CENTRAL COALFIELDS LIMITED
(Govt. of India Undertaking)
A miniratna Cat-I Company
Darbhanga House, Ranchi-834001

एक महारत्न कंपनी
A Maharatna Company

पत्रांक : एच.ओ.डी./(पर्या.)/2020-21/1280 दिनांक: 08/05/2020

To,
Member Secretary
EAC Committee (Coal Mining Projects)
Ministry of Environment, Forest and Climate Change,
Indira Paryavaran Bhawan, 3rd Floor,
Vayu Wing, Jor Bagh Road, New Delhi -3

Subject: Submission of Additional Details in respect of Tapin South OCP –Reg.

Ref: [IA/JH/CMIN/18640/2013, F No. J-11015/155/2013- IA.II(M)]

Respected Sir,

The proposal for expansion of Tapin South Open Cast Coal Mine Project of 2 MTPA Normative/2.50 MTPA Peak of M/s Central Coalfields Limited was considered in the 53rd EAC meeting held on 20.02.2020. The additional details for the projects were sought on Parivesh Portal on 06.05.2020.

. The compliance to the additional details sought is given below for your kind consideration.

SN	Additional Detail Sought	Compliance
1	PP shall provide the status of recommendation of sub-committee site visit on 15th May, 2018	The status of recommendations of sub-committee site visit is enclosed as **Annexure-1.**
2	Status of Consent to Operate vis-à-vis past production details	The status of CTO issued and past production details is enclosed as **Annexure-2.**
3	One-month baseline data on same monitoring station and comparison with earlier data.	The environmental baseline data was generated between March to May 2017 which is valid till May 2020 (Enclosed as **Annexure-3**). Further, as per the direction, the generation of one month of baseline data is under progress.
4	Permission for approval of extraction of ground water from Central Ground Water Authority.	The application for obtaining approval from Central Ground Water Authority has been submitted vide letter no 21-4/396/JH/MIN/2019 dated: 29.03.2019. The copy of receiving is enclosed as **Annexure-4.**
5	Compliance of issues address during Public Hearing held on 27th February, 2016	The updated compliance status of issues addressed during Public Hearing is enclosed as **Annexure-5.**

Considering above, it is requested that the reply of ADS may please be accepted and Tapin South OCP be considered in the ensuing EAC meeting.

Yours faithfully,

8/5/2020
HoD (E&F)
Central Coalfields Limited, Ranchi

Scanned with CamScanner

Annexure -1

Annexure -1

Status of recommendation of sub-committee site visit on 15th May 2018:

<table>
<tr><th>SN</th><th>Recommendations</th><th>Updated Status</th></tr>
<tr><td>1</td><td>A model scheme of eco-restoration over back-filled area, external OB dumps and around the mine premises with water conservation measures for adoption.</td><td>1. The project includes an old external dump, the maximum height of which is about 30 meter above ground level. As per the mine plan/project report, the internal dump will be merged with the present external OB dump and the height of merged dumps will be increased upto 60 meter above ground level.
2. As per the approved mine closure plan of the project about 12.95 Crores has been kept towards reclamation and plantation activities. (Enclosure-1)
3. CCL has requested Institute of Forest Productivity (constituent of ICFRE) for a scientific study on eco-restoration taking into account the native eco-system of the area. On the basis of advice of IFP, the backfilled area in Tapin South OCP will be ecologically restored in conformity with local eco-system.
4. The stored water in an adjacent quarry/mine void is utilized by State Govt. for supplying drinking water, after treatment, to Mandu town. After restoration of mine in post closure phase, the mine void water will be similarly used for community purpose as per MoU with State Govt.</td></tr>
<tr><td>2</td><td>Stabilisation of OB benches facing river Bokaro including catch drain, toe wall and plantation has to be provided.</td><td>1. The total length of toe wall along the periphery of OB dump and Bokaro River is approximately 600 m which has been constructed.(Work order enclosed as Enclosure-2) at a tentative cost of Rs. 23 Lakhs. Photographs of the work are given as Photo 1 & Photo 2.
2. Seed ball plantation over an area of 0.5 Ha along Toe-wall has been done. A total of 600 seed balls have been planted along the Toe-wall.</td></tr>
<tr><td>3</td><td>A customized CSR/R & R Scheme in place with compliance to provisions of RFCTLARR 2013, if applicable.</td><td>1. CSR programmes in mines of CCL are undertaken as per Companies Act 2013. The action plan is prepared based on the recommendation of local representatives and stakeholders. The CSR expenditure of Hazaribagh Area (2016-17 to 2019-20) is given below:
<table>
<tr><th>SN</th><th>Particulars</th><th>Sum</th></tr>
<tr><td>1</td><td>Infrastructure</td><td>13.08</td></tr>
<tr><td>2</td><td>Education</td><td>10.61</td></tr>
<tr><td>3</td><td>Drinking Water</td><td>48.81</td></tr>
<tr><td>4</td><td>Health</td><td>37.91</td></tr>
<tr><td>5</td><td>Sanitation</td><td>7.48</td></tr>
<tr><td>6</td><td>Environment</td><td>8.95</td></tr>
<tr><td>7</td><td>Skill Development</td><td>11.34</td></tr>
<tr><td>8</td><td>Miscellaneous</td><td>14.35</td></tr>
<tr><td colspan="2">Total</td><td>152.53</td></tr>
</table>
2. The R & R scheme is prepared on the basis of CIL R & R policy. Two villages i.e Phusri and Bahera will be affected by the project. Number of PAFs is approximately 200 and total employment proposed is 182.Out of 182 employments, 47 employments has been given to PAFs.
3. The shifting of PAFs will be done after issuance of EC (Year-1). Tentative timeline is given below:
<table>
<tr><th rowspan="2">Name of Village</th><th rowspan="2">Total No of PAFs To Be Shifted</th><th colspan="5">Year of Shifting</th></tr>
<tr><th>Year-1</th><th>Year - 2</th><th>Year - 3</th><th>Year- 4</th><th>Year- 5</th></tr>
<tr><td>Phusri</td><td>200</td><td>20</td><td>30</td><td>30</td><td>50</td><td>70</td></tr>
</table></td></tr>
</table>

<table>
<tr><td></td><td></td><td>4. The scope of the CIL R & R Policy states that “While implementing the policy it is to ensure that the provision of the concerned Acts applicable and rules mentioned there under shall not be violated”. This will ensure compliance of provisions of R & R for Tapin South OCP with applicable laws.</td></tr>
<tr><td>4</td><td>Need-based CSR schemes matching with inherent skills of PAPs and there-after scope of its harnessing through intervention of PP in order to strive towards inclusive growth. This should specifically include the requirement of the two affected villages in the close vicinity of the mine.</td><td>1. CSR programmes in mines of CCL are undertaken as per Companies Act 2013. The action plan is prepared based on the recommendation of local representatives and stakeholders. The CSR expenditure of Hazaribagh Area (2016-17 to 2019-20) is given below:

<table>
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</table>
2. Several skill development works undertaken at Hazaribagh Area in last three years includes motor driving training, mobile repair training, Stitching and embroidery training and beautician training etc.</td></tr>
<tr><td>5</td><td>Data presented in the report should be carefully revised to overcome inconsistency or any ambiguity.</td><td>1. Data pertaining to the project area as per earlier approved mining plan and EMP is as given under:

<table>
<tr><th rowspan="2">SN</th><th rowspan="2">Particular</th><th colspan="3">Land required</th></tr>
<tr><th>Forest</th><th>Non - Forest</th><th>Total</th></tr>
<tr><td>1</td><td>Quarry</td><td>0.0</td><td>89.78</td><td>89.78</td></tr>
<tr><td>2</td><td>Industrial area</td><td>0.0</td><td>6.75</td><td>6.75</td></tr>
<tr><td>3</td><td>Haul road</td><td>0.0</td><td>1.9</td><td>1.9</td></tr>
<tr><td>4</td><td>External OB Dump</td><td>24.71*</td><td>17.59</td><td>42.30</td></tr>
<tr><td>6</td><td>Green Belt</td><td>0.0</td><td>18.64</td><td>18.64</td></tr>
<tr><td>7</td><td>Safety zone</td><td>0.0</td><td>18.69</td><td>18.69</td></tr>
<tr><td colspan="2">Total</td><td>24.71</td><td>153.35</td><td>178.06</td></tr>
</table>
2. The land required for external Dump included 24.71 Ha released & utilized forest before 1980. Accordingly, the mining plan has now been revised to exclude the 24.71 Ha forestland released & utilized forest before 1980.The approval of mining plan & mine closure plan along with the plan has been submitted to MoEF&CC. The revised project area after revision of mining plan is given below:
<table>
<tr><th rowspan="2">SN</th><th rowspan="2">Particular</th><th colspan="3">Land required</th></tr>
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<tr><td colspan="2">Total</td><td>0.0</td><td>151.93</td><td>151.93</td></tr>
</table></td></tr>
</table>

6	Impact assessment of Jharna Nallah diversion on the local riverine system considering it as a tributary to River Bokaro.	1. Jharna nala is a seasonal 2nd order stream, originating from north of the project, which flows towards south to meet Bokaro river. The seasonal Jharna nala, which flows towards south through the mining area, will be diverted along a stretch of about 2000 m. The diversion channel of nala will meet Bokaro river in upstream in southwest direction of mine. As such the flow of nallah to Bokaro river will be minimally impacted due to diversion. 2. Adequate measures shall be undertaken for ensuring that there is no impact on local riverine system. The diverted route of nallah is attached and **enclosure-3**.

Photo 1 & 2: Toe wall along the periphery of OB dump and Bokaro River

Enclosure -1

सेंट्रल कोलफील्ड्स लिमिटेड
(कोल इंडिया की अनुषंगी इकाई)

CENTRAL COALFIELDS LIMITED
(A Subsidiary of Coal India Limited)
CIVIL ENGINEERING DEPARTMENT
HAZARIBAGH AREA
वेबसाइट/Website : https://www.centralcoalfields.in

CCL

A miniratna cat-I company

No. GM(H)/SO(C)/2019/ 846. Dated 17/2/2020

Registered post

To,
M/S R. D. P. Construction
At : Prasad General stores, Kurmidih
Balidih, Bokaro.

Sub :Award of work for "***Construction of Toe wall between Bokaro River and quarry OB edge under Tapin South OCP of Hazaribagh Area.***

Ref.: e-Tender Notice No. 53 of 2019 – 20 vide no.GM(H)/SO(C)/Tender/2019-20/663, Dated 23.12.2019 , Bid submission end date on 08.01.2020 and Date of opening of tender [Cover I (Technical bid) & Cover II (Price bid)] on 09.01.2020. Tender Id -2019_CCL_159591_1.

Dear Sir,

In response to your tender for the subject work mentioned above, this is to inform you that your offer amounting to ₹ 23,52,958.46 (Rupees Twenty Three lakhs fifty two thousand Nine hundred fifty eight and paise forty six only) (excluding GST) to undertake the work has been accepted by CCL, subject to the following stipulations / conditions which are supplementaries / complementaries to the conditions of the tender documents : –

1. GST Amount @ 18.00% on Quoted Value of the bidder is ₹ 4,23,532.50 only. The payment of GST and GST Compensation Cess by the service availer (i.e. CCL) to bidder/ contractor (If GST payable by bidder/ contractor) would be made only on the latter submitting a Bill/Invoice in accordance with the provision of relevant GST Act and the rules made thereunder and after online filing of valid return on GST portal. The payment of GST and GST Compensation Cess is responsibility of the Contractor.

2. The period of completion of work shall be 90 (Ninety) days from expiry of 10 (Ten) days from the issue of this award of work or within 07 (Seven) days of handing over of the site, whichever is later.

3. The earnest money amounting to ₹ 31,000.00/- deposited online through Axis Aggregator vide Bank/UTR No. 59023253 and Ref. no. 164424478159, has been retained by the company (CCL) as part of Performance Security Money.

   You are further required to deposit ₹ 86648.00/- (Rupees Eighty six thousand six hundred fourty eight) only with the company in the form of a Govt. Securities or FDR duly pledged in favour of CCL or demand draft in favour of Central Coalfields Limited, Kedla group from any Scheduled Bank payable at Charhi / Hazaribaghi within 28 (Twenty eight) days of issuance of this letter thus making the total performance security money amount to ₹ 117648.00/- (Rupees One Lakh seventeen thousand six hundred fourty eight) only i.e. 5% of the contract amount. If you fail to deposit the above amount within the prescribed time, the Award of Work may be cancelled and Earnest Money will be forfeited.

4. All running on A/c bills shall be paid at 95% of the work value. The 5% deduction towards retention money will form Second Part of Security deposit and shall be refunded after issue of no defect certificate.

14/2/2020

5. You shall comply with Contract Labour (Regulation and Abolition) Act and make payments to your workmen accordingly. In case you engage 10 & above labourers in the work on any working day you shall be required to submit registration certificate under the B.O.C.W. (RE&CS) Act 1996 and in case you engage 20 (Twenty) or more labourers in the work on any working day you shall be required to submit Labour license under Contract Labour (Regulation & Abolition) Act 1970 for the same.

6. You shall comply with CMPF/any other appropriate PF authority's clause of tender document and you will have to submit "No dues certificate" from Provident Fund Authority, Ministry of Labour, Govt. of India at Jharkhand before finalization of final bill.

7. Work shall be executed strictly as per specification in accordance with laid down norms of company.

8. You shall be responsible for arranging all necessary tests of materials as per instruction of Project Engineer(Civil), TSOCP , Hazaribagh Area / Engineer-in-Charge at your own cost as per terms & conditions of Tender Document.

9. You shall make your own arrangement for all materials, tools, staff and labour required for the above work. The rates for the work include all taxes (excluding taxes subsumed in GST), octoroi, carriage, tools etc. for execution and completion of work.

10. You shall arrange necessary water for the work & for your own establishment. However, if available and feasible the company may arrange water at one point near the work site for which recovery @ 1% (One percent) of the contract value of work done shall be made from your bills.

11. The technical personnel shall be engaged by you on work site as per terms and conditions of tender document.

12. You shall not employ on this contract any close relatives of CCL's employee.

13. Before clearance of final bill you will submit royalty clearance from concerned Mining Officer.

14. Your tax invoice raised must be in compliance of relevant GST Acts, Rules and notifications made thereunder and should bear the GSTIN of CCL. The rate and amount of IGST/CGST/SGST, GST (Compensation to State) cess (if any), related to execution of work shall be shown separately in Tax invoice.

15. The IGST/CGST/SGST and GST(Compensation to State) cess(if any), as applicable at the time of execution of the work, shall be paid extra against submission of proper tax invoice, as referred above by you so that CCL is able to avail Input tax Credit(If available) of such IGST/CGST/SGST, GST (Compensation to State) cess (if any) reflected in the invoice.

16. If the ITC claimed is disallowed due to failure on your part in incorporating the tax invoice issued to CCL in its relevant returns under GST, payment of IGST/CGST/SGST, GST (Compensation to State) cess (if any) shown in tax invoice to the tax authorities, issue of improper tax invoice or any other reason whatsoever, the applicable taxes and cess paid based on such tax invoice alongwith interest, penalties if any levied on CCL, shall be recovered from your current Bills and any other dues.

17. The amount of IGST/CGST/SGST and GST cess if any as indicated in Tax invoice shall be paid only when they appear in GSTR 2A of CCL and you have filed the valid return in accordance with provisions of the GST acts and Rules made thereunder.

18. In the event of any additional tax liabilities accruing on you due to classification issue or for any other reason the liability of CCL shall be restricted to the amount of GST charged on original tax invoice issued by you.

19. You shall pass on the benefit on account of reduction in rate of tax on any supply of goods and / or services or any benefit of the input tax credit to CCL by way of commensurate reduction in prices in terms of Anti profiteering clause of GST Act 2017.

20. You are requested to submit the following for execution of agreement within 28 days from the issue of this Award of Work : –

a. An amount of ₹ 86648.00/- (Rupees Eighty six thousand six hundred fourty eight) only towards Performance Security in the any of the form given below :-

i. Govt. Securities or FDR duly pledged in favour of Central Coalfields Limited, Kedla group.

ii. Demand Draft drawn in favour of Central Coalfields Limited, Kedla group on any Scheduled Bank payable at its Branch at Charhi / Hazaribagh.

b. Registration / License under B.O.C.W. (RE&CS) Act / Contract Labour (Regulation & Abolition) Act / Insurance (if any as per NIT / Tender Document) before execution of agreement / any payment are made to you against this work.

c. Non-judicial stamp paper worth ₹ 100/= only for execution of agreement alongwith partnership deed / Memorandum & Articles of Association and power of attorney if any, GSTIN etc.

21. You are requested to contact the Project Engineer(Civil), TSOCP, Hazaribagh Area, for further needful action regarding execution of work.

Yours faithfully

14/2/2020

Staff Officer (Civil)
Hazaribagh Area.

Copy to :

1. GM, Hazaribagh Area
2. S. O (Mining), Hazaribagh Area
3. Area Finance Manager, Hazaribagh Area.
4. Project Engineer(Civil)/TSOCP
5. Overseer (Civil)/TSOCP

In reference to Budget certification vide no. 19-20/R-4/18/2744 dated 14.02.2020 For amount of Rs 2776490.98 only , under head O/C PMO.

Enclosure -2

15	Diversion of Jharna Nala	200.0
Total		**761.95**

4.0 Mine Closure activities and cost

Mine Closure activities of Tapin South Expansion OCP would be a constant exercise for the mine which would begin with the commencement of mining operations and continue till post closure. The mine closure activities would naturally entail certain expenditures, which will have to be borne by the mine operator.

Mine Closure Plan of Tapin South OCP was earlier approved by CCL Board in its 417th meeting held on 19/20.08.2015 with project area of 277.15 ha and mine closure cost of Rs. 3924.39 lakhs. Although the mine closure plan was approved but the escrow account of the mine was not opened.

4.1 The mine closure cost envisaged in existing mine closure plan is Rs. 1654.13 lakhs. However, it will be revised as the area and life of mine has been reduced .

Detail of escrow account

ESCROW ACCOUNT	
Project Area (Ha)	151.93
Escrow amount per Ha for OC project as on Aug, 2009 (in Rs Lakhs)	6
Corpus Value based on Aug, 2009 rate (in Rs. Lakhs)	911.58
WPI as on Aug, 2009 (base year 2004-05)	129.6
WPI as on April, 2019 (base year 2011-12)	120.9
Current value of Corpus (in Rs. Lakh)	1369.12
Amount deposited (including interest) till 01.04.19 (in Rs. Lakh)	**0**
Balance Corpus for which provision is to be made as on 01.04.19 (in Rs. Lakh)	1369.12
Balance Life of mine as on 01.04.19 (in years)	3
Annual corpus (Balance corpus / Balance life, in Rs. Lakh)	
Year	**Amount in Lakh (Rs.)**
1	456.37
2	479.19
3	503.15

Total	**1438.71**
Total Mine closure cost (in Rs Lakhs)	**1438.71**

As per above an amount will be deposited every year up to the last year of mine life.
The amount calculated by the above formula shall be deposited every year by CCL in the Escrow amount opened with the Coal Controller organization in a scheduled Bank. An agreement, outlining detailed terms and conditions of operating the said Escrow Account shall be executed amongst CCL, the Coal Controller and the commercial Bank.

However the additional amount beyond the escrow account, if any estimated later on, will be provided by the mine operator after estimating the final mine closure cost five years prior to mine closure (as per the mine closure guideline).

Details of Mine Closure Cost

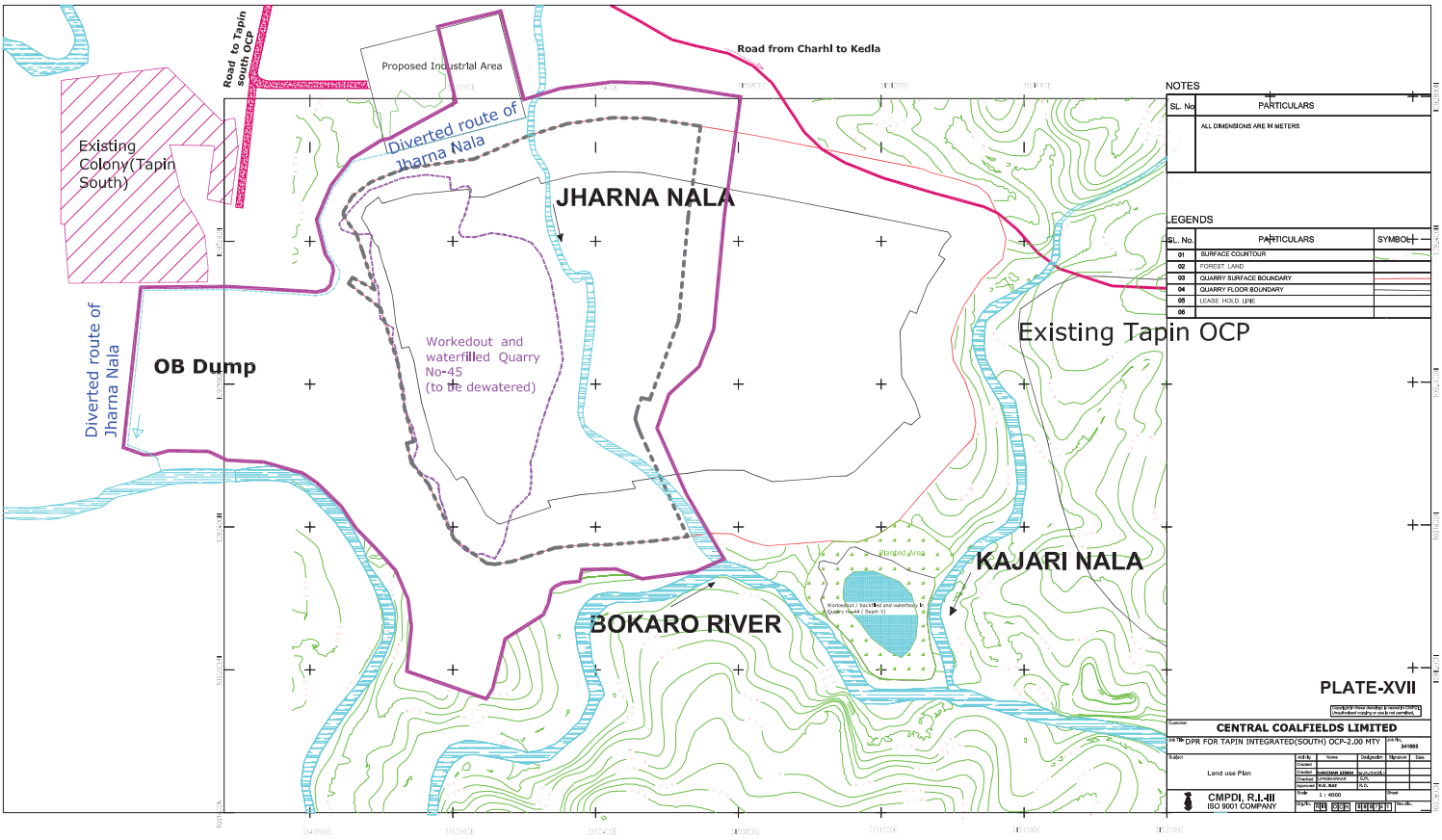
The above escrow account will meet the cost of different activities of Mine Closure cost which is given in the table below:

PROGRESSIVE AND FINAL MINE CLOSURE COST DISTRIBUTION				
SL. NO.	**ACTIVITY**	**% OF TOTAL MINE CLOSURE COST**	**AMOUNT IN LAKH (RS.)**	**Remarks**
A	**Dismantling of Structures**			To be included in final mine closure plan
	Service Buildings	0.20	2.88	
	Residential Buildings	2.67	38.41	
	Industrial structures like CHP, Workshop, field sub-station etc.	0.30	4.32	
B	**Permanent Fencing of mine void and other dangerous area**			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	21.58	
C	**Grading of highwall slopes**			To be included in final mine closure plan
	Levelling and grading of highwall slopes	1.77	25.47	
D	**OB Dump Reclamation**			

	Handling/ Dozing of OB Dump and back filling for progressive mine closure	71.00	1021.48	Equal weightage throughout the life of the mine
	Handling/ Dozing of OB Dump and back filling for final mine closure	17.66	254.08	To be included in final mine closure plan
	Bio-reclamation including soil spreading, plantation and post care	0.40	5.75	Equal weightage throughout the life of the mine
E	**Landscaping**			
	Landscaping of the open space in lease hold area for improving its esthetic	0.30	4.32	Equal weightage throughout the life of the mine
F	**Plantation**			
	Plantation over cleared area obtained after dismantling	0.50	7.19	To be included in final mine closure plan
	Plantation around the quarry area and in safety zone	0.20	2.88	Equal weightage throughout the life of the mine
	Plantation over the external OB Dump	0.02	0.29	Equal weightage throughout the life of the mine
G	**Post Closure Env Monitoring/ testing of parameters for three years**			For three years after mine closure
	Air Quality	0.22	3.17	
	Water Quality	0.20	2.88	
H	**Enterpreneurship Development (Vocational/ skill development training for sustainable income of affected people**	0.26	3.74	Equal weightage throughout the life of the mine
I	**Miscellaneous and other mitigative measures**	2.00	28.77	Equal weightage throughout the life of the mine
J	**Post Closure Manpower cost for supervision**	0.80	11.51	To be included in final mine closure plan
	TOTAL	**100.00**	**1438.71**	

Enclosure -3

PLAN SHOWING DIVERSION OF JHARNA NALA



Annexure -2

Annexure -2

Tapin South Production details vis-à-vis CTO Details

Year	Coal Production (In Tes)	Period of CTO as per the CTO application	Status of CTO along with application details & fee submitted
2001-02	78540	01.10.2001 to 30.09.2002 (Emission CTO) 01.10.2001 to 30.06.2002 (Discharge CTO)	• Application made to BSPCB Dated: 01.05.2001 • CTO issued by BSPCB vide memo T-2493 Dated: 07.09.2001
2002-03 to 2010-11	Mine not operational	--	--
2011-12	109063	01.10.2011 to 30.09.2012	• Application submitted in hardcopy vide no: 179 with DD no: 019730 Dated: 27.12.2011
2012-13	198356	01.10.2012 to 30.09.2013	• Application submitted in hardcopy vide no: 107 with DD no: 020728 Dated: 22.09.2012
2013-14	319031	01.10.2013 to 30.09.2014	• Application submitted in hardcopy vide no: 79 with DD no: 015656 Dated: 01.10.2013
2014-15	267074	01.10.2014 to 30.09.2015	• Application submitted in hardcopy with DD no: 00342 Dated: 25.09.2014
2015-16	59116	01.10.2015 to 30.09.2016	• Aplication submitted online with application No: 625241 Dated: 28-05-2016 along with fees
2016-17	0	01.10.2016 to 30.09.2019	• Application submitted online with application No:1167320 Dated: 25.11.2016 with fees of 3 Years. • CTO issued on 26.03.2019 valid upto 30.06.2019 vide Ref No: JSPCB/HO/RNC/CTO-1167320/2019/571
2017-18	0		
2018-19	55590		
2019-20	316318	01.10.2019 to 30.09.2020	• Application submitted online with application No: 5319833 Dated: 11.05.2019 with fees of 1 Years. • The application is in-progress with JSPCB

Annexure -3

BASELINE ENVIRONMENTAL DATA GENERATION FOR TAPIN OCP PROJECT OF CENTRAL COALFIELDS LTD., RAMGARH DISTRICT, (JHARKHAND)

PRE MONSOON

(March – MAY 2017)

SPONSOR

M/s. CENTRAL MINE PLANNING & DESIGN INSTITUTE LTD.

REGIONAL INSTITUTE – III,

GONDWANA PLACE, KANKE ROAD, RANCHI, (JHARKHAND)

PREPARED BY

CEG TEST HOUSE AND RESEARCH CENTRE PVT. LTD.

CEG Test House and Research Centre Pvt. Ltd.,
B-11(G), Malviya Industrial Area, Jaipur (Raj.)
Tel: +91-141-2751801/02/03/04; Fax: +91-141-2751806
URL: www.cegtesthouse.com, e-mail: info@cegtesthouse.com

Ambient Air Quality

Ambient Air Quality Monitoring Locations

S. No.	Location Name	Classified Area	Classified Area	Station Code	Direction from Mine Boundary	Justification for Site selection
1	P.O office Near Bahera Village	Core Zone	Industrial Area	A 1	NW	Representative location in Project area.
2	Phushri Village	Core Zone	Residential Area	A 2	NE	Village in Core Zone
3	Charhi Village	Buffer Zone	Residential Area	A 3	NW	Dense habitation at Charhi village
4	Kajri Village	Buffer Zone	Residential Area	A 4	NNE	Habitation near Core Zone
5	Rangabera Village	Buffer Zone	Residential Area	A 5	S	Habitation near Core Zone
6	Nunyaberai Village	Buffer Zone	Residential Area	A 6	SE	Habitation in Buffer Zone

Plate VIII shows the 10 Km Buffer zone of Tapin South Expansion OCP Mine showing Baseline Monitoring Locations of Air, Noise, Water & Soil.

Table 3.13: Summary of Ambient Air Quality (PM_{10}, $PM_{2.5}$ SO2 and NOx):

Season: Pre-Monsoon (March to May, 2017)

Name of monitoring equipment used			**PM_{10} Resp. Dust Sampler**			**$PM_{2.5}$ Fine Dust Sampler**			**NO_x Resp. Dust Sampler**			**SO_2 Resp. Dust Sampler**		
Permissible AAQ standard *														
Industrial / Coal mine, Residential, rural & other areas			100			60			80			80		
Sensitive areas			100			60			80			80		
Monitoring Location	No. of Samples Drawn	Category* (R, I, S)	Min.	Max.	98% tile	Min.	Max	98% tile	Min.	Max.	98% tile	Min.	Max.	98% tile
Core zone														
A1	24	I	159	245	229	43	96	87	21.8	38.7	37.6	15.5	33.7	27.1
A2	24	I	159	242	237	44	102	101	22.9	46.4	46.1	18.1	28.2	27.6
Buffer zone														
A3	24	R	60	97	96	22	40	40	24.3	40.8	40.7	14.6	35.2	33.3
A4	24	R	67	95	94	24	37	37	25.7	38.0	37.7	11.1	37.5	33.6
A5	24	R	62	96	95	23	41	39	23.7	38.0	37.3	16.4	40.6	39.6
A6	24	R	55	92	90	22	38	36	21.5	46.6	44.8	14.9	35.6	31.1

* RPM has been compared with Coal Mines standard in Core Zone and other than Core Zone is as per NAAQS.
* SO_2& NO_x have been compared with Coal Mines standard in Core Zone and other than Core Zone are as per NAAQS.
*R = Residential; I = Industrial; S = Sensitive

WATER QUALITY STATUS

Table 3.16: Drinking Water Quality Monitoring Locations

S. No.	Location Name	Station Code	Distance (m.) from Mine	Direction from Mine
1	45 Colony Near Project office (Hand Pump)	DW1	400	NW
2	Tapin South Expansion North Near Mine Dump Area	DW2	2320	E

Table 3.17: Surface Water Quality Monitoring Locations

S. No.	Location Name	Station Code	Distance (m.) from Mine	Direction from Mine
1	Bokaro river Up Stream	SW1	2510	NW
2	Bokaro river Down Stream	SW2	1,000	SE

Table 3.18: Effluent Water Quality Monitoring Locations

S. No.	Location Name	Station Code	Distance (m.) from Mine	Direction from Mine
1	Mine Discharge Water (Tapin South Expansion North)	EW1	2330	E
2	Quarry No. 44 Mining Area Tapin South Expansion South	EW2	1000	SE

3.3.4 Result and Discussion of Water Quality

Table 3.23: Drinking Water Quality Result

Season: Pre-Monsoon (March to May, 2017)

S. No.	Location Name	Station Code	Date of Sampling	Date of Sample Tested
1	45 Colony Near Project office (Hand Pump)	DW1	15/05/2017	22/05/2017 to 27/05/2017
2	Tapin South Expansion North Near Mine Dump Area (Hand Pump)	DW2	15/05/2017	22/05/2017 to 27/05/2017

Sl. No.	Parameters	Unit	Limits as per IS:10500 2012		DW 1	DW 2
			Requirement Acceptable Limit	Permissible Limit in the absence of Alternate source		
	Physical parameters					
1	pH Value (at 25°C)	-	6.5-8.5	No relaxation	6.6	7.7

2	Temperature	°C	-	-	32.8	30.1
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable
4	Colour	Hazen	5	15	<1	<1
5	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable
6	Turbidity	NTU	1	5	<1	<1
7	Total Dissolved Solids	mg/l	500	2000	215.0	392.8
	Chemical parameters					
8	Total Alkalinity (as $CaCO_3$)	mg/l	200	600	128.76	84.36
9	Total Hardness (as $CaCO_3$)	mg/l	200	600	192.98	344.34
10	Calcium (as Ca)	mg/l	75	200	56.12	75.83
11	Chloride (as Cl)	mg/l	250	1000	39.99	51.98
12	Fluoride (as F)	mg/l	1	1.5	0.40	0.50
13	Free Residual Chlorine	mg/l	0.2	1	<0.18	<0.18
14	Nitrate (as NO_3)	mg/l	45	No relaxation	2.7	4.5
15	Phenolic Compounds (as C_6H_5OH)	mg/l	0.001	0.002	<0.001	<0.001
16	Cyanide (as CN)	mg/l	0.05	No relaxation	<0.008	<0.008
17	Anionic Detergents (as MBAS)	mg/l	0.2	1	<0.05	<0.05
18	Sulphate (as SO_4)	mg/l	200	400	7.042	183.37
19	Hexavalent Chromium (as Cr^{+6})	mg/l	-	-	<0.005	<0.005
	Trace/Heavy metals					
20	Aluminium (as Al)	mg/l	0.03	0.2	<0.01	<0.01
21	Boron (as B)	mg/l	0.5	1	<0.01	<0.01
22	Copper (as Cu)	mg/l	0.05	1.5	<0.005	<0.005
23	Iron (as Fe)	mg/l	0.3	No relaxation	<0.10	<0.10
24	Manganese (as Mn)	mg/l	0.1	0.3	<0.005	<0.005
25	Selenium (as Se)	mg/l	0.01	No relaxation	<0.005	<0.005
26	Zinc (as Zn)	mg/l	5	15	<0.005	<0.005
27	Cadmium (as Cd)	mg/l	0.003	No relaxation	<0.001	<0.001
28	Lead (as Pb)	mg/l	0.01	No relaxation	<0.005	<0.005
29	Mercury (as Hg)	mg/l	0.001	No relaxation	<0.0005	<0.0005
30	Arsenic (as As)	mg/l	0.01	0.05	<0.005	<0.005
	Bacteriological parameter					
31	Faecal Coliform	MPN/100ml	Shall not be detectable in any 100ml sample		Nil	Nil

Table 3.24: Surface Water Quality Result

Season: Pre-Monsoon (March to May, 2017)

S. No.	Location Name	Station Code	Date of Sampling	Date of Sample Tested
1	Bokaro river Up Stream	**SW 1**	15/05/2017	22/05/2017 to 27/05/2017
2	Bokaro river Down Stream	**SW 2**	15/05/2017	22/05/2017 to 27/05/2017

Sl. No.	Parameters	Unit	IS 2296: Class-'C' Standards	SW 1	SW 2
	Physical parameters				
1	pH Value (at 25°C)	-	6.5-8.5	8.5	8.5
2	Temperature	°C	-	31.3	32.4
3	Odour		300	Agreeable	Agreeable
4	Colour	Hazen	-	<1	<1
5	Total Suspended Solids	mg/l		78	14
6	Total Dissolved Solids	mg/l	1500	241	136
	Chemical parameters				
7	Total Hardness (as $CaCO_3$)	mg/l	-	155.14	1010.33
8	Calcium (as Ca)	mg/l	-	33.37	171.38
9	Magnesium (as Mg)	mg/l	-	17.47	141.61
10	Chlorides (as Cl^-)	mg/l	600	29.99	319.90
11	Fluoride (as F)	mg/l	1.5	0.70	0.30
12	Phenolic Compounds (as C_6H_5OH)	mg/l	0.005	<0.001	<0.001
13	Sulphate (as SO_4)	mg/l	400	12.10	264.76
14	Hexavalent Chromium (as Cr^{+6})	mg/l	0.05	<0.005	<0.005
15	Cyanide (as CN)	mg/l	0.05	<0.008	<0.008
16	Nitrate Nitrogen	mg/l	10	0.90	1.30
17	Oil & Grease	mg/l	-	<0.5	<0.5
18	Dissolved Oxygen	mg/l	4 (Min)	5.2	5.3
19	Biochemical Oxygen Demand (3 days at 27°C)	mg/l	30	16.2	15.3
	Trace/Heavy metals				
19	Copper (as Cu)	mg/l	1.5	<0.005	<0.005
20	Iron (as Fe)	mg/l	50	<0.10	<0.10
21	Manganese (as Mn)	mg/l	-	<0.005	<0.005
22	Selenium (as Se)	mg/l	0.05	<0.005	<0.005
23	Zinc (as Zn)	mg/l	15	<0.005	<0.005
24	Cadmium (as Cd)	mg/l	0.01	<0.001	<0.001
25	Lead (as Pb)	mg/l	0.1	<0.005	<0.005
26	Mercury (as Hg)	mg/l	-	<0.0005	<0.0005
27	Arsenic (as As)	mg/l	0.2	<0.005	<0.005
	Bacteriological parameter				
28	Total Coliform	MPN/100ml	5000	7	8

Table 3.25: Effluent Water Quality Result

Season: Pre-Monsoon (March to May, 2017)

S. No.	Location Name	Station Code	Date of Sampling	Date of Sample Tested
1	Mine Discharge Water (Tapin North)	EW1	15/05/2017	22/05/2017 to 27/05/2017
	Quarry No. 44 Mining Area (Tapin South)	EW2	15/05/2017	22/05/2017 to 27/05/2017

Sl. No.	Parameters	Unit	Environmental Protection Act. 1986 (Schedule VI) - Inland surface water	EW 1	EW 2
	Physical parameters				
1	pH Value (at 25°C)	-	5.5-9.0	8.6	8.4
2	Temperature	°C	Shall not exceed 5°C above the receiving water temperature	34	33.2
3	Odour	-	-	Agreeable	Agreeable
4	Colour	Hazen	-	<1	<1
5	Turbidity	NTU	-	<1	<1
6	Total Suspended Solids	mg/l	100	78	14
	Chemical parameters				
7	Total Hardness (as $CaCO_3$)	mg/l	-	1770.9	143.8
8	Calcium (as Ca)	mg/l	-	364.0	21.2
9	Chlorides (as Cl^-)	mg/l	-	38.0	8.0
10	Fluoride (as F)	mg/l	2	0.70	0.5
11	Sulphate (as SO_4)	mg/l	-	298.2	65.0
12	Sulphide (as H_2S)	mg/l	2	<0.5	<0.5
13	Free Residual Chlorine	mg/l	1	< 0.18	< 0.18
14	Phenolic Compounds (as C_6H_5OH)	mg/l	1	< 0.001	< 0.001
15	Hexavalent Chromium (as Cr^{+6})	mg/l	0.1	< 0.005	< 0.005
16	Cyanide (as CN)	mg/l	0.2	<0.008	< 0.008
17	Dissolved Phosphate (as P)	mg/l	5	0.6	0.05
18	Oil & Grease	mg/l	10	< 0.5	< 0.5
19	Total Kjeldahl Nitrogen (TKN)	mg/l	100	7.6	8.5
20	Ammonical Nitrogen (as NH_3-N)	mg/l	50	1.68	1.96
21	Nitrate Nitrogen (as NO_3-N)	mg/l	10	3.6	3.2
22	Chemical Oxygen Demand	mg/l	250	64	76
23	Biochemical Oxygen Demand (3 days at 27°C)	mg/l	30	18.6	22.2
	Trace/Heavy metals				
24	Aluminium (as Al)	mg/l	-	<0.1	<0.1
25	Boron (as B)	mg/l	-	<0.1	<0.1
26	Copper (as Cu)	mg/l	3	<0.05	<0.05

27	Iron (as Fe)	mg/l	3	<0.10	<0.10
28	Manganese (as Mn)	mg/l	2	<0.05	<0.05
29	Selenium (as Se)	mg/l	0.05	<0.05	<0.05
30	Zinc (as Zn)	mg/l	5	<0.05	<0.05
31	Cadmium (as Cd)	mg/l	2	<0.01	<0.01
32	Lead (as Pb)	mg/l	0.1	<0.05	<0.05
33	Mercury (as Hg)	mg/l	0.01	<0.01	<0.01
34	Nickel (as Ni)	mg/l	3	<0.05	<0.05
35	Arsenic (as As)	mg/l	0.2	<0.05	<0.05
36	Total Chromium (as Cr)	mg/l	2	<0.05	<0.05
37	Vanadium (as V)	mg/l	0.2	<0.05	<0.05

3.4 NOISE QUALITY MONITORING STATUS

3.4.1 Rationale behind ambient noise quality monitoring

A preliminary reconnaissance survey has been undertaken to identify the major noise generating sources in the area. Noise monitoring locations have been identified based on the activities in the inhabited and mining areas.
The ambient noise quality monitoring stations were set up at six locations, two locations in core zone and four locations in buffer zone area.

Locations were selected for noise quality monitoring in study area with consent of customer. Ambient noise monitoring was done for 24 hours, twice a month during study period. Details of the selected locations are as follows:

Table 3.26: Noise Quality Monitoring Locations

S. No.	Location	Classified Area	Category	Station Codes	Direction from Mine boundary	Justification for Site selection
1	PO Office, near Bahera Village	Core Zone	Industrial Area	N 1	NW	Village near Charhi-Tapin South Expansion Road
2	Phushari Village	Core Zone	Industrial Area	N 2	NE	Village in Core Zone
3	Charhi Village	Buffer Zone	Residential Area	N 3	NW	Dense habitation at Charhi village
4	Kajri Village	Buffer Zone	Residential Area	N 4	NNE	Habitation near Core Zone
5	Rangabera Village	Buffer Zone	Residential Area	N 5	S	Habitation near Core Zone
6	Nunyaberai village	Buffer Zone	Residential Area	N 6	SE	Habitation in Buffer Zone

Table 3.32: Statistical Summary of Noise Quality during study
Season: Pre-Monsoon (March to May, 2017)

Sl. No.	Category	Location Code	Shift	Average	Max	Min	CPCB Noise Standard
1	Industrial	N 1	Day	65.4	69.1	62.4	75
			Night	55.5	56.9	53.1	70
2	Industrial	N 2	Day	63.3	66.6	60.6	75
			Night	57.1	61.8	54.1	70
3	Residential	N 3	Day	61.4	64.7	57.3	55
			Night	52.2	54.0	51.1	45
4	Residential	N 4	Day	59.8	64.7	56.2	55
			Night	52.0	54.0	50.8	45
5	Residential	N 5	Day	58.2	62.4	56.4	55
			Night	53.2	58.9	50.5	45
6	Residential	N 6	Day	57.1	62.3	54.2	55
			Night	51.8	54.1	50.5	45

3.4.4 DISCUSSION OF AMBIENT NOISE QUALITY

Bahera Village, Core Zone – (N 1): The Leq noise levels recorded are ranging from 53.1 to 69.1 dB(A).
Phushari Village, Core Zone – (N 2): The Leq noise levels recorded are ranging from 54.1 to 66.6 dB(A).
Charhi Village, Buffer Zone – (N 3): The Leq noise levels recorded are ranging from 51.1 to 64.7 dB(A).
Kajri Village, Buffer Zone – (N 4): The Leq noise levels recorded are ranging from 50.8 to 64.7 dB(A).
Rangabera Village, Buffer Zone – (N 5): The Leq noise levels recorded are ranging from 50.5 to 62.4 dB(A).
Nunyaberai Village, Buffer Zone – (N 6): The Leq noise levels recorded are ranging from 50.5 to 62.3 dB(A).

3.5 SOIL QUALITY STATUS

3.5.2 RESULTS AND DISCUSSION OF SOIL QUALITY

The following locations in the core zone & buffer zone of Tapin South Expansion OCP were selected for soil quality analysis. The soil quality analysis results are summarized hereunder.

Results of Soil Quality

Table 3.35: Soil Quality Status at Bahera Village (Agriculture) – (S-1)
Date of Sampling : 13/05/2017
Date of Sample Tested : 22/05/2017 to 27/05/2017

Season : Pre-Monsoon (March to May, 2017)

Sl. No.	Parameter	Unit	S 1 (Depth in cm)				
			0-30	30-60	60-90	Min	Max
1	pH	-	5.5	5.8	8.2	5.50	8.20
2	Water Holding Capacity	%	42.3	40.3	37.1	37	42
3	Electrical Conductivity	µS/cm	190	50	170	50.0	190.0
4	Available Nitrogen	kg/ha	153	165	152	152	165
5	Available Phosphorus	kg/ha	5.62	6.32	7.14	5.62	7.14
6	Available Potassium	kg/ha	176	147	159	147	176
7	Sodium absorption ratio (SAR)	-	0.29	0.30	0.32	0.29	0.32
8	Available Organic Carbon	%	0.46	0.51	0.62	0.46	0.62
9	Cation exchange capacity	meq/100g	1.03	1.06	0.96	0.96	1.06
10	Specific Gravity	-	2.63	2.65	2.64	2.63	2.65
11	Field Capacity	%	21.5	20.3	24.0	20	24
12	Wilting Coefficient	%	12.0	11.0	14.0	11	14
13	Texture	-	Loam	Loam	Sandy Loam		
	a) Sand	%	45.83	47.10	52.31	45.83	52.31
	b) Silt	%	42.99	41.86	35.81	35.81	42.99
	c) Clay	%	11.01	10.69	11.42	10.69	11.42

Table 3.36: Soil Quality Status Bahera Village (Forest) – (S-2)

Date of Sampling : 13/05/2017

Date of Sample Tested : 22/05/2017 to 27/05/2017

Season : Pre-Monsoon (March to May, 2017)

Sl. No.	Parameter	Unit	S-2 (Depth in cm)				
			0-30	30-60	60-90	Min	Max
1	pH	-	6.80	6.50	6.00	6.00	6.80
2	Water Holding Capacity	%	40.5	41.6	39.5	40	42
3	Electrical Conductivity	µS/cm	150.0	180.0	130.0	130.0	180.0
4	Available Nitrogen	kg/ha	171.50	165.80	163.20	163	172
5	Available Phosphorus	kg/ha	6.69	7.14	5.59	5.59	7.14
6	Available Potassium	kg/ha	141.20	152.30	142.30	141	152
7	Sodium absorption ratio (SAR)	-	0.41	0.50	0.44	0.41	0.50
8	Available Organic Carbon	%	0.42	0.49	0.50	0.42	0.50
9	Cation exchange capacity	meq/100g	0.91	1.14	1.33	0.91	1.33
10	Specific Gravity	-	2.61	2.62	2.63	2.61	2.63
11	Field Capacity	%	20.2	17.6	21.5	18	22
12	Wilting Coefficient	%	14.0	13.0	16.0	13	16
13	Texture	-	Loam	Silty Loam	Silty Loam		
	a) Sand	%	32.12	35.30	33.40	32.12	35.30

	b) Silt	%	48.95	50.48	50.34	48.95	50.48
	c) Clay	%	18.25	14.22	13.86	13.86	18.25

Table 3.37: Soil Quality Status at Tapin South Expansion South_OB Dump – (S-3)
Date of Sampling : 13/05/2017
Date of Sample Tested : 22/05/2017 to 27/05/2017

Season : Pre-Monsoon (March to May, 2017)

Sl. No.	Parameter	Unit	S-3 (Depth in cm)				
			0-30	30-60	60-90	Min	Max
1	pH	-	5.30	5.60	5.50	5.30	5.60
2	Water Holding Capacity	%	41.2	37.5	38.5	38	41
3	Electrical Conductivity	µS/cm	229.0	120.0	140.0	120.0	229.0
4	Available Nitrogen	kg/ha	162.50	171.20	165.20	163	171
5	Available Phosphorus	kg/ha	8.12	7.14	6.96	6.96	8.12
6	Available Potassium	kg/ha	153.60	125.20	142.30	125	154
7	Sodium absorption ratio (SAR)	-	0.29	0.40	0.26	0.26	0.40
8	Available Organic Carbon	%	0.62	0.68	0.72	0.62	0.72
9	Cation exchange capacity	meq/100g	1.30	0.98	0.69	0.69	1.30
10	Specific Gravity	-	2.62	2.60	2.61	2.60	2.62
11	Field Capacity	%	22.6	18.5	20.5	19	23
12	Wilting Coefficient	%	14.0	16.0	19.0	14	19
13	Texture	-	Loam	Silty Loam	Loam		
	a) Sand	%	40.10	31.08	39.90	31.08	40.10
	b) Silt	%	42.82	45.12	44.47	42.82	45.12
	c) Clay	%	13.48	16.58	10.48	10.48	16.58

3.5.3 DISCUSSION OF SOIL QUALITY

Bahera Village (Agriculture) – (S-1):

At this location, pH value is found to be in the range of 5.50 – 8.20 whereas EC and Water holding capacity values ranges between 50 - 190 µS/cm and 37 – 42 % respectively. Nitrogen, Phosphorous and Potassium contents are found to be in the range of 152 – 165 kg/ha, 5.62 – 7.14 kg/ha and 147 – 176 kg/ha respectively. Organic carbon varies between 0.46 – 0.62 % whereas Cation exchange capacity 0.96 – 1.06 meq/100g. Texture class is found to be Sandy loam. The soil quality at this location supports vegetation.

Bahera Village (Forest) – (S-2):

At this location, pH value is found to be in the range of 6.0 – 6.80 whereas EC and Water holding capacity values ranges between 130 – 180 µS/cm and 40 – 42 % respectively. Nitrogen, Phosphorous and Potassium contents are found to be in the range of 163 – 172 kg/ha, 5.59 – 7.14 kg/ha and 141 – 152 kg/ha respectively. Organic carbon varies between 0.42 – 0.50 % whereas Cation exchange capacity 0.91 – 1.33 meq/100g. Texture class is found to be Silty loam. The soil quality at this location supports vegetation.

Tapin South Expansion South OB Dump – (S-3):

At this location, pH value is found to be in the range of 6.30 – 5.60 whereas EC and Water holding capacity values ranges between 120 - 229 µS/cm and 38 – 41 % respectively. Nitrogen, Phosphorous and Potassium contents are found to be in the range of 163 - 171 kg/ha, 6.96 – 8.12 kg/ha and 125 – 154 kg/ha respectively. Organic carbon varies between 0.62 – 0.72 % whereas Cation exchange capacity 0.69 – 1.30 meq/100g. Texture class is found to be Silty Loamy. The soil quality at this location supports vegetation.

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3.7 BASELINE STATUS OF FLORA & FAUNA

The data on flora & fauna was collected based on field survey in the core and buffer zone (10 KM radius) and from local offices of forest department. The results of the study are given in Tables – 3.38 to 3.41 separately for Core & Buffer Zone for flora & fauna.

Table – 3.38 Flora of Core Zone

Flora	Local Name	Botanical Name	Family
Agricultural crops			
Cereals	Makka (Maize)	*Zea mays*	Poaceae
	Dhan (Paddy)	*Oryza sativa*	-
Pulses	Arhar (Pigeon pea)	*Cajanus cajan*	-
	Musur (Lentil)	*Lens curinaris*	-
	Chana (Gram)	*Cicerarienthum*	-
	Urad (Black gram)	*Vigna mungo*	Fabaceae
Commercial crops / Cash Crops			
Vegetables	Aloo (Potato)	*Ipomoea batatas*	Convolvulaceae
	Onion	*Allium cepa*	Liliaceae
	Baigan	*Solanum melongena*	Solanaceae
	Tamator (Tomato)	*Lycopersicum esculentum*	Solanaceae
	Bean	*Lablab purpureus*	Leguminosae
	Band Gobi (Cobbage)	*Brassica spp.*	Cruciferae
	Bhindi	*Abelmoschus esculentus*	Malvaceae
	Pumpkin	*Cucurbeta moschata*	Cucurbetaceae
	Jack-fruit	*Artocarpus heterophyllus*	Moraceae
	Beet root	*Beta vulgaris*	Chenopodiaceae
	Cauliflower	*Brassica oleracea varbotrytis*	Brassicaceae
	Chilli	*Capsicum annum*	Solanaceae
Oil Yielding Plants	Sarson (Mustard)	*Brassica compestris*	Brassicaceae
	Tisi	Linum usitatissimum	-
Spices	Dhaniya	*Coriandrum sativum*	Umbelliferae
	Lahsun (Garlic)	*Allium stivum*	Liliaceae
	Mirchi	*Capsicum annum*	Solanaceae
	Haldi (Turmeric)	*Curcuma domestica*	Zinziberaceae
Fruits	Jam (Guava)	*Psidium guajava*	Myrataceae
	Ber (Jujube)	Ziziphus mauritiana	Rhamnaceae
	Jackfruit (Kathal)	*Artrocarpus hetarophylla*	Moraceae
	Bel	*Aegl marmalas*	Rutaaceae
	Jambhul/Jamun	*Syzygium cumini*	Myrtaceae
	Amba	*Magnifera indica*	Anacardiaceae
	Lemon	*Citrus Lemon*	Rutaceae
Plantation			
Planted by CCL & Forest Department	Ashok	*Sarracca indica*	Annonaceae
	Neem	*Azadirachta indica*	Meliaceae
	Amba	*Magnifera indica*	Anacardiaceae
	Babul	*Acacia nilotica*	Fabaceae

Flora	Local Name	*Botanical Name*	Family
Natural vegetation / Forest type			
Herbs	Bhui neem	*Andrographis paniculata*	Acanthaceae
	Dhudhi	*Euphorbia hirta*	Euphorbiaceae
	Tulsi	*Ocimum sancturm*	Lamiaceae
	Gajar gawat	*Parthenium hysterophorus*	Compositeae
Shrubs	Arakha	*Calotropis procera*	Asclepiadaceae
	Arandi	*Ricinus communis*	Euphorbiaceae
	Bhor	*Ziziphus jujuba*	Rhamnaceae
	Katumbar	*Ficus hispida*	Moraceae
	Nagabari	*Lantana camara*	Verbenaceae
	-	*Ipomoea carnea*	Convolvulaceae
Climbers	Atundi	*Combretum decandrum*	Combretaceae
	Anantamul	*Hemidesmus indicus*	Apocynaceae
Trees	Kala Siras	*Albizzia lebbek*	-
	Neem	*Azadirachta indica*	Meliaceae
	Sagwan	*Tectona grandis*	Verbenaceae
	Aam	*Magnifera indica*	Anacardiaceae
	Sisam	*Dalbergia sissoo*	Fabaceae
	Karanj	*Pongamia pinnata*	Fabaceae
	Peepal	*Ficus religiosa*	Moraceae
	Palash	*Butea monosperma*	Fabaceae
	Siris / Kala sirus	*Aibizia lebbeck*	Mimosaceae
	Babul / Babool	*Acacia nilotica*	Mimosaceae
	Arjun	*Terminalia arjuna*	Combretaceae
	Mahuva	*Madhuca longifolia*	Sapotaceae
	Jamun	*Syzigium cumini*	Myrtaceae
	Eucalyptus	*Eucalyptus sp*	Myrtaceae
	Imli	*Tamarindus indica*	Caesalpiniaceae
Grasses	Bamboo	*Dendrocalamus strictus*	Poaceae
	Krisnachuda / Gulmohur	*Delonix regia*	Caesalpiniaceae
Endangered Species	Nil	Nil	Nil
Endemic Species	Nil	Nil	Nil

Table – 3.39: Flora of Buffer Zone

Flora	Local Name	Botanical Name	Family
Agricultural crops			
Cereals	Dhan (Paddy)	*Oryza sativa*	Poaceae
	Makka (Maize)	*Zea mays*	Poaceae
	Ragi (Mundua)	*Eleusine coracana*	Poaceae
Pulses	Urad (Black Gram)	*Vigna mungo*	Fabaceae
	Chana	*Cicer arietinum*	Fabaceae
	Tuar (Red Gram)	*Cajanus cajan*	Fabaceae
	Lentil (Musur)	*Lens culineris*	-
	Khesari	*Lathyrus sativus*	-
	Mung (Green Gram)	*Vigna radiata*	Fabaceae
Commercial crops			
Vegetables	Baigan	*Solanum melongena*	Solanaceae
	Aloo (Sweet Potato)	*Ipomoea batatas*	Convolvulaceae
	Onion	*Allium cepa*	Liliaceae
	Tamator (Tomato)	*Lycopersicum esculentum*	Solanaceae
	Bean	*Lablab purpureus*	Leguminosae
	Band Gobi (Cobbage)	*Brassica spp.*	Cruciferae
	Bhindi	*Abelmoschus esculentus*	Malvaceae
	Jhinga	*Luffa acutangula*	Cucurbetaceae

	Karela	*Momordica charantia*	Cucurbetaceae
	Kohra	*Benincasa hispida*	Cucurbetaceae
	Kundri	*Coccinia grandis*	Cucurbetaceae
	Kaddu	*Hibiscus esculentus*	Malvaceae
	Nenua	*Luffa cylindrica*	Cucurbetaceae
	Kheera	*Cucumis stiva*	Cucurbetaceae
	Kheera	*Cucrbaltus sativus*	Cucurbetaceae
	Phool Gobi	*B. oleracea var, botrytis*	Cruciferae
	Muli	*Raphanus sativus*	Cruciferae
Oil Yielding Plants	Sarson (Mustard)	*Brassica compestris*	Brassicaceae
	Arandi	*Ricinus communis*	Euphorbiaceae
	Soyabean	*Glycine max*	Fabaceae
Cash Crops	Soyabean	*Glycine max*	Fabaceae
Spices	Mirch (Capsicum)	*Capsicum species*	Solanaceae
	Dhaniya	*Coriandrum sativum*	Apiaceae
	Lahsun (Garlic)	*Allium stivum*	Alliaceae
	Haldi (Turmeric)	*Curcuma domestica*	Zingiberaceae
	Adrak (Ginger)	*Zingiber officinale*	Zingiberaceae
Fruits	Aam	*Magnifera indica*	*Anacardiaceae*
	Anar	*Punica granatum*	*Lythraceae*
	Amrud (Guava)	*Psidium guajava*	Myrataceae
	Jamun (Black Berry)	*Sysygium jambolana*	*Myrtaceae*
	Kathal (Jackfruit)	*Articarous heterophyllus*	Moraceae
	Bel	*Angle marmelos*	Rutaaceae
	Lime	*Citrus limonum*	Rutaceae
	Banana	*Musa paradisiaca*	Musaceae
	Ber	*Ziziphus mauritiana*	Rhamanceae
	Papaya	*Carica papaya*	Caricaceae
Plantation			
Planted by CCL & Forest Department	Shisam	*Dalbergia sisso*	Leguminosae
	Mango	*Magnifera indica*	Anacardiaceae
	Amaltas	*Casia fistula*	Leguminosae
	Kathal (Jackfruit)	*Articarous heterophyllus*	Moraceae
	Gulmohar	*Delonix regia*	Caesalpiniaceae
	Arjun	*Terminalia arjuna*	Combretaceae
	Babul	*Acasia nilotica*	Momoseae
	Karanj	*Pongamia pinnata*	Fabaceae
	Sagwan	*Tectona grandis*	Verbenaceae
Natural vegetation / Forest type			
Trees (Top Story)	Palash	*Butea monosperma*	Fabaceae
	Ashok	*Sarracca indica*	Annonaceae
	Neem	*Azadirachta indica*	Meliaceae
	Arjun	*Terminalia arjuna*	Combretaceae
	Mahuva / Mahul	*Madhuca longifolia*	Sapotaceae
	Siris / Kala sirus	*Aibizia lebbeck*	Mimosaceae
	Babul / Babool	*Acacia nilotica*	Mimosaceae
	Bel	*Aegle marmelos*	Rutaceae
	Imli	*Tamarindus indica*	Caesalpiniaceae
	Jamun	*Syzigium cumini*	Myrtaceae
	Eucalyptus	*Eucalyptus sp*	Myrtaceae
	Bamboo	*Dendrocalamus strictus*	Poaceae
	Krisnachuda/Gulmohur	*Delonix regia*	Caesalpiniaceae
	Sagwan	*Tectona grandis*	Verbenaceae
	Aam	*Magnifera indica*	Anacardiaceae
	Sisam	*Dalbergia sissoo*	Fabaceae
	Karanj	*Pongamia pinnata*	Fabaceae
	Peepal	*Ficus religiosa*	Moraceae
	Sitaphal	*Annona squamosa*	Annonaceae

	Bija	*Pterocarpus marsupium*	Leguminosae
	Katang bamboo	*Bambusa arundinacea*	Graminae
	Tendu	*Diospyros melanoxylon*	Ebenaceae
	Awla	*Phyllanthus emblica*	Euphorbiaceae
	Kumbhi	*Careya arborea*	Myrtaceae
	Limbu	*Citrus aurantifolia*	Rutaceae
	Austrelian babul	*Acacia auriculoformis*	Mimosaceae
	Jamun (Black Berry)	*Sysygium jambolana*	*Myrtaceae*
	Kathal (Jackfruit)	*Articarous heterophyllus*	Moraceae
	Gulmohar	*Delonix regia*	Caesalpiniaceae
	Ankula	*Alangium lamarckii*	Alanggiaceae
	Panas	*Artocarpus heterophyllus*	Moraceae
	Semul / Simili	*Bombax ceiba*	Bombacaceae
	Salai	*Boswellia serrata*	Burseraceae
	Kasi	*Bridelia retusa*	Euphorbiaceae
	Achar / Char	*Buchanania lanzan*	Anacardiaceae
	Simaro	*Cassia fistula*	Caesalpiniaceae
	Chakhunda	*Cassia siamea*	Caesalpiniaceae
	Bhirra	*Chloroxylon swietenia*	Flindrsiaceae
	Sisoo(Bali Sisoo)	*Dalbergia latifolia*	Caesalpiniaceae
	Barabakulia	*Dalbergia paniculata*	Caesalpiniaceae
	Radhachuda	*Delonix elata*	Caesalpiniaceae
	Mankadkendu	*Diospyros chloroxylon*	Ebenaceae
	Paldhua	*Erythrina indica*	Fabaceae
	Banyan/Bata / Bad	*Ficus benghalensis*	Moraceae
	Gular / Dimiri	*Ficus glomerata*	Moraceae
	Gambhari	*Gmelina arborea*	Verbenaceae

Flora	**Local Name**	**Botanical Name**	**Family**
	Halanda/Kurum	*Haldinia cordifolia (Adina cordifolia)*	Rubiaceae
	Dhauranja	*Holoptelia integrifolia*	Ulmaceae
	Kansa	*Hymenodictyon excelsum*	Rubiaceae
	Kamalagunddi	*Mallotus philippinensis*	Euphorbiaceae
	Baula	*Manilkera hexandra*	Sapotaceae
	Buckain	*Melia azedarach*	Meliaceae
	Nageswar	*Mesua ferrea*	Clusiaceae
	Champa	*Michelia champaca*	Magnoliaceae
	Kari	*Miliusa tomentosa*	Annonaceae
	Achhu	*Moringa tinctoria*	Moringaceae
	Kadamb	*Neolamarckia cadamba*	Rubiaceae
	Jungle jalebi	*Pithocolobium dulce*	Mimosaceae
	Ludukurum	*Wrightia tinctorea*	Apocynaceae
	Sajana (muniga)	*Moringa oleifera*	Moringaceae
Herbs (Lower Story)	Kukada	*Celosia argentia*	-
	Aradhi	*Achyranthus aspera*	-
	Amaltas	*Cassia fistula*	Leguminosae
	Tarota	*C tora*	-
	Kamarmodi	*Tridax procumbens*	Astraceae
	Gajar gawat	*Parthenium hysterophorus*	Astraceae
	Tulsi	*Ocimum basilicum*	Lamiaceae
	Ratantulsi	*O.bassilicum*	Lamiaceae
	Kala dhotra	*Datura metal*	Solanaceae
Shrubs (Middle Story)	Ratrani	*Cestrum nocturnum*	Solanaceae
	Gokhru	*Tribulus teristris*	Zygophyllaceae
	Pandra kuda	*Holarrhena antidysenterica*	Apocynaceae
	Kanher	*Nerium indicum*	Apocynaceae

	Bharati	*Maytenus emarginata*	Celastraceae
	Ratanjyoti	*Jatropha gossypifolia*	Euphorbiaceae
	Katumbar	*Ficus hispida*	Moraceae
	Lokhandi	*Ventilago denticulata*	Rhamnaceae
	Bhor	*Ziziphus jujuba*	Rhamnaceae
	Eroni	*Z. oenoplia*	Rhamnaceae
	Mehndi	*Lowsonia immermis*	-
	Nirgundi	*Vitex nigunda*	-
Climbers	Amar bel	*Cuscuta reflexa*	Convolvulaceae
	Indrayani	*Citrullus calexynthis*	-
	Jangli kundru	*Cephalandra indica*	Cucurbitaceae
	Dudhi	*Cryptolepis buchanani*	Periplocaceae
	Rabarachavel	*Cryptostegia grandiflora*	Asclepiadaceae
	Arasphari	*Olax scandens*	Periplocaceae
	Doob	*Cynodon dactylum*	Gramineae
	Bans/Bamboo	*Dendrocalamus strictus*	Gramineae
	Sabai	*Eulaliopsis binata*	Gramineae
	Munj	*Sacchanum munja*	Gramineae
	Jharoo grass	*Thysanolaena agrostis*	Gramineae
	Chor kanta	*Chrysopogon auciculatus*	Gramineae
Endangered Species	Nil	Nil	
Endemic Species	Nil	Nil	

Table - 3.40: Fauna of Core Zone

Fauna	Common Name	Zoological Name
Listed Under Wildlife Protection Act,1972		
Terrestrial Fauna		
Schedule-I	Nil	-
Schedule-II	Nil	-
Schedule-III	Nil	-
Schedule-IV, Section 6A	Indian Grey Mongoose	*Herpestes edwardsi*
Schedule-IV, Section 6A	Five Striped Palm Squirrel	*Funambulus pennant*
Schedule-V, Section 6, Section 3	Indian Mouse	*Bandicota bengalensis*
	House rat	*Rattus rattus*
Schedule-V, Section 3	Fulvous Fruit Bat	*Rousettus Leschenaulti*
Schedule-V, Section 3	Home Mouse	*Musmusculus homeurus*
Amphibians		
Schedule-IV	Tortoise	Kachuga dhongoka
	Indian burrowing frog	Rana breviceps
	Skipper frog	Rana cyanophlyctis
Reptiles		
Schedule-II	Dhaman	*Ptyas mucosa*
Schedule-IV	Indian wall lizard	*Hemidactylus flavivi*
	Saw scaled viper	*Echis carinatus*
	Common Indian Krait	*Bungarus caeruleus*
	Garden lizard	*Calotes versicolor*
	Dhondwa	*Enhydris enhydris*
Avi Fauna		
	Koel	*Eudynamys scolopacea*
	Common myna	*Acridotheres tristis*
	Small blue kingfisher	*Alcedo atthis*
	Pond heron	*Andeolv grayii*
	Rose-Ringed Parakeet	*Psittacula krameri*
	Bhagule	*Ardea purpurea*

	Kabutar	*Columbia livia*
	House swift	*Apus affinis*
	Little egret	*Egretta garzetta*
	Large Cormorant	*Phalacrocorax carbo*
	Blossom headed Parakeet	*Psittacula cyanocephala*
Schedule-V	Common crow	*Corvus splendens,*
Not Listed Under Wildlife Protection Act,1972		
Mammals / (Domestic Animals)	Goat	*Capra species*
	Bull	*Bos indicus*
	Cow	*Bos indicus*
	Buffalo	*Bubalus bubalis*
Invertebrates	Cockroach	*Blata orientalis*
	Madhumakkhi	*Apis indica*
	Tilchatta	*Blata orientails*
	Chinti	*Solpopsis Spp.*
	Honey bee	*Apis dorsata*
	Lahi	*Kerria laxxa*
	Birni	*Polistis Spp.*
	Jugnu	*Photinus Spp.*
	Gojar	*Scolopendra Spp.*
ENDANGERED SPECIES	Nil	-
ENDEMIC SPECIES	Nil	-
MIGRATORY SPECIES	Nil	-

Table - 3.41: Fauna of Buffer Zone

Fauna	Common Name	Zoological Name
LISTED UNDER WILDLIFE PROTECTION ACT,1972		
Terrestrial Fauna		
Schedule-I	Nil	-
Schedule-II	Siyar (Jackal)	*Vulpes vulpes*
	Common langur	*Presbytis entellus*
	Small Indian Civet	*Vivericula indica*
Schedule-IV	Squirrel	*Funambulus pennant*
	House Rat	*Rattus species*
	Mongoose	*Herpestes edwardsi*
Schedule-V, Section 3	Fulvous Fruit Bat	*Rousettus Leschenaulti*
Amphibians		
Schedule-IV	Skipper frog	*Rana cyanophlyctis*
	Tortoise	*Kachuga dhongoka*
	Indian Bull frog	*Rana tigrina*
	Indian burrowing frog	*Rana breviceps*
Reptiles		
Schedule-II	Russel viper	*Vipera ruselli*
	Common Garden Lizards	*Varanus species*
	Dhamon	*Ptyas Mucosus*
Schedule-IV	Garden lizard	*Calotes versicolor*
	Dhondwa	*Enhydris enhydris*
	Indian wall lizard	*Hemidactylus flavivi*
	Saw scaled viper	*Echis carinatus*
	Common Indian Krait	*Bungarus caeruleus*
Avi Fauna		
Schedule-IV, Section 11	Red-vented bulbul	*Pycnonotus cafer*
	Indian robin	*Saxicolodies fulicata*
	Spotted dove	*Streptopelia chinensis*
	Cattle Egret	*Bubulcus ibis*
	Blue rock pigeon	*Columba livia*
	Indian roller	*Coracias benghalensis*

	Black drongo	*Dicrurus macrocercus*
	Common myna	*Acridotheres tristis*
	Small blue kingfisher	*Alcedo atthis*
	Pond heron	*Andeolv grayii*
	Common hoopoe	*Upupa epops*
	Common babbler	*Turdoides caudatus*
	Little egret	*Egretta garzetta*
	Large Cormorant	*Phalacrocorax carbo*
	Blossom headed Parakeet	*Psittacula cyanocephala*
	Rose-Ringed Parakeet	*Psittacula krameri*
	Lesser pied Kingfisher	*Ceryle rudis*
	Indian tree pie	*Dendrocitta vagabunda*
	Barn owl	*Tyto alba*
	Pied myna	*Sturnus contra*
	Grey hornbill	*Tockus birostritis*
Schedule-V	Common Crow	*Corvus splendens*
Not Listed Under Wildlife Protection Act,1972		
Mammals (Domestic Animals)	Goat	*Capra species*
	Bull	*Bos indicus*
	Cow	*Bos indicus*
	Buffalo	*Bubalus bubalis*
	Dog	*Canis familaris*
	Sheep	*Capra Sp.*
	Pig	*Sus scrofa*
	Horse	*Equus Sp,*
	Sparrow	*Passer domesticus*
Birds (Domestic Birds)		
	Duck	*Nettopus Coromandelianus*
Fauna	**Common Name**	**Zoological Name**
Aquatic fauna (Fishes)	Mangoor	*Clarias batrachus*
	Jhinga	*Dendrobranchiata*
	Singhi	*Heteropneustes*
	Brgade	-
	Tilipia	*Oreochromis mossambicus*
	Rohu	*Labco rohita*
	Catla	*Cyprindiae*
	Garai	*Channa punctatus*
Invertebrates	Lahi	*Kerria laxxa*
	Jugnu	*Photinus Spp.*
	Gojar	*Scolopendra Spp.*
	Moth	*Antheria mylita*
	Black Bee	*Apis dorsata*
	Birni	*Polistis Spp.*
	Grosshopper	*Hierogylphus banian*
	Tidha	*Schistocerca gregaria*
	Bee	*Apis indica*
	Stem Borer	*Chilo auricilia*
	Cockroach	*Blata orientalis*
	Madhumakkhi	*Apis indica*
	Chinti	*Solpopsis Spp.*
Aquatic Insect	Daphnia	*Nepa Spp.*
	Prawn	*Chaetogaster*
ENDANGERED SPECIES	Nil	-
ENDEMIC SPECIES	Nil	-
MIGRATORY SPECIES	Tree Pipit	*Anthus Trivialis*
	Cuckoo	*Cuculus Micropterus*

3.8 Socio-economic Study

3.8.1 Profile of Respondents

The respondents were in the age range between 18 to 65 years and around 8% of them were women. Majority reside in the area for long, mostly since birth or since marriage. There are many out-migrants from the PIA as there is no job opportunity in the area.Demographic profile of the PIA is as follows:

Table 3.42: Demographic Profile of PIA

Indicators	2011
Total Households	19035
Total Population	99746
Household Size	5.2
Sex Ratio	920
Child Population (≤6 years) (%)	14.1
Scheduled Caste (%)	17.3
Scheduled Tribe (%)	20.2
Literate Persons (%)	63.5
Total Workers (%)	32.8
Total Main Workers (%)	57.5
Total Marginal Workers (%)	42.5
Total Non-Workers (%)	67.2

Source: Primary Census Abstract, Census of India 2011

The respondents were mostly Hindu (more than 79%) in religion and about 12% were scheduled tribes. About 74% are residing in the area for generations. There is considerable number of scheduled castes and several tribal groups in the PIA.

Table 3.43: Caste Structure at Surveyed Areas

Name of villages	SC	ST	GEN	OBC	Muslim	Total
Core Zone						
Tapin (CT)	5	9	1	5	20	40
Total	**5**	**9**	**1**	**5**	**20**	**40**
Charhi (CT)	5	2	3	14	2	26
Mandu (CT)	13	4	11	23		51

Pundi		1	5	24		30
Sarbaha	10	5	1	17		33
Indra					27	27
Pipra	3	4	5	5	19	36
Parej	2				10	12
Total	**33**	**16**	**25**	**83**	**58**	**215**
Grand Total	**38**	**25**	**26**	**88**	**78**	**255**

The major languages in Jharkhand include Nagpuri, Bhojpuri, Khortha, Sadr, Angika, Urdu, Bengali and Oriya. Villagers in the PIA said more than 90% have own residential plot; most (86%)householdsreside in their own houses. Only about 31% of the respondents live in kutchahousesand 34.5% each insemi-pucca and puccahouses.

Table 3.44: Type of Dwellings at Surveyed Areas

Name of Village	Kutcha	Semi-Pucca	Pucca	Total
Core Zone				
Tapin	12	14	14	40
Total	**12**	**14**	**14**	**40**
Buffer Zone				
Charhi (CT)	8	9	9	26
Mandu (CT)	16	18	17	51
Pundi	9	10	11	30
Sarbaha	10	11	12	33
Indra	8	9	10	27
Pipra	11	12	13	36
Parej	4	4	4	12
Total	**66**	**73**	**76**	**215**
Grand Total	**78**	**87**	**90**	**255**

Of all about 69% of the respondents were from nuclear family. In Tapin South Expansion this figure is 80%.The age-sex distribution pattern of the households is as follows.

Table 3.45: Age-Sex Distribution

	Age Group									
	0-5		6-18		19-40		41+		Total	
	M	F	M	F	M	F	M	F	M	F
Core Zone										
Tapin	12	7	22	17	26	17	25	17	85	58
Total	**12**	**7**	**22**	**17**	**26**	**17**	**25**	**17**	**85**	**58**
Buffer Zone										
Charhi (CT)	9	11	18	12	24	23	14	18	65	64
Mandu (CT)	1	3	5	4	8	11	17	5	31	23
Pundi	5	3	4	4	10	7	6	4	25	18
Sarbaha	5	5	13	10	11	9	11	6	40	30
Indra	6	7	13	8	7	15	14	7	40	38

Pipra	6	3	10	8	14	6	12	9	42	26
Parej	2	4	5	3	5	2	4	2	16	11
Total	**34**	**36**	**68**	**49**	**79**	**73**	**78**	**51**	**259**	**210**
Grand Total	**46**	**43**	**90**	**66**	**105**	**90**	**103**	**68**	**344**	**268**

3.8.2 Literacy

In the sampled population 76% were literates. There are various education facilities available in the villages/towns in the PIA. In the Core Zone 18% were illiterate.

Table 3.46: Education Status in PIA

Name of villages	Literate		Illiterate		Secondary & above		Professional		M	F	Total
	M	F	M	F	M	F	M	F			
Core Zone											
Tapin	31	20	13	16	31	10			75	46	121
Total	31	20	13	16	31	10			75	46	121
Buffer Zone											
Charhi (CT)	23	22	10	18	23	11	0	0	55	51	106
Mandu (CT)	9	7	4	6	9	4	0	0	22	17	39
Pundi	10	7	4	5	10	3	0	0	24	15	39
Sarbaha	12	10	5	8	12	5	0	0	30	23	53
Indra	14	13	6	10	14	6	0	0	35	29	64
Pipra	17	11	7	9	17	6	0	0	42	26	68
Parej	7	5	3	4	7	2	0	0	16	11	27
Total	93	75	39	60	93	37	0	0	224	172	396
Grand Total	124	95	52	76	124	47	0	0	299	218	517

3.8.3 Livelihood

A significant portion (47.4%) of people in the Core Zone work in mining sector.The rest are mainly self-employed or have petty business. Women mainly are housewives a few work as casual labourers. Children are not employed by the industries.

Table 3.47: Employment Pattern

Villages	Labour	Office Worker	Agriculture	Business	Others	Total
Core Zone						
Tapin (CT)	13	15	1	16	1	46

Total	13	15	1	16	1	46
Buffer Zone						
Charhi (CT)	9	2	1	20	4	36
Mandu (CT)	28	9		16	2	55
Pundi	3	1		11	13	28
Sarbaha	5	1	16	13	13	48
Indra	1	1	1	20	3	26
Pipra	10			11		21
Parej	8			3		11
Total	**64**	**14**	**18**	**94**	**35**	**225**
Grand Total	**77**	**29**	**19**	**110**	**36**	**271**

In the Core Zone mean per capita monthly income is □2292/-, mean expenditure is approximately □4500/- and according to them mean savings is almost nil. While in the Buffer Zone mean per capita monthly income is □1625, mean expenditure is approximately □4669/- and mean savings per month is around □1200/-. It seems as many in the Core Zone are employed with CCL, they have better income. When looked into non-economic parameters the households have minimum assets like cell phone, cycle and 2-wheelers; only one family with 7 members was found possessing more than these.

Table 3.48: Income Groupwise Household at Surveyed Areas

Villages	=<5000	6000-10000	11000+	Total
Core Zone				
Tapin (CT)	29	11		40
Total	**29**	**11**		**40**
Buffer Zone				
Charhi (CT)	18	8		26
Mandu (CT)	25	17	9	51
Pundi	12	10	8	30
Sarbaha		11	22	33
Indra	12	9	6	27
Pipra	18	12	6	36
Parej	6	4	2	12
Total	**91**	**71**	**53**	**215**
Grand Total	**120**	**82**	**53**	**255**

3.8.4 Land Use Pattern

This district is mostly full of forests and stones. The cultivable land can be divided into two parts viz- upper land and lower land. The upper land is barren. Rabi and Kharifcrops are generally sown here with fertiliser. The respondents communicated that land in the Core Zone is mostly used for mining and in Buffer Zone for cultivation and agriculture- vegetables, rice and wheat are primarily produced. People have no land and most of them are engaged in business.

Table 3.49: Land Use Pattern

Villages	Land Holding				
	Small	Medium	Large	Not Mentioned	Total
Core Zone					
Tapin		1			1
Total		**1**			**1**
Buffer Zone					
Charhi	1				1
Indra	1				1
Sarabaha	8	5	3		16
Total	**10**	**5**	**3**		**18**
Grand Total	**10**	**6**	**3**		**19**

Note- Available for the land holders

3.8.5 Physical Infrastructure

Drinking Water

The major source of water are Public hand pump 48.3% and Public dug well 24.1%. only 17.2% have house connection. Each village in the PIA was unhappy about water supply, especially about safe drinking water. Besides government facilities CCL has some water supply systems. The villagers communicated that CCL supplies water from mine directly, without any treatment; and is not safe at all. A few hand pumps are found non-functional in the villages. Some use water from pond and well for other purposes.

Table 3.50:Primary Source of Water in the PIA

Primary Source	Percentage (%)
House Connection	17.2

Own hand pump	3.5
Public hand pump	48.3
Own dug well	3.5
Public dug well	24.1
Other	3.4
Total	**100.0**

Drainage and Sanitation

Most of the villages are not very clean. People in the villages complained about absence of drainage and flowing water on the streets, inner paths and access roads. At few locations clogging of channels, made by local people was observed.

Table 3.51: Sanitation in the PIA

Sanitation	Percentage (%)
Pour Flush	20.0
Twin Pit Latrine	46.7
Dry/bucket Latrine	10.0
None	23.3
Total	**100.0**

Practice of open defecation persists in the PIA. People are unwilling to construct latrines on their own; most of them expect financing for this purpose, though they do not hesitate to purchase a mobile phone and/or a colour television. On an average at the maximum 23% of the households do not have latrines in their houses.

3.8.6 Solid Waste Management

There is no system for solid waste management in the PIA. It was found in the study area that most of the locations are strewn with waste. Some initiatives are being taken under Swachh Bharat Abhiyan in this regard. The villagers often burn waste- which is in reality against solid waste management rule.

Electricity

All of the households have electric connection but only about 20% has meter for this purpose. So they often pay a lump sum amount; it was mentioned that the payment is □120 a month. The supply is irregular, with a few hours power cut daily, but people do not complain as they got used to this.

Connectivity and Transport

The project locations are well connected with the surrounding villages and the other towns in the State. The nearest city is Ranchi. There is railway connectivity in some villages and the nearest railway station is at Danea, about 30 km from this project. The major railway station in the area is in Ranchi, which is around 45 km.The local population daily commuteby auto-rickshaws, buses, tempos and personal vehicles like cycle, bikes and car. Use of mobile phones is very common and extensive.

Health Facilities

About 14% mentioned of illnesses in the household and in the area. According to the villagers Government health facilities are located in some of the villages in the study area, but those do not have medicines, doctors and other facilities. They also complained about rudimentary health facilities of CCL.The respondents mentioned that malaria, asthma and tuberculosis are the prevalent illnesses in the area.People mostly prefer allopathic treatment; a few opt for ayurvedic treatment.

3.8.7 Political Infrastructure

Governance

The villages in the PIA are governed by local governments, i.e. panchayats. There are a few urban local bodies for the Census Towns (CT).

Government Schemes and Benefits

Of all respondents, 10% mentioned that they availed of benefits of some Government schemes. But most of them are not very satisfied with these. The noticeable schemes include public distribution system, midday meal, Integrated Child Development Services (ICDS) Scheme, Sarva Shiksha Abhiyan. In few villages Swachh Bharat Abhiyan is getting operational. Anganwadi centres under ICDS are present in all villages and caring for mother and child health and nutrition.

3.8.8 Social Infrastructure

Education facilities in the villages under PIA are mostly limited to pre-primary, primary and/or middle level education. For secondary and higher secondary schooling, degree courses, students travel to nearby towns. To pursue other professional courses they travel to Ranchi and even to other states.

People in the PIA gather to perform various religious festivals. Besides, tribal population have their own festivals In Core Zone 60% and only about 21% in Buffer Zone mentioned that some of their family members are member of some local group.

Status of Women

It was evident through the interaction with the villagers that women's status in the rural areas under the PIA is not very high. Most of the women were not very forward, younger generation is pursuing education. Girls since very young age share household chores with their mothers and other ladies in the family. Though women work a lot in the household to maintain it, their works are not given much importance.Very few women work for livelihood- some has petty business, a few works as labourer.

People's Priorities and Perception

About 76%of the respondents were very positive about the mines around them, the rest were not sure about their opinion. Of allabout64% thought these are beneficial for them as those provide them better earning opportunity, 14% were unsure and the rest were negative.Of all 68% thought that the mines would bring better earning opportunity. In the Core Zone 80% said so. The respondents did not relate any recent deaths with mining activities.

Table 3.52: People's Perception in the PIA

Benefit of Mine	Percentage

Earning opportunity	41
Cheap coal	8
Employment	26
It will bring more population	11
Sale in shop increase	6
Business	8
Total	100

Those who mentioned that they have some idea about environmental pollution, conveyed that by pollution they understand air pollution due to dust. As a consequence there are health hazards- people suffer from breathing problem, asthma and tuberculosis. Some of the respondents felt that trees in the area reduce pollution to some extent. Some of the views of the local residents in the following villages under PIA are as follows:

Tapin

Tapin South Expansion being in the Core Zone of this mine, people communicated a lot regarding mines and their views. They mentioned that the area lack solid waste management and even health services are not provided in this location. Neither hospital nor medicine is available, these are present only for CCL staff. Malaria, asthma and tuberculosis are common in this location.

None knew about the expansion project. The respondents mentioned that mines are good as in mine area residents are provided with sanitation, health services and electricity. These facilities are provided only due to mining in this locality; but some facilities are still absent. The groups mentioned that blasting for mining leads to air pollution and loss of property in the vicinity. Pollution is less here due to presence of trees.
They expect safe water supply and education facilities. The local people pointed out that employment should be provided to local people according to their qualifications. They complained that there is no work facility for local people in mines.

Pundi

The people of Pundi pointed that a few tube wells are available but pressure is low, pipeline was being laid but work has stopped; some tube wells are non-functioning. The village has electricity; but sanitation, solid waste management and health services are poor or not available. Asthma and malaria are common illnesses here. The people said development is lacking in this location.
The respondents communicated that they do not find any benefit from mine. They expressed that job opportunities should be provided to local residents. Local people experience air pollution and loss of property due to blasting in the mine areas.

Sarabaha

The local people mentioned that they lack safe water supply, sanitation, proper solid waste management and health services in the village. Hospital is about 4km away, health center is not available. Malaria is common here. A college is available nearby, but no admission in the college, school is also available about 4km away.
People in this location were aware of air pollution due to mining. They added that the areas away from mine have less exposure to pollution. They see no benefits from mine in this locality. They have expectation of job opportunities in mine. Employment should be provided according to qualification of the candidates. People also look for proper basic services and Government support and local area development.

Indra

It was conveyed by the local residents that there are bore well but no water is available. The villagers pay monthly □120/- for electric supply. There is poor solid waste management in the area and health services are not available.It was mentioned that malaria is very common in this location. Hospital of CCL is about 5 km away, but only CCL staff is allowed there. The participants mentioned that there should be enough distance of human settlement from the mining area. This would save people from pollution. People expect employment in the mines.

Pipra

The residents here communicated in the same manner that supply of safe water, solid waste management and health services are not up to the mark. People often suffer from fever and malaria. They were vocal in saying that damages have been caused due to blasting in mining field; there are dislocation of houses and property. No support from the Government is provided. The respondents pointed out that wells are available but there is no water, so they felt bore well is required. CCL supplies electricity and a hospital is available. A health centre is also available 2km away but no medicine is there. Local people need employment as per their qualifications. The village is developed25% but health and education facilities are required. Air pollution is caused by the mines.

Charhi

Charhi is a census town. The respondents communicated that except water supply rest of the basic services exist in their location. They are not engaged in mining industry or in related profession- people here are mostly self-employed- doing business; therefore they do not have any opinion regarding mining. But they are not in favour of mines and mentioned that damages of property and air pollution are due to mining. The groups felt that water supply, sanitation and health facilities should be provided by the mining authority. Physical development is required in the villages and jobs to be provided to locals.

Parej

The respondents mentioned that for carrying water from well they need to travel 5 km. People here enjoy electric supply; other basic services are poor. Malaria is common disease but no health services for common people. Mine is causing pollution, especially of coal dust, in the locality. The villagers communicated that there is no benefit for them from mines.

Mandu

People at Mandu feel that except solid waste management they have other basic services, though water supply is not very good. Drains are being cleaned in a month. For electricity they have meter installed. Job, roads, health services are required.
People mentioned that mines are good as these bring some positive changes in the surroundings.jobs are getting available, small tea vendors, grocery shops are being set up. But further development is required for some locations. There is employment of labor by coal/steel factory and business opportunity increased. The residents face some dust pollution and poly bag menace.

3.8.9 Suggestion from the People in the Impact Area

People in this particular Project suggested the followings to make the area more livable and to satisfy the local residents:

- To provide better facilities, scope and support to the local people
- Generate new job opportunities by providing more sources of income
- Should provide facilities like health, education, drinking water, etc

1. Findings

Negative Impact

The probable major impact of the new project would be-

- Relocation of the local residents due to mining activities
- Increased pollution due to enhanced mining activities
- Increased transportation of coal would lead to bad road and more pollution

Positive Impact

Positive aspects are as follows-

- Employment to land losers resulting in improved quality of life
- There are opportunities of indirect income generation
- Improved socioeconomic standard of local people
- Upgrading of infrastructure facilities in the villages of the PIA
- The PIA will be benefitted from the Corporate Social Responsibility (CSR) activities of the CCL.

Table 3.53: Basic and Civic Amenities at Surveyed Areas

Villages	Education	Health Service	Water Supply	Sanitation	SWM	Electricity	Land use	Communication
Core Zone								
Tapin South Expansion (CT)	Anganwadi (AW) and Primary schools	CCL hospital is available, for CCL staff and local villagers	Wells available	Provided	Needs Improvement	Present	Vegetation and mining	Telephone, public conveyance
Buffer Zone								
Charhi (CT)	-do-	-do-	Wells available	-do-	-do-	-do-	Mostly barren or agricultural land	-do-
Mandu (CT)	-do-	-do-	Domestic water supply, community tap and borewells.	-do-	-do-	-do-	Urban /commercial development & agricultural	-do-
Pundi	-do-	-do-	Domestic water supply, community tap and borewells	-do-	-do-	-do-	Mining, Vegetation and crop production	-do-
Sarbaha	-do-	Hospital is about 4km away.	-do-	-do-	-do-	-do-	Vegetation and crop production	-do-
Indra	-do-	CCL hospital is available about 5km	-do-	-do-	-do-	-do-	Agriculture	-do-

		away.						
Pipra	-do-	CCL hospital is available& health centre is available 2km away	-do-	-do-	-do-	-do-	Vegetation and crop production	-do-
Parej	-do-	CCL hospital is available	-do-	-do-	-do-	-do-	Mining, commercial and agriculture	-do-

Table 3.54: Villagewise Demographic Profile at Core and Buffer Zone

Name	HH	Total Population	Total Male	Total Female	Male SC	Female SC	Male ST	Female ST
Core Zone								
Tapin	1048	5080	2668	2412	553	507	424	439
Total								
Semra	106	528	278	250	103	86	143	139
Gobindpur	202	1155	543	612	127	116	151	203
Durukasmar	340	1630	821	809	202	205	539	535
Barisam	46	236	114	122	0	0	96	105
Rauta	91	440	231	209	0	0	106	84
Ulhara	70	347	171	176	0	0	166	171
Pindra	396	2189	1156	1033	157	138	144	148
Pundi	587	3165	1596	1569	100	104	599	608
Parej	405	1952	1017	935	134	121	54	54
Duni	433	2251	1164	1087	57	50	359	364
Bongahara	450	2609	1328	1281	412	420	349	344
Hesagara	344	1676	854	822	87	83	393	389
Kasikhap	131	704	352	352	0	0	342	340
Keribanda	189	896	455	441	60	67	322	319
Toera	189	1111	567	544	77	43	1	1
Banwar	254	1245	636	609	125	116	217	197
Sarabera	444	2304	1172	1132	125	124	746	740
Banji	253	1321	691	630	326	300	87	95
Ichakdih	1132	5647	2986	2661	1045	913	487	474
Mandu (CT)	1926	10223	5450	4773	1031	967	1042	794
Barughutu (CT)	4915	24202	12864	11338	1961	1760	974	956
Nagri	86	578	305	273	51	50	0	0
Churchu	54	334	156	178	0	0	242	112
Dumar	293	1839	964	875	102	106	3	1
Bali	178	990	482	508	143	150	270	275
Sarbaha	479	2423	1253	1170	58	47	637	584
Kurukhap	265	1738	893	845	321	312	13	12
Harhad	328	1902	971	931	100	93	23	23
Mukru	112	634	306	328	57	78	7	14
Jarwa	517	3046	1573	1473	258	245	30	27
Indra	594	3519	1808	1711	263	225	183	199
Lasodh	106	617	311	306	3	3	84	69
Pipra	198	1156	605	551	0	0	31	24
Kargi	42	208	105	103	32	29	0	1
Gondwar	124	670	342	328	53	54	254	243
Lothe	66	366	178	188	0	0	177	187
Potmo	39	220	114	106	0	0	110	102
Charhi (CT)	1246	6842	3611	3231	434	429	526	500
Total	17987	94666	49298	45368	8352	7799	9775	9480
Grand Total	19035	99746	51966	47780	8905	8306	10199	9919

Source: Census 2011

Table 3.55: Village wise Demographic Profile at Core and Buffer Zone

Name	Total Population	Male	Female	Total Literate	Male Literate	Female Literate	Total Illiterate	Female Illiterate	Female Illiterate
Tapin	5080	2668	2412	3432	2010	1422	1648	658	990
Semra	106	528	278	301	188	113	227	90	137
Gobindpur	202	1155	543	758	382	376	397	161	236
Durukasmar	340	1630	821	637	410	227	993	411	582
Barisam	46	236	114	106	64	42	130	50	80
Rauta	91	440	231	200	134	66	240	97	143
Ulhara	70	347	171	143	88	55	204	83	121
Pindra	396	2189	1156	1443	871	572	746	285	461
Pundi	587	3165	1596	1737	1023	714	1428	573	855
Parej	405	1952	1017	1262	725	537	690	292	398
Duni	433	2251	1164	1487	892	595	764	272	492
Bongahara	450	2609	1328	1199	754	445	1410	574	836
Hesagara	344	1676	854	1025	602	423	651	252	399
Kasikhap	131	704	352	272	172	100	432	180	252
Keribanda	189	896	455	448	283	165	448	172	276
Toera	189	1111	567	723	433	290	388	134	254
Banwar	254	1245	636	730	412	318	515	224	291
Sarabera	444	2304	1172	1124	699	425	1180	473	707
Banji	253	1321	691	886	521	365	435	170	265
Ichakdih	1132	5647	2986	3513	2127	1386	2134	859	1275
Mandu (CT)	1926	10223	5450	6383	3790	2593	3840	1660	2180
Barughutu (CT)	4915	24202	12864	18166	10372	7794	6036	2492	3544
Bahera	357	1753	875	1016	583	433	737	292	445
Dumar	293	1839	964	969	586	383	870	378	492
Churchu	54	334	156	143	89	54	191	67	124
Nagri	86	578	305	328	203	125	250	102	148
Bali	178	990	482	467	271	196	523	211	312
Sarbaha	479	2423	1253	1304	793	511	1119	460	659
Karukhap	265	1738	893	1014	606	408	724	287	437
Harhad	328	1902	971	1225	728	497	677	243	434
Mukru	112	634	306	404	226	178	230	80	150
Jarwa	517	3046	1573	1748	1027	721	1298	546	752
Indra	594	3519	1808	2079	1233	846	1440	575	865
Lasodh	106	617	311	285	172	113	332	139	193
Pipra	198	1156	605	682	418	264	474	187	287
Kargi	42	208	105	130	74	56	78	31	47
Gondwar	124	670	342	311	185	126	359	157	202
Lothe	66	366	178	189	104	85	177	74	103
Potmo	39	220	114	127	77	50	93	37	56
Charhi (CT)	1246	6842	3611	4971	2837	2134	1871	774	1097
Total	**94666**	**49298**	**45368**	**59935**	**35154**	**24781**	**34731**	**14144**	**20587**
Grand Total	**99746**	**51966**	**47780**	**63367**	**37164**	**26203**	**36379**	**14802**	**21577**

Source: Census 2011

Table 3.56: Villagewise Economic Profile at Core and Buffer Zone

Name	Total Population	Total Worker	Main Worker		Marginal Worker		Non- Worker	
			Male	Female	Male	Female	Male	Female
Tapin	5080	1317	889	111	220	97	1559	2204
Semra	106	249	144	69	2	34	132	147
Gobindpur	202	351	195	64	60	32	288	516
Durukasmar	340	556	381	145	18	12	422	652
Barisam	46	55	1	2	47	5	66	115
Rauta	91	251	56	11	75	109	100	89
Ulhara	70	156	6	1	87	62	78	113
Pindra	396	569	362	33	132	42	662	958
Pundi	587	1139	426	87	286	340	884	1142
Parej	405	548	420	80	41	7	556	848
Duni	433	828	390	153	198	87	576	847
Bongahara	450	765	223	30	427	85	678	1166
Hesagara	344	442	255	35	127	25	472	762
Kasikhap	131	281	138	17	30	96	184	239
Keribanda	189	417	47	8	231	131	177	302
Toera	189	632	113	27	209	283	245	234
Banwar	254	491	220	143	70	58	346	408
Sarabera	444	840	474	227	69	70	629	835
Banji	253	329	303	22	2	2	386	606
Ichakdih	1132	1604	1010	105	268	221	1708	2335
Mandu (CT)	1926	3287	1790	365	597	535	3063	3873
Barughutu (CT)	4915	6674	5177	530	714	253	6973	10555
Bahera	357	717	300	91	102	224	473	563
Dumar	293	942	320	58	184	380	460	437
Churchu	54	162	69	65	12	16	75	97
Nagri	86	156	7	4	138	7	160	262
Bali	178	456	52	17	190	197	240	294
Sarbaha	479	1402	149	57	558	638	546	475
Karukhap	265	684	88	9	347	240	458	596
Harhad	328	623	115	10	379	119	477	802
Mukru	112	367	26	5	161	175	119	148
Jarwa	517	1271	179	36	648	408	746	1029
Indra	594	1035	174	33	667	161	967	1517
Lasodh	106	240	74	5	87	74	150	227
Pipra	198	276	87	12	164	13	354	526
Kargi	42	95	2	1	45	47	58	55
Gondwar	124	364	43	29	143	149	156	150
Lothe	66	180	2	3	87	88	89	97
Potmo	39	108	25	24	35	24	54	58
Charhi (CT)	1246	1858	1189	174	389	106	2033	2951
Total	**94666**	**31400**	**15032**	**2787**	**8026**	**5555**	**26240**	**37026**
Grand Total	**99746**	**32717**	**15921**	**2898**	**8246**	**5652**	**27799**	**39230**

Source: Census 2011

Table 3.57: Villagewise Workforce Pattern at Core and Buffer Zone

Name of village	Total Main Workers	Cultivators	Agricultural Labourers	Household Industry	Others
Tapin	1000	9	14	6	971
Semra	213	15	154	0	44
Gobindpur	259	40	11	2	206
Durukasmar	526	5	8	1	512
Barisam	3	1	0	0	2
Rauta	67	22	19	0	26
Ulhara	7	0	0	0	7
Pindra	395	9	1	4	381
Pundi	513	39	83	3	388
Parej	500	3	3	6	488
Duni	543	186	28	1	328
Bongahara	253	97	0	47	109
Hesagara	290	5	2	14	269
Kasikhap	155	74	52	0	29
Keribanda	55	0	1	0	54
Toera	140	31	8	0	101
Banwar	363	13	139	4	207
Sarabera	701	75	6	0	620
Banji	325	1	3	3	318
Ichakdih	1115	12	35	23	1045
Mandu (CT)	2155	224	131	34	1766
Barughutu (CT)	5707	10	26	113	5558
Bahera	391	15	215	3	158
Dumar	378	195	15	0	168
Churchu	134	86	39	0	9
Nagri	11	0	1	0	10
Bali	69	40	6	5	18
Sarbaha	206	120	19	10	57
Karukhap	97	28	0	6	63
Harhad	125	58	4	0	63
Mukru	31	7	0	0	24
Jarwa	215	10	1	9	195
Indra	207	16	2	4	185
Lasodh	79	5	0	0	74
Pipra	99	1	9	2	87
Kargi	3	0	0	0	3
Gondwar	72	53	4	0	15
Lothe	5	0	0	0	5
Potmo	49	44	0	0	5
Charhi (CT)	1363	24	25	31	1283
Total	**17819**	**1564**	**1050**	**325**	**14880**
Grand Total	**18819**	**1573**	**1064**	**331**	**15851**

Source: Census 2011

Table 3.58: Villagewise Status Of Sex Ratio at Core and Buffer Zone

Name of village	Sex ratio female / 1000 male	Population (0-6 years)	Sex Ratio (0-6)	Sex Ratio (SC)	Sex Ratio (ST)
Tapin	904	673	880	917	1035
Semra	899	75	875	835	972
Gobindpur	1127	154	855	913	1344
Durukasmar	985	352	1011	1015	993
Barisam	1070	44	1200		1094
Rauta	905	74	897		792
Ulhara	1029	69	865		1030
Pindra	894	364	1045	879	1028
Pundi	983	458	908	1040	1015
Parej	919	333	914	903	1000
Duni	934	289	1125	877	1014
Bongahara	965	425	950	1019	986
Hesagara	963	220	947	954	990
Kasikhap	1000	121	1086		994
Keribanda	969	133	1111	1117	991
Toera	959	153	987	558	1000
Banwar	958	200	923	928	908
Sarabera	966	386	892	992	992
Banji	912	192	1110	920	1092
Ichakdih	891	832	887	874	973
Mandu (CT)	876	1457	856	938	762
Barughutu (CT)	881	2720	909	898	982
Bahera	1003	333	881	1049	
Dumar	908	294	909	1039	2000
Churchu	1141	83	1594		1161
Nagri	895	95	1159	980	
Bali	1054	196	941	1049	1019
Sarbaha	934	365	962	810	917
Karukhap	946	265	934	972	923
Harhad	959	215	903	930	1000
Mukru	1072	78	950	1368	2000
Jarwa	936	428	747	950	900
Indra	946	548	957	856	1087
Lasodh	984	105	1143	1000	821
Pipra	911	207	953		774
Kargi	981	21	909	906	
Gondwar	959	107	877	1019	957
Lothe	1056	74	1000		1056
Potmo	930	49	1042		927
Charhi (CT)	895	840	871	988	951

Source: Census 2011

3.9 Land Use Pattern by Satellite Imagery

Class of Landuse		Core zone		Buffer zone	
		Area (Km2)	%	Area (Km2)	%
Forest	Dense Forest	0.0	0.0	82.45	21.96
	Open Forest	0.0	0.0	78.96	21.03
	Total Forest	0.0	0.0	161.41	42.99
Scrubs	Scrubs	0.43	24.16	62.49	16.64
Plantation	Social Forestry	0.0	0.00	1.36	0.36
	Plantation on OB Dump	0.18	10.11	1.50	0.40
	Plantation on Backfilled	0.0	0.0	0.58	0.15
	Orchard	0.0	0.0	0.0	0.00
	Total Plantation Area	0.18	10.11	3.44	0.92
Mining Area	Coal Quarry	0.23	12.92	2.25	0.60
	Barren OB Dump	0.23	12.92	4.55	1.21
	Backfill	0.0	0.0	1.53	0.41
	Coal Dump	0.0	0.0	0.34	0.09
	Water filled Quarry	0.18	10.11	0.89	0.24
	Total Mining Area	0.64	35.96	9.57	2.55
Waste Land	Waste Lands	0.25	14.04	17.18	4.58
	sand Body	0.0	0.0	0.14	0.04
	Gullied Land	0.0	0.0	0.0	0.00
	Total Waste Land	0.25	14.04	17.32	4.61
Agriculture	Crop Lands	0.13	7.30	31.23	8.32
	Fallow Lands	0.13	7.30	80.70	21.49
	Total Agriculture	0.26	14.61	111.93	29.81
Settlement	Urban Settlement	0.0	0.0	1.93	0.51
	Rural Settlement	0.01	0.56	2.81	0.75
	Industrial Settlement	0.0	0.0	1.32	0.35
	Total Settlement	0.01	0.56	6.06	1.61
Water Body	Reservoir, nallah, ponds	0.01	0.56	3.23	0.86
	Grand Total	1.78	100	375.45	100

Refer Plate-X for Present Land Use of Buffer Zone By Satellite Imagery.

****

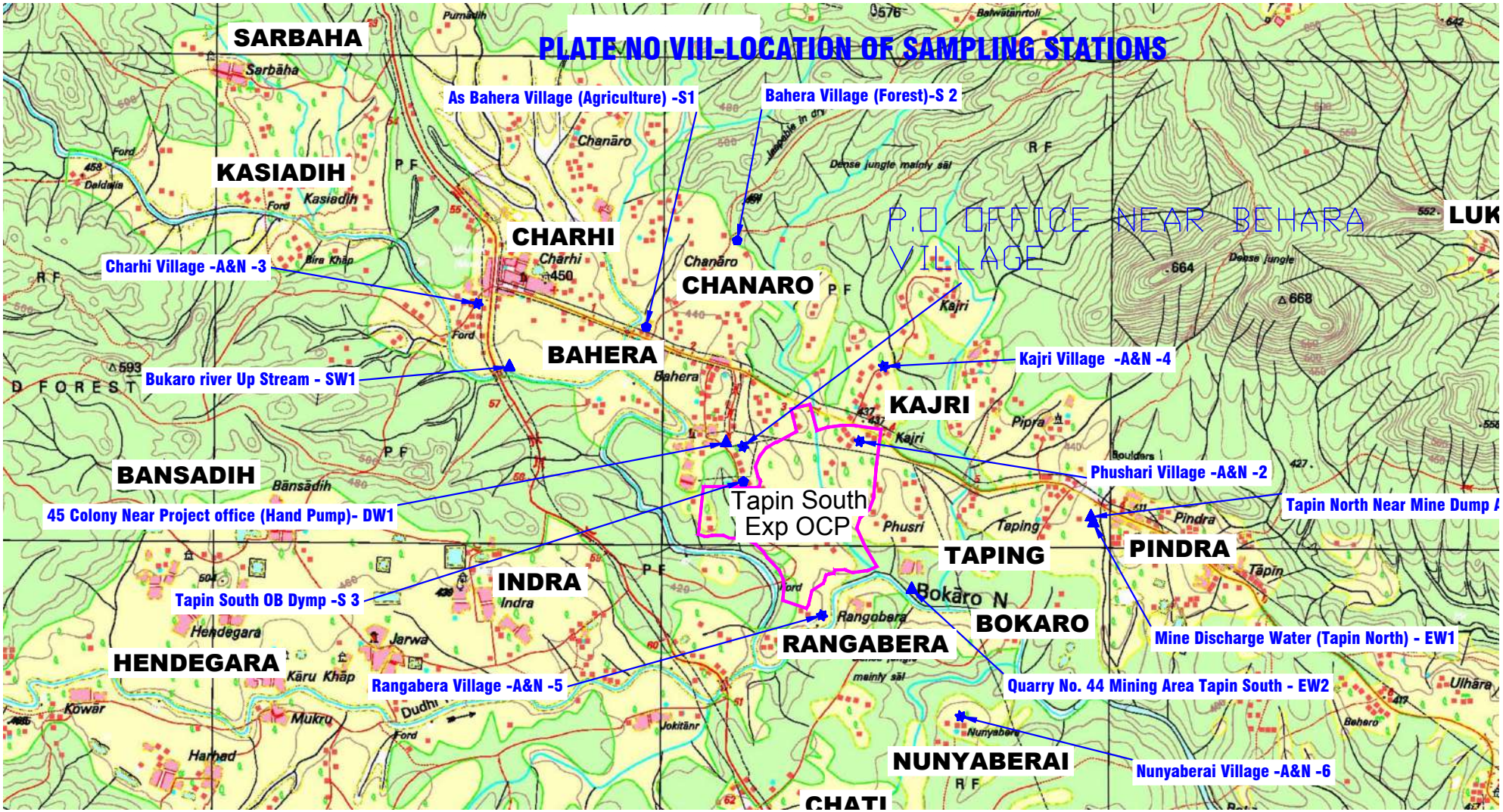
PLATE NO VIII-LOCATION OF SAMPLING STATIONS
SARBAHA
KASIADIH
CHARHI
CHANARO
BAHERA
KAJRI
BANSADIH
INDRA
HENDEGARA
TAPING
PINDRA
BOKARO
RANGABERA
NUNYABERAI
CHATI
P.O OFFICE NEAR BEHARA VILLAGE
As Bahera Village (Agriculture) -S1
Bahera Village (Forest)-S 2
Charhi Village -A&N -3
Bukaro river Up Stream - SW1
Kajri Village -A&N -4
Phushari Village -A&N -2
45 Colony Near Project office (Hand Pump)- DW1
Tapin South Exp OCP
Tapin North Near Mine Dump A
Tapin South OB Dymp -S 3
Mine Discharge Water (Tapin North) - EW1
Quarry No. 44 Mining Area Tapin South - EW2
Rangabera Village -A&N -5
Nunyaberai Village -A&N -6

Annexure -4

Government of India
Central Ground Water Authority (CGWA)
Ministry of Water Resources, River Development and Ganga Rejuvenation
Applications for Issue of NOC to Abstract Ground Water (NOCAP)

Application for Permission to Dewater Ground Water for Mining Industry (Application for New NOC)

Application Number : 21-4/396/JH/MIN/2019

1.	**General Information:**	
	Water Quality:	Fresh Water
	Whether Ground Water Utilization for:	Existing Industry
	Date of Commencement Mine/Project:	01/04/1975
	Date of Expansion:	
	Application Type Category/ Type of Application	Coal
2.	**Name of Mine/Project:**	TAPIN SOUTH OCP
3.	**Location Details of the Mining Unit- (Attach Site, Approved Mining Plan) ($) :**	
	Address Line 1 :	PROJECT OFFICETAPIN SOUTHOCP
	Address Line 2 :	TAPIN
	Address Line 3 :	HAZARIBAGH
	State:	JHARKHAND
	District:	HAZARIBAGH
	Sub-District:	CHURCHU
	Village/Town:	Bahera
	Latitude:	23.824160
	Longitude	85.471380
	Area Type :	Non-Notified
	Area Type Category :	Safe
4.	**Communication Address**	
	Address Line 1:	PROJECT OFFICE TAPIN SOUTH OCP
	Address Line 2:	TAPIN
	Address Line 3:	HAZARIBAGH
	State:	JHARKHAND
	District:	HAZARIBAGH
	Sub-District:	CHURCHU
	Pincode:	825326
	Phone Number with Area Code:	
	Mobile Number:	91 8987784289
	Fax Number:	
	E-Mail:	projectofficertsocp@gmail.com

5. **Salient Features of the Activity:**

Tapin South Expn OC mine is a new opencast proposed project of Hazaribagh Area, West Bokaro Coalfield, Central Coalfields Limited. The normative capacity is 2.0 MTY and peak capacity is 2.50 MTY. Total leasehold area is 277.15 Ha and mining area is 178.30 Ha. Tapin South Expn opencast will produce W-IV grade of coal. The mineable reserve of this proposed Tapin South Expn OCP is 36.56 MT and total volume of OB is 128.31 Mm3. Life of the mine with this mineable reserve is 20 years

6. **Land Use Details of the Surroundings (km 10 Radius – Outside): ($)**

Approved

30/03/2019 05:17 PM

Scanned by CamScanner

Annexure -5

Annexure 5

Action Taken Report for Public Hearing of Tapin South OCP

M/s Central Coalfields Limited's Tapin South Expansion Project, Post Tapin, District Hazaribagh, Jharkhand (Normative 2 MTPA & Peak 2.5 MTPA), Executive summary of public hearing held on 27/02/2016 for getting Environmental Clearance.

<table>
<tr><th>SN</th><th>Name of Person and Address</th><th>Question asked by villagers/members</th><th>Action Taken Report</th></tr>
<tr><td>1</td><td>Shri Satru Saav,Village Kajri</td><td>Till now management has not ensured proper arrangement for electricity, water etc. facilities.</td><td>1. CCL undertakes development work of nearby villages under CSR scheme of CCL. The expenditure made for CSR in Hazaribagh Area over the years is given below.
2. Water from Old quarry no. 45 is being used for water supply to the Mandu Town.</td></tr>
<tr><td colspan="4">CSR expenditure Hazaribagh Area (2016-17 to 2019-20)

<table>
<tr><th>SN</th><th>Particulars</th><th>Sum</th></tr>
<tr><td>1</td><td>Infrastructure</td><td>13.08</td></tr>
<tr><td>2</td><td>Education</td><td>10.61</td></tr>
<tr><td>3</td><td>Drinking Water</td><td>48.81</td></tr>
<tr><td>4</td><td>Health</td><td>37.91</td></tr>
<tr><td>5</td><td>Sanitation</td><td>7.48</td></tr>
<tr><td>6</td><td>Environment</td><td>8.95</td></tr>
<tr><td>7</td><td>Skill Development</td><td>11.34</td></tr>
<tr><td>8</td><td>Miscellaneous</td><td>14.35</td></tr>
<tr><td colspan="2">Total</td><td>152.53</td></tr>
</table>
</td></tr>
<tr><td>2</td><td>Smt. Anushi Devi, Pramukh, Churchu Prakhand</td><td>Management has done commendable work for expansion of project. Management should inform us when mining process will start, so that people can get employment.</td><td>1. The expansion project will be started once the environmental clearance of the mines is granted. Out of the total 182 employment proposed in the expansion project, 47 employments have been provided. Apart from this, approximately 200 to 300 local persons are expected to be engaged contractually from time to time.
2. Further, CCL has taken action for development of skill and employability of local persons. Total expenditure made for skill development over last 4 years in Rs 11.34 Lakhs.</td></tr>
<tr><td>3</td><td>Shri Babli Peter Horo, Mukhiya, Bahera Panchyat</td><td>He expressed his happiness and gave consent for expansion of project and appealed for early start of work.
He asked for information on employment generation from this project.</td><td>1. The expansion of project creates direct as well as indirect employment opportunities.
2. Out of the total 182 employment proposed, 47 employments have been provided. Apart from this, approximately 200 to 300 local persons are expected to be engaged contractually from time to time.</td></tr>
<tr><td>4</td><td>Smt Aagnesia Sandi Purti,</td><td>She congratulated management for</td><td>1. CSR programmes in mines of CCL are undertaken as per Companies Act 2013. The</td></tr>
</table>

	District council member,Churchu	organizing public hearing event, and asked for information about facilities given by CCL to displaced people 33 years after acquiring their land. She asked to include displaced people in the committee while deciding proposed work schedule under CSR.	action plan is prepared based on the recommendation of local representatives and stakeholders, which are then customized as per the local needs and rules pertaining to CSR programmes.
5	Smt Neha Devi, Panchyat Samiti, Member, Western Area	While coal dispatch due to overloading, coal falls on road and gets converted into dust. Management has made what arrangement for avoiding this and for saving people from diseases generated due to it? Why displaced haven't got facilities under CSR yet.	1. Coal transportation is being done by tarpaulin-covered trucks, which will reduce dust generation. No overloading is allowed. Water sprinkling is also being done using mobile water sprinklers to avoid air pollution. At present 3 numbers of water sprinklers are being used for water sprinkling in the project. Wind barrier screen and Fixed type sprinkler is being installed at Charhi Railway Siding.(work order enclosed) 2. Two regional hospitals and seven dispensaries area established with well-qualified doctors and professionals to care of health issues. 3. The displaced persons are being provided facilities as per the R & R policy of CCL. Out of the total 182 employment proposed, 47 employments have been provided.
6	Shri Mannu Tudu, People Representative, Phusri	While giving his consent for project he told that CCL has acquired land in 1977 and employment is only given to few displaced people. He demanded from management to give detailed account of acquired land, no of job given and no of pending job proposed to be given.	1. The displaced persons are being provided facilities as per the R & R policy of CCL. 1. No of homestead proposed to shift is 200 numbers for which Rs. 600 Lakh compensation is proposed. 2. Out of the total 182 employment proposed, 47 employments have been provided. Apart from this, approximately 200 to 300 local persons are expected to be engaged contractually from time to time.
7	Shri Ram Kishore Murmu,	He told that 906.45 Acre land was acquired from Phusri village but only 35 people have got employment till now. Management should provide information about no of families got displaced and no of employment given.	1. No of homestead proposed to shift is 200 numbers for which Rs. 600 Lakh compensation is proposed. 2. Out of the total 182 employment proposed, 47 employments have been provided. Apart from this, approximately 200 to 300 local persons are expected to be engaged contractually from time to time.
8.	Shri Shiv Lal Mahto, Behra Village	CCL management should give one employment per 2-acre land. Scholarship should be given to meritorious students of the area.	1. As per the CCL R & R policy, one employment @ every 2 acres of land is being given. 2. Central Coalfields Limited (CCL) under its CSR initiatives has been providing free education along with boarding and lodging facility to meritorious male students every year since

		Employment should be given to displaced families after identification. PAF children should get excellent education facilities. Trees should be planted. Water is not sprinkled.	2012-2013 under the scheme "CCL KE LAL", and to meritorious female students since the year 2016-17 under the scheme "CCL KI Laadli". 3. Total employment proposed is 182 numbers in the expansion OCP. 4. 11,500 saplings has been planted over 4.6 Ha. in the FY 2014-17 in consultation with the State Forest Department. Plantation over 28.23 Ha in the first phase, development of green belt, water sprinklers etc. are proposed for the project. 5. At present 3 numbers of water sprinklers are deployed in the project.
9	Shri Ajay Kumar, Phusri Villager	He told that this is good initiative by management to organize public hearing event. I am a displaced and I am visiting headquarter from last 3 years for getting employment. No action has been taken yet. Therefore, it is my request from CCL management to give employment within 6 months. CCL management should completely implement Land acquisition bill 2014. Apart from this area revenue officer should be appointed in Hazaribagh area, which will help displaced people.	1. As per the CCL R & R policy, one employment @ every 2 acres of land is being given to the project affected persons. All efforts are being made to help and provide the eligible persons with suitable compensation as per the R & R policy. 2. Sri. Dinesh Prasad, Senior Officer (Survey) is working as Area Revenue Officer of Hazribagh Area.
10	Shri Anwar Hussain,Jarwa Villager	He requested CCL management to establish 10+2 school under CSR in the area so that village children don't have to outside for getting education.	1. CCL fund and provides help to the local DAV schools for providing 10+2 level education. Two numbers of DAV schools are situated in Hazaribagh Area i.e. DAV Kedla & DAV Tapin. The expenditure occurred over education in FY 2018-19 CCL is listed below:

Grant sanctioned for Schools including Privately Managed Schools for 2018-19

SN	Name of School	Amount (upto March 2019) (Rs in Crores)
1	DAV Public Schools	20.29
2	Privately Managed Schools	1.23
3	Kendriya Vidyalaya School	2.81
Total		**24.33**

CCL scholarships to meritorious students under following schemes

SN	Details	Year	
		2017-18	2018-19
1	Expenditure (Rs.in Lakhs)	13.52	7.65
2	No. of Wards	628	343

11	Shri Kuleshwar Bhokta,Kajri Villager	He said that colliery is running since 1972-73. Water, forest and land is degrading due to immigrant Indians. Employment should be given on 1-acre land instead of 2-acre land. Outsourcing should be closed and mine should be run by CCL itself. Employment should be given to displaced people by starting road sale.	1. As per the CCL R & R policy, one employment @ every 2 acres of land is being given. 2. Suitable measure for protection of environment shall be taken including but not limited to plantation over 28.23 Ha in the first phase, development of green belt, water sprinklers etc. 3. The project will generate a total 182 employment. Apart from this, approximately 200 to 300 local persons are expected to be engaged contractually from time to time.

सेंट्रल कोलफील्ड्स लिमिटेड
(कोल इंडिया की अनुषंगी इकाई)

CENTRAL COALFIELDS LIMITED
(A Subsidiary of Coal India Limited)
CIVIL ENGINEERING DEPARTMENT
HAZARIBAGH AREA
वेबसाइट/Website : https://www.centralcoalfields.in

CCL

A miniratna cat-I company

No. GM(H)/SO(C)/2019/ 877. Dated 22/2/2020

Registered post

To,
SRI RAJESH KUMAR SHARMA
New friends colony,Gosala Road
Ramgarh, PIN NO - 829122

Sub :Award of work for: **Construction and installation of fixed Sprinkler system for Charhi Siding under Tapin South OCP of Hazaribagh Area.**

Ref.: e-Tender Notice No. 61 of 2019 – 20 vide no.GM(H)/SO(C)/Tender/2019-20/681, Dated 27.12.2019 , Bid submission end date on 11.01.2020 and Date of opening of tender [Cover I (Technical bid) & Cover II (Price bid)] on 20.01.2020. Tender Id -2019_CCL_160237_1.

Dear Sir,

In response to your tender for the subject work mentioned above, this is to inform you that your offer amounting to ₹ 3680427.27 (Rupees Thirty six lakhs eighty thousand four hundred twenty seven and paise twenty seven only) (excluding GST) to undertake the work has been accepted by CCL, subject to the following stipulations / conditions which are supplementaries / complementaries to the conditions of the tender documents : –

1. GST Amount @ 18.00% on Quoted Value of the bidder is ₹ 662476.91 only. The payment of GST and GST Compensation Cess by the service availer (i.e. CCL) to bidder/ contractor (If GST payable by bidder/ contractor) would be made only on the latter submitting a Bill/Invoice in accordance with the provision of relevant GST Act and the rules made thereunder and after online filing of valid return on GST portal. The payment of GST and GST Compensation Cess is responsibility of the Contractor.

2. The period of completion of work shall be 90 (Ninety) days from expiry of 10 (Ten) days from the issue of this award of work or within 07 (Seven) days of handing over of the site, whichever is later.

3. The earnest money amounting to ₹ 47835.00/- deposited online through Axis Aggregator vide Bank/UTR No. 59073603 and Ref. no. 165140479631, has been retained by the company (CCL) as part of Performance Security Money.

   You are further required to deposit ₹ 136187.00/- (Rupees One lakh thirty six thousand one hundred eighty seven) only with the company in the form of a Govt. Securities or FDR duly pledged in favour of CCL or demand draft in favour of Central Coalfields Limited, Kedla group from any Scheduled Bank payable at Charhi / Hazaribaghi within 28 (Twenty eight) days of issuance of this letter thus making the total performance security money amount to ₹ 184022.00/- (Rupees One Lakh eighty four thousand twenty two) only i.e. 5% of the contract amount. If you fail to deposit the above amount within the prescribed time, the Award of Work may be cancelled and Earnest Money will be forfeited.

4. Item nos. 1.06,1.25,2.06,2.11, 2.21, 3.06, 3.13, 5.05, 5.09,and 5.13 have been found abnormally low rate (ALR) items and item nos 1.10, 4.01, 4.03, 5.02, 5.03, 5.04, 5.16, and 5.18 have been found abnormally high rate (AHR) items as per clause 5.6 of condition of contract of tender document.

5. All running on A/c bills shall be paid at 95% of the work value. The 5% deduction towards retention money will form Second Part of Security deposit and shall be refunded after issue of no defect certificate.

22/2/2020

6. You shall comply with Contract Labour (Regulation and Abolition) Act and make payments to your workmen accordingly. In case you engage 10 & above labourers in the work on any working day you shall be required to submit registration certificate under the B.O.C.W. (RE&CS) Act 1996 and in case you engage 20 (Twenty) or more labourers in the work on any working day you shall be required to submit Labour license under Contract Labour (Regulation & Abolition) Act 1970 for the same.

7. You shall comply with CMPF/any other appropriate PF authority's clause of tender document and you will have to submit "No dues certificate" from Provident Fund Authority, Ministry of Labour, Govt. of India at Jharkhand before finalization of final bill.

8. Work shall be executed strictly as per specification in accordance with laid down norms of company.

9. You shall be responsible for arranging all necessary tests of materials as per instruction of Project Engineer(Civil), TSOCP , Hazaribagh Area / Engineer-in-Charge at your own cost as per terms & conditions of Tender Document.

10. You shall make your own arrangement for all materials, tools, staff and labour required for the above work. The rates for the work include all taxes (excluding taxes subsumed in GST), octoroi, carriage, tools etc. for execution and completion of work.

11. You shall arrange necessary water for the work & for your own establishment. However, if available and feasible the company may arrange water at one point near the work site for which recovery @ 1% (One percent) of the contract value of work done shall be made from your bills.

12. The technical personnel shall be engaged by you on work site as per terms and conditions of tender document.

13. You shall not employ on this contract any close relatives of CCL's employee.

14. Before clearance of final bill you will submit royalty clearance from concerned Mining Officer.

15. Your tax invoice raised must be in compliance of relevant GST Acts, Rules and notifications made thereunder and should bear the GSTIN of CCL. The rate and amount of IGST/CGST/SGST, GST (Compensation to State) cess (if any), related to execution of work shall be shown separately in Tax invoice.

16. The IGST/CGST/SGST and GST(Compensation to State) cess(if any), as applicable at the time of execution of the work, shall be paid extra against submission of proper tax invoice, as referred above by you so that CCL is able to avail Input tax Credit(If available) of such IGST/CGST/SGST, GST (Compensation to State) cess (if any) reflected in the invoice.

17. If the ITC claimed is disallowed due to failure on your part in incorporating the tax invoice issued to CCL in its relevant returns under GST, payment of IGST/CGST/SGST, GST (Compensation to State) cess (if any) shown in tax invoice to the tax authorities, issue of improper tax invoice or any other reason whatsoever, the applicable taxes and cess paid based on such tax invoice alongwith interest, penalties if any levied on CCL, shall be recovered from your current Bills and any other dues.

18. The amount of IGST/CGST/SGST and GST cess if any as indicated in Tax invoice shall be paid only when they appear in GSTR 2A of CCL and you have filed the valid return in accordance with provisions of the GST acts and Rules made thereunder.

19. In the event of any additional tax liabilities accruing on you due to classification issue or for any other reason the liability of CCL shall be restricted to the amount of GST charged on original tax invoice issued by you.

20. You shall pass on the benefit on account of reduction in rate of tax on any supply of goods and / or services or any benefit of the input tax credit to CCL by way of commensurate reduction in prices in terms of Anti profiteering clause of GST Act 2017.

21. You are requested to submit the following for execution of agreement within 28 days from the issue of this Award of Work. : –

a. An amount of ₹ 136187.00/- (Rupees One lakh thirty six thousand one hundred eighty seven) only towards Performance Security in the any of the form given below :-

   i. Govt. Securities or FDR duly pledged in favour of Central Coalfields Limited, Kedla group.

   ii. Demand Draft drawn in favour of Central Coalfields Limited, Kedla group on any Scheduled Bank payable at its Branch at Charhi / Hazaribagh.

b. Registration / License under B.O.C.W. (RE&CS) Act / Contract Labour (Regulation & Abolition) Act / Insurance (if any as per NIT / Tender Document) before execution of agreement / any payment are made to you against this work.

c. Non-judicial stamp paper worth ₹ 100/= only for execution of agreement alongwith partnership deed / Memorandum & Articles of Association and power of attorney if any, GSTIN etc.

22. You are requested to contact the Project Engineer(Civil), TSOCP, Hazaribagh Area, for further needful action regarding execution of work.

Yours faithfully

22/2/2020

Staff Officer (Civil)
Hazaribagh Area.

Copy to :

1. GM, Hazaribagh Area
2. S. O (Mining), Hazaribagh Area
3. Area Finance Manager, Hazaribagh Area.
4. Project Officer/TSOCP
5. Project Engineer(Civil)/TSOCP

In reference to Budget certification vide no. 19-20/C-81/01/2809 dated 22.02.2020 For amount of Rs 4342904.18 only , under head Environmental Activities.

सेंट्रल कोलफील्ड्स लिमिटेड
(कोल इंडिया की अनुषंगी इकाई)

CENTRAL COALFIELDS LIMITED
(A Subsidiary of Coal India Limited)
CIVIL ENGINEERING DEPARTMENT
HAZARIBAGH AREA
वेबसाइट/Website : https://www.centralcoalfields.in

स्वच्छ भारत
एक कदम स्वच्छता की ओर

CCL

A miniratna cat-I company

No. GM(H)/SO(C)/2019/ 876. Dated 22/2/2020

Registered post

To,
M/S SUKUL RAJAK
At + PO : Charhi Distt : Hazaribagh
Jharkhand

Sub :Award of work for : **Providing agroshade mat wind breaking screen fixed on bamboo frame including maintenance for one year at Railway siding charhi under Tapin South OCP of Hazaribagh Area.**

Ref.: e-Tender Notice No. 63 of 2019 – 20 vide no.GM(H)/SO(C)/Tender/2019-20/755, Dated 20.01.2020 , Bid submission end date on 01.02.2020 and Date of opening of tender [Cover I (Technical bid) & Cover II (Price bid)] on 03.02.2020. Tender Id -2020_CCL_162757_1.

Dear Sir,

In response to your tender for the subject work mentioned above, this is to inform you that your offer amounting to ₹ 458731.31 (Rupees Four lakhs fifty eight thousand seven hundred thirty one and paise thirty one only) (excluding GST) to undertake the work has been accepted by CCL, subject to the following stipulations / conditions which are supplementaries / complementaries to the conditions of the tender documents : –

1. GST Amount @ 18.00% on Quoted Value of the bidder is ₹ 82571.6358 only. The payment of GST and GST Compensation Cess by the service availer (i.e. CCL) to bidder/ contractor (If GST payable by bidder/ contractor) would be made only on the latter submitting a Bill/Invoice in accordance with the provision of relevant GST Act and the rules made thereunder and after online filing of valid return on GST portal. The payment of GST and GST Compensation Cess is responsibility of the Contractor.

2. The period of completion of work shall be 30 (Thirty) days for fabrication & erection and 365 (Three hundred Sixty five) days for maintenance work from expiry of 10 (Ten) days from the issue of this award of work or within 07 (Seven) days of handing over of the site, whichever is later.

3. The earnest money amounting to ₹ 7200.00/- deposited online through Axis Aggregator vide Bank/UTR No. 60107402 and Ref. no. 167730488445, has been retained by the company (CCL) as part of Performance Security Money.

   You are further required to deposit ₹ 15737.00/- (Rupees fifteen thousand seven hundred thirty seven) only with the company in the form of a Govt. Securities or FDR duly pledged in favour of CCL or demand draft in favour of Central Coalfields Limited, Kedla group from any Scheduled Bank payable at Charhi / Hazaribaghi within 28 (Twenty eight) days of issuance of this letter thus making the total performance security money amount to ₹ 22937.00/- (Rupees Twenty two thousand nine hundred thirty seven) only i.e. 5% of the contract amount. If you fail to deposit the above amount within the prescribed time, the Award of Work may be cancelled and Earnest Money will be forfeited.

4. Further you have to deposit ₹ 28718.45 (Rupees Twenty eight thousand seven hundred eighteen and paise forty five) as Additional performance security as per clause no. 4.8 of conditions of contract of tender documents alongwith Performance Security in form of a Bank Guarantee or Govt. Securities or FDR duly pledged in favour of CCL, Kedla group or demand draft in favour of Central Coalfields Limited, Kedla Group from any Scheduled Bank payable at Charhi/ Hazaribagh

5. Item nos. 1.02, 1.03, and 1.04 have been found abnormally Low rate (ALR) items and item nos 1.01 have been found abnormally high rate (AHR) items as per clause 5.6 of condition of contract of tender document .

22/2/2020

6. All running on A/c bills shall be paid at 95% of the work value. The 5% deduction towards retention money will form Second Part of Security deposit and shall be refunded after issue of no defect certificate.

7. You shall comply with Contract Labour (Regulation and Abolition) Act and make payments to your workmen accordingly. In case you engage 10 & above labourers in the work on any working day you shall be required to submit registration certificate under the B.O.C.W. (RE&CS) Act 1996 and In case you engage 20 (Twenty) or more labourers in the work on any working day you shall be required to submit Labour license under Contract Labour (Regulation & Abolition) Act 1970 for the same.

8. You shall comply with CMPF/any other appropriate PF authority's clause of tender document and you will have to submit "No dues certificate" from Provident Fund Authority, Ministry of Labour, Govt. of India at Jharkhand before finalization of final bill.

9. Work shall be executed strictly as per specification in accordance with laid down norms of company.

10. You shall be responsible for arranging all necessary tests of materials as per instruction of Project Engineer(Civil), TSOCP , Hazaribagh Area / Engineer-in-Charge at your own cost as per terms & conditions of Tender Document.

11. You shall make your own arrangement for all materials, tools, staff and labour required for the above work. The rates for the work include all taxes (excluding taxes subsumed in GST), octoroi, carriage, tools etc. for execution and completion of work.

12. You shall arrange necessary water for the work & for your own establishment. However, if available and feasible the company may arrange water at one point near the work site for which recovery @ 1% (One percent) of the contract value of work done shall be made from your bills.

13. The technical personnel shall be engaged by you on work site as per terms and conditions of tender document.

14. You shall not employ on this contract any close relatives of CCL's employee.

15. Before clearance of final bill you will submit royalty clearance from concerned Mining Officer.

16. Your tax invoice raised must be in compliance of relevant GST Acts, Rules and notifications made thereunder and should bear the GSTIN of CCL. The rate and amount of IGST/CGST/SGST, GST (Compensation to State) cess (if any), related to execution of work shall be shown separately in Tax invoice.

17. The IGST/CGST/SGST and GST(Compensation to State) cess(if any), as applicable at the time of execution of the work, shall be paid extra against submission of proper tax invoice, as referred above by you so that CCL is able to avail Input tax Credit(If available) of such IGST/CGST/SGST, GST (Compensation to State) cess (if any) reflected in the invoice.

18. If the ITC claimed is disallowed due to failure on your part in incorporating the tax invoice issued to CCL in its relevant returns under GST, payment of IGST/CGST/SGST, GST (Compensation to State) cess (if any) shown in tax invoice to the tax authorities, issue of improper tax invoice or any other reason whatsoever, the applicable taxes and cess paid based on such tax invoice alongwith interest, penalties if any levied on CCL, shall be recovered from your current Bills and any other dues.

19. The amount of IGST/CGST/SGST and GST cess if any as indicated in Tax invoice shall be paid only when they appear in GSTR 2A of CCL and you have filed the valid return in accordance with provisions of the GST acts and Rules made thereunder.

20. In the event of any additional tax liabilities accruing on you due to classification issue or for any other reason the liability of CCL shall be restricted to the amount of GST charged on original tax invoice issued by you.

21. You shall pass on the benefit on account of reduction in rate of tax on any supply of goods and / or services or any benefit of the input tax credit to CCL by way of commensurate reduction in prices in terms of Anti profiteering clause of GST Act 2017.

22. You are requested to submit the following for execution of agreement within 28 days from the issue of this Award of Work : –

a. An amount of ₹ 15737.00/- (Rupees fifteen thousand seven hundred thirty seven)only towards Performance Security in the any of the form given below :-

   i. Govt. Securities or FDR duly pledged in favour of Central Coalfields Limited, Kedla group.

   ii. Demand Draft drawn in favour of Central Coalfields Limited, Kedla group on any Scheduled Bank payable at its Branch at Charhi / Hazaribagh.

b. An amount of ₹ 28718.45 (Rupees Twenty eight thousand seven hundred eighteen and paise forty five) only towards Additional Performance Security in the form given below :-

   i. Govt. Securities or FDR duly pledged in favour of Central Coalfields Limited, Kedla group.

   ii. Demand Draft drawn in favour of Central Coalfields Limited, Kedla group on any Scheduled Bank payable at its Branch at Charhi / Hazaribagh.

c. Registration / License under B.O.C.W. (RE&CS) Act / Contract Labour (Regulation & Abolition) Act / Insurance (if any as per NIT / Tender Document) before execution of agreement / any payment are made to you against this work.

23. You are requested to contact the Project Engineer(Civil), TSOCP, Hazaribagh Area, for further needful action regarding execution of work.

Yours faithfully

22/2/2020

Staff Officer (Civil)
Hazaribagh Area.

Copy to :

1. GM, Hazaribagh Area
2. S. O (Mining), Hazaribagh Area
3. Area Finance Manager, Hazaribagh Area.
4. Project Officer/TSOCP
5. Project Engineer(Civil)/TSOCP

In reference to Budget certification vide no. 19-20/R-05/23/2811 dated 22.02.2020 For amount of Rs 541302.95 only , under head O/C PMO.