार्ग का बहुत बड़ा हिस्सा जो शिवनगर से अंबिकापुर तक का भाग है, उसके

लिए निर्माण एजेंसी मेसर्स गाँवर कंस्ट्रक्शन कम्पनी द्वारा यथार्थ षणों से निर्माण कार्य किया जा रहा है लेकिन निर्माण की अत्यंत धीमी गति के कारण वह अभी तक अपूर्ण है। इस कम्पनी द्वारा करवाए जा रहे कार्यों में अनेक स्थानों पर सड़क निर्माण एवं पुल-पुलिया निर्माण के कार्य अधूरे पड़े हैं जिसके कारण क्षेत्रीय नागरिकों में आक्रोश है। मेसर्स गाँवर कंस्ट्रक्शन कम्पनी द्वारा कराए जा रहे निर्माण कार्य गुणवत्ताहीन होने के साथ ही परिवर्तित मार्गों के निर्माण कार्य अनुपयुक्त एवं अपूर्ण हैं। इस राजमार्ग के अपूर्ण एवं जगह-जगह निर्माण एजेंसी द्वारा गड़बड़ खोद दिए जाने की वजह से नागरिकों को अत्यधिक परेशानियों का सामना करना पड़ रहा है।

वर्तमान में सड़क निर्माण कार्य के लिए अनुबंधित फर्म मेसर्स गाँवर कंस्ट्रक्शन कम्पनी द्वारा किए जा रहे कार्यों पर विभिन्न टर्निंग प्वाइंट्स पर अनेक तकनीकी खामियों के

साथ ही सड़क निर्माण इंजीनियरिंग के स्थापित सिद्धांतों की पूरी तरह से अनदेखी की जा रही है और निर्माण की स्तरहीन गुणवत्ता व निर्धारित मापदण्डों की अवहेलना की वजह से इस राजमार्ग पर आये दिन गंभीर दुर्घटनाएं घटित हो रही हैं।

राजस्व मंत्री ने अपने पत्र में सड़क निर्माण के बारे में गडकरी को जानकारी दी : चोटिया से मनेन्द्रगढ़ (छोट्टा नागपुर होते हुए) 2 लेन सड़क का निर्माण। कटघोरा के कसनिया से केंवची या गौरला मार्ग 2 लेन सड़क का निर्माण। कोरबा में सुनालिया ब्रिज के पास अण्डरपास मार्ग का निर्माण कार्य।

कोरबा में सी.एस.ई.वी. चौक पर वाई शोप ओवरब्रिज का निर्माण कार्य। राष्ट्रीय राजमार्ग 149 बी, चांपा-कोरबा-कटघोरा खण्ड फोरलेन परियोजना से छूट रहे कुछ भाग को कोरबा शहर के सीतामढ़ी चौक से होटल रिलेक्स इन तक फोरलेन में सी.सी. रोड का उन्नयन कार्य। जनहित में त्वरित निर्णय लेकर मंजूरी प्रदान करने की मांग की है। ताकि समय की बचत के साथ ही आम नागरिकों का सड़कों पर सुरक्षित आवागमन सहित हो रही जन-धन की क्षति को रोका जा सके।

**सामय ईस्टर्न कोलफील्ड्स लिमिटेड**  
"मिनी एल्व क्वरपनी"  
(कोल इंडिया लिमिटेड का उपखण्ड)

**सूचना**  
भारत सरकार-पर्यावरण एवं वन जलवायु परिवर्तन मंत्रालय के द्वारा पत्र क्रमांक- J-110154872/2007-IA-II (M) दिनांक 05.09.2022, के माध्यम से दीपका विस्तार परियोजना, दीपका क्षेत्र, एस.ई.सी.एल. की 35 मिलियन टन से 37.5 मिलियन टन तक क्षमता विस्तार के लिये पर्यावरण स्वीकृति दी गयी है। स्वीकृति की प्रति एस.ई.सी.एल. की वेबसाइट एवं भारत सरकार-पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय की वेबसाइट में उपलब्ध है।  
Samvad-3387/2 महाप्रबंधक, एस.ई.सी.एल. दीपका क्षेत्र



कोरबा। कोरबा नगर निगम क्षेत्र में 12 सितम्बर से प्रारंभ हुए कोविड वैक्सीनेशन महाअभियान के दूसरे दिन पुनः वैक्सीनेशन टीमों ने डोर-टू-डोर पहुंचकर वैक्सीन की विभिन्न खुराकों से बचे हुए लोगों को वैक्सीन लगाई, निगम के सभी 67 वार्डों के लिए तैनात की गई 167 टीमों के सदस्यों ने पूरे दिन बिना रुके वार्ड एवं बस्तियों का भ्रमण करते हुए वैक्सीनेशन का कार्य सम्पन्न कराया। 15 सितम्बर तक वैक्सीनेशन का यह महाअभियान जारी रहेगा।

कलेक्टर संजीव कुमार के मार्गदर्शन एवं निगम आयुक्त श्री प्रभाकर पाण्डेय की देखरेख में 15 सितम्बर तक नगर निगम कोरबा क्षेत्र के सभी वार्ड एवं बस्तियों में 04 दिवसीय वैक्सीनेशन का महाअभियान पुनः संचालित किया जा रहा है, आज भी यह अभियान जारी रहा। निगम क्षेत्र के सभी 67 वार्डों में कुल 167 टीमों तैनात की गई हैं, टीम में शामिल नगर निगम, स्वास्थ्य विभाग, शिक्षा विभाग, महिला एवं बाल विकास विभाग, आंगनबाड़ी कार्यकर्ता, सहायिका व मितानिनों ने घर-घर पहुंचकर आज भी

वैक्सीनेशन का कार्य सम्पन्न कराया तथा वैक्सीन की विभिन्न खुराकों को लगवाने से बचे हुए लोगों को पात्रतानुसार वैक्सीन लगाई।

वार्डों में सक्रिय रहे पार्षदगण - संचालित किए जा रहे वैक्सीनेशन के इस महाअभियान में नगर निगम कोरबा के एम.आई.सी. सदस्य, पार्षद, एल्डरमैन व जनप्रतिनिधिगण अपना पूरा-पूरा सहयोग दे रहे हैं। आज भी वार्ड पार्षदों ने अपने-अपने वार्डों का भ्रमण कर वैक्सीन की विभिन्न खुराकों से छूटे हुए लोगों चिन्हांकन करते हुए उन्हें वैक्सीन की सभी खुराकों पात्रतानुसार लगवाने हेतु प्रोत्साहित किया।

नगर पालिक निगम कोरबा क्षेत्रांतर्गत वार्डों में गठित राजीव युवा मिमान क्लब के पदाधिकारियों, सदस्यों ने आज वैक्सीनेशन महाअभियान में बढ़-चढ़कर अपनी सहायिता निभाई, जिला प्रशासन द्वारा 04 दिवसीय वैक्सीनेशन महाअभियान चलाकर निःशुल्क वैक्सीन लगाई जा रही है, अतः इसका लाभ उठाएं तथा पात्रतानुसार वैक्सीन की सभी खुराकों अवश्य लगवाएं।

## कार्यालय कार्यपालन अभियंता, ग्रामीण यात्रिकी सेवा संभाग कोरबा

मैनुअल क्षेत्रीय निविदा आग्रहण सूचना क्रमांक-07 (प्रथम बार)	
क्रमांक/3339/टेंडर/ग्रायांसेवा/2022	कोरबा, दिनांक 09.09.2022
छत्तीसगढ़ के राज्यपाल के और से एकीकृत पंजीयन प्रणाली के अंतर्गत लोक निर्माण विभाग द्वारा सक्षम श्रेणी में पंजीकृत ठेकेदारों से निम्न दर्शित सिविल कार्य हेतु मुख्य अभियंता, ग्रामीण यात्रिकी सेवा रायपुर द्वारा जारी दिनांक 01.11.2021 एवं, प्रमुख अभियंता लोक निर्माण विभाग रायपुर द्वारा जारी दिनांक 01.01.2015 (सिविल) से प्रचलित प्रशासनिक दूर अनुसूची मुद्रित एवं अद्यतन संशोधित दूर ऑफलाइन (Offline) जोनल निविदा (सिविल) आमंत्रित की जाती है:-	
1. कार्य का नाम :- जोनल टेंडर (वित्तीय वर्ष 2022-23) जिला कोरबा के विकासखण्ड पाली (जोनल क्रमांक 01 से 05 तक) एवं विकासखण्ड पोड़ीउपरोड़ा (जोनल क्रमांक 01 से 05 तक) अंतर्गत विभिन्न मदों में रु. 10.00 लाख लागत तक के स्वीकृत भवन एवं मात्रा के सिविल कार्य।	
2. ठेके की अनुमानित मात्रा :- रु. 20.00 लाख (प्रत्येक जोनल क्र. हेतु)	
3. निविदा की धरोहर राशि :- रु. 15000.00 (प्रत्येक जोनल क्र. हेतु)	
4. निविदा प्रपत्र का मूल्य :- रु. 750.00 (प्रत्येक जोनल क्र. हेतु)	
5. निविदा प्रपत्र Download करने की अंतिम तिथि व समय	26.09.2022 समय 17.30 बजे तक
6. निविदा स्मिड पोस्ट के माध्यम से पहुंचने की अंतिम तिथि व समय	04.10.2022 समय 17.30 बजे तक
7. निविदा खोलने की तिथि:-	12.10.2022 समय 11.30 बजे से
2. निविदा की सामान्य शर्तें, विस्तृत निविदा विज्ञप्ति (परिशिष्ट-2.10 एवं निविदा दस्तावेज परिशिष्ट 2.13) यथा संशोधित व अन्य जानकारी वेबसाइट <a href="http://eproc.cgstate.gov.in">http://eproc.cgstate.gov.in</a> में अथवा कार्यालयीन अवधि में कार्यालय में उपस्थित होकर दिनांक 09.09.2022 समय 17.00 बजे से देखी जा सकती है।	
(अन्तोनो तिर्की) कार्यपालन अभियंता ग्रामीण यात्रिकी सेवा संभाग कोरबा जिला-कोरबा (छ.ग.)	
जी-94145/3	

## कठिन समस्याओं के लिए भरोसेमंद टॉनिक

### पूरे माह रहें एक्टिव, फिट एवं स्वस्थ



**मेरा नाम प्रियंवदा शर्मा, जिला मेरठ, उत्तर प्रदेश की रहने वाली हूँ। मैं सिलाई सेंटर चलाती हूँ। दिनभर के काम के कारण मैं हमेशा थकान में रहती थी। घर के रोजमर्रा के काम भी नहीं कर पाती थी। दिन-ब-दिन मेरी समस्या बढ़ती ही जा रही थी। फिर एक दिन मुझे 'सच्ची सहेली' आयुर्वेदिक टॉनिक और टेबलेट्स के बारे में पता चला। मात्र कुछ ही दिनों में 'सच्ची सहेली' के नियमित सेवन करने पर मुझे आज थकान का कोई अनुभव नहीं होता और आज मैं बिल्कुल ठीक हूँ। 'सच्ची सहेली' आयुर्वेदिक टॉनिक वास्तव में हमारी सच्ची सहेली है।**

**मेरा नाम मोनिका तंवर, उम्र 22 वर्ष, मध्य प्रदेश की रहने वाली हूँ। पिछले काफी समय से मैं थकान, कमर दर्द, कठिन दर्द जैसी समस्याओं से काफी परेशानी में रहती थी। काफी चिड़चिड़ापन भी आ गया था। 67 आयुर्वेदिक जड़ी-बूटियों से बनी 'सच्ची सहेली' आयुर्वेदिक टॉनिक के रगलर यूज से मुझे शरीर की अनेकों समस्याओं जैसे: थकान, कमर दर्द, कठिन दर्द और चिड़चिड़ापन को दूर करने में काफी फायदा मिला। आज मैं एकदम स्वस्थ हूँ। आप भी 'सच्ची सहेली' टॉनिक इस्तेमाल कीजिए और खुद फर्क देखिए।**

**मेरा नाम मेहराज वानों, उम्र 30 वर्ष, जिला गुना (मध्य प्रदेश) की रहने वाली हूँ। गृहिणी होने के नाते घर के सारे काम की जिम्मेदारी भी मुझ पर है। जिसके चलते मैं थकान, कमजोरी, खून की कमी, चक्कर आना जैसी समस्याओं से परेशान थी। फिर एक दिन मैंने अखबार में 'सच्ची सहेली' का विज्ञापन देखा। मात्र 5 माह के रोजाना प्रयोग से मेरी शरीर की सभी समस्याओं जैसे: थकान, कमर दर्द, चक्कर आना आदि में बहुत हद तक आराम मिला। आज मैं पूरी तरह से ठीक हूँ। 'सच्ची सहेली' सच में बहुत ही फायदेमंद है।**

### टैलेंट विंडो



**आदित्य निषाद**  
14 वर्ष, रायपुर (छत्तीसगढ़)

**निश्चल देवांगन**  
14 वर्ष, रायपुर (छत्तीसगढ़)

**दीपक पालरिया**  
13 वर्ष, जोधपुर (राजस्थान)

**मलिक निरंजन**  
13 वर्ष, छतरपुर (मध्यप्रदेश)

**पुष्टि सनाह्य**  
6 वर्ष, राजसमंद (राजस्थान)

देशभर में हर साल 14 सितंबर को हिंदी दिवस मनाया जाता है। मगर क्या आपको पता है कि इस तारीख को ही हिंदी दिवस क्यों मनाया जाता है? यहां पढ़ें इससे जुड़ी जानकारी।

## यूट्यूब पर 93 फिसदी लोग हिंदी में देखते हैं वीडियो

एक सर्वे के अनुसार साल 2050 तक हिंदी दुनिया की सबसे लोकप्रिय भाषाओं में से एक होगी।

हर साल 14 सितंबर को देश में हिंदी दिवस मनाया जाता है। इस दिन स्कूल, कॉलेज, कार्यालयों सहित देशभर में बड़े ही उत्साह के साथ उत्सवों-कार्यक्रमों का आयोजन किया जाता है। अब बात कर लेते हैं कि इसी दिन हिंदी दिवस क्यों मनाया जाता है? दरअसल, आजादी के बाद 14 सितंबर 1949 को संविधान सभा ने हिंदी को देश की राजभाषा बनाने का फैसला लिया था। तब सरकार का ज्यादातर कामकाज अंग्रेजी में होता था, लेकिन देश की बहुसंख्यी संस्कृति को देखते हुए एक ऐसी भाषा की जरूरत महसूस की गई, जो देश के अधिकांश हिस्से को आपस में जोड़ती हो। काफी विचार-विमर्श के बाद इसके लिए राजभाषा के रूप में हिंदी का चुनाव किया गया। बाद में जवाहरलाल नेहरू सरकार ने इस ऐतिहासिक दिन के महत्त्व को देखते हुए हर साल 14 सितंबर को हिंदी दिवस के रूप में मनाने का फैसला किया। पहला आधिकारिक हिंदी दिवस 14 सितंबर 1953 को मनाया गया था। आधिकारिक भाषा के अलावा भारत के संविधान की 8वीं अनुसूची में 22 भाषाएं शामिल हैं।

**भारत में 43 फीसदी लोग हिंदी बोलते हैं। इसमें भोजपुरी, राजस्थानी जैसी कई मातृभाषाएं शामिल हैं।**

**हिंदी शब्दकोश में हिंदी शब्दों की संख्या ढाई लाख से अधिक है। एक-एक वस्तु, कार्य, भाव आदि को व्यक्त करने के लिए सैकड़ों शब्द हैं।**

**दुनियाभर में हिंदी का प्रयोग करीब 60 करोड़ से ज्यादा लोग करते हैं। यह दुनिया की सबसे ज्यादा बोली जाने वाली भाषाओं में से एक है।**

**नमस्ते शब्द हिंदी में सबसे ज्यादा उपयोग में लिया जाने वाला शब्द है। ठीक उसी तरह जैसे अंग्रेजी में हेलो शब्द प्रयोग किया जाता है।**

**भारत में यूट्यूब पर 93 प्रतिशत युवा हिंदी वीडियो देखते हैं। भारतीय युवाओं के स्मार्टफोन में औसतन 32 एप में 8 से 9 हिंदी के हैं।**

**दुनिया के लगभग 176 विश्वविद्यालयों में हिंदी भाषा पढ़ाई जाती है। इतना ही नहीं, अमरीका के 45 विश्वविद्यालय भी इसमें शामिल हैं।**

**हिंदी का जो शब्द पहली बार ऑक्सफोर्ड की डिक्शनरी में शामिल किया गया वह 'स्वदेशी' था।**

**संयुक्त राष्ट्र आससभा को सबसे पहले वर्ष 1977 में विदेश मंत्री के रूप में अटल बिहारी वाजपेयी ने हिंदी में संबोधित किया था।**

**त्रिनिदाद, मॉरीशस, फिलीपींस, नेपाल, गुयाना, सूरीनाम, तिब्बत और पाकिस्तान में हिंदी बोली और समझी जाती है।**

### हिंदी से जुड़ी रोचक जानकारी...

### नॉलेज पावर

1. 'क' वर्ण निम्न लिखित में से है? (अ) स्वर (ब) व्यंजन (स) अन्तस्थ (द) अन्तस्थ

2. सही क्रम का चयन कीजिए? (अ) श, घ, स (ब) स, घ, श (स) घ, श, स (द) श, घ, स

3. 'ड' वर्ण किस वर्ण में आता है? (अ) क वर्ण (ब) च वर्ण (स) ट वर्ण (द) व वर्ण

4. 'ज' वर्ण किन दो अक्षरों से मिलकर बना है? (अ) क और ष (ब) त और र (स) ज और ज (द) त और र

5. 'प' वर्ण में कितने अक्षर आते हैं? (अ) तीन (ब) चार (स) पांच (द) छ

उत्तर- 1. स्वर 2. श, घ, स 3. क वर्ण 4. ज और ज 5. पांच

### RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

(A Joint Venture of Govt. of Karnataka & Ministry of Railways)

Regd. office: 1st Floor, Samparka Soudha, Opp. Orion Mall, Rajajinagar 1st Block, Bengaluru-10  
Tel: +91 6366430945 CIN: U60100KA2000PLC028171 e-mail: electrical.kride@gmail.com

**e-TENDER NOTICE**

Tender Notice No. KRIDE/BSRP/15/2022 Date: 13.09.2022

e-tenders are invited from experienced agencies for the following work.

**Name of the Work:** "Shifting of Electrical Utilities infringing Proposed Bengaluru Suburban Rail Project Corridor-2 from Benniganahalli to Chikkabanavara (excluding Lottegollahalli to Yesvantpur)"

**Estimated value of the work 2.73 Cr**

**Last date for submission of above tender is 13.10.2022.**

For details visit <http://eproc.karnataka.gov.in> and [www.kride.in](http://www.kride.in)

Sd/-  
JGM / Electrical

## केन्द्रीय भूमि जल प्राधिकरण

### जल शक्ति मंत्रालय भारत सरकार शुद्धि-पत्र सूचना

सभी मौजूदा प्रयोक्ताओं द्वारा भूमि जल निकासी के लिए आज्ञा लेने संबंधित सीजीडब्ल्यूए द्वारा जारी की गई सार्वजनिक सूचना सं. 3/2022 दि. 14.6.2022, 5/2022 दि. 29.07.2022 एवं 6/2022 दि. 19.08.2022 की ओर ध्यान आकर्षित किया जाता है।

- "सभी भूमि जल प्रयोक्ताओं सहित" को "इन वर्गों से भूमि जल प्रयोक्ताओं" पढा जाए।
- लद्दाख को दो गयी राज्यों/संघीय क्षेत्रों की सूची से हटा दिया गया है।

कथित सार्वजनिक सूचनाओं की शेष सामग्री अपरिवर्तित रहेगी। और अधिक विवरणों के लिए कृपया <https://cgwanoc.gov.in> पर लॉगआन करें।

चेयरमैन  
अगस्त 2022  
CBC 45103/12/0012/2223

**हमें भेजिए अपनी रचनाएं**

अगर आपके बच्चे में किसी भी प्रकार का टैलेंट है, जैसे- कविता लिखना, पेंटिंग बनाना, आर्ट एंड क्राफ्ट, गेम्स या अन्य कोई क्रिएशन.. तो हमें पूरा नाम, पता, उम्र, फोटो सहित भेजिए। चुनी हुई रचनाओं को 'ब्रेन पावर' पेज पर प्रकाशित किया जाएगा। कृपया 6 से 15 वर्ष की उम्र वाले बच्चे ही अपनी रचनाएं भेजें। 'पत्रिका ब्रेन पावर' के लिए अपनी रचनाएं यहां भेजिए- [www.facebook.com/PatrikaBrainPower](http://www.facebook.com/PatrikaBrainPower) [www.facebook.com/groups/brainpower.patrika](http://www.facebook.com/groups/brainpower.patrika) [patrikabrainpower@in.patrika.com](mailto:patrikabrainpower@in.patrika.com)

### साक्ष्य इंस्ट्रुमेंट कोलफील्ड्स लिमिटेड

"मित्री एलव क्लब्सकी"  
(कोल इंस्ट्रुमेंट्स लिमिटेड का उपक्रम)

**सूचना**

भारत सरकार-पर्यावरण एवं वन जलवायु परिवर्तन मंत्रालय के द्वारा पत्र क्रमांक- J-11015/487/2007-IA-II (M) दिनांक 05.09.2022 के माध्यम से दीपका विस्तार परियोजना, दीपका क्षेत्र, एस.ई.सी.एल. की 35 मिलियन टन गी से 37.5 मिलियन टन तक क्षमता विस्तार के लिये पर्यावरण स्वीकृति दी गयी है। स्वीकृति की प्रति एस.ई.सी.एल. की वेबसाइट एवं भारत सरकार-पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय की वेबसाइट में उपलब्ध है।

महाप्रबंधक, एस.ई.सी.एल. दीपका क्षेत्र  
S-33872

## सुरक्षा की सौगात

# फसल बीमा पॉलिसी

### अब आपके हाथ

प्रधानमंत्री फसल बीमा योजना

प्रधानमंत्री फसल बीमा योजना ने बेहतर सुरक्षा कवर देकर जोखिम कम किया है, जिसका लाभ करोड़ों किसानों को मिला है। इस योजना ने दावा भुगतान में पारदर्शिता को बढ़ावा देकर किसानों में एक नया विश्वास जगाया है।

नरेन्द्र मोदी, प्रधानमंत्री

**योजना एक, लाभ अनेक**

- भुगतान सीधे किसान के बैंक खाते में
- पंजीकरण के लिए 12 भाषाओं में एनसीआई पोर्टल एवं क्रॉप इन्शुरन्स ऐप
- पैदावार के बेहतर अनुमान के लिए आधुनिक तकनीक
- किसानों की सुविधा के लिए घर-घर पॉलिसी वितरण

**योजना के 7 साल - बन रही एक नई मिसाल**

- हर साल 5.5 करोड़ से अधिक किसान योजना से जुड़ रहे हैं

देशभर में किसानों को अब तक 1.22 लाख करोड़ रु. बीमा दावों के रूप में दिए गए, आप भी अपनी रबी फसलों का बीमा ज़रूर कराएं

मेरी पॉलिसी मेरे हाथ

अधिक जानकारी के लिए संपर्क करें - किसान कॉल सेंटर 1800 -180-1551

pmfby PMFasalBimaYojana pmfasalbimayojana

## भारतीय रिजर्व बैंक (आरबीआई) का कार्डधारकों को अपने कार्ड्स का टोकनाइज़ेशन कराने हेतु प्रोत्साहन

कार्डधारकों के हितों की सुरक्षा को ध्यान में रखते हुए, आरबीआई ने आदेश दिया है कि 1 अक्टूबर 2022 से कार्ड नेटवर्क तथा कार्ड जारीकर्ताओं को छोड़कर, कोई दूसरी इकाइयां कार्ड डेटा जैसे कि कार्ड नंबर, कार्ड की एक्सपायरी की तिथि आदि (कार्ड-ऑन-फाइल या CoF) को स्टोर नहीं कर सकती हैं। साथ ही, यह सुनिश्चित करने के लिए कि कार्डधारकों को कोई असुविधा न हो, आरबीआई ने CoF टोकनाइज़ेशन पेश किया है। टोकनाइज़ेशन इसलिए किया जाता है ताकि कार्डधारक को प्रत्येक ट्रांजेक्शन पर कार्ड के विवरण न भरने पड़ें, साथ ही, मर्चेन्ट कार्ड के विवरण को स्टोर या उनका इस्तेमाल न कर सके, जिसके फलस्वरूप कार्ड के विवरणों के खोने की संभावना तथा उससे जुड़े दुरुपयोग से बचा जा सकता है। टोकन का इस्तेमाल कार्ड ट्रांजेक्शन की सुरक्षा और सुविधा को बढ़ाता है तथा यह कार्डधारकों के हित में है।

### टोकनाइज़ेशन या कार्ड-ऑन-फाइल (CoF) टोकनाइज़ेशन क्या है ?

1. टोकनाइज़ेशन (या CoF टोकनाइज़ेशन) कभी भी अपनी सुविधा के अनुसार किया जा सकता है।
2. टोकनाइज़ेशन डेबिट या क्रेडिट कार्ड के विवरण को एक अनोखे वैकल्पिक कोड, जिसे "टोकन" कहते हैं, से बदलने की प्रक्रिया है।
3. टोकनाइज़ेशन केवल ऑनलाइन/ई-कॉमर्स ट्रांजेक्शन के लिए विनिर्धारित किया गया है और यह आमने-सामने या पॉइंट ऑफ सेल (POS) ट्रांजेक्शन के लिए नहीं है।
4. टोकनाइज़ेशन प्रत्येक कार्ड के लिए ऑनलाइन/ई-कॉमर्स मर्चेन्ट के यहां केवल एक बार ही करने की जरूरत है। कार्ड विशेष तथा ऑनलाइन/ई-कॉमर्स मर्चेन्ट विशेष के लिए प्रत्येक टोकन अलग होता है। कार्डधारक किसी कार्ड का अनगिनत ऑनलाइन/ई-कॉमर्स मर्चेन्ट्स के साथ टोकनाइज़ेशन करा सकता है।
5. किसी टोकन का इस्तेमाल उसी मर्चेन्ट को भुगतान करने के लिए किया जा सकता है, जिसके लिए उसे बनाया गया हो, न कि किसी और मर्चेन्ट को भुगतान करने के लिए।
6. एक बार टोकन बनाने के बाद, कार्डधारक को भविष्य के ट्रांजेक्शन के लिए टोकन का विवरण एंटर करने या याद रखने की जरूरत नहीं। टोकनाइज़्ड कार्ड की पहचान के लिए, चेकआउट प्रक्रिया के दौरान कार्ड के अंतिम चार अंकों को डिस्प्ले/प्रदर्शित किया जाएगा।
7. कार्डधारक अपनी इच्छानुसार अपने टोकन के रजिस्ट्रेशन को समाप्त भी कर सकते हैं।

### किसी कार्ड का टोकनाइज़ेशन कैसे करें ?

1. टोकनाइज़ेशन का विकल्प चुनने के लिए कार्डधारक को मर्चेन्ट वेबसाइट एप्लिकेशन पर वन-टैप रजिस्ट्रेशन करना होगा।
2. रजिस्ट्रेशन करने के लिए कार्डधारक को अपने कार्ड का विवरण भरना होगा तथा सहमति देनी होगी। कार्ड जारीकर्ता प्रमाणीकरण के अतिरिक्त घटक जैसे कि OTP के जरिए इस सहमति को मान्य करेगा।

कार्डधारकों को एक सुरक्षित, संरक्षित, बाधा रहित तथा सुविधाजनक अनुभव पाने के लिए अपने कार्ड्स का टोकनाइज़ेशन कराने की सलाह दी जाती है।

इस परामर्शिका (एडवाइज़री) को आरबीआई द्वारा केवल सूचना के माध्यम से जारी किया गया है। किसी स्पष्टीकरण या व्याख्या के लिए, आरबीआई द्वारा जारी संबंधित परिपत्रों तथा अधिसूचनाओं की मदद ली जा सकती है।



साउथ ईस्टर्न कोलफिल्ड्स लिमिटेड  
South Eastern Coalfields Limited  
(कोल इंडिया का एक अंश/A Subsidiary Of Coal India Ltd)  
कार्यालय:- महाप्रबंधक, दीपिका क्षेत्र  
OFFICE OF THE GENERAL MANAGER, DIPKA AREA  
P.O.: Dipka, Distt.: Korba (CG)-495452  
Tel: 07815-239011,263300,263301 Fax:07815239002  
e-mail: gmdpk.secl@coalindia.in

ANNEXURE 36

क्रमांक: एस.ई.सी.एल/दी.क्षे./पर्या./2022/ 2771

दिनांक: 18.11.2022

प्रति,

वनमंडलाधिकारी,  
कटघोरा वनमंडल, कटघोरा

**विषय: Endorsement of plantation work carried out at Kasaipali (OA-778)-Reg.**

संदर्भ: 1) पत्र क्र: एस.ई.सी.एल./दी.क्षे./पर्यावरण/2022/2582, दिनांक: 07.04.2022.

2) आपका पत्र क्र: तक.अधि./2021/72, कटघोरा, दिनांक: 04.01.2022.

3) पत्र क्र: एस.ई.सी.एल./दी.क्षे./पर्यावरण/2020/1885, दिनांक: 25.06.2020.

महोदय,

A scheme for plantation of 50,000 native species at Kasaipali (OA-778) was prepared by your office and a demand letter dated: 05.08.2021 for payment of Rs. 99.91 lakhs was raised. Further, a demand letter for payment of difference amount of Rs.8.25 lakhs was raised vide your letter dated: 04.01.2022. Payments against the demand letters was submitted through DD on 29.06.2021 & 07.04.2022 (Copy enclosed).

You are kindly requested to provide your endorsement for the above plantation work carried out at Kasaipali (OA-778), so that the same can be submitted to MoEF&CC for the compliance of EC granted to Dipka Expansion Project.

धन्यवाद,

भवदीय,

महाप्रबंधक

दीपका क्षेत्र, एस.ई.सी.एल.।

प्रतिलिपि,

1. महाप्रबंधक(पर्यावरण/वन), एस.ई.सी.एल. मुख्यालय, बिलासपुर.।
2. महाप्रबंधक(खनन), दीपका विस्तार परियोजना, एस.ई.सी.एल.।
3. स्टाफ ऑफिसर (खनन), दीपका क्षेत्र, एस.ई.सी.एल.।
4. नोडल अधिकारी(पर्यावरण/वन), दीपका क्षेत्र, एस.ई.सी.एल.।



5548  
5/10/21  
06



SOUTH EASTERN COALFIELDS LIMITED, GEVRA AREA  
OFFICE OF THE CHIEF OF MEDICAL SERVICES  
Nehru Centenary Hospital, Gevra

PO :- Gevra Project, Distt. :- Korba (CG) - 495452,  
Mobile : 7008879922, email : cmssecl.gevra@gmail.com



Ref. :- SECL/GA/NCH/CMS/2021/ 3908

Dated :- 25/09/2021

प्रति,  
श्रीमान नोडल अधिकारी (पर्यावरण),  
एस.ई.सी.एल., दीपका क्षेत्र।

विषय : आपके द्वारा मांगी गई औषधियों के स्टॉक के सम्बन्ध में।  
सन्दर्भ : Your letter No. : एस.ई.सी.एल./दी.क्ष./पर्या./2021/2347, दिनांक : 10/09/2021, regarding 35  
MTY Environment Clearance of Dipka Expansion Project.

महोदय,

Through the letter referred to above, you have sought information about the stock of Burn, Malaria and Anti Snake Venom Medicines. All medicines are available in our Hospital.

This is for your information and needful.

Thanking you,

Yours Sincerely,

*[Handwritten Signature]*  
25.9.21

Chief of Medical Services,  
Nehru Centenary Hospital,  
SECL, Gevra Area.

Copy to :-

1. The General Manager, Dipka Area,
2. The General Manager, (Excav.), Dipka Expansion Project,
3. The Chief Medical Officer, Dipka Dispensary,

NO (EMH)

*[Handwritten Signature]*  
6/10

भारत सरकार  
पर्यावरण वन एवं जलवायु परिवर्तन मंत्रालय  
एकीकृत क्षेत्रीय कार्यालय,  
अरण्य भवन, नार्थब्लॉक,  
सेक्टर-19, नयारायपुर, अटलनगर  
छत्तीसगढ़ - 492002  
ईमेल- [lro.raipur-mefcc@gov.in](mailto:lro.raipur-mefcc@gov.in)



GOVERNMENT OF INDIA  
MINISTRY OF ENVIRONMENT, FORESTS &  
CLIMATE CHANGE  
INTEGRATED REGIONAL OFFICE  
ARANYA BHAWAN, NORTH BLOCK, SECTOR-19,  
NAYA RAIPUR, ATAL NAGAR, CHHATTISGARH - 492002  
Email - [lro.raipur-mefcc@gov.in](mailto:lro.raipur-mefcc@gov.in)

पत्र सं. EC-752/RON/2018-NGP / 883

दिनांक: 22/08/2022

सेवा में,

The General Manager (W B P & Environment)  
M/s South Eastern Coalfields Ltd,  
W B P & Environment Department,  
Seepat Road, P B No. 60  
Bilaspur- 495006 (Chhattisgarh)  
Email: [gmenvtsecl@gmail.com](mailto:gmenvtsecl@gmail.com)

विषय : Certified copy of compliance status report of EC stipulations -reg.

सन्दर्भ: 1. F. No. J-11015/487/2007- IA.II (M), dated 09.03.2020.

2. Your letter no. क्रमांक : एस.ई.सी.एल / दी.क्षे . / पर्या . /2022/2531 dated 05.03.2022, received in this office on 14.03.2022.

महोदय,

With reference to the above, I am directed to enclose herewith certified copy of the Monitoring Report providing status of compliance of environment clearance stipulations in accordance with MoEF& CC, New Delhi's Circular F.No. IA3-22/10/2022-IA.III[E 177258] dated 08.06.2022 as received vide letter from M/s Dipka SECL OCM, mentioned above.

This issues with approval of the Deputy Director General/Regional Officer, Integrated Regional Office, Raipur.

Following observations have been made during visit: -

- Project authorities are directed to construct the wind barrier wall as per the stipulated condition and ATR in this regard shall be submitted to this office (**Specific Condition - III & IV**).
- Project authorities are directed to expedite the matter with State Forest Department for surfaced drainage plan including surface water conservation plan for the area of influence affected by the said mining operations and the factual status may be submitted to this office (**Land reclamation and water conservation - II**).
- Project authorities are directed to properly maintain the check/garland drains and siltation ponds regularly as per the stipulated condition (**Emissions, effluents & waste disposal - VIII**).
- Project authorities are directed to submit the physical and financial targets of the implementation of the Action plan for conservation and protection of endangered flora/fauna to this office (**Ecosystem & biodiversity conservation - I**).
- Project authorities didn't provide any details of action plan on the issues raised during the public hearing and its implementation status and R & R details tot this office (**Public hearing, R&R & CSR - I**).
- Project authorities are directed to submit the comprehensive details of CSR activities undertaken, budget allocated for CSR activities for the FY 2021-22 and actual expenditure spent for the CSR activities shall be submitted to this office (**Public hearing, R&R & CSR - II**).

826  
24/08/2022  
एस.ई.सी.एल. नयारायपुर, अटलनगर  
Supte  
SLE Dipka  
29.8.22

- vii. It has been observed that a total no of 6 partially complied conditions were reported in the Ministry's Regional Office Nagpur, in its certified compliance report dated 27<sup>th</sup> November 2019, out of which as on date two conditions were complied (i.e. Specific Condition No. 4 (IX), General Condition 4.1 (j) (i)). Remaining Conditions are under process (EC NO. J 11015/487/2007-IA.II (M) PT DT. 09.03.2020, Condition - III)

**Encl:** As stated

भवदीय,

(डॉ. अरुण आदिराज)  
वैज्ञानिक 'सी'

**Copy to:**

- i. The Member Secretary, IA Division (Coal Mining), Ministry of Environment Forest & Climate Change, Indira Paryavaran Bhawan, Aliganj, Jorbagh Road New Delhi-110 003.
- ii. Addl. Director (Monitoring Cell), Ministry of Environment Forest & Climate Change, Indira Paryavaran Bhawan, Aliganj, Jorbagh Road New Delhi-110003 (Email: [shruti.rai@nic.in](mailto:shruti.rai@nic.in))

वैज्ञानिक 'सी'

वैज्ञानिक 'सी'  
11/03/2020

**File No. J-11015/487/2007-IA-II (M)**

Government of India  
Ministry of Environment Forest and Climate Change  
Impact Assessment Division

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Indira Paryavaran Bhawan,  
Jorbagh Road, N Delhi - 3  
E mail: [lk.bokolia@nic.in](mailto:lk.bokolia@nic.in) Tel: 011-20819417

**Dated: 9<sup>th</sup> January 2023**

**To,**

The General Manager (W B P & Environment)  
M/s South Eastern Coalfields Ltd,  
W B P & Environment Department, Seepat Road,  
**Bilaspur** - 495006 (Chhattisgarh)  
Email: [gmenvtsecl@gmail.com](mailto:gmenvtsecl@gmail.com)

**Sub: Dipka Opencast Coal Mine Project of capacity from 35 MTPA (Now 37.5 MTPA) to 40 MTPA (Peak) of M/s South Eastern Coalfields Limited in an mine lease area of 1999.386 ha located in Tehsil Katghora, District Korba (Chhattisgarh) - For Amendment of Terms of Reference dated 08.06.2020 reg.**

Sir,

This has reference to your Online Proposal No. IA/CG/CMIN/294232/2022 dated 21<sup>st</sup> November, 2022, on the above-mentioned subject.

2. The Ministry of Environment, Forest and Climate Change vide letter dated 8<sup>th</sup> Jun, 2020 has being granted Terms of Reference (ToR) to Dipka Opencast Coal Mine Project of capacity 40 MTPA (Peak) of M/s South Eastern Coalfields Limited in an mine lease area of 1999.386 ha located in Tehsil Katghora, District Korba (Chhattisgarh).
3. Project Proponent has requested for amendment in ToR since there is change in initial production figures i.e. from 35 MTPA to 37.5 MTPA. This change is due to PP obtaining EC for expansion in capacity under Ministry's OM dated 7<sup>th</sup> May, 2022 (10%), applicable for such project which has already obtained EC under special relaxation (exemption in public hearing without change in mine lease area) given by Ministry from time to time i.e. upto 40%. Accordingly, PP has requested to amend the ToR dated 08.06.2020 for administrative purpose.
4. The Expert Appraisal Committee in its 38<sup>th</sup> EAC meeting held during 14 -15 December, 2022 through Video Conferencing has recommended the proposal for grant of amendment in Terms of References (ToR) i.e. change in initial capacity of project from 35 MTPA to 37.5 MTPA. Based on the recommendation of EAC, Ministry of Environment, Forest and Climate Change hereby grants amendment of Terms of Reference dated 08.06.2020 for Dipka Opencast Coal Mine Project with production capacity from 37.5 to 40 MTPA of M/s South Eastern Coalfields Limited in a mine lease area of 1999.386 ha located in Tehsil Katghora, District

Korba (Chhattisgarh), under the provisions of EIA Notifications, 2006 and its amendments therein

5 All other conditions stipulated in ToR. No. F No. J-11015/487/2007-IA- II(M) dated 08.06.2020 shall remain unchanged and EIA-EMP report shall be prepared accordingly.

This issues with the approval of the competent Authority.

  
**(Lalit Bokolia)**  
**Director**

**Copy to:**

1. The Secretary, Department of Environment & Forests, Government of Jharkhand, Secretariat, Ranchi
2. The Principal Chief Conservator of Forests, Regional office (ECZ), Ministry of Environment & Forests, Bungalow No. A-2, Shyamali Colony, Ranchi – 834002
3. The Chairman, Central Ground Water Authority, Ministry of Jal Shakti, Jamnagar House, 18/11, Man Singh Road Area, New Delhi, Delhi 110001
4. The District Collector, Korba, Government of Jharkhand
5. Monitoring File/Guard File/Record File.      7. PARIVESH Portal

  
**(Lalit Bokolia)**  
**Director**