

BEFORE THE NATIONAL GREEN TRIBUNAL,  
PRINCIPAL BENCH, NEW DELHI

[Original Application No 23/2017(EZ) with  
O.A. No 776/2018 (PB) with OA No. 373/2019 (PB)]

IN THE MATTER OF:

Syed Arshad Nasar

Vs

Applicant

Union of India & Ors.

Respondent(s)

And

Ramchandra Chaurasia

Vs

Applicant

State of Jharkhand

Respondent

And

Pradeep Kumar Singh

Vs

Applicant

State of Jharkhand

Respondent

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(S. K. Gupta)

Scientist-E

Central Pollution Control Board  
Parivesh Bhawan, East Arjun Nagar  
Delhi- 110032

Place: Delhi  
Date: 18.08.2022

# **REPORT OF THE COMMITTEE**

***In Compliance with the  
Order dated 22.12.2021 of the HON'BLE NATIONAL  
GREEN TRIBUNAL***

**in**

**OA No. 23/2017 (EZ), OA No. 776/2018, OA No.  
373/2019)**

***in the matter of***

**Syed Arshad Nasar Vs Union of India**

**with**

***Ramchandra Chaurasia Vs. State of Jharkhand***

**with**

***Pradeep Kumar Singh Vs. State of Jharkhand***

**Central Pollution Control Board**

**August 2022**

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## **Expert Committee Report**

**in the matter of**

**Syed Arshad Nasar Vs. Union of India with**

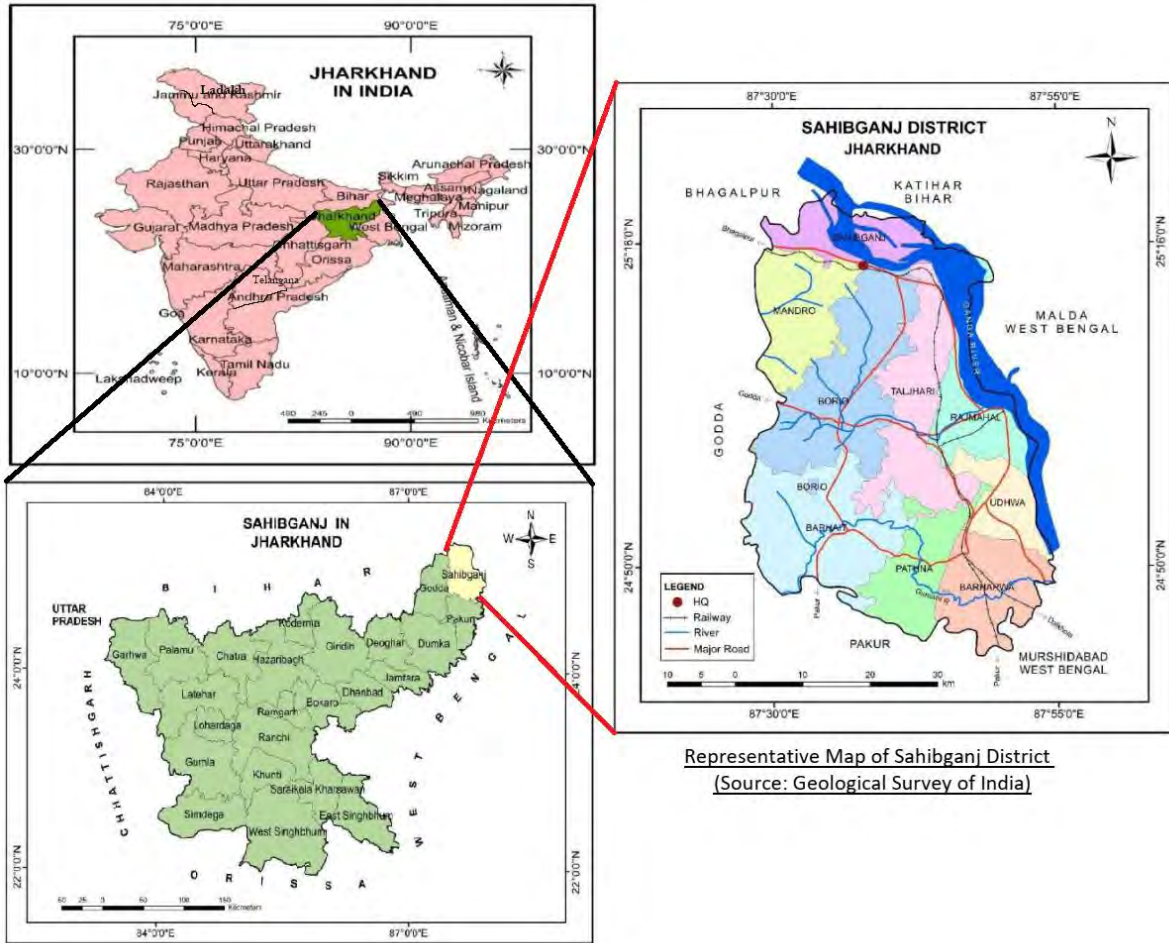
**Ramchandra Chaurasia Vs. State of Jharkhand**

**(NGT order dt. 12.03.2021 in O.A. No. 23/2017(EZ) with O.A. No 776/2018)**

### **1.0 Introduction**

- I. With reference to the matter of Syed Arshad Nasar (Applicant) Vs. Union of India (Respondent) (O.A. No. 23/2017), Ramchandra Chaurasia (Applicant) Vs. State of Jharkhand (Respondent) (O.A. No. 776/2018) and Pradeep Kumar Singh (Applicant) Vs. State of Jharkhand (Respondent) (O.A. No. 373/2019), Hon'ble NGT passed several orders relating to the enforcement of environmental norms in the operation of quarrying and crushing units in Rajmahal hills of the Vindhya Mountains, District Sahibganj, Jharkhand.
- II. Sahibganj district, one of the twenty-four districts of Jharkhand State, is situated in the northeastern tip of the State. The district is situated roughly between 25° 50' 00" North and 24° 42' 52" North latitude and 87° 27' 35" East and 87° 53' 56" East longitude, having an area of 1599 km<sup>2</sup> (Figure 1). The district is divided into two subdivisions: Sahibganj and Rajmahal. It is further subdivided into nine community development blocks: Sahibganj, Mandro, Borio, Barhait in Sahibganj subdivision and Taljhari, Rajmahal, Udhwa, Pathna, and Barharwa in Rajmahal subdivision (Figure 1). The area receives an average annual rainfall of 1479 mm and having a forest area of 28425.74 hectares (21% of the total area). River Ganga, Gumani and Morang are the major rivers flowing through the district.
- III. The area is rich in minerals such as Coal, China Clay, Bentonite, Black Stone, Sand Stone, Silica Sand, Quartz, Kaolin, and Flint Stone. The Rajmahal Hills are the source of building and road stones. Therefore, the companies/industries in this area are associated with excavating the stone minerals, crushing, and manufacturing stone chips.
- IV. Out of nine blocks, mining and stone crushing activities are prevalent in 8 blocks. As per the records of the District Level Task Force (Mining), the total mining area is 4.76 km<sup>2</sup>, which is 0.0029% of the total area of the district (informed during the site visit dated 3-4<sup>th</sup>

March 2022 to the Expert & Joint Committee, constituted by Hon'ble NGT vide Order dated 22.12.2021)



**Figure 1 Representative Map of Sahibganj District**

V. As per District Level Task Force (DLTF-Mining) records, 238 Stone Storage and 3 Kaolinized Stand Stone areas are leased out (Table 1). As per the data received from Jharkhand State Pollution Control Board (JSPCB), presently, there are 118 standalone stone mines, 192 standalone stone crushers, and 20 combined stone mines (Table 2) operating in the district with valid Consent to Operate (CTO). The stone mines and stone crushers are shown in Figure 2 and Figure 3.

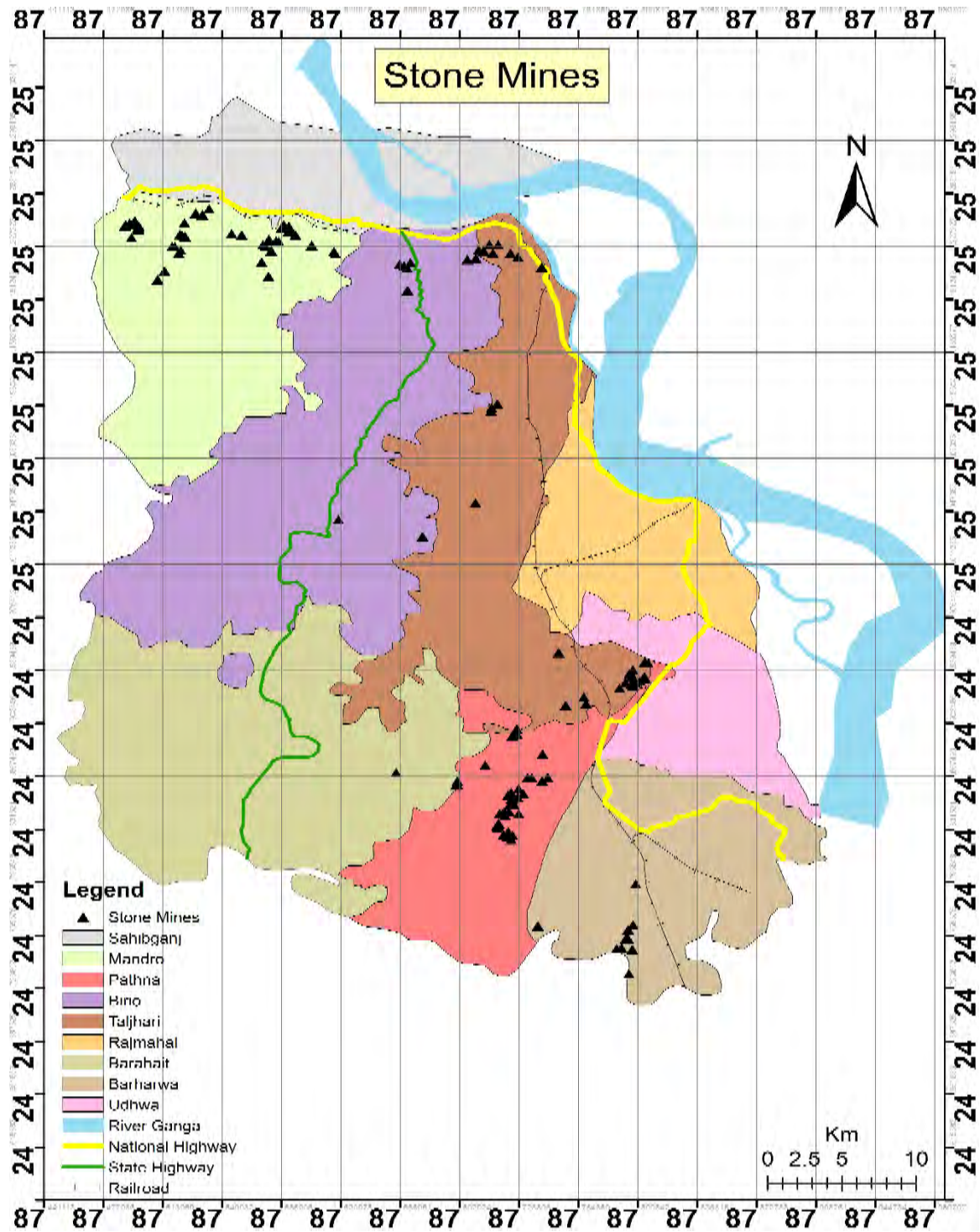


Figure 2 Stone mines in Sahibganj District

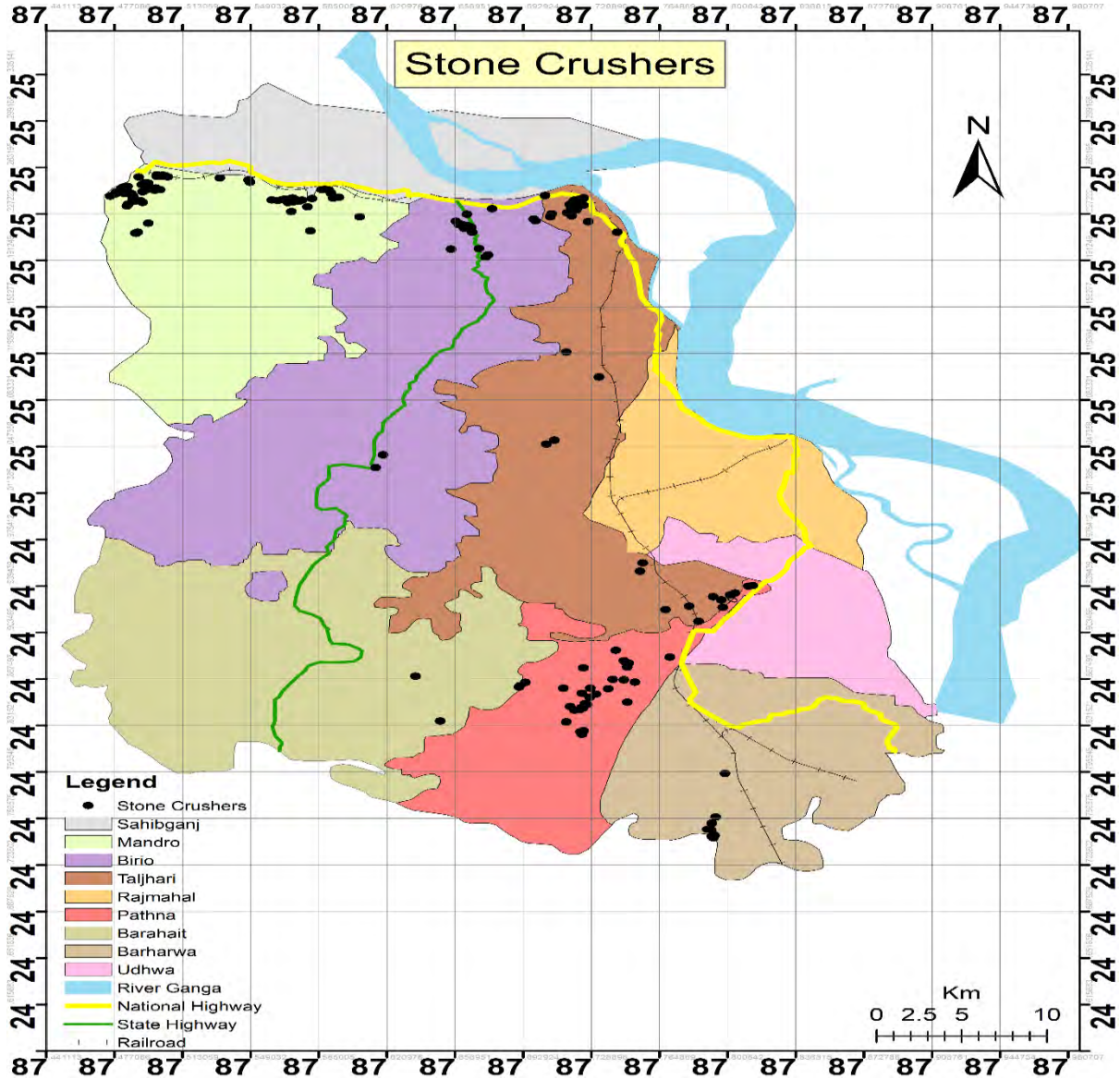


Figure 3 Stone crushers in Sahibganj District

Table 1. Block-wise Lease & Dealer License Allocations

Sl No	Block Name	Total Lease of Stone Storage	Total Lease of Kaolinized Stone
1	Sahibganj	0	0
2	Mandro	129	0
3	Borio	24	0
4	Barhait	3	0
5	Taljhari	51	0
6	Rajmahal	0	3
7	Udhwa	2	0
8	Barharwa	11	0
9	Pathna	17	0
	Total	238	3

Source: District Level Task Force-Mining, Sahibganj

## 2.0 Hon'ble NGT Order: Chronology of Events

### 2.1. Background

- I. The Hon'ble NGT passed the first Order on 23.02.2017 and several orders thereafter to prohibit illegal mining and non-compliant stone crushing activities, and constituted a Committee comprising (a) Senior Scientist/Engineer from CPCB; (b) Regional Office, East Zone, MoEF&CC, Ranchi; (c) Expert from SEIAA; and (d) Expert from JSPCB.
- II. The Committee submitted its report; however, Hon'ble NGT was not fully satisfied with the report and constituted another four-member Committee vide its Order dated 23.09.2020. The Committee was chaired by an officer of the rank of Joint Secretary in the MoEF&CC. Other members were (a) Nominees of Indian Institute of Technology (IIT), Dhanbad (b) Senior officer, CPCB; and (c) Secretary Environment, Government of Jharkhand.
- III. The constituted Committee, in compliance with the Order of 23.09.2021, submitted a report on 10.03.2021 seeking time to file a comprehensive joint Committee report.
- IV. Hon'ble NGT vide its Order dated. 12.03.2021 directed to undertake the carrying capacity assessment of the area as submitted in OA No. 1016/2019, *Utkarsh Panwar Vs. Central Pollution Control Board & Ors.* The NGT further directed that the Committee may also make recommendations on the assessment of compensation taking into account the cost of restoration for the damage caused and its apportionment among the violators.
- V. In compliance with the above Order, an interim report was submitted by CPCB on 09.12.2021, which was jointly prepared by the joint Committee along with the Project Investigator (PI) of the study "*Source Apportionment Study, Carrying Capacity and Clean Air Action Plan*" from CEED, Delhi and Sh. Sundeep, Sc F, MoEF&CC.
- VI. The Hon'ble NGT after considering the joint Committee report issued the following Order dated 22.12.2021.

### 2.2. Direction of Hon'ble NGT vide Order dated 22.12.2021

- I. The Hon'ble NGT vide its Order dated 22.12. 2021 in the matter of OA 23/2017/EZ & Ors., Syed Arshad Nasar (Applicant) Vs. Union of India & Ors. directed as under:

***“20. In view of failure of the joint Committee to provide sound basis for assistance of the Tribunal, we have no option except to reject the report of the Committee. CPCB may assign the task to the Committee which undertook study and submitted report dated 6.10.2020 in OA No. 1016/2019, Utkarsh Panwar vs. Central Pollution Control Board & Ors. The Committee may be steered by Member Secretary, CPCB, who will be free to take assistance from any other expert. The Committee may give its report within three months by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF. The report may also be uploaded on the website of CPCB for any response by any stakeholder before the next date.”***

- II. In compliance with the Order, an Expert Committee was constituted, which was steered by the Member Secretary, CPCB.

### **2.3. Responsibilities & Action Taken by Expert Committee**

In compliance to the Hon'ble NGT Order dated 22.12.2021, an Expert Committee was constituted vide office order dated 04.02.2022 (*Appendix I*). The members of the Expert Committee are as follow:

1. Prof. Mukesh Sharma, Professor, Indian Institute of Technology Kanpur
2. Prof. Sagnik Dey, Professor, Indian Institute of Technology Delhi
3. Dr. Narender Sharma, Additional Director, CPCB, RD, Chandigarh
4. Member Secretary, JSPCB
5. Regional Director, CPCB, RD Kolkata

The Committee had the following mandate:

- a. ensure compliance to the aforesaid direction of Hon'ble NGT.
  - b. undertake the carrying capacity assessment of the area viz-a-viz stone mine and stone crushers.
  - c. examine as to how many stone crushers and mining units can be allowed and subjected to what specific conditions.
  - d. assess environmental compensation for violators based on restoration cost, damage extent, and deterrent element.
- I. The first meeting of the Expert Committee was held on 8.02.2022 to discuss the strategy to undertake the required task and activities (*Appendix 2*).

- II. The Expert Committee undertook field visit from 3<sup>rd</sup> - 4<sup>th</sup> March 2022 for assessing the ground situation.
- III. Three virtual meetings of the expert committee were also held on 29.03.2022, 01.04.2022, 15.6.2022 (*Appendix 3, 4, & 5*).
- IV. Carrying capacity of the area was assessed using box model.

### 3.0 Stone Mining and Crushing Details

- I. The stones are mined from the proposed minable blocks identified based on the geological studies through field observations. The area is enriched in various rocks and minerals that can be used for construction activities. These include Granite Gneiss/Migmatite (present in Sahibganj block ); Basalt - Rajmahal Formation (present in Rajmahal Trap- Basalt are found in Mandro, Borio, Barhait, Pathna, Taljhari Blocks.); Sandstone & Shale (found in Barhait Block); Quartz (found in almost every block of Sahibganj District); Bentonite (found in Taljhari Block in Ranga, Pokharia and Manoharpur village); Flint (found in Khorbanni, Bisunpur village in Rajmahahal Block, Dudhkol village in Taljhari Block); China Clay (found in Rajmahal block) (*as per District Survey Report of Sahibganj- Appendix 6*).
- II. As per the data received from Jharkhand State Pollution Control Board, presently (as on March, 2022), there are 118 standalone stone mines, 192 standalone stone crushes and 20 combined stone mines and crushes operating in the Sahibganj district. Lists of the crushers and mines are given in *Appendix 7, 8 and 9, respectively*.
- III. The primary raw material in this area is Granite Gneiss, Basalt, which is primarily used for infrastructure activities such as roads, buildings, and railways by Govt. of India & PSUs. The rocks are excavated through open cast mining through drilling and blasting and transported to the crushing units for sizing the stone lumps into specified sizes.
- IV. The process flow diagram of a typical stone mine and crusher unit are given in Figure 4 and Figure 5.

### 3.1. Process Details

#### 3.1.1. Stone Mine

I. The current practice of stone mining is depicted in Fig. 4

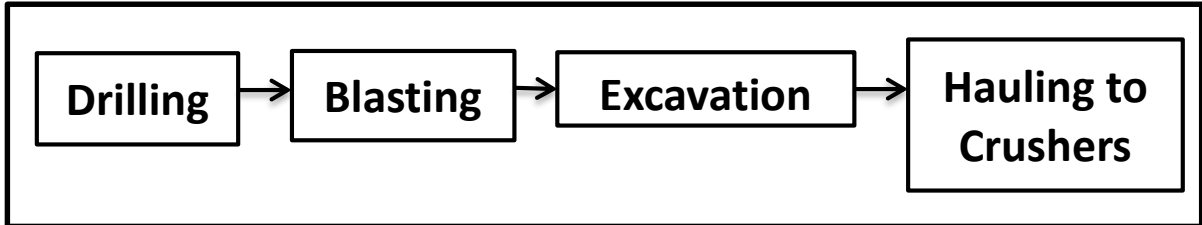


Figure 4. Process Flow Diagram of a Stone Mine

- II. Most of the stone crushers source the raw material from small hillocks, open-cast mines, and river beds situated in the local region of Mandro and Pathna.
- III. The drilling is mainly done manually or by mechanical means, followed by automated blasting and manual or mechanical excavations.
- IV. The mined stones are transported to the crusher sites using trucks and dumpers. Rocks are dumped at the crushing unit sites for further processing. Block-wise distribution of 118 standalone and 20 combined stone mines with their production capacity in Tonnes per Day (TPD) and occupied area are given in **Table 3** and **Table 5**. The categorization of 118 standalone and 20 combined stone mines based on the capacity range is presented in **Table 4** and **Table 6**.

#### 3.1.2. Stone Crushing

I. The current practice of stone crushing is depicted in Figure 5

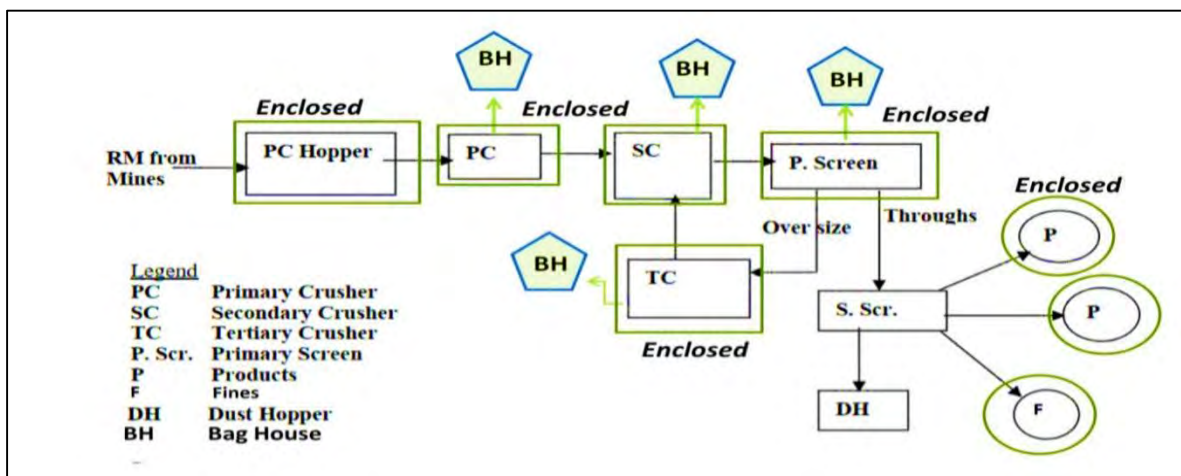
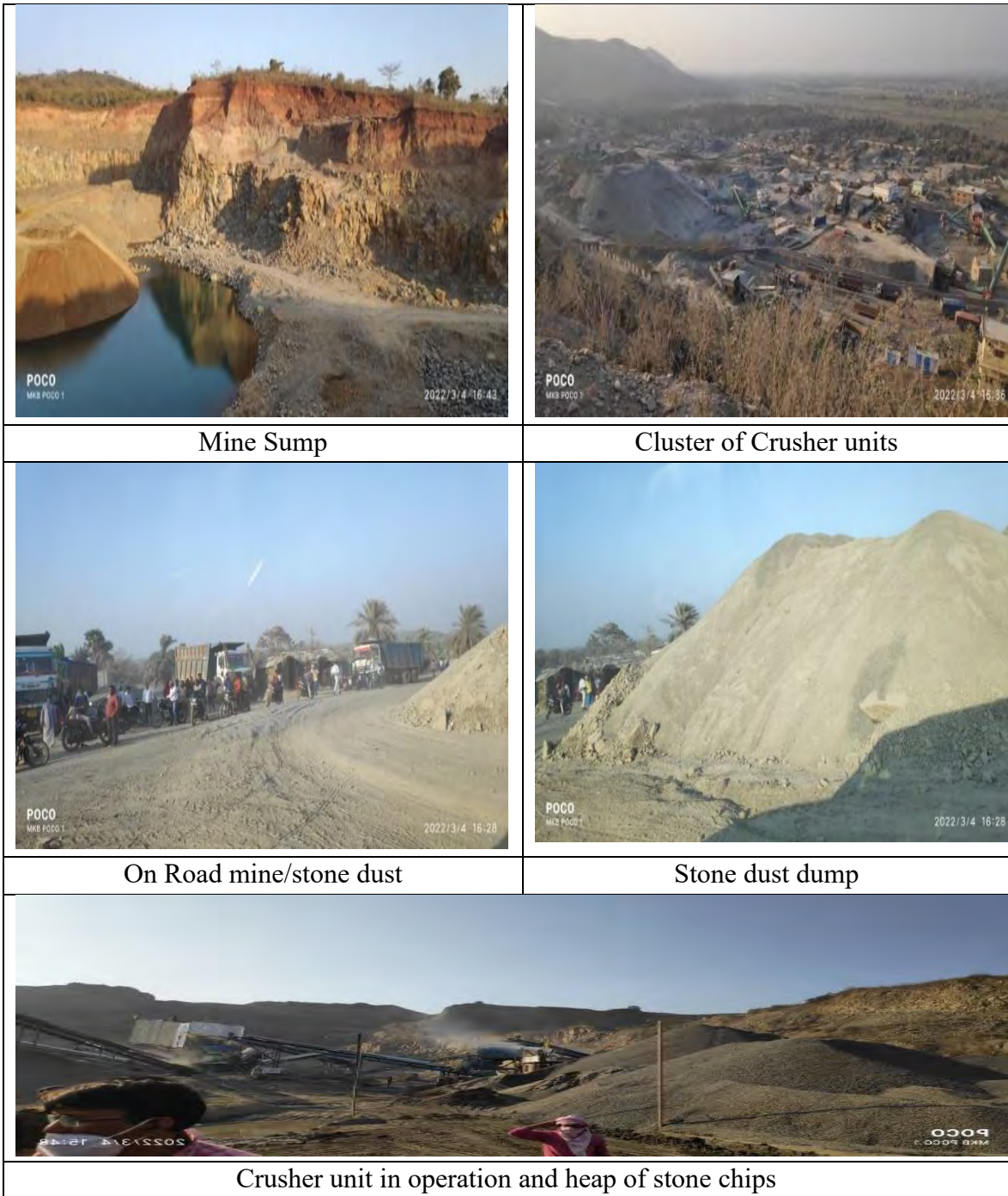


Figure 5 Process Flow Diagram of a Stone Crusher Unit

- II. Most of the crusher units process stone from quarries for producing different grades of stone and crushed sand (40mm, 20mm, 10mm, crushed sand, stone dust, etc.) using crushing, screening and shaping activities.
- III. The stones are fed into primary crushing units with a discharge opening ranging from 1.5 to 4 inches. Various crushers are used in the stone crushing industry such as Jaw Crushers, double toggle crushers, single toggle crushers and single toggle jaw crusher, Roller Crushers, Cone Crushers, Impactor, Rotopactor, etc.
- IV. The crushing is followed by a screening operation, which is used to segregate fine and oversized materials. The oversized stones are again transferred to secondary crushers for further crushing. Further, the same process repeats and the oversized stones are fed to a tertiary crusher for final crushing. For the secondary and tertiary crushing applications, either Jaw, Cone, Roller, Impactor, or Rotopactor crushers are used. Often washing of the materials is done as part of screening.
- V. The undersized/segregated materials (as products or fines) are discharged through a chute on the conveyer belt, which is connected from one to the subsequent crusher. The product/fines are either stored as stockpile or directly loaded onto trucks and dumpers and transported to outside markets. As per JSPCB estimates, in the process of crushing, approximately 10% of stones is generated as stone dust.

Block-wise distribution of 20 combined and 192 standalone stone crushers with their corresponding production capacity in TPD and occupied areas are given in **Table 5 and Table 7**. The categorization of 20 combined and 192 standalone stone crushers based on the capacity range is presented in **Table 6 and Table 8**. The representative images of the current practice captured during field visit (3rd -4th March, 2022) are shown in Figure 6.



**Figure 6. Representative Images of stones mines and stone crushers**

As per JSPCB, the status of Consent to Operate with respect to mines and crushers are given in Table 2 below;

**Table 2. Details of Stone mines and stone crushers with valid CTO**

Standalone Stone Mines	No. of units with valid CTO	118
	No. of units for which CTO is under process	Nil
Standalone Stone Crushers	No. of units with valid CTO	192
	No. of units for which CTO is under process	Nil
Stone mines with crusher	No. of units with valid CTO	20
	No. of units for which CTO is under process	Nil

*Source-JSPCB*

**Table 3. Block-wise distribution of stone mines**

Block Name	No. of stone mines	Area in acre	Capacity in TPD
BARHAIT	1	5	300
BARHARWA	9	69	3397
BARHARWA	3	20	1086
BORIO	10	63	2752
MANDRO	43	360	27955
PATHNA	26	161	9047
TALJHARI	26	214	11704
Grand Total	<b>118</b>	<b>891</b>	<b>56241</b>

*Source-JSPCB*

**Table 4. Categorization of 118 Stone mines based on the capacity range**

Capacity (TPD)	No. of stone mines
≤300	48
>300 ≤600	36
>600 ≤900	22
>900 ≤1200	5
>1200 ≤2000	6
>2000	1

*Source-JSPCB*

**Table 5. Block-wise distribution of stone mines with crushers**

Block Name	Stone mines with crushers	Area in acre of stone mines with crusher	Stone crusher capacity in TPD	Stone mine capacity in TPD
BARHAIT	1	5	72	80
PATHNA	12	94	5212	5791
TALJHARI	7	153	6114	6654
<b>GRAND TOTAL</b>	<b>20</b>	<b>251</b>	<b>11398</b>	<b>12525</b>

*Source-JSPCB*

**Table 6. Categorization of stone mines with crushers based on the capacity range**

No. of stone mines	Capacity (TPD)	No. of stone crusher
8	>0 =<300	8
5	>300 =<600	6
2	>600 =<900	3
3	>900 =<1200	1
1	>1200 =<2000	1
1	>2000	1

*Source-JSPCB***Table 7. Block-wise distribution of stone crushers**

Block Name	No. of crusher	Area in acre	Stone Chips capacity (TPD)
BARHAIT	2	3	590
BARHARWA	8	18	1241
BORIO	22	33	4632
MANDRO	90	168	26650
PATHNA	20	54	8655
RAJMAHAL	2	2	1620
SAHEBGANJ	5	26	1418
TALJHARI	43	268	13686
<b>Grand Total</b>	<b>192</b>	<b>572</b>	<b>58492</b>

*Source-JSPCB***Table 8. Categorization of 192 no. of stone crushers based on the capacity range**

Capacity (TPD)	No. of stone crusher
<=300	142
>300 <=600	23
>600 <=900	6
>900 <=1200	5
>1200 <=2000	14
>2000	2

*Source-JSPCB*

The above Table 6 and Table 7 indicate that the majority of crushers and mines are of small and medium ranges.

As per JSPCB, 118 stone mines having valid CTO are presently in operation and are situated across seven blocks of Sahibganj district with a total area of 891 acres and a total capacity of 56241 TPD (Table 3). Out of these 118 mines, 48 mines are having capacity less than equal to 300 TPD, six mines are above 1200 TPD, and only one mine is beyond 2000 TPD capacity. Similarly, 63 mines produce stone boulder in the capacity range of greater than 300

TPD to less than equal to 1200 TPD. This indicates that most mines are of small and medium ranges (**Table 4**).

In addition, there are 20 mines with crushers having a total area of 251 acres, a total stone crusher capacity of 11398 TPD, and a stone mine capacity of 12525 TPD (**Table 5**). Seventeen stone mines with crushers are less than or equal to 900TPD capacity, of these, eight are of capacity less than 300 TPD. Majority of them belong to the small and medium range (**Table 6**).

Similarly, 192 stone crushers having valid consent are located across eight blocks of the Sahibganj district with a total area of 572 acres and a total capacity of 58492 TPD (**Table 7**). Out of the 192 crushers, 142 have capacity less than equal to 300 TPD, 14 are above 1200 TPD and only two crushers have capacity beyond 2000 TPD. This implies that the majority of crushers fall in the small and medium range bracket (**Table 8**).

### 3.2 Air Pollution Sources

The sources of pollutants from the stone mining and crushing activities are categorized as process sources and pollution in **Table 9**.

**Table 9. Pollution Sources due to Stone Mining and Crushing Activities**

Sl. No	Activity	Process Source	Fugitive Dust Source
1	Mining	Drilling	Blasting
			Loading and Hauling
2	Transportation	N/A	Haul Roads
3	Stone Crushing	Crushing	Stock Piles
		Screening	Conveying
		Conveying Transfer Points	

- I. **Mining Operation:** The drilling, blasting, excavation, loading, and hauling are the primary source of pollutants in the mining operation.
- II. **Transportation through Haul Roads:** The movement of heavy vehicles to transport the stones from mines to crushers leads to fugitive dust emission.
- III. **Crushing Operation:** The primary (Jaw Crushers), secondary and tertiary crushers used for crushing of stoned mines into desirable sizes generate a huge amount of particulate matter. The emissions are recorded more at the crusher feed and discharge points.

- IV. **Screening Operation:** The agitation of dry stone in the screening operation emits dust. The screening after tertiary crushing produces higher emissions than the screening of coarse sizes after primary and secondary screening.
- V. **Conveying:** The transportation of the material from one point to another emits a huge amount of dust. The transfer points include transfers from one conveyor to another into a hopper and a storage pile.
- VI. Apart from these operations, **storing the materials in the stock pile and transporting the finished product** also contribute to pollution.

### 3.3 Environmental Management Status

Detailed inspections of the stone crushers were conducted by Sahibganj District Task Force Committee (DTC) (letter no 1393/MO dated 09.12.2020: (*Appendix 10*) from 11.02.2020 to 16.02.2021. The existing pollution control system installed by the crushers have been compared with recommended control options as mentioned in the *Comprehensive Industry Document, Stone Crusher by CPCB (Series: COINDS/78/2007-08)*.

The recommended emission control system, along with the implementation status of the existing emission control system available with the stone crushers at the time of the inspection, is tabulated below (**Table 10**):

**Table 10 Environmental management Status of Stone Crushers in Sahibganj**

SI No	Process	Recommended Emission Control System	Existing Emission Control System Status		Adequacy *(w.r.t. recommended emission control system)
			Type	Implementation Status (in percent) w.r.t the total crushers inspected	
1	Hauling from Mines to Crushers	1. Water Sprinkling 2. Treatment with Surface Agents 3. Soil Stabilization 4. Paving 5. Traffic Control 6. Covered HEMM	Tanker	16%	Inadequate
2	Feeding to Crusher	1. Enclosed hopper 2. Sprinklers	Single Water Tap	<1%	Inadequate
			Tanker	10%	
			Single Water Tap with Covered Conveyor	2%	

3	Primary Crusher	<ol style="list-style-type: none"> <li>1. Enclosed</li> <li>2. Wet Dust Suppression System (Series of Scientifically designed Sprinklers)</li> <li>3. Capturing and venting emission to a control device as:               <ol style="list-style-type: none"> <li>i. Fabric Filter</li> <li>ii. Bag House</li> </ol> </li> </ol>	38%	38%	Inadequate
			2%		
			<1%		
4	Secondary Crusher	<ol style="list-style-type: none"> <li>1. Wet Dust Suppression System (Series of Scientifically designed Sprinklers)</li> <li>2. Capturing and venting emission to a control device as:               <ol style="list-style-type: none"> <li>i. Fabric Filter</li> <li>ii. Bag House</li> </ol> </li> </ol>	Single Water Tap with Covered Conveyer	2%	Inadequate
5	Tertiary Crusher	<ol style="list-style-type: none"> <li>1. Wet Dust Suppression System (Series of Scientifically designed Sprinklers)</li> <li>2. Capturing and venting emissions to a control device as:               <ol style="list-style-type: none"> <li>i. Fabric Filter</li> <li>ii. Bag House</li> </ol> </li> </ol>	Three Water Tap	<1%	Inadequate
6	Screening after Primary Crushing	<ol style="list-style-type: none"> <li>1. Covered Screens</li> <li>2. Wet Dust Suppression System (Series of Scientifically designed Sprinklers)</li> <li>3. Capturing and venting emissions to a control device as:               <ol style="list-style-type: none"> <li>i. Fabric Filter</li> <li>ii. Bag House</li> </ol> </li> </ol>	Single Water Tap	20%	Inadequate
			Covered Screen	3%	
			Single Water Tap with Screen Covered	16%	
7	Screening after Secondary Crushing	<ol style="list-style-type: none"> <li>1. Covered Screens</li> <li>2. Wet Dust Suppression System (Series of Scientifically designed Sprinklers)</li> <li>3. Capturing and venting emission to a control device as:               <ol style="list-style-type: none"> <li>i. Fabric Filter</li> <li>ii. Bag House</li> </ol> </li> </ol>	Single Water Tap	13%	Inadequate
			Covered Screen	<1%	
8	Screening after Tertiary Crushing	<ol style="list-style-type: none"> <li>1. Covered Screens</li> <li>2. Wet Dust Suppression System (Series of Scientifically designed Sprinklers)</li> <li>3. Capturing and venting emission to a control device as:               <ol style="list-style-type: none"> <li>i. Fabric Filter</li> <li>ii. Bag House</li> </ol> </li> </ol>	Single Water Tap	13%	Inadequate
			Covered Screen	<1%	

9	Conveyer Belt (Screen to Product Stock Pile)	1. Covered 2. Wet-dust suppression (Series of Scientifically designed Sprinklers)	Single Water Tap	34%	Inadequate
			Covered	<1%	
			Covered with Single Water Tap	3%	
10	Conveyer Belt (Screen to Fine Stock Pile)	1. Covered 2. Wet-dust suppression (Series of Scientifically designed Sprinklers)	Single Water Tap	29%	Inadequate
			Covered	<1%	
			Covered with Single Water Tap	2%	
11	Transfer Points	1. Wet Dust Suppression System (Series of Scientifically designed Sprinklers)	Single Water Tap	29%	Inadequate
			Mist Canon Gun	<1%	
12	Storage (Products)	1. Water Wetting 2. Surface active agents 3. Covering 4. Wind-breaks	Covered	<1%	Inadequate
13	Storage (Fines)	1. Water Wetting 2. Surface active agents 3. Covering 4. Wind-breaks	Covered	<1%	Inadequate
14	Others	1. Wind Breaking Wall (Altitude should be greater than the crusher units)	Four Sided	2%	Inadequate
			Three Sided	20%	
			Two Sided	17%	
			One Sided	11%	
			No Boundary Wall	50%	
		2. Green Belt	-	-	Inadequate

*\*The recommended emission control systems are referred from Comprehensive Industry Document, Stone Crusher by CPCB (Series: COINDS/78/2007-08)*

### 3.4 Railway Siding Details

- I. The railways are the major transporter of stone chips and other products.
- II. Sahibganj area has eight (8) railway good sheds for loading and unloading stone chips or other materials for import/export.
- III. During the field visit of the Committee, it was observed that the railway sidings do not have any provision to mitigate the pollution load generated from loading/unloading or transportation of the stone chips.

The details of the railway goods shed and siding are given in **Table 11 & Table 12** and railway siding is shown in Figure 7.

**Table 11. Details of Railway Goods Shed located in Sahibganj**

Sn	Name	Place	Material	Capacity ( T/Month)	Length (m)	Avg. Width (m)	Area (sq. m)
1	Mirzachauki Goods Shed	Mirzachauki, Tetariyarailway Station	Stone Chips, Ballast, Bolder	75000	Not Mentioned	Not Mentioned	Not Mentioned
2	Sakrigali Goods Shed	Sakrigali Railway Station, Sakrigali	Stone Chips, Ballast, Bolder	225000	710	32	22720
					Sakrigali Line 6		
					700	27	18900
					Sakrigali Sabal Siding		
3	Taljhari Goods Shed	Dudhkol, Taljhari	Stone Chips, Ballast, Bolder	75000	730	27	19710
4	Barharwa Good Shed	Barmasia & Jhiktia Mauza	Stone Chips,	1,50,000	1520	37	56240
5	Sahibganj Good Shed	Sahibganj	Stone Material	Not Mentioned	430	60	25800
					Goods Shed Line		
					420	29	12180
					Marshalling Loading Line		
6	Rajmahal Goods Shed	Malkashwa	Stone Chips, Ballast, Bolder	375000	720	24	43200
7	Maharajpur Goods Shed	Motijharna	Stone Material	375000	415	26	10790
8	Karamtola Good Shed	North Karamtola	Stone Material	1,50,000	717	26	18642

**Table 12. Approx. distance of the railway siding from the clusters**

SI No	Railway Siding	Cluster Name	Approx. Distance (km)
1	Barharwa	Chapandey & Borna	4
2	Bakudih	Ptanibona, Chalpahar, Gadytungi	3
3	Taljhari	No Cluster	
4	Maharajpur	Ambadiha(Sakrigali),	5
5	Sakrigali	Ambadiha(Sakrigali), Gudwa	3
6	Sahibganj (R. Col)	Lohanda, Adro Mako	2.5
7	Sahibganj Ghat	Mahdeoganj	7
8	Karamtola	Mahdeoganj	2
9	Bartala	Mundli, Mahadebaran, tetariya	1
10	Tilbhita	Kotalpohakar,Dhatapara, Pipaljori	4

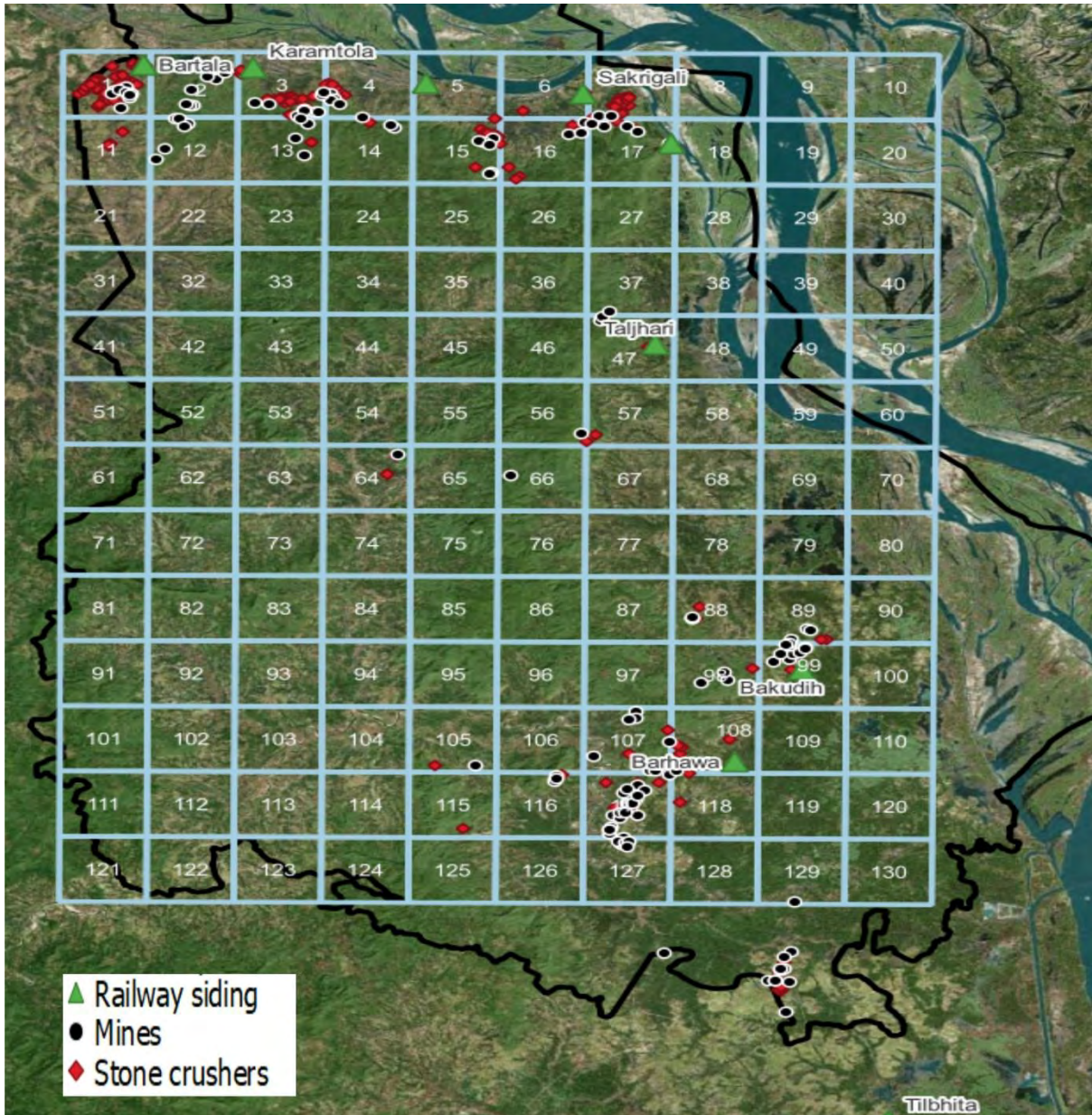


Figure 7 Map of Stone crushers, Stone mines and Railway sidings

### 3.5 Stone Crusher/Mine Dust

- I. During the field visit of the Expert Committee, it was observed that the dumps of mine or crusher dust are one of the major issues of the area and therefore, was concerned for improper or no utilization of the crusher dust.
- II. To assess impact and to explore the appropriate practices for utilization of mine dust, the committee discussed with expert from CSIR-Central Institute of Mining and Fuel Research (CIMFR). It was opined that due to high specific gravity of the dust particles, these cannot be airborne on its own however, due to high wind or traffic movement these may come into re-suspension.

## 4.0 Assessment of Carrying Capacity

### 4.1 Methodology

Assessment of the Particulate Matter (PM) carrying capacity of the area was undertaken using the following approach:

- i. Box model was used to estimate the PM<sub>10</sub> concentration in 4 km × 4 km Grids of Distt. Sahibganj, where stone crushers and mines are located. Box model is an atmospheric dispersion model that can be used to calculate ground-level concentrations of air pollutants emitted from some activity and is based on the assumption that the emitted pollutants are homogeneously mixed in a given volume, or box, due to atmospheric turbulence and the volume is continuously replaced by incoming winds. Other assumptions of the model are constant (i) wind velocity, (ii) background concentration (i.e., pollution arriving from outside the box), (iii) pollutant emission rate, and that the pollutant is conservative (no reactions or removal within atmosphere).

With these assumptions, the concentration  $C$  (mass/volume) inside the box is calculated as:

$$C = b + \frac{qL}{uH} \quad (1)$$

Where,

$b$ = Background concentration (mass/volume)

$q$ = Emission rate per unit area (mass/area/time)

$L$ = Length of the box (metre)

$u$ = Wind speed (metre/sec)

$H$ =Mixing height (metre)

- ii. PM emission factor (uncontrolled) of 5.5 kg per ton of crushed stone product (Ref: CPCB, 2009. *Comprehensive Industry Document Stone Crushers*) has been used to estimate the emissions from the stone crushers. Total grid wise PM emission load was estimated by multiplying the emission factor with the stone crushing capacity.
- iii. PM<sub>10</sub> emission load has been estimated by extrapolating the total PM emission load using following formula (Ref: United States Environmental Protection Agency (US EPA). 2004. *AP 42, Fifth Edition, Volume I Chapter 11: Mineral Products Industry*)

$$PM_{10} = PM \times \frac{0.0012}{0.0027}$$

The following empirical expression has been used to estimate the quantity in pounds (lb) of size-specific particulate emissions from an unpaved road, per vehicle mile travelled (VMT) [US EPA, 2011. *Chapter 13: Miscellaneous Sources, AP 42, Fifth Edition, Volume I | Clearinghouse for Emission Inventories and Emissions Factors | Technology Transfer Network | US EPA*].

$$E = k (s/12)^a \times (W/3)^b$$

where:

k, a, b, c and d are empirical constants

E = size-specific emission factor (lb/Vehicle Mile Travelled (VMT))

s = surface material silt content (%)

W = mean vehicle weight (tons)

In the present case, k= 4.9 for PM, 1.5 for PM<sub>10</sub> weight of the truck has been assumed as 32T, s= 16%, a= 0.7 for PM & 0.9 for PM<sub>10</sub>, b= 0.45 for PM & PM<sub>10</sub>

Emission for PM= 4.9 x (16/12)<sup>0.7</sup> x (32/3)<sup>0.45</sup> = 17.4 lb/VMT = 7.9 kg/VMT

Emission for PM<sub>10</sub>= 1.5 x (16/12)<sup>0.9</sup> x (32/3)<sup>0.45</sup> = 5.6 lb/VMT = 2.6 kg/VMT

- iv. There are ~1100 trucks catering to stone crushing operations, suggesting that each stone crusher would have ~5 trucks (i.e. 1100/212). Each truck travels 1-2 km from the mine to the crushing area, and then 3-4 km from the crushing area to the siding, i.e. a round trip would be 12 km long. Assuming it takes 45 minutes to load the truck and 45 minutes to unload it, 1 hour to travel the distance, and that each stone crusher operates for 8 hours, a truck can make around ~3.5 trips in a day.

Vehicle Kilometre Travelled, (VKT) per truck = km travelled per trip by a truck × no. of trips per day made by a truck = 42 km per day

VKT for 5 trucks at a crusher= 210 km per day

VMT for 5 trucks at a crusher= 130.2 miles per day

PM emissions from road dust resuspension due to a stone crusher=1029 kg/day

PM<sub>10</sub> emissions from road dust resuspension due to a stone crusher=339 kg/day

It was assumed that the PM emissions from road dust resuspension by the trucks plying at a stone crusher are emitted inside the grid where the crusher is located, PM and PM<sub>10</sub> emissions for each grid have been calculated.

- v. Quarrying and mining of minerals result in Total Suspended Particulate Matter, PM<sub>10</sub> and PM<sub>2.5</sub> emissions, due to activities such as bulldozing, scraping, drilling, loading, etc. To estimate PM<sub>10</sub> emissions from stone mines, emission factors for TSP (102 g/Mg mineral) and PM<sub>10</sub> (50 g/Mg) as provided in European Monitoring and Evaluation Programme (EMEP) / European Environment Agency (EEA) air pollutant emission inventory guidebook 2016 have been considered.
- vi. The total PM<sub>10</sub> emission load in a particular grid were estimated by using the following formula:

Total Net emission load for the grid = Emission Load from stone crushers + Emission Load from road dust resuspension + Emission load from stone mines

- vii. The background concentration,  $b$ , for the grids in box model (equation (1)) has been considered as the concentration computed in its neighbouring grid, which is decided by the predominant wind direction. For example, if wind is blowing consistently from west to east, background concentration for Grids 1, 11, 21, 31, 41, 51, 61, 71, 81, 91, 101, 111 and 121 shall be considered as 0 (i.e. no pollutant transport in these grids). Background concentration for Grid 12 would be the computed concentration in Grid 11. Similarly, background concentration for Grid 89 would be the computed concentration in Grid 88, and so on.

Length of the box,  $L= 4$  km

Area of each box= $16$  km<sup>2</sup>

It is important to note that analysis is conducted for winter season, as it is a critical period from air pollution point of view. Meteorological variables considered for the present study are summarized below:

**Table 13 Meteorological variable**

Parameters	Winter (November to February)
<b>Average Wind Speed (m/s)</b> <i>(Source: IMD)</i>	1.5
<b>Maximum Mixing height (m)</b> <i>(Source: CPCB/Probes/88/2002-03)</i>	1200

In absence of data from ground-based weather stations, monthly average wind speed obtained from global atmospheric reanalysis datasets provided by IMD is used in the

analysis. For the same reason, mixing height data has been obtained from a CPCB report on hourly spatial distribution of mixing height over the Indian region.

- viii. Using the aforementioned data, PM<sub>10</sub> concentration due to stone crushers, mines and associated transport operations, was estimated for each grid. The model was run four times, with different wind directions, i.e. East to West, West to East, North to South and South to North. The resulting PM<sub>10</sub> concentrations for each grid, was then averaged for each of the wind directions and the same was used for estimating the carrying capacity as elaborated in the following sections.
- ix. Carrying Capacity of the ambient air environment may be defined as “the maximum emission load (PM<sub>10</sub>), which an area can sustain at maximum rate of operation of any air polluting activity/activities”. Further, the operational framework for estimation of carrying capacity of any area involves the estimation of three components viz. i) Existing Pollution Load, ii) Assimilative Capacity and iii) Supportive Capacity.
- x. The month-wise Existing Pollution Load in terms of PM<sub>10</sub> was estimated by multiplying the volume of air in a particular area/grid with PM<sub>10</sub> concentration.
- xi. The Pollution load at which the maximum permissible concentration is reached, is considered as the assimilative capacity. The maximum permissible concentration of PM<sub>10</sub> as per National Ambient Air Quality Standard (NAAQS) of PM<sub>10</sub> (24-hour average) is 100 µg/m<sup>3</sup>. Considering the present assessment as a seasonal estimation, the assimilative capacity should be calculated at a concentration which is between the annual average NAAQS (60 µg/m<sup>3</sup>) and 24-hourly average NAAQS (100 µg/m<sup>3</sup>). Since emission inventory/source apportionment for the area is not available, and visit of the area suggested major contribution from stone crushers, in the present case, assimilative capacity has been calculated at 75% of NAAQS of PM<sub>10</sub> (24-hour average), i.e. 75 µg/m<sup>3</sup>, with the assumption that 25% of the PM<sub>10</sub> NAAQS (50 µg/m<sup>3</sup>) is being contributed by other non-crusher & non-mining activities in the grid and external sources, and 75% may be contributed by emissions from stone crushers and mines. This was used for estimating the total Carrying Capacity, by multiplying with the volume of air available for dispersion in each grid.

- xii. The difference between the maximum permissible concentration/load of PM<sub>10</sub> i.e. **Assimilative Capacity** and the existing average PM<sub>10</sub> concentration/ load i.e. **Existing Pollution Load** is the Supportive Carrying Capacity, which gives an indication of the **Supportive Capacity** of an area available for sustaining the operation of additional air polluting activities. The positive values show the capacity to accommodate additional pollution load and the negative values indicate that the pollution load is in excess of the assimilative capacity of the area i.e. no additional pollution load can be accommodated and measures are required to bring the pollution load within the assimilative capacity.
- xiii. The following formulae/equations were used to arrive at the conclusion with regard to available supportive carrying capacity:

**Estimation of total equivalent PM<sub>10</sub> Load:**

Total area in **km<sup>2</sup>**: **a** × **a**, and Atmospheric Mixing Height/Depth in **km**: **b**

Average Wind speed in km/day: **u**

Total Volume flow rate of Air in the area/grid in **km<sup>3</sup>/day**: **a** × **b** × **u** = **c**

Average PM<sub>10</sub> Concentration of Ambient Air in the area/grid in **kg/km<sup>3</sup>**: **d**

Therefore, Total estimated load of particulate matter (PM<sub>10</sub>) in ambient air of the area/grid(**x**): **c** × **d**= **x kg/day**

**Estimation of Assimilative Capacity w.r.t. PM<sub>10</sub>:**

Total Volume flow rate of Air in the area/grid in **km<sup>3</sup>/day**: **c**

NAAQS Standard for Particulate Matter (PM<sub>10</sub>): **100 µg/m<sup>3</sup>** i. e. **100 kg/km<sup>3</sup>**

It is assumed that 25% of the PM<sub>10</sub> NAAQS (25 µg/m<sup>3</sup>) is being contributed by daily essential activities in the grid and external sources and cannot be controlled, and 75% is due to emissions from stone crushers and mines.

Therefore, Assimilative Capacity w.r.t PM<sub>10</sub> in ambient air of the area/grid (**y**): **c** × 75= **y kg/day**

**Estimation of Supportive carrying Capacity w.r.t. PM<sub>10</sub>:**

Supportive Carrying Capacity (**z**) = Assimilative Capacity (**y**) - Total Equivalent Estimated Load (**x**);

xiv. In the grids, where the supportive carrying capacity is available (Positive Supportive Carrying Capacity), the stone crushing and mining capacity that can be operated, is determined as follows:

**Total stone crushing and mining capacity which can be operated in a grid = Supportive Carrying Capacity of the grid /PM<sub>10</sub> Emission load per ton of stone**

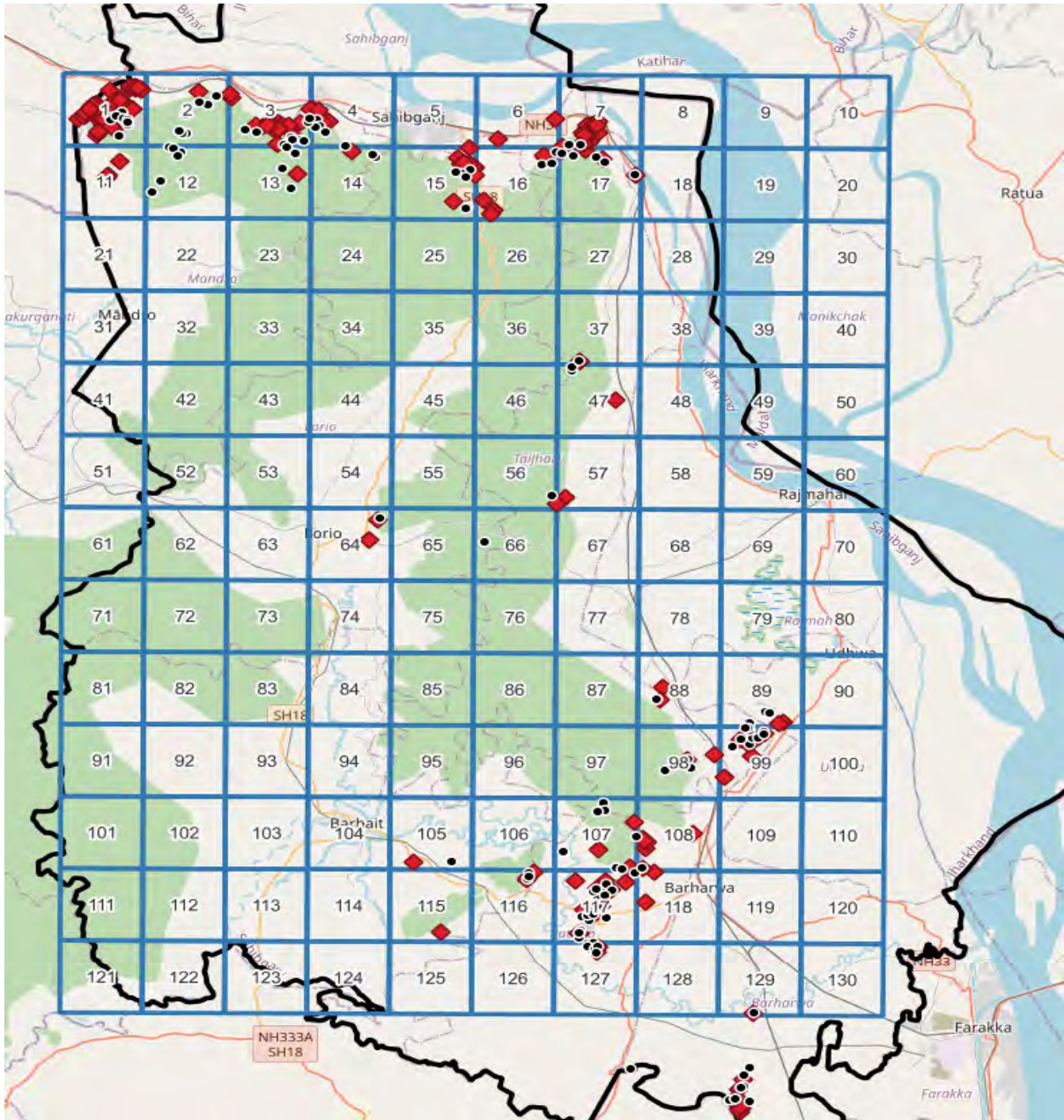
xv. However, assuming that all the stone crushers and mines were in operation during Jan-Dec, 2021, the stone crushing capacity, which can be operated within the available supportive carrying capacity was determined as follows:

**Stone crushing and mining capacity, which can be operated = Total stone crushing capacity operational– (Negative Supportive Carrying Capacity or Load in excess of Assimilative Capacity/ Emission Load from one stone crusher and mine)**

## 4.2 Calculation and Results

**The outcome of the estimations/calculations made by following the above approach is given below;**

Out of total 130 grids (i.e., boxes of 4 km x 4 km) in the district, 203 stone crushers and 126 mines are located in 29 grids and 27 grids (i.e. in 32 grids there are crushers or mines) (Figure 8). Grid-wise number of stone crushers and mines and their capacity is given in **Annexure A 1**



**Figure 8 Grid-wise location of stone crushers (in red diamond) & mines (in black circle)**

(a) The total PM<sub>10</sub> emission load from the stone crushers located in 29 grids is estimated to be 168.4 TPD. Total PM<sub>10</sub> emission load, due to resuspension of road dust on movement of trucks, from all grids comes out to be 68.8 TPD respectively, with maximum PM<sub>10</sub> emissions from Grid 1 (20.7 TPD). Total PM<sub>10</sub> emission load from the mining activities is estimated to be 3.2 TPD. Overall total PM<sub>10</sub> emission load for 32 grids due to operation of stone crushers, resuspension of dust and mining activities is calculated to be 240.4 TPD. PM<sub>10</sub> Emission load from mining activities only

comprised of 1.3% of the total PM<sub>10</sub> emission load. Estimated grid-wise PM<sub>10</sub> emission load from the aforementioned activities is summarised in Annexure A 2.

(b) Subsequently, PM<sub>10</sub> concentration for each grid in winter season was estimated using box model, and is summarised in Annexure A 3.

(c) Grid wise PM<sub>10</sub> Assimilative Capacity/Load, estimated PM<sub>10</sub> emission load using calculated PM<sub>10</sub> concentration and the resultant supportive Capacity was assessed and is summarized in Annexure A 3.

It is observed that supportive capacity is negative in 4 grids, and therefore stone crushing and mining activities need to be controlled in these grids. Accordingly, the supporting capacity is converted to equivalent crushing & mining capacity using the ratio of net estimated PM<sub>10</sub> load and total crushing and mining capacity. This total allowable capacity is further separated to mining and crushing components, using the proportion of contribution of each activity to PM<sub>10</sub> emission load in the grid. Thus, the grid-wise stone crushing and the mining capacity, which may be permitted to operate within the assimilative capacity or available supportive capacity during winter season is computed and is summarized in the Table 14.

**Table 14. Grid wise capacity of stone crushing and mining to be permitted in winters**

<b>GRID ID</b>	<b>Stone Crushing Capacity, (TPD)</b>	<b>Allowable crushing capacity (TPD)</b>	<b>Mining capacity , (TPD)</b>	<b>Allowable mining capacity (TPD)</b>
<b>1</b>	<b>11162</b>	6760	<b>5382</b>	5357
2	360	2395	4287	4644
<b>3</b>	<b>8319</b>	6663	<b>6201</b>	6183
<b>4</b>	<b>6980</b>	6742	<b>2656</b>	2655
6	512	2307	NA	NA
<b>7</b>	<b>9582</b>	5283	<b>1135</b>	1128
11	280	5424	NA	NA
12	NA	NA	4017	11673
13	1800	7243	3135	3315
14	51	5335	2277	3573
15	918	7550	1365	1433
16	2639	8946	876	910
17	886	4357	2389	2507
37	3600	7378	2500	2550
47	60	4289	2102	3017
56	NA	NA	958	9213
57	338	5363	NA	NA
64	755	8269	172	195
66	NA	NA	417	8552

88	236	7726	560	727
89	377	8001	1643	2035
98	1018	7870	1906	2112
99	2732	9505	4253	4418
105	270	7460	300	408
107	2640	5909	3693	3773
108	5410	10767	1500	1526
115	158	7456	NA	NA
116	857	7735	547	607
117	5444	7670	7812	7859
118	216	6916	NA	NA
127	550	5232	1041	1144
129	751	8498	834	983

(d) Using **Table 14** above, the number of stone crushers and mines that can be allowed to operate are estimated based on the capacity of one stone crusher and one stone mine (Table 15). It is important to note that the crushing capacity for each stone crusher is different, and thus the number of crushers that may be permitted to operate is only indicative in nature, whereas the overall objective is to achieve reduction in net crushing capacity in the grid to meet the permissible capacity. List of existing stone crushers and mines (details enclosed as Annexure A 5) and the number of stone crushers and mines that can be allowed to operate, is summarised in following table:

**Table 15. No. of stone crushers and mines that can be permitted to operate during winters in 4 grids with negative supportive capacity**

<b>GRID ID</b>	<b>Number of stone crushers in the grid</b>	<b>No. of stone crushers that can be allowed to operate<sup>#</sup></b>	<b>Number of mines in the grid</b>	<b>No. of mines that can be allowed to operate<sup>##</sup></b>
1	61	37	10	10
3	22	18	9	9
4	5	4*	5	5
7	29	16	2	2

\*Floor function (largest nearest integer which is less than or equal to a specified value) used in this case

<sup>#</sup> Numbers have been calculated considering average capacity of the crushers hence, actual no. may vary as per the exact capacity of the crushers so that the total capacity does not exceed the capacity indicated at Table 14.

<sup>##</sup> Mining capacity may be proportionately reduced to match with the crushing capacity.

### 4.3 Summary

The carrying capacity for 4 km×4 km grids in Sahibganj District, Jharkhand was assessed using box model. The analysis was done for the critical winter season, when deterioration of air quality is a major concern.

4 grids were found to have negative supporting capacity, thereby reduction in stone crushing capacity is required in these 4 grids, i.e. Grids 1, 3, 4 and 7. It may also be noted that 58% of the stone crushers in Sahibganj district, considered in the analysis, are located in these four grids. According to the assessment, a total of 42 number of stone crushers, i.e. 24 stone crushers in Grid 1, 4 stone crushers in Grid 3, 1 stone crusher in Grid 4 and 13 stone crushers in Grid 7, may not be permitted to operate.

## 5.0 Assessment for Environmental Compensation

For assessment of Environmental Compensation (EC) for violators with respect to illegal or non-compliant stone mining and stone crushing operation in Sahibganj district, the following methodology may be considered:

### 5.1 Illegal or Non-Compliant Stone Mining

For assessing Environmental Compensation for illegal or non-compliant stone mining operation, JSPCB shall follow the methodology accepted by Hon'ble NGT in the matter of O.A. No. 75 of 2019 (CZ) (Vijay Singh Rajput Vs. State of M.P. & Ors.), vide its order dated 5.10.2020 as given below:

The volume of the illegal mining of the stone assumed as "**V**" m<sup>3</sup>, in the length of '**l**' m, width of '**w**' m and depth of '**d**' m

1. The market value per m<sup>3</sup> of the stone is Rs X.

*The market value is assessed by District Mining Office or State Pollution Control Board.*

2. Therefore, the total market value of the **V** m<sup>3</sup> illegal stone mines is calculated as **T = V × X Rs**

3. The proposed penalty is calculated as four times the market value of illegal mines  
Stone, Rs. = **4 × T**

*The proposed Environmental Compensation in the Hon'ble NGT matter of O.A. No. 75 of 2019 (CZ) was considered based on the M.P. Land Revenue Code 1956 (as amended) rule 247 (7).*

## 5.2 Illegal or Non-Compliant Stone Crusher

For assessing Environmental Compensation for illegal or non-compliant stone crusher, JSPCB shall follow the methodology prepared by CPCB and accepted by Hon'ble NGT as follows:

- I. **Nature of violation** – Discharges in violation of consent conditions, mainly prescribed standards/consent limits.
- II. **The basis for levying the Environmental Compensation** – Pollution Index
- III. The environmental compensation is based on the following formula:

$$EC = PI \times N \times R \times S \times LF$$

Where,

**EC**- Environmental Compensation

**PI**- Pollution Index of Industrial Sector, **for stone crusher: 50**

The industrial sectors have been categorized into Red, Orange, Green and White based on their Pollution Index range of 60 to 100, 41 to 59, 21 to 40, and <20, respectively (Table 16).

**Table 16 Categorywise Pollution Index Values**

Sl No	Industrial Category	Pollution Index (PI)	Average PI
1	Red	60-100	80
2	Orange	41-59	50
3	Green	21-40	30
4	White	<20	10

Based on the “Revised Classification of Industrial Sectors Under Red, Orange, Green and White Categories” published by the Central Pollution Control Board on February 29, 2016”, the PI for stone crushers is to be taken as 50.

**N** –Number of days of violation took place.

It is the period between the day of violation observed/due date of direction's compliance and the day of compliance verified by CPCB/SPCB/PCC.

As per the available records of previous inspections, JSPCB shall calculate the number of days of violation with respect to the non-compliance.

**R** – A factor in rupees for EC, to be taken as per CPCB’s guidelines

**S**- Factor of scale of operation, Scale of operation of stone crusher was taken as defined in CPCB’s Comprehensive Industry Document Series COINDS/78/2007-08 on Stone Crushers (Feb 2009) (Table 17)

**Table 17. Value for Factor of Scale of Operation**

SI No	Scale of Operation	Production Capacity (TPH)	Factor (S)
1	Small Scale	3-25	0.5
2	Medium Scale	25-100	1.0
3	Large Scale	>100	1.5

**LF** - Location factor.

It could be based on the population of the city/town and the location of the industrial unit. For the industrial unit located within the municipal boundary or up to 10 km distance from the municipal boundary of the city/town, the following factors (LF) may be used as mentioned in Table 18.

**Table 18. Location Factor Value**

SI No	Population (in Million)	Location Factor (LF)
1	1 - <5	1.25
2	5 - <10	1.5
3	>10	2.0

*\*\*LF will be 1.0 in case unit is located >10 km from municipal boundary or city/town having population less than 1 million.*

**LF is to be taken as 1.25** as the total population of Sahibganj district is 11,50,567 as per Census Data 2011.

The Environmental Compensation that would be imposed may be considered as interim. Detailed study on assessment of environmental compensation taking into account the cost of restoration for the damage caused and its apportionment among the violators may be done through the expert institute(s).

## 6.0 Recommendations

Based on the field visit (3<sup>rd</sup>-4<sup>th</sup> March 2022) and the carrying capacity study carried out by the Expert Committee, the following are recommended;

### 6.1 Measures to be taken for crushers/mines

- I. In the case of stone crushers, the crushing units (both primary & secondary) should be placed in a covered section and the crushing units having capacity more than 100 TPH, shall be provided with bag house as emission control system.
- II. The Crushers shall install scientifically designed adequate number of sprinklers with requisite hydraulic pressure and shall ensure that the sprinklers remained in operation during crushing period.
- III. JSPCB along with district administration shall ensure that crushers are not in operation without having requisite pollution control measures through strict vigilance. Priority may be given for the grids where negative supporting carrying capacity has been observed.
- IV. Conveyor belts should be covered /enclosed to avoid fugitive emission, without side gaps, in enclosure and belts.
- V. The crushed stones or finished products should be stored in a silo, or the finished goods should be kept lower than the height of wind-breaking walls. Strong structural base and framing should be provided for wind-breaking walls to withstand strong wind conditions. The height of the stockpile should always be kept lower than the height of the wind-breaking wall. The wall can be erected radially with a screen as center point. In addition, proper sprinkling arrangement should be provided all around the stockpiles.
- VI. The haul roads/roads within the mines/industry premises used for the transportation of the products from the stone crushers or mines shall be paved and sufficient number of sprinklers be in operation. The concerned crushers shall be responsible for installation and O&M.

- VII. Cleaning of crushing units and railway goods shed shall be performed with only mechanical means on regular basis.
- VIII. JSPCB shall direct the concerned agencies to maintain the national highways and other metalled roads to reduce fugitive emission.
- IX. The stone dusts from the stone crushing/ mines are dumped in the nearby area causing may be utilized for construction activities of the 4-lane highway and Ganga Bridge in the area and filling up the ponds/mine voids which were created during the stone mining or reclamation of the stone mines.
- X. A proper green belt is to be developed surrounding the crushers.

## 6.2 Measures to be taken for management of railway siding

- XI. Ten railway sidings and eight railway goods sheds are important source of pollution as they deal with 14,25,000 tonnes of materials (Stone Chips, Ballast and Bolder) per month (**Table 11**). Therefore, the railway sidings are recommended to be covered /enclosed with Galvanized Iron (G.I) / Mild Steel (M.S) sheets with proper pollution control system to avoid fugitive emissions. Proper housekeeping should also be maintained.
- XII. The loading/unloading points of the wagons shall be covered if possible or shall be equipped with scientifically designed sprinklers with adequate hydraulic pressure. The sprinklers should be in adequate number to maintain a water curtain along the loading/unloading points.
- XIII. The waste generated from the railway goods sheds/sidings shall be collected and segregated for proper disposal.
- XIV. Since the railway sidings are located near the clusters (**Table 12**), which may impact on human health, these shall be relocated to some safer distance.
- XV. The trucks, as well as the wagons, should be properly covered while transporting the stone chips.

### **6.3 Surveillance and monitoring**

- XVI. Pan-tilt-zoom or PTZ cameras must be installed at all the stone crusher units at appropriate locations to detect fugitive emissions. Feed of the PTZ cameras shall be shared with the JSPCB.
- XVII. The operating capacity of the Stone crusher units may be verified with the monthly electricity bills of the respective unit.
- XVIII. The units using DG set as power source may only be allowed to operate when the unit is having valid authorization as per Hazardous & Other Wastes (Management and Transboundary Movement) Rules, 2016.
- XIX. Random drone surveillance on the bank of river Ganga may be done to prevent illegal dumping of debris generated during stone mining, crushing or allied activities.
- XX. Online and manual ambient air quality monitoring stations may be installed in the grids where negative carrying capacity is observed to monitor atleast for measurement of PM10, PM2.5 and NOx. JSPCB may be responsible for operation of these stations however, the expenses incurred for the same may be recovered from the respective stone crushers and mines.
- XXI. The environmental management status shall be updated as well as verification of the adequacy of the pollution control devices installed in all the stone mines/ crushing units operating in the region shall be done by JSPCB & DC Sahibganj.

### **6.4 Environmental Compensation & Damage Assessment**

- XXII. JSPCB may impose Environmental Compensations (EC) for violators based on methodology as described in para 5.0 till the cost of restoration to the extent of damage including the deterrent element is assessed.
- XXIII. The cost of restoration of the actual damage and apportionment assessment may be carried out by technical institutes through JSPCB following the mechanism already developed by CPCB and circulated to all SPCBs/PCC following the direction of

Hon'ble NGT in the matter of O.A. No. 739/2018. The copy of the mechanism for "Assessment of Damage to Air Quality", "Damage Assessment of Health Issues" and "Agricultural Production Loss" w.r.t Stone Crushers" is given in **Appendix 11**.

- XXIV. A Comprehensive Environment Management plan may be prepared, for the areas where the stone mines and crushers are located, through the expert institutes like Indian Institute of Technology - India School of Mines (IIT-ISM), Dhanbad or any other reputed agency.



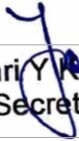
Prof. Mukhesh Sharma,  
IIT Kanpur



Prof. Sagnik Dey  
IIT Delhi



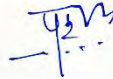
Dr. Narendra Sharma  
Additional Director,  
CPCB, RD, Chandigarh



Shri Y R Das  
Member Secretary, JSPCB



Shri M K Biswas  
Sc 'E' & Regional Director,  
CPCB RD Kolkata



Dr. Prashant Gargava  
Member Secretary, CPCB

**Annexure A 1. Grid-wise summary of stone crushers & stone mines**

<b>GRID ID</b>	<b>Number of stone crushers in the grid</b>	<b>Net capacity of the crushers in the grid (TPD)</b>	<b>Number of mines in the grid</b>	<b>Net capacity of the mines in the grid (TPD)</b>
1	61	11161.6	10	5381.7
2	1	360	7	4286.7
3	22	8319.1	9	6201
4	5	6980	5	2656.5
6	2	512	-	-
7	29	9582.3	2	1135
11	4	280	-	-
12	-	-	6	4016.9
13	1	1800	4	3135.2
14	1	51.2	2	2277
15	13	918	6	1364.6
16	5	2639.2	3	876.4
17	4	886	5	2389.3
37	2	3600	1	2500
47	1	60	2	2102
56	-	-	1	958
57	2	338	-	-
64	3	754.6	1	172
66	-	-	1	417
88	2	236	3	560
89	2	376.9	3	1643
98	2	1018	3	1906
99	6	2731.9	11	4253
105	1	270	1	300
107	3	2640	7	3692.5
108	6	5410	1	1500
115	1	158.4	-	-
116	3	856.8	3	547
117	15	5444	22	7812
118	2	216	-	-
127	3	550.1	6	1041.2
129	1	750.6	1	834
<b>Total</b>	<b>203</b>	<b>68900.7</b>	<b>126</b>	<b>63957.8</b>

**Annexure A 2. Grid-wise PM<sub>10</sub> emission load**

<b>GRID ID</b>	<b>PM<sub>10</sub> emission load due to road dust resuspension (kg per day)</b>	<b>PM<sub>10</sub> emission load due to stone crushing operations (kg per day)</b>	<b>PM<sub>10</sub> emission load (kg per day) from mines</b>	<b>Net PM<sub>10</sub> emission load (kg per day)</b>
1	20679	27283.9	269.1	48232.0
2	339	880.0	214.3	1433.3
3	7458	20335.5	310.1	28103.6
4	1695	17062.2	132.8	18890.0
6	678	1251.6	0.0	1929.6
7	9831	23423.4	56.8	33311.2
11	1356	684.4	0.0	2040.4
12	0	0.0	200.8	200.8
13	339	4400.0	156.8	4895.8
14	339	125.2	113.9	578.0
15	4407	2244.0	68.2	6719.2
16	1695	6451.4	43.8	8190.2
17	1356	2165.8	119.5	3641.2
37	678	8800.0	125.0	9603.0
47	339	146.7	105.1	590.8
56	0	0.0	47.9	47.9
57	678	826.2	0.0	1504.2
64	1017	1844.6	8.6	2870.2
66	0	0.0	20.9	20.9
88	678	576.9	28.0	1282.9
89	678	921.3	82.2	1681.5
98	678	2488.4	95.3	3261.7
99	2034	6678.0	212.7	8924.6
105	339	660.0	15.0	1014.0
107	1017	6453.3	184.6	7655.0
108	2034	13224.4	75.0	15333.4
115	339	387.2	0.0	726.2
116	1017	2094.4	27.4	3138.8
117	5085	13307.6	390.6	18783.2

118	678	528.0	0.0	1206.0
127	1017	1344.7	52.1	2413.7
129	339	1834.8	41.7	2215.5
Maximum	20679	27283.9	390.6	48232.0
Average	529.4	1295.6	24.6	1849.5
<b>Total</b>	<b>68817</b>	<b>168423.9</b>	<b>3197.9</b>	<b>240438.8</b>

**Annexure A 3 Grid-wise estimated PM<sub>10</sub> concentration due to crushing, road dust and mining**

<b>GRID ID</b>	<b>Estimated PM<sub>10</sub> concentration in Winter (µg/m<sup>3</sup>)</b>
1	112
2	55
3	89
4	77
6	60
7	111
11	32
12	11
13	28
14	20
15	19
16	22
17	45
37	43
47	32
56	6
57	33
64	12
66	7
88	11
89	8
98	16
99	17
105	14
107	47
108	30
115	14
116	17
117	56
118	19
127	35
129	9
<b>Average</b>	35
<b>Maximum</b>	112

**Annexure A 4. Grid wise PM<sub>10</sub> Assimilative Capacity/Load**

	<b>Winters</b> <b>(Assimilative PM<sub>10</sub> load= 46658 kg/day)</b>	
<b>GRID ID</b>	<b>Estimated PM<sub>10</sub> load using box model (kg/day)</b>	<b>Supportive Carrying Capacity (kg/day)</b>
<b>1</b>	<b>69675</b>	<b>-23018</b>
2	34216	12442
<b>3</b>	<b>55367</b>	<b>-8709</b>
<b>4</b>	<b>47902</b>	<b>-1244</b>
6	37326	9332
<b>7</b>	<b>69053</b>	<b>-22396</b>
11	19907	26750
12	6843	39814
13	17419	29239
14	12442	34216
15	11820	34838
16	13686	32971
17	27995	18663
37	26750	19907
47	19907	26750
56	3733	42925
57	20529	26128
64	7465	39192
66	4355	42303
88	6843	39814
89	4977	41681
98	9954	36704
99	10576	36082
105	8709	37948
107	29239	17419
108	18663	27995
115	8709	37948
116	10576	36082
117	34838	11820
118	11820	34838
127	21774	24884
129	5599	41059

## Annexure A 5. Grid wise list of Stone crushers and mines

## List of stone crushers in Grid 1

Sl. No.	Industry Name	Industry Address	Latitude	Longitude	Block	Khata No. & Plot No.	Ref. No.
1.	M/S SRI RAM STONE WORKS	MOUZA-NIMGACHI,MIRZACHOWKI	25.248535	87.484096	MANDRO	Mauza-Nimgachi, Plot No.- 659, Khata No.- 37	JSPCB/HO/RNC/CTO -9257797/2021/330
2.	M/S Pratik Stone Works	At-Belbhadri, Post-Mirzachowki, Dist-Sahibganj	25.24696	87.4828	MANDRO	Mauza-Belbhadri, Plot No.- 08, Khata No.- 05	JSPCB/HO/RNC/CTO -8547247/2021/850
3.	M/S KUNDAN KUMAR	MUNDLI	25.24576	87.49374	MANDRO	Mauza-Mundli, Plot No.- 03/P, 11	JSPCB/HO/RNC/CTO -5341122/2019/1638
4.	M/S Durga Stone Works	AT- Belbhadri, Post-Mirzachowki,Dist-Sahebganj	25.247449	87.483296	MANDRO	Mauza - Belbhadri, Plot No.- 07, Khata No.- 11	JSPCB/HO/RNC/CTO -8153120/2020/1205
5.	M/S Shanti Stone Works	At-Mundli, Post-Mirzachowki, Dist-Sahebganj	25.245591	87.493427	MANDRO	Mauza " Mundli, Plot No. - 03 & 04, Khata No.- 05 & 16,	JSPCB/HO/RNC/CTO -8031750/2020/992
6.	M/S Aditi Stone Works	At-Mundli, Post-Mirzachowki, Dist-Sahebganj	25.24632	87.49455	MANDRO	Mauza-Mundli, J.B. No.- 14, Plot No -21	JSPCB/HO/RNC/CTO -4545428/2019/542
7.	M/S JAI MATADI STONE WORKS	NEEMGACHHI	25.249835	87.492162	MANDRO	Mauza-Nimgachi, Plot No.- 534 to 536, Khata No.- 25 & 26	JSPCB/HO/RNC/CTO -10471375/2021/1381
8.	M/S Maa Vaishnavi Stone Works (Stone Crusher)	Mundli, Po.+Ps- Mirzachouki, Dist.- Sahibganj	25.247339	87.499022	MANDRO	Mauza " Mundli, Khata No. -12 & 19, Plot No -13 & 16/P	JSPCB/HO/RNC/CTO -5300537/2019/1143
9.	M/S MAHAMAYA STONE WORKS	TETERIA	25.255919	87.50528	MANDRO	Mauza-Teteria, Plot No.- 95 & 96	JSPCB/HO/RNC/CTO -7259744/2020/1148
10.	M/S MAA BAINNAVI STONE WORKS	AT- Mundali, Post-Mirzachowki,Dist-Sahebganj	25.24736	87.49624	MANDRO	Mauza -Mundli,Plot No - 24 (P), J.B. No.- 19	JSPCB/HO/RNC/CTO -5298742/2019/1150
11.	M/s Nath Stone Works	Belbhadri Sahebganj	25.24298	87.48245	MANDRO	Mauza - Belbhadri, Plot No.-44, J.B. No.- 21	JSPCB/HO/RNC/CTO -8019220/2020/1356
12.	Shree Hari Stone Works	At- Mundali, PS-Mirzachowki, Distt-Sahebganj	25.244415	87.49198	MANDRO	Mauza " Mundli, Plot No. 04/P, Khata No.- 05,	JSPCB/HO/RNC/CTO -10143737/2021/748

13.	M/S SRI SHYAM STONE WORKS	MARIKUTI	25.24349	87.48543	MANDRO	Mauza - Marikuti, Plot No - 10,11,20,22to2 5,30 Khata No - 29,16,06,39,12, 11	JSPCB/HO/RNC/CTO -7041388/2020/916
14.	M/S JAI GURU STONE WORKS	BARTALLA	25.241	87.475	MANDRO	Mauza - Bartalla, Khata No.- 23, Plot No.- 45	JSPCB/HO/RNC/CTO -6201301/2019/1928
15.	M/S ANANYA STONE WORKS	MUNDLI	25.24607	87.497844	MANDRO	Mauza-Mundli, Plot No.- 24, J.B. No.- 19	JSPCB/HO/RNC/CTO -8506410/2021/1343
16.	M/S VANSHRAJ STONE WORKS	BELBHADRI	25.243921	87.478513	MANDRO	Mauza- Belbhaddri, Plot No.-53, Khata No.- 03 Old & 14 New	JSPCB/HO/RNC/CTO -10181615/2021/717
17.	M/S RAJ STONE WORKS	BARTALLA	25.25629	87.499513	MANDRO	Mauza-Bartolla, Plot No.- 120/P, 124/P, 125/P, 127/P	JSPCB/HO/RNC/CTO -4517320/2021/1136
18.	M/S MAA GAYTRI STONE WORKS	Plot no - 132P,133,134P, 162, 163, 164, AT- Mahadevbaran	25.25124	87.49348	MANDRO	Mauza-Mahadevbaran, Plot No.- 162, 163, 164, 133, 132/P, 134/P, Khata No.- 24	JSPCB/HO/RNC/CTO -8207523/2020/1688
19.	GANPATISTONE WORKS	BARTALLA	25.251	87.495	MANDRO	Mauza- Bartalla, Plot No.- 455	JSPCB/HO/RNC/CTO -9144978/2021/452
20.	M/S SUMIT STONE WORKS	MUNDLI	25.247793	87.495008	MANDRO	Mauza-Mundli, Plot No.- 25/P, Khata No.- Nil	JSPCB/HO/RNC/CTO -10585871/2021/865
21.	M/S MAHADEO STONE WORKS	MAHADEOBARAN	25.25061	87.49271	MANDRO	Mauza-Mahadeobaran, Plot no.- 140, 141, Khata No.- 24	JSPCB/HO/RNC/CTO -9386949/2021/394
22.	M/S SRI SRI RAM STONE WORKS	BELBHADRI	25.245014	87.481722	MANDRO	Mauza- Belbhaddri, Khata No.-15, Plot No.- 02	JSPCB/HO/RNC/CTO -10181479/2021/560
23.	M/S Subhadra Stone Works	Vill-Bartalla, Post- Mirzachowki, Dist-Sahebganj	25.2574	87.49951	MANDRO	Mauza-Bartalla, Plot No.- 152 & 153, Khata No.-40	JSPCB/HO/RNC/CTO -10359901/2021/679
24.	M/S BHARAT STONE WORKS	NIMGACHI	25.2558	87.49	MANDRO	Mauza-Nimgach, Plot No.- 681, Khata No.- 23	JSPCB/HO/RNC/CTO -5867170/2019/1697
25.	M/S Chandan Stone Works	At-Nimganchi, Post- Mirzachowki, Dist-Sahebganj	25.245655	87.48165	MANDRO	Mauza-Nimgachi, Plot No.- 668, Khata No.- 18	JSPCB/HO/RNC/CTO -10284102/2021/757
26.	M/S GUPTA INDUSTRIES	NIMGACHI	25.24733	87.4815	MANDRO	Mauza-Nimgachi, Khata No.-04, Plot No.- 779	JSPCB/HO/RNC/CTO -10146068/2021/783
27.	M/S Tarkeshwer	Mouza- Bhutaha Plot No- 09p	25.24598	87.50131	MANDRO	Mauza - Bhutaha Plot	JSPCB/HO/RNC/CTO

	jaiswal	area- 2.28acres				No 09 , Khata No.- 26	-6877063/2020/189
28.	M/S RATAN STONE WORKS	MAUZA - NEEMGACHHI, MIRZACHOUKI, SAHIBGANJ	25.248506	87.483138	MANDRO	Mauza - Nimghachi, Plot No - 673, Khata No-21	JSPCB/HO/RNC/CTO -8062462/2020/1034
29.	M/S Adarsh Stone Works	At-Mundli, Post-Mirzachowki, Dist-Sahebganj	25.247339	87.499022	MANDRO	Mauza - Mundli, Khata No.- 13	JSPCB/HO/RNC/CTO -8813506/2021/1344
30.	M/S SHIV STONE WORKS	BELBHADRI, MIRZACHOUKI	25.246454	87.482858	MANDRO	Mauza-Belbhadri, Khata No.- 24, Plot No.- 02 & 05	JSPCB/HO/RNC/CTO -8306409/2020/1326
31.	M/S GUPTA STONE WORKS	NIMGACHI	25.247	87.482	MANDRO	Mauza-Nimgachi, Plot No.- 776(P), Khata No.16	JSPCB/HO/RNC/CTO -7351327/2020/993
32.	M/s Jaiswal stone works	mahadeobaran mirzachouki	25.24873	87.49411	MANDRO	Mauza : Mahadeo Baran, Khata No. : 06, Plot No.- 233/P	JSPCB/HO/RNC/CTO -5356479/2019/1434
33.	M/S SHYAM STONE WORKS	AT - BELBHADRI, PO-MIRZACHOWKI, SAHEBGANJ	25.243487	87.485434	MANDRO	Mauza-Belbhadri, Khata No.- 02 & 16, Plot No. 31 & 32	JSPCB/HO/RNC/CTO -5526837/2019/1500
34.	M/S HIMALYA STONE WORKS	PAHARPUR	25.243	87.4861	MANDRO	Mauza-Paharpur, Khata No.- 17, Plot No.- 05	JSPCB/HO/RNC/CTO -10787947/2021/1501
35.	M/S Balaji Stone Works	Mauza -Mundli , PS - Mirzachowki, District - SAHEBGANJ	25.247483	87.481289	MANDRO	Mauza - Mundli, Khata No.-14, Plot No.-21	JSPCB/HO/RNC/CTO -11111298/2021/1348
36.	Hindustan Stone Works	Paharpur Po.- Mirzachowki, Dist.- Sahibganj	25.23719	87.486947	MANDRO	Mauza-Paharpur, Khata No.-26, Plot No.- 04	JSPCB/HO/RNC/CTO -10609407/2021/1106
37.	JAI BAJARANG STONE WORKS	BELBHADRI	25.244039	87.482846	MANDRO	Mauza-Belbhadri, Plot No.- 49, 47	JSPCB/HO/RNC/CTO -7828434/2020/1129
38.	M/S S. S. BLACK STONE WORKS	BELBHADRI	25.238721	87.486833	MANDRO	Mauza-Belbhadri, Khata No.- 10, 11, Plot No.- 198/P, 199/P,	JSPCB/HO/RNC/CTO -7989682/2020/1064
39.	M/S NARAYAN STONE WORKS	MAUZA - BARTALLA, MIRZACHOUKI, SAHIBGANJ	25.256336	87.502079	MANDRO	Mauza-Bartalla, J.B. No.- 16, 18, 23, Plot No.- 106 to 113	JSPCB/HO/RNC/CTO -7825958/2020/1239
40.	M/S MAA SARASWATI STONE WORKS	MUNDLI	25.245906	87.493385	MANDRO	Mauza-Mundli, Khata No.- 16, Plot No.-03	JSPCB/HO/RNC/CTO -8601142/2021/356
41.	M/S NOORANI &	MAUZA - TETARIA,	25.25583	87.505	MANDRO	Mauza-Tetaria, Khata No.	JSPCB/HO/RNC/CTO

	BROTHERS	MIRZACHOUKI, SAHIBGANJ				-24, Plot No -237/P and 238/P	-5653299/2019/1781
42.	M/S PUJA STONE WORKS	MAHADEOBARAN	25.249993	87.491727	MANDRO	Mauza-Mahadeobaran, Plot No.- 158 & 159	JSPCB/HO/RNC/CTO -10495425/2021/1366
43.	M/S D. D. S. STONE WORKS	PAHARPUR	25.233387	87.48379	MANDRO	Mauza - Paharpur, Khata No.-08, Plot No.- 133 & 134	JSPCB/HO/RNC/CTO -5477764/2019/1172
44.	M/S B. B. S. STONE WORKS	PAHARPUR	25.23449	87.48448	MANDRO	Mauza- Pahar, Khata No.- 08, Plot No.- 136 & 137	JSPCB/HO/RNC/CTO -4647252/2019/587
45.	M/S NOOR STONE WORKS	NEEMGACHI , MIRZACHOKI	25.242934	87.477957	MANDRO	Mauza-Nimgachi, Khata No. New 10, Old 16, Khesra No. New 921, 922 Old 781, 782	JSPCB/HO/RNC/CTO -6730726/2020/611
46.	M/S JAY MAA KALI STONE WORKS	NEEMGACHI	25.247239	87.481562	MANDRO	Mauza - Nimgachi, Plot No.- 678, 679 & 680	JSPCB/HO/RNC/CTO -8155706/2020/1389
47.	M/S NOOR STONE WORKS	Vill - Nimganchi, Post- Mirzachouki, Dist - Sahibganj	25.242591	87.477442	MANDRO	Mauza-Nimgachi, Khata No.- 10, Plot No.- 921 & 922	JSPCB/HO/RNC/CTO -6766883/2020/690
48.	M/S Universal Enterprises	Mouza-Jokmari	25.237158	87.488237	MANDRO	Mauza -Jokmari Gutibera, Plot No. 147/P, Khata No.-14	JSPCB/HO/RNC/CTO -8104948/2020/1218
49.	M/S MAA BHAWANI STONE WORKS	BELBHADRI	25.244263	87.479803	MANDRO	Mauza - Belbhadri, J.B. No.- 10, Plot No.- 199/P, 204	JSPCB/HO/RNC/CTO -10217266/2021/715
50.	M/S NEHA STONE WORKS	AT.- BELBHADRI, PS + PO - MIRZACHOWKI, SAHEBGANJ	25.250752	87.494538	MANDRO	Mauza - Bhelbhadri, Plot No.- 55, Khata No.- 17	JSPCB/HO/RNC/CTO -10731395/2021/1498
51.	MAA SHEETLA STONE WORKS	MARIKUTI	25.241	87.487	MANDRO	Mauza - Marikuti, Plot No. 44, 45/P, J.B. No. - 11, 08.	JSPCB/HO/RNC/CTO -5749106/2019/1826
52.	M/S MAA LAXMI STONE WORKS	BELBHADRI	25.244196	87.47801	MANDRO	Mauza-Belbhad ri, J.B. No. 17, Plot No. 205/P	JSPCB/HO/RNC/CTO -5867938/2019/1698
53.	HINDUSTAN STONE WORKS	BELBHADRI, MIRZACHOWKI	25.257171	87.502575	MANDRO	Mauza - Paharpur No.- 03, Plot No - 213, J.B. No.- 03	JSPCB/HO/RNC/CTO -10609500/2021/1107

54.	M/S AMBIKA STONE SUPPLY CO.	Mouza-Bartalla, Mirzachowki, Plot No.-141 To 147	25.25666	87.504081	MANDRO	Mauza-Bartalla, Plot No.- 141 to 147	JSPCB/HO/RNC/CTO -10186715/2021/1367
55.	M/S SHILA MINERALS	TETARIA	25.245581	87.498336	MANDRO	Mauza-Tetaria, Plot No.- 92, 93, 213, Khata No.-24	JSPCB/HO/RNC/CTO -8129220/2020/1251
56.	M/S MAA AMBE STONE WORKS	MUNDLI	25.24598	87.50131	MANDRO	Mauza-Mundli, Plot No.- 04, J.B.- 05	JSPCB/HO/RNC/CTO -10482275/2021/1131
57.	M/S D & D S STONE WORKS	PAHARPUR	25.234795	87.484439	MANDRO	Mauza " Paharpur No.- 01, Plot No. " 141/P, Khata No.- 04	JSPCB/HO/RNC/CTO -8070573/2020/1036
58.	M/s CTS Industries Ltd (Mirzachowki)	Plot No. 9 & 10, Khata No. 13 & 14, Mauza: Chota Damin Bitha (Damramako), Anchal: Mandro, Dist.: Sahibganj	25.236135	87.492029	PATHNA	Mauza - Damramako Chotamdamin Bitha, Khata No.- 13, 04, Plot No.- 09 & 10	JSPCB/HO/RNC/CTO -9698017/2021/52
59.	ECO FRIENDLY INFRA TECHNOLOGY PVT LTD	MOUZA ½ BALBHADRI, NO-03	25.237409	87.490904	RAJMAHA L	Mauza-Belbhadri, JB No.- 17, Plot No. 214 (P)	JSPCB/HO/RNC/CTO -9640195/2021/488
60.	M/S MAA BHAVANI STONE WORKS	NIMGACHI	25.248022	87.481923	MANDRO	Mauza - Nimgachi, Khata No.15, Plot No.- 682	JSPCB/HO/RNC/CTO - 8258602/2020/1320
61.	M/S MANOJ KUMAR STONE WORKS	NIMGACHI	25.246205	87.480648	MANDRO	Mauza-Nimgachi, Khata No.- 05, Plot No.- 757	JSPCB/HO/RNC/CTO - 10228406/2021/674

**List of mines in Grid 1**

Sl. No.	Industry Name	Industry Address	Lat	Long	Block	Type of Industry
1	M/s Maa Vaishnavi Stone Works (Mundali Stone Mines)	Mauza.- Mundli, P.o.- Mirzachowki, Dist.- Sahebganj	25.2419	87.49065	MANDRO	Mining and ore beneficiation
2	MUNDALI STONE MINE	Mauza - Mundali, PO+PS - Mirzachowki, Dist - Sahebganj	25.24392	87.49612	MANDRO	Mining and ore beneficiation
3	Jai Maa Bhagwati Stone Works	Belbhadri, Po.- Mirzachowki, Dist.- Sahibganj	25.24108	87.49019	MANDRO	Mining and ore beneficiation
4	M/S Maa Basnawi Stone Works (Mundli Stone Mine)	Mundli, PO.- Mirzachowki, Dist.- Sahibganj	25.24453	87.49617	MANDRO	Stone Mines
5	M/S Sri Budhwa Paharia	At-Mundli, Post- Mirzachowki, Dist- Sahebganj	25.24303	87.4931	MANDRO	Mines
6	M/s Tarkeshwar Jaiswal (Mundli Stone Mine)	Mauza.- Mundali, P.o.- Mirzachowki, Dist.- Sahebganj	25.24181	87.49639	MANDRO	Mines
7	M/S MAA RAKSI STONE WORKS	BHUTAHA	25.24083	87.49862	MANDRO	Stone Mines
8	MS STAR INDIA INDUSTRIES	Chhota Daminbhitta	25.23856	87.49831	MANDRO	Stone crushers
9	MS STAR INDIA MINING MINERALS	Bhutaha & Chhota Damin Bhita	25.23978	87.49831	MANDRO	Stone crushers
10	CTS Industries Limited	Chhota Damin Bhita, Mirzachauki, District: Sahebganj.	25.23309	87.49414	Mandro	Stone Mines

**List of stone crushers in Grid 3**

Industry Name	Industry Address	Latitude	Longitude	Block	Khata No. & Plot No.	Ref. No.
M/S LALITA ENTERPRISES	MOUZA- DESHIPOKHARIA	25.237611	87.56345	BORIO	Mauza â€“ Deshipokharia, Plot No. 54/P, Khata No.-32,	JSPCB/HO/RNC/CTO -8024236/2020/1032
M/S NINJA STONE	MAUZA - JOKMARI, MAHADEOGANJ, SAHIBGANJ	25.232661	87.5791	BORIO	Plot No - 07, Khata No - 68	JSPCB/HO/RNC/CTO -12207308/2022/134
M/S Noor Stone Works	Mauza- Marikuti	25.239184	87.570296	MANDRO	Mauza-Maricutti, Plot No . 30/P & 36/P, Khata No.- 11	JSPCB/HO/RNC/CTO -8144380/2020/1217
M/S ANKIT STONE INDUSTRIES	MAHADEOVARAN	25.229	87.5705	MANDRO	Mauza â€“ Mahadeobaran, Plot No.- 144, 145/P, 208, 193	JSPCB/HO/RNC/CTO -10161444/2021/681
M/S DADA JEETU BUILDCON Pvt. Ltd.	DESHI POKHARIA	25.23797	87.560178	MANDRO	Mauza - Deshipokharia, J.B. No. 21 & 04, Plot No. 61/P & 62/P	JSPCB/HO/RNC/CTO -4996650/2019/830
M/S TAMANNA STONE WORKS	MOUZA-MARIKUTI	25.236	87.5687	MANDRO	MauzaMarikuti, Khata No.- 11, Plot No 29 & 30	JSPCB/HO/RNC/CTO -7030429/2020/994
M/S VANVASI KALYAN STONE WORKS	AT + MOUZA - MARIKUTI, PS- MUFFASIL, SAHEBGANJ	25.238212	87.572767	MANDRO	Mauza â€“ Marikuti, Plot No . 47/P & 48/P, Khata No.- 03 & 09	JSPCB/HO/RNC/CTO -7858965/2020/1122
M/s Kashi Viswanath Stone Works	Belbhaddri, Po.-Mirzachowki, Dist.- Sahibganj	25.229	87.5705	MANDRO	Mauza-Belbhaddri, Khata No.- 24, Plot No.- 03, 04, 05, 06,	JSPCB/HO/RNC/CTO -8878516/2021/293
M/S BALAJI STONE WORKS	MAUZA JOKMARI MAHADEOGANJ	25.246073	87.586558	MANDRO	Mauza - Jokmari, J.B. No.- 02/81, Plot No . 229/119	JSPCB/HO/RNC/CTO -10164294/2021/637
M/s Maa Durga Stone Works	Mouza-Marikuti, Plot No- 45P,51P,71P,72,73P,74P,75P ,76P,AREA-03.12 ACRES	25.23696	87.571673	MANDRO	Khata No. â€“ 08, 17, 27, 33, 36; Plot Nos. - 45P, 51P, 71P, 72, 73P, 74P, 75P & 76P	JSPCB/HO/RNC/CTO -11756418/2022/160
BPY INFRA BUILD PVT LTD	Vill-Jokmari,Po- Mahadevganj,dist- sahibganj,pin-816109.	25.2391	87.58138	MANDRO	Mauza - Jokmari, Khata No.- 81, Plot No . 38/P	JSPCB/HO/RNC/CTO -8487964/2021/1351
M/S MAA AMBA STONE WORKS	MOUZA-MARIKUTI	25.236906	87.574446	MANDRO	Mauza - Marikuti, Khata No.- 36, Plot No.-51/P	JSPCB/HO/RNC/CTO -11366156/2021/1346
M/S OM STONE WORKS	NEEMGACHI	25.2386	87.5669	MANDRO	Mauza-Neemgachi, J.B. No.- 01, Plot No.- 674	JSPCB/HO/RNC/CTO -8535980/2020/1391
M/S SRI SHYAM STONE WORKS	Mauza- MARIKUTI	25.2518	87.5487	MANDRO	Mauza - Marikuti , Khata No.- 02, 08, 11 & 39, Plot No.- 02, 03, 04, 26, 27, 28 & 30	JSPCB/HO/RNC/CTO -9563127/2022/106

M/s Maa Amba Stone Works	Marikuti, Po.-Mahadeoganj, Dist.- Sahibganj	25.237361	87.574636	MANDRO	Mauza - Marikuti, Plot No - 52, 53 Khata No - 24, 16	JSPCB/HO/RNC/CTO -8460131/2021/738
M/s Star Stone Works	MariKuti, Po.- Mandro, Dist.- Sahibganj	25.239534	87.571221	MANDRO	Mauza-Marikuti, Plot No.- 33 & 34, Khata No.- 33	JSPCB/HO/RNC/CTO -3611762/2018/2085
M/S JYOTI CREATORS PVT. LTD (STONE CRUSHER)	Mauza- MARIKUTI, P S - MAHDEOGANJ, District- SAHEBGANJ	25.23778	87.5725	MANDRO	Mauza- Marikuti ,Khata No.- 03, 28, 34, Plot No.- 37, 38, 208	JSPCB/HO/RNC/CTO -9178838/2021/208
Sonamtech Buildcon Private Limited	Mouza-Marikuti, Plot No.- 10,11, Area- 2.10 Acors	25.23812	87.56754	MANDRO	Mouza - Marikuti, Plot No - 10,11, Khata No - J.B. No - 29	JSPCB/HO/RNC/CTO -11286542/2021/1483
M/S ASCENT INFRABUILD L L P	MARIKUTI, MAHADEOGANJ	25.23787	87.57615	MANDRO	Mauza-Marikuti, Khata No. - 27, Plot No -58 & 59	JSPCB/HO/RNC/CTO -8937966/2021/270
M/S Patliputra Enterprises Pvt ltd	Vill-Chubey, Post-Bari Kodarjanna, Dist-Sahebganj	25.25349	87.54803	MANDRO	Mauza-Chubey, Plot No - 5 & 6, Khata no,- 19	JSPCB/HO/RNC/CTO -6426855/2020/1033
KARAMBI STONE WORKS	PINDHARI,PO- MAHADEOGANJ.	25.2363	87.571063	MANDRO	Mauza - Pindhari, Plot No. 279, 280, 281, 312, 313 & 314	JSPCB/HO/RNC/CTO -9287805/2021/112
Mahakal Stone Works	Mauza- Desh Pokhariya,PO- Mahadeoganj,PS- Jirwabari,Dist-Sahebganj	25.238222	87.565661	SAHEBGA NJ	Mauza- Desh Pokhariya, Plot no - 42,43,44 Khata No - 21, 06	JSPCB/HO/RNC/CTO -11431346/2022/23

### List of mines in Grid 3

Sl. No.	Industry Name	Industry Address	Lat	Long	Block	Type of Industry
1	M/S MAA AMBA STONE WORKS	MOUZA-DEMBA	25.23203	87.57742	MANDRO	Mines
2	M/s Mahaveer Engicons Private Limited	Demba	25.22831	87.57383	MANDRO	Mining and ore beneficiation
3	M/S MOHAM MAD SHEK FARSAD	MOUZA-DESH POKHARIA, PLOT NO- 73P,77P,79P,83P,100, AREA- 03.34 ACRES	25.23491	87.56091	MANDRO	Mining and ore beneficiation
4	MS YASHRAJ BLACK STONE WORKS (Stone Mines)	Demba, Po.- Mahadeoganj, Ps.- Jirwabari, Dist.- Sahibganj	25.2308	87.58175	MANDRO	Mining and ore beneficiation
5	M/S BLACK STONE WORKS	MOUZA-DESHPOKHARIA & AMJHOR	25.23581	87.55478	MANDRO	Mines

6	M/S Maa Laxmi Stone Works (Stone Mines)	At.- Demba, Po.- Mahadeoganj, Ps.- Jirwabari, Block - Mandro, Dist.- Sahibganj	25.23118	87.57753	MANDRO	Mining and ore beneficiat ion
7	M/S MINAKSH I STONE WORKS	MAUZA - DEMBA, MIRZACHOUKI, SAHIBGANJ	25.23038	87.58336	MANDRO	Mines
8	M/S KASHI BUILDERS & SERVICES Pvt. Ltd.	JOKMARI (MAHADEVGANJ)	25.23976	87.58508	Mandro	Stone Mines
9	CTS Industries Limited (10 acre Mines SBJ)	District - Sahebganj	25.24176	87.58633	Mandro	Mines

**List of stone crushers in Grid 4**

Industry Name	Industry Address	Latitude	Longitude	Block	Khata No. & Plot No.	Ref. No.
Old Name-M/s A K Builders & New Name-M/s Maa Jagdambey Stone Works	Mouza-Jokmari (Guthi Beda)	25.24624	87.58812	MANDRO	Mauza -Jokmari (Guthi Beda), Plot No -69/P, Khata No. -34,	JSPCB/HO/RNC/CT O-10975793/2021/1066
M/S SINGH DEEP STONE WORKS	MAUZA - JOKMARI, MAHADEOGANJ, SAHIBGANJ	25.243358	87.591483	MANDRO	Mauza - Jokmari, J.B. No.- 55 & 79, Plot No -79 & 78	JSPCB/HO/RNC/CT O-5404612/2019/1169
CTS Industries Ltd(Mahadeoganj)	Plot No. 69, 71 & 72; Khata No. 34 & 41; Mauza: Jokmari, Anchal: Mandro, Dist.: Sahebganj	25.24567	87.59035	MANDRO	Mauza-Jokmari, J.B. No.- 34 & 41, Plot No.- 69, 71, 72	JSPCB/HO/RNC/CT O-9639611/2021/460
DILIP BUILDCON LIMITED UNIT 1 & 2	SRIRAM CHOUKI AMBADIHA	25.24016	87.59558	MANDRO	Plot Nos. -Jokmari (Guthi Beda), Plot No. -377(P), 378, 369(P), 373; J.B. No. - 14, 45	JSPCB/HO/RNC/CT O-11725540/2022/159
M/S AWADH KISHORE & SONS	TETARIYA	25.239488	87.592649	MANDRO	Mauza-Tetaria, Khata No.- 13, Plot No.- 93 & 94/P	JSPCB/HO/RNC/CT O-4880800/2019/796

**List of mines in Grid 4**

Sl. No.	Industry Name	Industry Address	Lat	Long	Block	Type of Industry
1	Chaman Tulsyan	Plot No. 85,88(P),86; Khata No.: 45,52,09; P.S.: Jirwabadi (No. 13 Borio)	25.24083	87.58944	MANDRO	Stone Mines
2	M/S CHATURA NAND PANDEY	MAUZA - JOKMARI, MAHADEOGANJ, SAHIBGANJ	25.23805	87.59101	MANDRO	Mining and ore beneficiat ion
3	M/S Maa Jagdambe Stone Works (JAI MAA DURGE)	JOKMARI (GUTTIBERA)	25.23689	87.58908	MANDRO	Stone Mines
4	M/S ADARSH GROUP	MOUZA-JOKMARI	25.23494	87.59353	MANDRO	Stone Mines
5	M/s Baba Projects Pvt. Ltd	At- Pachrukhi, PS- Boriya, Distt- Sahibganj	25.22789	87.60328	Mandro	Mining and ore beneficiat ion

**List of stone crushers in Grid 7**

Sl. No.	Industry Name	Industry Address	Latitude	Longitude	Block	Khata No. & Plot No.	Ref. No.
1.	VIKASH STONE WORKS (Stone Crusher)	CHOTI BHAGIAMARI, Khata No.-76, Plot No.-853, SAKRIGALI	25.23451	87.71919	TALJHARI	Mauza-Choti Bhagamari, Khata No.- 76, Plot No.- 853	JSPCB/HO/RNC/CTO-9119918/2021/434
2.	MAA SHITLA STONE WORKS	Mauza- Gudwa	25.23548	87.72118	TALJHARI	Mauza- Gudwa, Khata No.- 47, Plot No 10/P	JSPCB/HO/RNC/CTO-5531890/2019/1296
3.	M/S BALRAM STONE WORKS	MOUZA- AMBADIHA	25.236032	87.721123	TALJHARI	Mauza-Ambadiha, Khata No.-12, Plot No -254	JSPCB/HO/RNC/CTO-5895756/2019/1922
4.	Shiv Shankar Stone Works	Ambadih, PLOT NO 259, JB NO 04	25.23892	87.72451	TALJHARI	Mauza - Ambadih, J.B. No.-04, Plot No -259	JSPCB/HO/RNC/CTO-5404493/2019/1453
5.	M/S SARASWATI STONE WORKS	MOUZA-CHHOTI BHAGIYAMARI, PL OT NO-844P,845	25.235571	87.719557	TALJHARI	Mauza Choti Bhagamari, Plot No . 844/P & 845, Khata	JSPCB/HO/RNC/CTO-8809645/2020/1492
6.	M/S G R G STONE WORKS	CHHOTI BHAGIAMARI SAKRIGALI SAHIBGANJ	25.235575	87.719557	TALJHARI	Mauza - Chhoti Bhagamari, Plot No- 824	JSPCB/HO/RNC/CTO-5161634/2019/967
7.	M/S KISHORE KUMAR	AMBADIHA, SAKRI GALI, SAHIBGANJ	25.23876	87.7229	TALJHARI	Mauza-Ambadiha, Plot No.- 183 & 184	JSPCB/HO/RNC/CTO-8142879/2020/1321
8.	NEW RAJASTONEWORKS OLDSHIVAMSTONENWORKS	MOUZA-CHHOTI BHAGIYAMARI	25.23662	87.71932	TALJHARI	Mauza- Chhoti Bhagamari, Plot No.- 822/P, J.B. No. 47	JSPCB/HO/RNC/CTO-11416807/2021/1656
9.	Prakash Chandra Yadav	Gudwa, Po.- Sakrigali, Dist.- Sahibganj	25.23186	87.72151	TALJHARI	Mauza-Gudwa, Khata No.- 47,55,12,25,49, 50 & 34, Plot No.- 10/P, 11/P, 14/P, 15, 16/P, 17/P & 18/P	JSPCB/HO/RNC/CTO-8619298/2021/697
10.	M/S KISHOR KUMAR RAY	MOUZA- AMBADIHA	25.2383	87.72163	TALJHARI	Mauza - Ambadiha, Khata No. 31, Plot No 186	JSPCB/HO/RNC/CTO-10645262/2022/95
11.	M/S ADITAYA STONE WORKS	CHHOTA BHAGIYAMARI	25.233486	87.718535	TALJHARI	Mauza - Chhota Bhagiya Mari, Khata No.-42, Plot No. 923	JSPCB/HO/RNC/CTO-5095076/2019/958

12.	M/S SUBHAM STONE WORKS	AMBADIHA,SAKRI GALI	25.23965	87.72474	TALJHARI	Mauza â€“ Ambadiha, Plot No. 170/P , J.B. No.- 30	JSPCB/HO/RNC/CTO-7596397/2020/991
13.	M/S SANTOSHSTONE INDUSTRIES	JAMUNI	25.234032	87.72473	TALJHARI	Mauza-Jamuni, Plot No.- 170 & 171	JSPCB/HO/RNC/CTO-4858001/2019/775
14.	M/S Mineral India	Village: Gudwa, Thana: Taljhari, Dist: Sahibganj, State- Jharkhand.	25.23028	87.72097	TALJHARI	Mauza - Gudwa, Plot No.- 26 P & 27 P, Khata No.- 44 & 09	JSPCB/HO/RNC/CTO-5338225/2020/837
15.	M/s Prakash Chandra Yadav (Stone Crushing)	At - Gudwa,P.O: Sakrigali, District- Sahebganj, state- Jharkhand	25.2375756	87.7220332	TALJHARI	Mauza - Gudwa, Plot No.- 10, 11, 14 to 17 & 18(P), Khata No.- 47,55,12,25,49, 50,34	JSPCB/HO/RNC/CTO-5338215/2020/640
16.	M/S SHLOK YADAV	CHHOTI BHAGIYAMARI	25.23395	87.71954	TALJHARI	Mauza â€“ Chhoti Bhagiyamari, Plot No. 924/P & 10/P, Khata No.- 56 & 47,	JSPCB/HO/RNC/CTO-8025322/2020/1317
17.	M/S AMIT YADAV	CHHOTI BHAGIYAMARI	25.233195	87.719836	TALJHARI	Mauza â€“ Chhoti Bhagiyamari, Plot No. 854, Khata No.- 72	JSPCB/HO/RNC/CTO-8334425/2020/1220
18.	M/S RAJESH STONE WORKS	KALYANI,MAHARA JPUR	25.228685	87.718179	TALJHARI	Mauza - Kalyani, Khata No.- 15, Plot No.- 185, 186 & 187	JSPCB/HO/RNC/CTO-7339210/2020/1125
19.	M/S ADITYA STONE WORKS	SAKRIGALI	25.23411	87.71839	TALJHARI	Mauza-Chhotib hagia mari, Plot No.- 922	JSPCB/HO/RNC/CTO-9164979/2021/395
20.	M/s Vishwanath Stone Works	Ambadiha, Sakrigali, Sahibganj	25.237977	87.720208	TALJHARI	Mauza- Ambadiha No.- 07, J.B. No.12	JSPCB/HO/RNC/CTO-9621646/2021/454
21.	APEX ENTERPRISES	Mauza- Choti Bhaiyamari P.o- SakrigaliP.s- Taljhari District- Sahibganj, Pin- 816115; Jharkhand	25.23461	87.71758	TALJHARI	Mauza- Chhoti Bhaiyamari, Khata No. 72, Plot No. 849/P	JSPCB/HO/RNC/CTO-10933765/2021/1314
22.	M/S MADANKANT	KIROKURIA	25.227315	87.70793	TALJHARI	Mauza - Kirokuria, J.B. No. 14 Plot No. 02/P (Outside Mining Lease Area)	JSPCB/HO/RNC/CTO-11418767/2021/1668

23.	M/S SHANTI STONE WORKS	VIL- AMBADIAH, POSAKRIG ALI, PS- TALJHARI, DISTSAHIB GANJ, PIN-816115.	25.23802	87.71946	TALJHARI	Mauza-Ambadiha, Khata No.- 02, 07, Plot No.- 202. 226, 299, 300 & 323	JSPCB/HO/RNC/CTO- 9261189/2021/864
24.	MAA SHITLA STONE WORKS	Mauza- Gudwa	25.235128	87.720839	TALJHARI	Mauza - Gudwa, Khata No.- 47, Plot No.- 10/P,	JSPCB/HO/RNC/CTO- 4296420/2019/214
25.	M/S SHIV STONE WORKS	MAUZA - CHHOTI BHAGIAMARI, SAKRIGALI, SAHIBGANJ	25.236126	87.719829	TALJHARI	Mauza- Chhoti Bhagiyamari, J.B. NO. 04, Plot No. 825	JSPCB/HO/RNC/CTO- 4846145/2019/710
26.	M/S SANTOSH STONE INDUSTRIES	MOUZA-BARA BHAGIAMARI , SAKRIGALI, SAHIBGANJ	25.237198	87.723216	TALJHARI	Mauza- Bara Bhagiamari, Plot No.- 189/P, 190/P, 191 & 45	JSPCB/HO/RNC/CTO- 4857524/2019/774
27.	M/S HAR HAR MAHADEV STONE WORKS	CHHOTIBHAGIAMAR I, SAKRIGALI , SAHIBGANJ	25.233191	87.718095	TALJHARI	Plot No. -840, J.B. No. 71, Mauza-Chhotibhagiyamari	JSPCB/HO/RNC/CTO- 11379832/2022/38
28.	M/S DEV STONE WORKS	CHOTTI BHAGIAMARI	25.23835	87.72419	TALJHARI	Mauza- Chhoti Bhagiyamari, Plot No. 861, 862, 864, 865, 866, 873/P, Khata No.- 82	JSPCB/HO/RNC/CTO- 8242710/2021/292
29.	M/S SARASWATI STONE WORKS	VILL- KIROKURIA, POSAKRIG ALI, PS- TALJHARI, DIST- SAHIBGANJ	25.228197	87.716142	TALJHARI	Mauza- Kirokuri a, Plot No 4/P, 8/P, 9/P & 30/P	JSPCB/HO/RNC/CTO- 8586867/2020/1822

### List of mines in Grid 7

Sl. No.	Industry Name	Industry Address	Lat	Long	Block	Type of Industry
1	M/S MADAN KANT	MOUZA-KIROKURIA	25.22827	87.7108	TALJHARI	Mines
2	M/S SARASWATI STONE WORKS	VILL-KIROKURIA, PO- SAKRIGALI, PS- TALJHARI, DIST- SAHIBGANJ	25.2282	87.71614	TALJHARI	Mines with Crusher

File No. CM-13014/11/2021, ~~TECH RD KOLKATA RD~~ (Kolkata)-Part(2)

(पर्यावरण वन, एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार)



## CENTRAL POLLUTION CONTROL BOARD

(Ministry of Environment, Forests & Climate Change, Government of India)

Eastern Regional Directorate

502, Southend Conclave, 1582, Rajdanga Main Road, Kolkata - 700 107

Date: 04.02.2022

### OFFICE ORDER

**Subject: Constitute of Expert Committee in compliance to the Hon'ble NGT Order dated 22 December 2021 in the matter of O.A. No. 23 of 2017 titled Syed Arshad Nasar V. Union of India & Other concerned matters. Reg.**

The Hon'ble NGT in its order, dated 22.12.2021 in OA No. 23 of 2017 in the matter of Syed Arshad Nasar V. Union of India & Other, relating to enforcement of environmental norms in the operation of quarrying and crushing units in Rajmahal hills of the Vindhya Mountains, District Sahebganj, Jharkhand, has directed that:

"20. In view of failure of the joint Committee to provide sound basis for assistance of the Tribunal, we have no option except to reject the report of the Committee CPCB may assign the task to the Committee which undertook study and submitted report dated 6.10.2020 in OA No. 1016/2019, Utkarsh Panwar vs. Central Pollution Control Board & Ors. The Committee may be steered by Member Secretary, CPCB, who will be free to take assistance from any other expert. The Committee may give its report within three months by e-mail at [judicial-ngt@gov.in](mailto:judicial-ngt@gov.in) preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF. The report may also be uploaded on the website of CPCB for any response by any stakeholder before the next date." (A Copy of the order dated 22.12.2021 is enclosed.)

In compliance to the above, following Committee of Experts is constituted:

1. Prof. Mukhesh Sharma, Professor, Indian Institute of Technology Kanpur
2. Prof. Sagnik Dey, Professor, Indian Institute of Technology Delhi
3. Dr. Narendra Sharma, Additional Director, CPCB, RD, Chandigarh
4. Member Secretary, Jharkhand State Pollution Control Board (JSPCB)
5. Regional Director, CPCB, RD Kolkata

The Committee will be steered by the Member Secretary, CPCB.

**Terms of Reference (ToR) of Committee are as follow:**

1. The Committee shall ensure compliance to the aforesaid direction of Hon'ble NGT.
2. The committee shall undertake the carrying capacity assessment of the area viz-a-viz stone mine and stone crushers
3. The committee shall examine as to how many stone crushers and mining units can be allowed and subjected to what special conditions.
4. The committee shall assess of Environmental Compensation(EC) Formulae for violators on the basis of cost of restoration, extent of damage and the deterrent element.
5. The Committee has to give its report by 10.03.2022 for uploading in the CPCB website.
6. The expenditure shall be booked under NGT(EC) funds as per the prevailing orders.

This is issued with the approval of Competent Authority, Central Pollution Control Board.

  
(M.K Biswas)  
Regional Director

To,

All the committee members

**Copy for kind information to:**

- |                    |                         |                        |
|--------------------|-------------------------|------------------------|
| 1. PS to CCB, CPCB | 3. Director, IIT Kanpur | 5. CPCB, RD Chandigarh |
| 2. PS to MS, CPCB  | 4. Director, IIT Delhi  | 6. DH-IPC-V            |

  
(M.K Biswas)

File No.CM-13014/11/2021-TECH-RD-KOLKATA-RD (Kolkata)-Part(2)



केन्द्रीय प्रदूषण नियंत्रण बोर्ड  
CENTRAL POLLUTION CONTROL BOARD

(पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार)  
(Ministry of Environment, Forest & Climate Change, Government of India)

क्षेत्रीय निदेशालय, कोलकाता  
Regional Directorate, Kolkata

**URGENT NGT MATTER****Date-17.02.2022****OFFICE MEMORANDUM**

**Subject: Minutes of 1st Meeting of the Expert and Joint Committee in the matter of Syed Arshad Nasar Vs Union of India with Ramchandra Chaurasia Vs State of Jharkhand in O.A. No. 23/2017(EZ) with O.A. No 776/2018 held on 08.02.2022 at 11:00 AM through video conferencing in compliance to Hon'ble NGT Order dated 22.12.2021**

A copy of Minutes of the Meeting as approved by the competent authority for enforcement of environmental norms in the operation of quarrying and crushing in Sahebganj in compliance to Hon'ble NGT order dated 22.12.2021 held through Video Conference on 08.02.2022 at 11:00 AM is forwarded herewith for information/necessary actions.

The requisite information that needs to be provided, may be sent through email to [mkbiswas.cpcb@nic.in](mailto:mkbiswas.cpcb@nic.in) & [biswasmrinal@gmail.com](mailto:biswasmrinal@gmail.com).

(M. K. Biswas)

Scientist E &amp; Regional Director

**Encl: As above****To:**

1. Dr. Mukesh Sharma, Professor, Indian Institute of Technology (IIT) Kanpur
2. Dr. Sagnik Dey, Professor, Indian Institute of Technology (IIT) Delhi
3. Dr. Narendra Sharma, Additional Director, CPCB, RD, Chandigarh
4. The Member Secretary, Jharkhand State Pollution Control Board
5. The District Magistrate, Sahebganj
6. Dr. G.P. Singh, Sc-D, CPCB, RD-Kolkata

**Copy for kind information to:**

1. AO to Member Secretary, CPCB, Delhi
2. Sh S.K.Gupta, AD & Div.Head, IPC-V, CPCB, Delhi
3. Sh. G Rambabu, Sc-D & Div. Head-Law, CPCB. Delhi

(M. K. Biswas)

**Head Office:**  
Parivesh Bhawan, CBD cum Office Complex,  
East Arjun Nagar, Delhi-110 032  
Tel: 011-43102030, 22305792  
Website: [www.cpcb.nic.in](http://www.cpcb.nic.in)

**Regional Directorate:**  
502, Southend Conclave  
1582, Rajdanga Main Road, Kolkata- 700107  
Tel: 033-2441 6634/4289/4677/6003  
e-mail: [rdkolkata.cpcb@gov.in](mailto:rdkolkata.cpcb@gov.in)

**Minutes of 1st Meeting of the Expert and Joint Committee in the matter of Syed Arshad Nasar Vs Union of India with Ramchandra Chaurasia Vs State of Jharkhand in O.A. No. 23/2017(EZ) with O.A. No 776/2018 held on 08.02.2022 at 11:00 AM through video conferencing in compliance to Hon'ble NGT Order dated 22.12.2021**

---

Hon'ble NGT vide its order dated. 22.12.2021 in OA 23 23/2017 (EZ) has directed as under:

*“20. In view of failure of the joint Committee to provide sound basis for assistance of the Tribunal, we have no option except to reject the report of the Committee. CPCB may assign the task to the Committee which undertook study and submitted report dated 6.10.2020 in OA No. 1016/2019, Utkarsh Panwar vs. Central Pollution Control Board & Ors. The Committee may be steered by Member Secretary, CPCB, who will be free to take assistance from any other expert. The Committee may give its report within three months by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF. The report may also be uploaded on the website of CPCB for any response by any stakeholder before the next date.*

*21. We also direct the State PCB to close the illegally operating stone crushers/mines - those not having valid consents, those not following valid siting criteria and those not maintaining laid down safeguards noted in paragraphs 5.3.1 and 5.3.3 in the above report. This may be ensured by a joint Committee of CPCB, State PCB and the District Magistrate and compliance report filed before the next date. The affected parties are at liberty to move this Tribunal, if they are aggrieved.”*

In compliance to the above order, Expert and Joint Committee was constituted by CPCB vide order dated 04.02.2022. The 1<sup>st</sup> meeting of these two committee was held through Video Conferencing (VC) on 08.02.2022 under the chairmanship of Member Secretary (MS), CPCB. All the members of both the committee attended the meeting along with the concerned officials.

*List of the officials attended the meeting is enclosed at **Annexure I**.*

1. Dr. Prashant Gargava, Member Secretary, CPCB and Chairman of the committee welcomed all the members of the Expert and Joint committee as well as concerned government officials attending the meeting. He introduced himself and also requested all the members to formally introduce themselves for better interactive discussion. He then requested Sh M K Biswas, Sc E & RD, CPCB-RD Kolkata to appraise the committee about the background of the matter.

2. Sh. Biswas, appraised the committee through power point presentation about the previous committees and their reports and also highlighted the report submitted by CPCB dated 09.12.2021 on behalf of earlier committee chaired by JS, MOEF &CC. It was also highlighted about the reason for rejection of the previous report and the relevant directions which are to be addressed by the two committees (Expert & Joint). He also discussed about the carrying capacity study report prepared by CEED and remarks of the Hon'ble NGT on that report. He also informed that out of 426 stone crushers and 170 stone mines, as identified by District Task Force (DTF) Committee, only 299 and 142 respectively as confirmed by Jharkahnd State Pollution Control Board (JSPCB) is being operated with valid CTO.

3. MS, CPCB further proceeded the meeting by highlighting the major activities which are required to be carried out by both the committees for compliance of the Hon'ble NGT Order. He asked JSPCB & DC Sahebganj to assess, inventorize as well as update the details of stone crushers

and mines, which are operating with or without valid CTO as well as verify the environmental management status of these units. Apart from this, they shall standardize a regular monitoring plan for inspection of these units and update the action taken against non-compliant units. He requested the Joint Committee to carry out surprise inspection to verify the status provided by JSPCB and shall execute their task independently. .

He requested Prof. Mukesh Sharma, IIT, Kanpur, Prof Sagnik Dey, IIT Delhi to review the report of CEED, Delhi which was already submitted to Hon'ble NGT by CPCB dated 09.12.2021 on behalf of earlier committee. He again asked DC, Sahebganj to identify the hotspots and develop a grid in the district based on the location of the Stone Crushers/Mines. This can be used for emission inventory assessment. He also asked the expert committee members to diagnose the data required for carrying out the emission inventory as well as for carrying capacity assessment. This can be acquired from CEED, Delhi as they have already carried out study in Sahebganj District.

Further, he requested all the members to share their opinion regarding the present matter.

4. Sh. Y.K Das, MS, JSPCB stated that they have already inventorized the stone crushers and mines operating with valid CTO. He also informed that they carry out regular inspection of these units as well as issue closure notice or impose penalty to the non-compliant units.

5. Sh. Ramnivas Yadav, DC Sahebganj also apprised the committee that the DTF Committee is engaged with regular fortnight inspection of the stone mines/crushers. He also informed that 20-25 PM 10 monitoring station has been installed in the district. He has reported that already directions were issued to Division Railway Manager (DRM) for removal of railway slidings, Director General of Mine Safety (DGMS) to maintain proper bench height during the mine operation and to the stone crushers for maintaining proper height of the wind breaking wall. He also mentioned that he has blacklisted approximately 450 vehicles in the *Parivahan app*. that are not following proper regulations. He also stated that two drones are to be acquired next month for inspection of the area.

6. Prof. Sagnik Dey, IIT Delhi agreed to review the report submitted by CEED, Delhi and will assist in the carrying capacity assessment.

7. Prof. Mukesh Sharma remarked that the area for calculation of carrying capacity must be defined at first. Along with this, PM 10 should also be estimated on site apart from the satellite data. The carrying capacity may be assessed through AERMOD Modeling System, which will include the ventilation coefficient and topography of the area as recommended by the earlier committee. He also recommended that the vehicles that are associated with stone mining/ crushing activities running on NH 80 should be identified for the source apportionment. He also emphasized that field visit is required to carry out for better understanding of the area.

8. Dr Narendra Sharma, AD, CPCB, RD, Chandigarh informed that CPCB has already submitted a report to Hon'ble NGT regarding the damage assessment, which was already accepted by Hon'ble NGT. He recommended that this formula can be used for stone crushers for damage assessment required for calculation of Environmental Compensation.

Based on the deliberation held, following were decided;

- I. The details as well as status of the stone crushers & mines operating with valid CTO or other legal documents shall be assessed, inventorized and updated by JSPCB & DC Sahebganj.
- II. The environmental management status shall be updated as well as verification of the adequacy of the pollution control devices installed in all the stone mines/ crushing units operating in the region shall be done by JSPCB & DC Sahebganj.
- III. Details of illegal units operating in Sahebganj area shall be updated by JSPCB & DC Sahebganj.
- IV. Action taken against the non-compliant units in the area shall be updated by JSPCB & DC Sahebganj.
- V. Preparation and standardization of proper monitoring methodology for regular inspection of the stone crushers & mines shall be carried out by JSPCB & DC Sahebganj
- VI. Re-identification of the hotspots as per the location of stone crushers/ mines and development of grid shall be done by DC, Sahebganj.
- VII. Details of the manual as well as online air quality monitoring stations including its present location and time series data if available shall be provided by JSPCB.
- VIII. Surprise inspection shall be carried out by the Joint Committee for verifying the status of stone crushers & mines as provided by JSPCB & DC, Sahebganj.
- IX. The report submitted by CEED, Delhi on “Environmental Management of Stone Mine & Crushers in Sahebganj” shall be reviewed by the Prof. Mukesh Sharma and Prof Sagnik Dey and shall guide CPCB, RD Kolkata regarding the data required for conducting the present study in appropriate format if any.
- X. JSPCB shall collect and provide the data used for assessment of air pollution sources as well as carrying capacity study as informed by the expert members of the committee from CEED, Delhi
- XI. Report/Relevant NGT Order on assessment of cost of damage shall be shared by Dr Narendra Sharma, AD, CPCB, RD, Chandigarh.
- XII. The field visit by the committee members shall be carried out, for which the date may be finalized during the break in on-going parliamentary session, i.e 10<sup>th</sup> Feb 2022.
- XIII. 2nd Meeting of the combined committees to be scheduled in next week for updating the the information required and decide the further course of action. However, the Joint Committee shall carry out its identified activities independently to comply with the direction of Hon’ble NGT.

The meeting ended with thanks to and from the chair.

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## Annexure-I

SI No	Name of Officer	Designation	Organization	E-mail id
1	Dr. Prashant Gargava	Member Secretary	CPCB	mscb.cpcb@nic.in
2	Prof. Sagnik Dey	Professor	IIT Delhi	Sagnikdey.iit@gmail.com
3	Prof. Mukesh Sharma	Professor	IIT Kanpur	mukesh@iitk.ac.in
4	Sh Y.K Das	Member Secretary	JSPCB	ranchispscb@gmail.com
5.	Dr Narendra Sharma	Additional Director	CPCB, RD Chandigarh	narendrsharma.cpcb@nic.in
6.	Sh. M.K Biswas	Sc E, RD	CPCB, RD-Kolkata	mkbiswas.cpcb@nic.in
7.	Dr. G.P Singh	Sc-D	CPCB, RD-Kolkata	singh.gyanprakash@gmail.com
7.	Sh. Ramniwash Yadav	District Magistrate	Sahebganj District, Govt. Jharkhand	dc-sah@nic.in
8.	Sh. Kamlakant Pathak	Regional Officer	RO, JSPCB	kkpathak1964@gmail.com
9.	Kumar Manibhusan	Consulting Executive	JSPCB	kmbcoep@gmail.com
10.	Sh. Nirala Baskey	Executive Consultant	RO, Dumka, JSPCB & DTFC	niralabas006@gmail.com
11.	Dr. Bishnu Prasad Sahoo	RA II	CPCB, RD-Kolkata	bishnuprasad.cpcb@supportgov.in
12	Dr. Priti Saha	SRF	CPCB, RD-Kolkata	pritisaha.cpcb@supportgov.in

\*\*\*

File No.CM-13014/11/2021-TECH-RD-KOLKATA-RD (Kolkata)-Part(2)



केन्द्रीय प्रदूषण नियंत्रण बोर्ड  
CENTRAL POLLUTION CONTROL BOARD

(पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार)  
(Ministry of Environment, Forest & Climate Change, Government of India)

क्षेत्रीय निदेशालय, कोलकाता  
Regional Directorate, Kolkata

**Date-01.04.2022****OFFICE MEMORANDUM**

**Subject: Minutes of 2nd Meeting of the Expert Committee in the matter of Syed Arshad Nasar Vs Union of India with Ramchandra Chaurasia Vs State of Jharkhand in O.A. No. 23/2017(EZ) with O.A. No 776/2018 held on 29.03.2022 at 11:30 AM through video conferencing in compliance to Hon'ble NGT Order dated 22.12.2021**

A copy of the approved Minutes of the 2<sup>nd</sup> Expert Committee Meeting held on 29.03.2022 at 11:30 AM through Video Conference is forwarded herewith for information/necessary actions.

(M. K. Biswas)  
Regional Director

**Encl: As above**

**To:**

1. Dr. Mukesh Sharma, Professor, Indian Institute of Technology (IIT) Kanpur
2. Dr. Sagnik Dey, Professor, Indian Institute of Technology (IIT) Delhi
3. Dr. Narendra Sharma, Additional Director, CPCB, RD, Chandigarh
4. The Member Secretary, Jharkhand State Pollution Control Board
5. The District Magistrate, Sahibganj

**Copy for kind information to:**

1. AO to Member Secretary, CPCB, Delhi
2. Sh S.K.Gupta, AD & Div.Head, IPC-V, CPCB, Delhi
3. Sh. G Rambabu, Sc-D & Div. Head-Law, CPCB. Delhi

(M. K. Biswas)

**Head Office:**  
Parivesh Bhawan, CBD cum Office Complex,  
East Arjun Nagar, Delhi-110 032  
Tel: 011-43102030, 22305792  
Website: www.cpcb.nic.in

**Regional Directorate:**  
502, Southend Conclave  
1582, Rajdanga Main Road, Kolkata- 700107  
Tel: 033-2441 6634/4289/4677/6003  
e-mail: rdkolkata.cpcb@gov.in

Minutes of 2nd Meeting of the Expert Committee in the matter of Syed Arshad Nasar Vs Union of India with Ramchandra Chaurasia Vs State of Jharkhand in O.A. No. 23/2017(EZ) with O.A. No 776/2018 held on 29.03.2022 at 11:30 AM through video conferencing in compliance to **Hon'ble** NGT Order dated 22.12.2021

**In compliance to Hon'ble NGT vide its order dated 22.12.2021 in OA 23 23/2017 (EZ)**, the Expert Committee Members completed the field visit at Sahibganj during 3rd - 4th March, 2022 and requested the data required for carrying capacity from Jharkhand State Pollution Control Board (JSPCB) and District Commissioner, (DC) Sahibganj. In connection to this, the 2nd meeting of the Expert Committee was held through Video Conferencing (VC) on 29.03.2022 under the chairmanship of Member Secretary (MS), CPCB. All the members of the Committee along with the concerned officials attended the meeting.

*List of the officials attended the meeting is enclosed at Annexure I.*

The committee was appraised that data requested from JSPCB and DC Sahibganj are still awaited except the link of PM 10 and details of railway sidings. Therefore, in absence of the other data/information, carrying capacity **could not be assessed till date for submission to Hon'ble NGT, which was due on 22.03.2022. The next date of hearing for further consideration by Hon'ble NGT is on 20.04.2022.**

Based on the deliberations, following were decided:

1. The carrying capacity assessment data which was forwarded to RO, Dumka, JSPCB by DC, Sahibganj as mentioned during the meeting shall be provided to CPCB RD Kolkata and subsequently be shared with all expert members to carry out the study.
2. As informed by JSPCB all other data that has been sent shall be rechecked and point wise data as requested by the committee shall be provided to RD Kolkata immediately.
3. The meteorological data is not available with the state department and may be obtained from the Indian Meteorological Department (IMD) head office through CPCB.
4. The manual ambient air quality monitoring data carried out by CPCB RD Kolkata in consultation with JSPCB at seven different locations shall also be shared with all the expert members by CPCB RD Kolkata.
5. The details including make and model, type of data being captured, detection range, certification as well as previous one year data of all the online monitoring stations in Sahibganj shall be provided to CPCB RD Kolkata by JSPCB.

The allied data may be compared with the existing manual monitoring data for checking the accuracy of these stations.

6. Online monitoring stations are also proposed to be installed along the road sides and nearby residential areas to measure the PM level.

7. The committee agrees that the dump of mines or crusher dust is a major concern of the area and need to be utilized as per scientific or international practice. As mentioned by Sh. M.K Biswas, RD Kolkata, expert from Central Institute of Mining and Fuel Research, Dahnabd is having expertise in the area and may be requested to attend the next meeting of the committee.

The committee shall also recommend to mitigate the pollution load being contributed by the railway sidings.

8. The State or concerned agencies shall be requested by JSPCB to maintain the national highways and other metaled roads to reduce the fugitive emission.
9. The Environmental Compensations (EC) for violators on the basis of cost of restoration, extent of damage and the deterrent element, which is **required to be submitted to Hon'ble NGT needs an extensive study. This** will require the previous environmental quality data, Land use land cover (LULC) which is to be compared with the present data for assessment. Therefore, interim EC formulae can be proposed in the present report and **proposed to grant additional time from Hon'ble NGT to carry out the** detailed study and may engage the expert institute as well.
10. The restoration plan which is already been prepared by DC, Sahibganj shall also be shared to all the committee members.
11. It was further clarified that the Joint Committee shall submit its report to **Hon'ble** NGT separately.
12. The structure / contents of the report shall be shared to all the members by CPCB RD Kolkata.
13. The next committee meeting to be scheduled on 01.04.2022 for updating the information acquired from JSPCB and decide the further course of action.

The meeting ended with thanks to and from the chair.

\* \* \* \* \*

**Annexure-I**

SI No	Name of Officer	Organization	Designation	E-mail id
1	Dr. Prashant Gargava	CPCB	Member Secretary	mscb.cpcb@nic.in
2	Sh Y.K Das	JSPCB	Member Secretary	ranchispscb@gmail.com
4.	Dr Mukesh Sharma	IIT Kanpur	Professor	mukesh@iitk.ac.in
5.	Dr Narendra Sharma	CPCB, RD Chandigarh	Additional Director	narendrsharma.cpcb@nic.in
6	Sh. Ramniwash Yadav	Sahibganj Dist., Jharkhand	District Magistrate	dc-sah@nic.in
10	Sh. M.K Biswas	CPCB, RD-Kolkata	Sc E, RD	mkbiswas.cpcb@nic.in
11	Dr. G.P Singh	CPCB, RD-Kolkata	Sc-D	singh.gyanprakash@gmail.com
12	Dr. Bishnu Prasad Sahoo	CPCB, RD-Kolkata	RA II	bishnuprasad.cpcb@supportgov.in
12	Dr. Priti Saha	CPCB, RD-Kolkata	SRF	pritisaha.cpcb@supportgov.in



## केन्द्रीय प्रदूषण नियंत्रण बोर्ड

### CENTRAL POLLUTION CONTROL BOARD

(पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार)  
(Ministry of Environment, Forest & Climate Change, Government of India)

क्षेत्रीय निदेशालय, कोलकाता  
Regional Directorate, Kolkata



Date-07.04.2022

#### OFFICE MEMORANDUM

**Subject: Minutes of 3rd Meeting of the Expert Committee in the matter of Syed Arshad Nasar Vs Union of India with Ramchandra Chaurasia Vs State of Jharkhand in O.A. No. 23/2017(EZ) with O.A. No 776/2018 held on 01.04.2022 at 11:00 AM through video conferencing in compliance to Hon'ble NGT Order dated 22.12.2021**

A copy of the approved Minutes of the 3<sup>rd</sup> Expert Committee Meeting held on 01.04.2022 at 11:00 AM through Video Conference is forwarded herewith for information/necessary actions.

(M. K. Biswas)  
Regional Director

**Encl: As above**

**To:**

1. Dr. Mukesh Sharma, Professor, Indian Institute of Technology (IIT) Kanpur
2. Dr. Sagnik Dey, Professor, Indian Institute of Technology (IIT) Delhi
3. Dr. Narendra Sharma, Additional Director, CPCB, RD, Chandigarh
4. The Member Secretary, Jharkhand State Pollution Control Board
5. The District Magistrate, Sahebganj

**Copy for kind information to:**

1. Dr. J.K Pandey, Chief Scientist, CIMFR, Dhanbad
2. AO to Member Secretary, CPCB, Delhi
3. Sh S.K.Gupta, AD & Div.Head, IPC-V, CPCB, Delhi
4. Sh. G Rambabu, Sc-D & Div. Head-Law, CPCB. Delhi

(M. K. Biswas)

**Head Office:**  
Parivesh Bhawan, CBD cum Office Complex,  
East Arjun Nagar, Delhi-110 032  
Tel: 011-43102030, 22305792  
Website: [www.cpcb.nic.in](http://www.cpcb.nic.in)

**Regional Directorate:**  
502, Southend Conclave  
1582, Rajdanga Main Road, Kolkata- 700107  
Tel: 033-2441 6634/4289/4677/6003  
e-mail: [rdkolkata.cpcb@gov.in](mailto:rdkolkata.cpcb@gov.in)

**Minutes of 3rd Meeting of the Expert Committee in the matter of Syed Arshad Nasar Vs Union of India with Ramchandra Chaurasia Vs State of Jharkhand in O.A. No. 23/2017(EZ) with O.A. No 776/2018 held on 01.04.2022 at 11:00 AM through video conferencing in compliance to Hon'ble NGT Order dated 22.12.2021**

The Expert Committee constituted in compliance to Hon'ble NGT order dated 22.12.2021 in OA 23 23/2017 (EZ), held the 3rd meeting of the Committee through Video Conferencing (VC) on 01.04.2022 under the chairmanship of Member Secretary (MS), CPCB.

*List of the participants attended the meeting is placed at Annexure I.*

As per the decision made in the 2<sup>nd</sup> Expert Committee meeting held on 29.03.2022, Dr. J.K Pandey, Chief Scientist, Central Institute of Mining and Fuel Research, Dhanbad attended the meeting and he was apprised that the committee is concerned about the dumping of unutilised stone dust/ fine dust generated from the stone crushers over the large area beside the crushers as well as on the road side as observed during the field visit of the committee. In this regard, Dr. J.K Pandey mentioned that stone dusts have more specific gravity than the sand, therefore these may have minimum impact on air pollution. However, these may cause land degradation as well as siltation problem in the river Ganga bed.

For sustainable utilization of stone dust district administration was requested to explore the following;

- i. Filling up the underground or opencast mines located in Dhanbad or Bokaro area and possibility to transport through railway wagons.
- ii. Filling up the ponds which were created during the stone mining or reclamation of the stone mines.
- iii. To discuss with the contractors/ NIH authorities assigned for the construction of the 4-lane highway and Ganga Bridge within a fixed time frame and to get an estimation about the quantity (by volume and by percentage) of the stone dust to be utilized in construction of roads/bridge; and
- iv. The samples of the stone dust of four representative locations shall be sent to Dr. Dr. J.K Pandey by DC, Sahebganj to analyze its properties for further confirmation of its feasible utilization.

Based on the deliberations, following were decided:

1. The scaled block map of Sahebganj including the Stone Crusher clusters (area), Human settlement, Monitoring locations (CAAQMS & Manual), Mining area, Standalone crushers and Railway Sidings shall be provided by DC, Sahebganj within 15 days. It should be grided in 4\*4 km<sup>2</sup>.
2. The coordinates for all 198 stone crushers shall be provided by RO, Dumka to CPCB RD Kolkata.
3. The waste generated from the railway good sheds / sidings and the loading/unloading capacity through manual or automatic means shall be provided by DC Sahebganj to CPCB RD Kolkata. The measures taken to prevent the pollution load from the railway sidings shall also be provided.
4. Based on the information shared by JSPCB and DC Sahebganj, the emission load from stone crushers and mines shall be decided/ estimated by Prof. Mukesh Sharma, IIT Kanpur.
5. Based on manual air quality monitoring data of PM<sub>2.5</sub> and PM<sub>10</sub> shared with the expert and other data received from JSPCB & DC Sahbeganj, the satellite data of PM<sub>2.5</sub> & PM<sub>10</sub> shall be obtained / derived by Prof. Sagnik Dey for assessment of carrying capacity.
6. The mixing height shall be obtained from the Indian Meteorological Department (IMD) head office through CPCB, Delhi.
7. Since, Damage Assessment is an extensive scientific study, therefore it may be awarded to National Environmental Engineering Research Institute (NEERI) or other expert institute. The additional time, required for the study may be requested from the Hon'ble NGT.
8. The interim EC formulae can be proposed in the present report considering the relevant Hon'ble NGT orders of similar nature and CPCB's guideline for EC.
9. The structure / contents of the Expert Committee Report shall be updated and re-shared with expert members for finalization by 04.04.2022.

The meeting ended with thanks to and from the chair.

\*\*\*\*

## Annexure-I

Sl No	Name of Officer	Organization	Designation	E-mail id
1	Dr. Prashant Gargava	CPCB	Member Secretary	mscb.cpcb@nic.in
2.	Sh Y.K Das	JSPCB	Member Secretary	ranchijspcb@gmail.com
3.	Dr. J.K Pandey	CIMFR, Dhanbad	Chief Scientist	jaikrishnapandey@gmail.com
4.	Dr Sagnik Dey	IIT Delhi	Professor	sagnik@cas.iid.ac.in
5	Sh. Ramniwash Yadav	Sahebganj District, Government of Jharkhand	District Magistrate	dc-sah@nic.in
6	Sh. M.K Biswas	CPCB, RD-Kolkata	Sc E, RD	mkbiswas.cpcb@nic.in
7	Dr. G.P Singh	CPCB, RD-Kolkata	Sc-D	singh.gyanprakash@gmail.com
8	Sh. Kamlakant Pathak	RO, JSPCB	Regional Officer	kkpathak1964@gmail.com
9	Sh. Nirala Bakshey	RO, JSPCB and DMTF	Executive Consultant	niralabas006@gmail.com
10	Dr. Bishnu Prasad Sahoo	CPCB, RD-Kolkata	RA II	bishnuprasad.cpcb@supportgov.in
11	Dr. Priti Saha	CPCB, RD-Kolkata	SRF	pritisaha.cpcb@supportgov.in



कन्द्रीय प्रदूषण नियंत्रण बोर्ड  
CENTRAL POLLUTION CONTROL BOARD

(पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार)  
(Ministry of Environment, Forest & Climate Change, Government of India)

क्षेत्रीय निदेशालय, कोलकाता  
Regional Directorate, Kolkata



**URGENT NGT MATTER**

**Date-14.07.2022**

**OFFICE MEMORANDUM**

**Subject: Minutes of 4th Meeting of the Expert Committee in the matter of Syed Arshad Nasar Vs Union of India with Ramchandra Chaurasia Vs State of Jharkhand in O.A. No. 23/2017(EZ) with O.A. No 776/2018 held on 15.06.2022 at 03:00 PM through video conferencing in compliance to Hon'ble NGT Order dated 22.12.2021**

A copy of the approved minutes of the 4<sup>th</sup> meeting of expert committee held on 15.06.2022 at 03:00 PM for finalization of the draft report through Video Conference is forwarded herewith for kind information/necessary actions.

**Encl: As above**

**(M. K. Biswas)**

Scientist E & Regional Director

**To:**

1. Dr. Mukesh Sharma, Professor, Indian Institute of Technology (IIT) Kanpur
2. Dr. Sagnik Dey, Professor, Indian Institute of Technology (IIT) Delhi
3. Dr. Narendra Sharma, Additional Director, CPCB, RD, Chandigarh
4. The Member Secretary, Jharkhand State Pollution Control Board
5. The District Magistrate, Sahibganj
6. Dr. G.P. Singh, Sc-D, CPCB, RD-Kolkata
7. Sh. Kamlakant Pathak, RO, Dumka, JSPCB

**Copy for kind information to:**

1. AO to Member Secretary, CPCB, Delhi
2. Sh S.K.Gupta, AD & Div.Head, IPC-V, CPCB, Delhi
3. Sh. Kamlesh Singh, Sc-E & Div. Head-Law, CPCB. Delhi

**(M. K. Biswas)**

**Minutes of 4th Meeting of the Expert Committee in the matter of Syed Arshad Nasar Vs Union of India with Ramchandra Chaurasia Vs State of Jharkhand in O.A. No. 23/2017(EZ) with O.A. No 776/2018 held on 15.06.2022 at 03:00 PM through video conferencing in compliance to Hon'ble NGT Order dated 22.12.2021**

In compliance to Hon'ble NGT vide its order dated 22.12.2021 in OA 23/2017 (EZ), the Expert Committee Members prepared the draft report. For review and finalization of the draft report, the 4th meeting of the Expert Committee was held through Video Conferencing (VC) on 15.06.2022 at 3.00 PM under the chairmanship of Member Secretary (MS), CPCB. All the members of the Committee along with the concerned officials attended the meeting.

*List of the officials attended the meeting is enclosed at Annexure I.*

Dr. Prashant Gargava, Member Secretary, CPCB and Chairman of the committee welcomed all the members of the Expert and Joint committee as well as concerned government officials attending the meeting.

The committee members reviewed the reports and shared their comments for finalization.

Based on the deliberations, the following were decided:

- Box-model may be considered for carrying capacity assessment study.
- Uncontrolled emissions may be taken into consideration while assessing carrying capacity.
- Carrying capacity assessment to include both stone crushers as well as stone mines.
- As per the order, the committee recommends that the assessment of compensation taking into account the cost of restoration for the damage caused and its apportionment among the violators may be done through study by the expert institutes like National Environmental Engineering Research Institute (NEERI).
- DC Sahibganj to provide the following information in writing to CPCB, RD, Kolkata by 17.06.2022:
  - Characterization of the stone crushing dust for its feasible utilization performed by CSIR- Central Institute of Mining and Fuel Research, Dhanbad-826015.
  - A scaled block map of Sahibganj of 4\*4 km grid showing Human settlement.
  - Outcome of the discussion of DC, Sahibganj with the bridge contractors/ National Highways Authority of India (NHAI) authorities assigned for the construction of the four-lane highway and Ganga Bridge regarding the volume of utilization of the stone dust/ fine dust generated from the stone crushers.
  - The details of waste generated from the railway goods sheds/ sidings and during loading/ unloading through manual or automatic means as well as their utilization and details of measures taken to prevent the pollution load from the railway sidings.
- Dr Narendra Sharma, AD, CPCB, RD, Chandigarh along with Prof. Mukesh Sharma, IIT Kanpur and Mr Gautam Sharma, Sc-B, CPCB, HO, Delhi may finalize the carrying capacity assessment section of the draft report.
- The feedback of the members regarding the draft report shall be provided

by 17.06.2022 (Friday).

- The draft report to be finalized by 18.06.2022 (Saturday) except for the carrying capacity assessment section which may require more time to be finalized.

The meeting ended with thanks to and from the chair.

\*\*\*\*

**Annexure-I**

<b>SI No</b>	<b>Name of Officer</b>	<b>Designation</b>	<b>Organization</b>	<b>E-mail id</b>
1.	Dr. Prashant Gargava	Member Secretary	CPCB	mscb.cpcb@nic.in
2.	Prof. Sagnik Dey	Professor	IIT Delhi	Sagnikdey.iit@gmail.com
3.	Prof. Mukesh Sharma	Professor	IIT Kanpur	mukesh@iitk.ac.in
4.	Sh Y.K Das	Member Secretary	JSPCB	ranchispscb@gmail.com
5.	Dr Narendra Sharma	Additional Director	CPCB, RD Chandigarh	narendersharm.cpcb@nic.in
6.	Sh. M.K Biswas	Sc-E, RD	CPCB, RD-Kolkata	mkbiswas.cpcb@nic.in
7.	Sh. Ramniwash Yadav	District Magistrate	Sahibganj District, Govt. Jharkhand	dc-sah@nic.in
8.	Sh. Nirala Baskey	Consulting Executive	RO, Dumka, JSPCB & DTFC	niralabas006@gmail.com
9.	Dr. G.P Singh	Sc-D	CPCB RD, Kolkata	singh.gyanprakash@gmail.com
10.	Mr Gautam Sharma	Sc-B	CPCB	Gautam.cpcb@gov.in
11.	Sh. Kamlakant Pathak	Regional Officer	RO, Dumka, JSPCB	kkpathak1964@gmail.com
12.	Kumar Manibhusan	Consulting Executive	JSPCB	kmbcoep@gmail.com
13.	Sh. S. K.	Sc-E	CPCB	skg.cpcb@gov.in

	Gupta			
14.	Dr. Bishnu Prasad Sahoo	RA-II	CPCB RD, Kolkata	bishnuprasad.cpcb@supportgov.in

श्री संदीप सिंह (भा0प्र0से0), अध्यक्ष DEIAA-सह-उपायुक्त, साहेबगंज की अध्यक्षता में दिनांक-25.08.2018 को DSR के संबंध में DEIAA एवं DSR के गठित सदस्यों के साथ की गई संयुक्त बैठक की कार्यवाही :-

01.उपस्थिति :-

पंजी के अनुसार।

02.कार्यवाही संख्या 01 :-

सर्वप्रथम अध्यक्ष DEIAA-सह-उपायुक्त, साहेबगंज द्वारा बैठक में आये DEIAA एवं DSR के सदस्यों का स्वागत करते हुए बैठक की कार्यवाही प्रारम्भ करते हुए Sathi Planners Pvt. Ltd. को साहेबगंज जिले के लघु खनिज (बालू घाटों को छोड़कर) का तैयार किये गये जिला सर्वेक्षण प्रतिवेदन (DSR) का Presentataion देने का निदेश दिया गया है।

03.कार्यवाही संख्या 02 :-

Sathi Planners Pvt. Ltd. के द्वारा साहेबगंज जिले के DSR का Presentataion दिया गया है।

04.कार्यवाही संख्या 03 :-

Presentataion के दौरान जिला सर्वेक्षण प्रतिवेदन (DSR) के संबंध में प्राप्त मार्गदर्शन के आलोक में विभिन्न बिन्दुओं पर विस्तार से चर्चा की गई :-

सर्वसम्मति से DSR को स्वीकृति देते हुए निम्नलिखित निर्णय लिये गये:-

1. DSR को अविलम्ब NIC Sahibganj के website (sahibganj.nic.in) पर अपलोड कर दिया जाय।
2. जिला जन-सम्पर्क पदाधिकारी, साहेबगंज द्वारा इस संबंध में एक प्रेस विज्ञप्ति दो मुख्य समाचार-पत्रों में प्रकाशित करा दी जाय कि "साहेबगंज के लघु खनिजों से संबंधित DSR NIC Sahibganj के website (sahibganj.nic.in) पर अपलोड कर दिया गया है, अगर किन्हीं व्यक्ति को कोई आपत्ति हो तो इस संबंध में वे अपना आपत्ति 21 दिनों के अन्दर अपनी आपत्ति जिला खनन कार्यालय अथवा DEIAA कार्यालय में दे सकते हैं।"
3. DSR की एक-एक प्रति (Hard Copy) DEIAA कार्यालय, साहेबगंज/वन प्रमण्डल कार्यालय, साहेबगंज/जिला खनन कार्यालय, साहेबगंज में उपलब्ध रहेगी, ताकि इच्छुक व्यक्ति कार्यालय अवधि में उसका अवलोकन कर सके।

अन्त में धन्यवाद ज्ञापन के साथ बैठक की कार्यवाही समाप्त की गई।

डॉ0 बी0 के0 तिवारी  
सदस्य DEIAA,  
साहेबगंज।

*Ashok*  
सदस्य सचिव DEIAA,  
-सह-  
अनुमण्डल पदाधिकारी,  
साहेबगंज।

*Manoj*  
सदस्य DEIAA,  
-सह-  
वन प्रमण्डल पदाधिकारी,  
साहेबगंज।

*25/8/18*  
अध्यक्ष DEIAA,  
-सह-  
उपायुक्त, साहेबगंज।

ज्ञापांक...224.../ DEIAA, साहेबगंज, दिनांक- 25/08/18

हेतु प्रेषित।

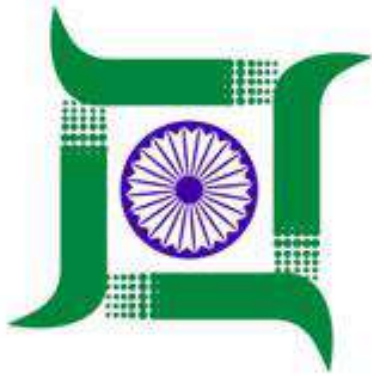
प्रतिलिपि-सभी संबंधित पदाधिकारी, DEIAA एवं DSR के सदस्यों को सूचनार्थ एवं आवश्यक कार्रवाई हेतु

प्रेषित।

प्रतिलिपि-जिला जन सम्पर्क पदाधिकारी, साहेबगंज को सूचनार्थ एवं अविलम्ब आवश्यक कार्रवाई हेतु

प्रतिलिपि-उपायुक्त-सह-अध्यक्ष, DEIAA, साहेबगंज को सूचनार्थ एवं आवश्यक कार्रवाई हेतु प्रेषित।

*Ashok*  
सदस्य सचिव DEIAA,  
-सह-  
अनुमण्डल पदाधिकारी,  
साहेबगंज।

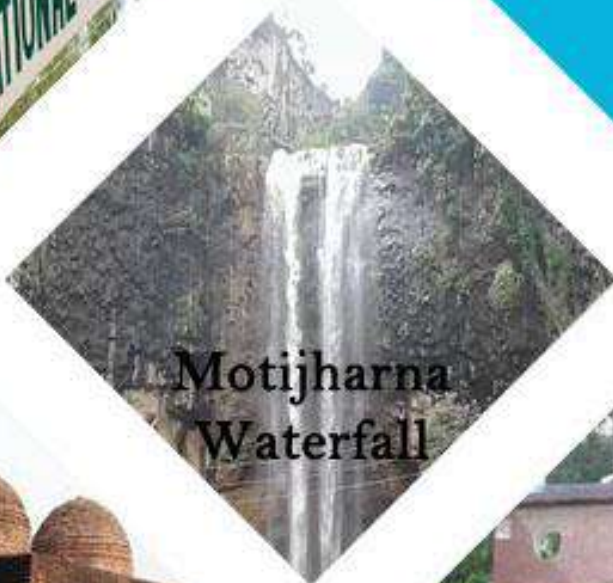


# District Survey Report Of Minor Minerals (Other Than Sand Mining) Sahibganj District

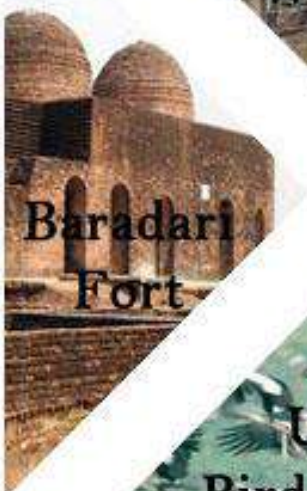
Prepared by DEIAA, Sahibganj  
Govt. of Jharkhand

Prepared in accordance with  
Para 7 (iii) of S.O.141 (E)

Dated 15th January 2016 as ammended  
on S.O. 3611 (E) Dated 25th July, 2018 of  
Ministry of Environment, Forest  
and Climate Change Notification.



Motijharna  
Waterfall



Baradari  
Fort



Shivgadi  
Temple



Udhwa  
Bird Sanctuary

District Mining Officer

Executive Engineer, Road.

Executive Engineer, Minor Irrigation.

Dy. Dir. Geology

Member Secretary DEIAA/S.D.O.

Divisional Forest Officer

Dr. B.K. Tiwary

Expert Member, DEIAA

APPROVED

Dy. Commissioner/Chairman DEIAA, Sahibganj

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Annexure I : Jharkhand Minor Minerals (Auction) Rules, 2017

Annexure II : Jharkhand Minor Minerals (Evidence & Mineral Contents) Rules, 2018

## **Acknowledgment**

In pursuance of MOEF&CC Notification S.O. 141(E) dated 5<sup>th</sup> Jan 2016, District Environment Impact Assessment Authority (DEIAA) & District level Expert Appraisal Committee (DEAC) has been formed for Category -B2 Minor Minerals having area less than or equal to 5 ha.

In line with above guideline Chief Secretary of Government of Jharkhand issued a letter to all Deputy Commissioner's Vide letter No. -1874/Cs dated 01-08-2017 & Notification No. Khani(vivid) -67/2017/L905 dated 16-08-2017 by Secretary, Department of Industries, Mines & Geology, Government of Jharkhand, to prepare a District Survey Report for all minor minerals as per guideline of sustainable Sand Mining guidelines with the assistance of Irrigation department (Minor), Forest department, Mining & Geology Departments. The District Survey Report (DSR) for sand had already been prepared and submitted to the Government.

The District Survey Report of Minor Mineral (Other than Sand) is prepared in accordance with Para 7 (iii) of S.O. 141 (E) Dated 15<sup>th</sup> January, 2016 as amended on S.O. 3611 (E) Dated 25<sup>th</sup> July, 2018 of Ministry of Environment, Forest And Climate Change Notification.

Considering the extent of deposit of stone in Sahibganj, it is very difficult to prepare DSR in a very short while with the available resources. The effort made by the DEIAA committee to engage outside party for compiling the departmental information & Field data to M/S Sathi Planners Pvt. Ltd, Ranchi and with the constant support from Forest Department Sahibganj, Mining Office Sahibganj, Executive Engineers from road and Minor irrigation to prepare this DSR in short while is commendable. This is an interim report prepared to meet the requirement of minor minerals for the state and same shall be reviewed time to time to updated the data bank of DSR.

It is clear from the report that most of the existing operative mines are having a lease period up to year 2022 to 2025 and the livelihood of Sahibganj district is dependent on mining and its related industries.

Hence, it is recommended to initiate the process of auctioning in accordance with the existing rules/laws to meet the requirement of stone for the state and earn the revenue and support the livelihood of Sahibganj District, even after the 2025.

I wish that DEIAA will make all the efforts to complete the DSR in all respect in near future.

With Warm Regards

Dy. Commissioner/ Chairman DEIAA, Sahibganj

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## PREAMBLE

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Prior to the formation of Jharkhand Minor Mineral Concession Rule 2004, (JMMCR -2004) the mining operation for minor mineral were carried out in unscientific manner. Identifying this fact in exercise of power, Conferred by Section 15 by Mines and Minerals (Development and Regulation) Act 1957 as amended in 2015 and all other powers enabling it in that behalf, the industry Mines & Geology Department, Govt. of Jharkhand framed the aforementioned rule, which has been amended with period of times in the year 2007, 2010, 2014, 2015 and 2017.

Keeping in view of experience gained in period of one decade, the MOEF&CC came out with Environmental Impact Assessment Notification S.O.-1533(E) dated 14<sup>th</sup> Sept.2006. It has been made mandatory to obtain environmental clearance for different kinds of development projects as listed in Scheduled -1 of notification.

Further, pursuance of the order of Hon'ble Supreme Court Petition (C) No. 19628-19629 of 2009, dated 27<sup>th</sup> Feb. 2012 In the matter of Deepak Kumar etc., Vs State of Haryana and others etc., prior environmental clearance has now become mandatory for Mining of Minor Minerals irrespective of the area of Mining Lease.

And also in view of the Hon'ble National Green Tribunal, order dated the 13<sup>th</sup> Jan.2015 the matter regarding Sand, Brick earth, & burrowed earth cutting for Road Construction has to take prior E.C. For Mining Lease irrespective of the fact that whether the area involved is more or less than 5 hectares. They also suggested to make a policy on E.C for sand including other minor minerals mining lease in cluster.

In pursuance MOEF&CC Notification S.O. 141(E) dated 15<sup>th</sup> Jan. 2016, District Environment Impact Assessment Authority (DEIAA) & District level Expert Appraisal Committee (DEAC) has been formed for Category –B2 Minor Minerals having area less than or equal to 5 ha.

MOEF&CC in consultation with State Government has prepared Guidelines on Sustainable Sand Mining & other Minor minerals mining in 2016, detailing the provisions on Environmental Clearance for cluster. Creation of District Environmental Impact Assessment Authority (DEIAA) & proper monitoring of Minor Minerals Mining using Information Technology to track the mineral out material from source to destination.

DEAC will scrutinize and recommend the prior environmental clearance of Mining of Minor Mineral to DEIAA on basis of District Survey report. This will model and guiding document which is a compendium of available mineral resources, geographical setup, environmental and ecological set up of the district and replenishment of minerals and is based on data of various departments, published reports, Journal and websites. The District Survey report will form the basis for application for environmental clearance, preparation of reports and appraisal of projects. District Survey Reports are to be reviewed once in every five years as per statue, however this is an interim report, which will be updated at regular intervals.

In line with above guideline Chief Secretary of Government of Jharkhand issued a letter to all Deputy Commissioner's Vide letter No. -1874/Cs dated 01-08-2017 & Notification No.

Khani(vivid) -67/2017/1905 dated 16-08-2017 by Secretary Government Department of Industries, Mines & Geology, Government of Jharkhand, to prepare a District Survey Report as per guideline of sustainable Sand & Minor Mineral Mining guidelines with the assistance of Irrigation department (Minor), Forest department , Mining & Geology Departments, considering the recent amendment S.O. 3611 (E) dated 25<sup>th</sup> July, 2018.

The Main objective of the preparation of District Survey Report is to ensure the following:-

1. Identification of Mineral Resources in the district.
2. Identification of areas of minor minerals having the potential where mining can be allowed. And
3. Identification of area and proximity to infrastructure and installations where mining should be prohibited.

## 1. INTRODUCTION

### SAHIBGANJ AT A GLANCE:-

#### 1.1 Location and Geographical Area

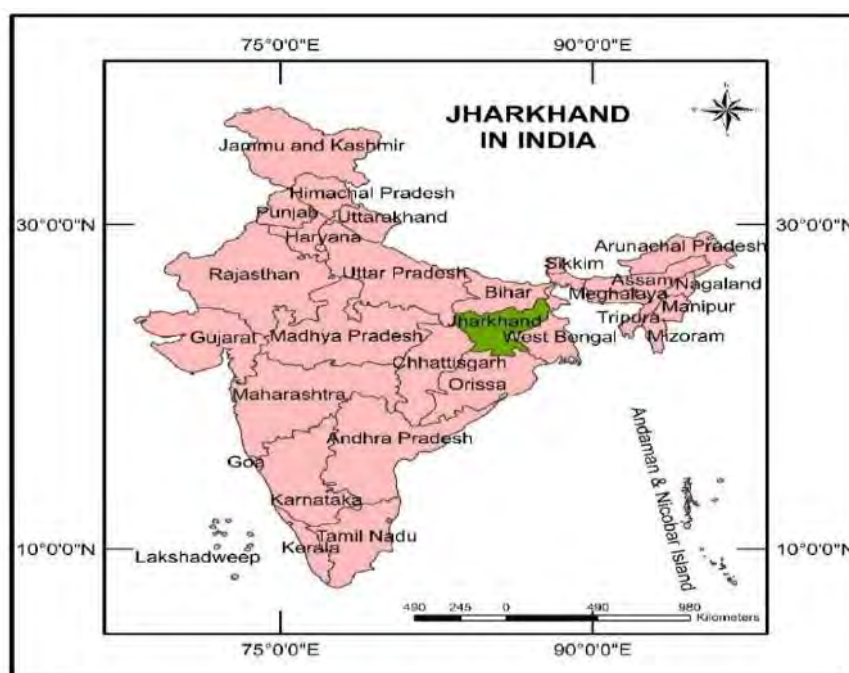
Sahibganj district is one of the twenty-four districts of Jharkhand state, India, and Sahibganj is the administrative headquarters of this district. The district is located in the north eastern most tip of Jharkhand State. Sahibganj district is bounded by the river Ganges and Katihar district of Bihar in the north on the south Pakur district of Jharkhand, on the east by Maldah and Murshidabad district of West Bengal and on the west by Godda district. The district is situated roughly between 25° 50' 00" North and 24° 42' 52" North latitude and 87° 27' 35" East and 87° 53' 56" East longitude, having an area of 1599 km<sup>2</sup>. The district covers Survey of India toposheets nos. **72 O/ 7, 72 O/ 8, 72 O/ 11, 72 O/ 12, 72 O/ 16, 72 P/5, 72 P/ 9, 72 P/10, 72 P/13 and 72 P/14**. The district has a total population of 1,150,567 with a population density of 558/km<sup>2</sup> having sex ratio of 952 (Census 2011).

#### 1.2 Administrative Units:-

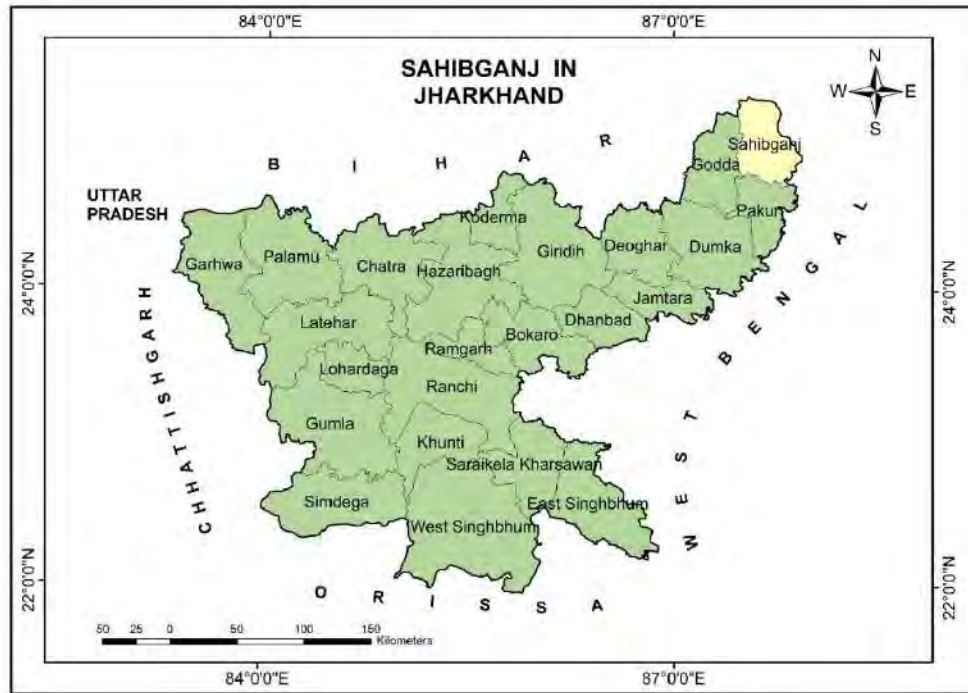
The district is divided into two subdivisions: **Sahibganj** subdivision and **Rajmahal** subdivision. It is further subdivided into nine Community development blocks: (Sahibganj subdivision) **Sahibganj, Mandro, Borio, Barhait**; (Rajmahal subdivision) **Taljhari, Rajmahal, Udhwa, Pathna** and **Barharwa**. The district has 6 Census Towns and 1,813 Villages (Inhabited-1,349 & Uninhabited-464). Moti Jharna Waterfall, Shivgadi Temple, Udhwa Bird Sanctuary and National Fossil Park are some of the important historical monuments of Sahibganj district.

#### 1.3 Connectivity facilities in Sahibganj District:-

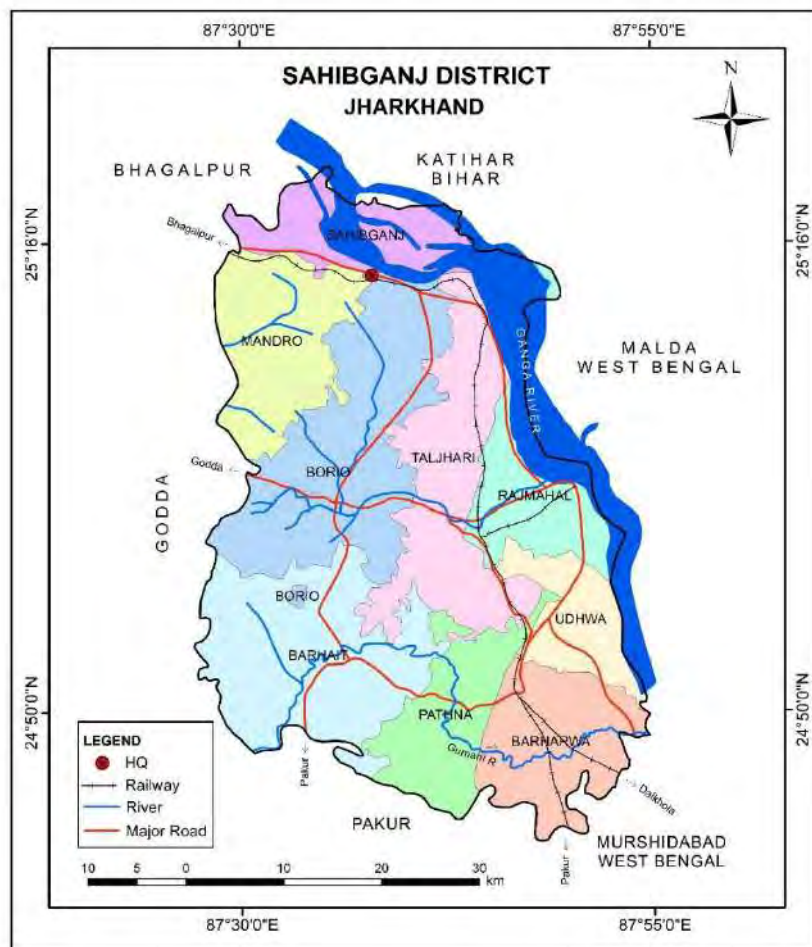
The area is approachable by train from Bhagalpur (Bihar) and Dhanbad (Jharkhand) via West Bengal by north-south running Howrah-Bhagalpur loop of Eastern Railway. The district can be approached from all sides by a network of metaled road. The National Highway 33 passes through the district. Nearest airport is Bagdogra Airport (Siliguri), approximately at a distance of 173 km.



## District Survey Report of Sahibganj, Jharkhand



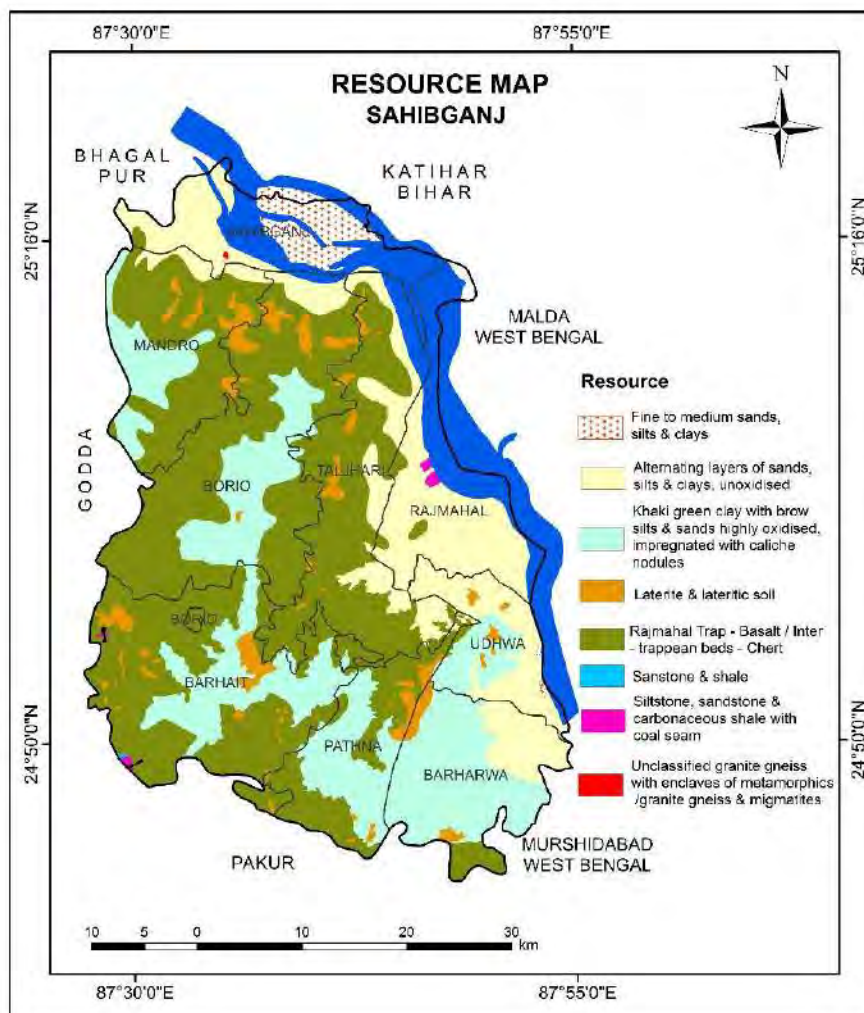
Map showing Location of Sahibganj District In Jharkhand



Representative Map of Sahibganj District (Source: Geological Survey of India)

## 2. OVERVIEW OF MINING ACTIVITY IN THE DISTRICT

Mainly the following minerals are found in the district: Coal, China Clay, Bentonite, Black Stone, Sand Stone, Silica Sand, Quartz, Kaolin, Flint Stone.



Representative Resource Map (Source: Geological Survey of India)

There are 120 operating stone mines and 282 non-operating mines and 3 operative china clay and flint mines presently (August 2018), in the district. This district provides approximately 5000 employment in the Mineral based industries, such as Fly Ash Bricks, Kiln Bricks, Mineral Grinding specially soap stone & Quartz, De-Hydrated Lime etc., which involves investment of approx. Rs. 809.97 Lakh. The Rajmahal Hills are the source of building and road stones. Most of the quarrying is done by the side of the loop line of the Eastern Railway. Kaolin is found near Mangal Hat in Rajmahal subdivision. Bentonite is also available in some places, used as “Multani Mitti” and has great scope of export to other parts of the state of Jharkhand.

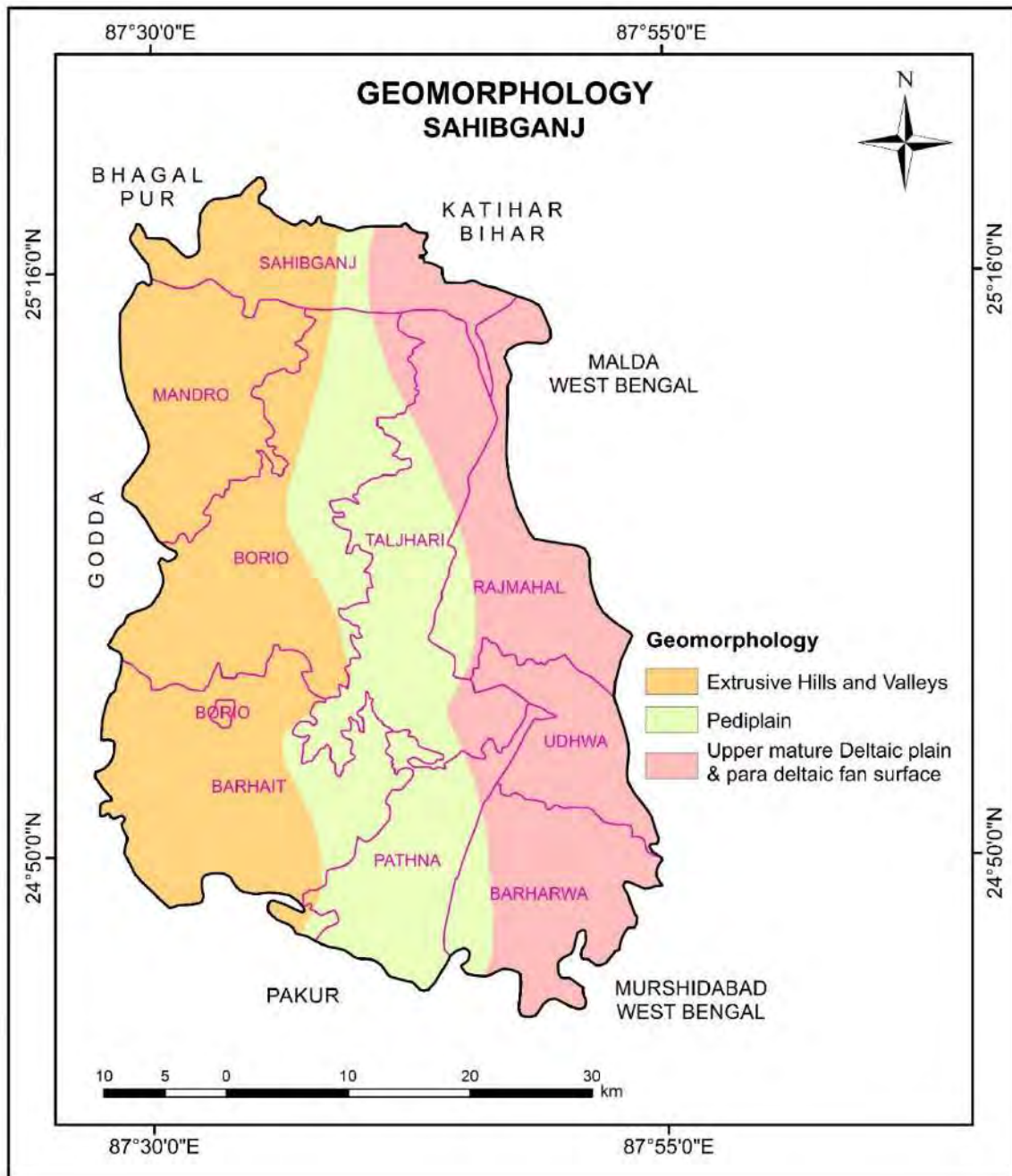
### 3. GENERAL PROFILE OF THE DISTRICT

#### 3.1 River System



The river Ganges forming the northern boundary of the district enters into it along the north – west corner and flow eastward upto Sakrigali. Here it takes a turn to the south and then forward forming the eastern boundary of the district upto a little beyond Radhanagar in Rajmahal sub division. The other rivers of the district are Gumani and Morang. The river Gumani flows SW to NE direction upto Barhait then it turn to east direction. The river Morang flows from north to south direction and join river Gumani near Barhait. The drainage pattern of the district is dendritic. All these rivers are seasonal in nature except the river Ganges.

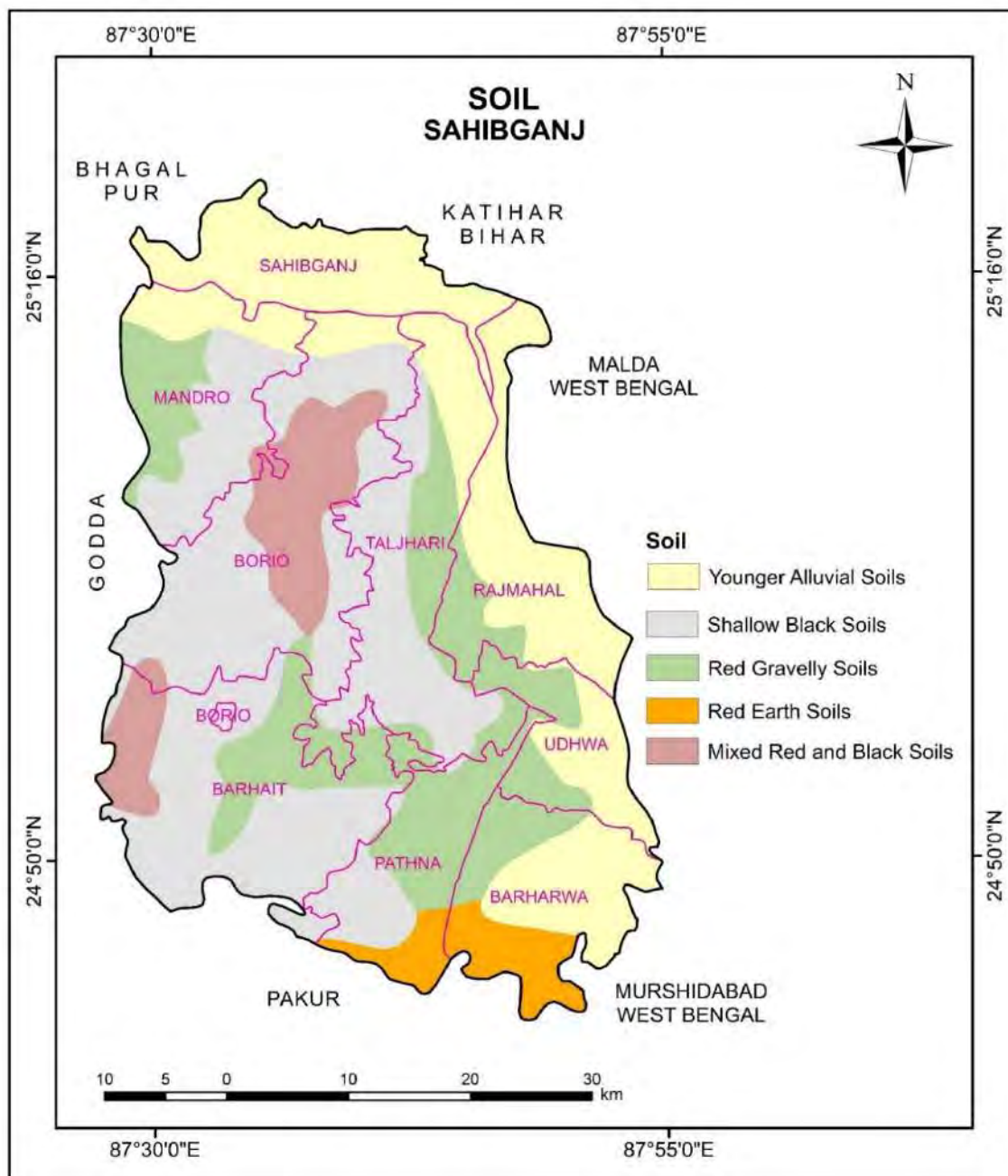
### 3.2 Geomorphology



(Source: Geological Survey of India)

Major part of the district is characterized by undulating topography covered by basaltic flows of Rajmahal Trap. The district is mainly drained by the rivers Ganges, Gumani and Morang. All these rivers are seasonal in nature except the river Ganges. The river Gumani and Morang contribute to the major surface run-off during monsoon. The main geomorphological features of the district are scarp on the northern part of the area, flat alluvial terrain in the eastern fringe of the district and resistant lava plateau of Rajmahal which rises above the general level and occupies major part of the district. The general evaluation of the hills and plateaus varies from 57 to 375 m above msl.

### 3.3 Soil:



(Source: Geological Survey of India)

The major soil type of the district is the Rajmahal type soil which derived from basaltic lava. These soils are black in colour, very fertile and restricted to Rajmahal lava areas. The other soil type of the district are red soil, eroded scarp soil, foothill soils, Tal soil and alluvial soil. The red soils are light to medium and are red to yellow or light grey in colour. The eroded scarp soil occurs in transverse section of dissected, descending scarp land at various altitude of upland. The yellowish red foothill soils occur in the eastern fringe of the district. The Tal soil is found in the back water belt of the Ganga around Barharwa when the rain water remains stagnant in the rainy season. The clayey loam type alluvial soil occurs near Sahebganj plains.

### 3.4 Physiography

Hilly terrains and extensive verdant landscapes is the main feature of Sahibganj. Based on the land resource and geographical condition, the district can be broadly sub-divided into two parts, i.e. the slopes and hills of this region which mainly forms the forested area and a part of Damin-I-Koh. The major blocks forming a part of this category are Borio, Pathna, Mandro, Taljhari and Barhait, blocks with major inhabitants being the Santhal Tribes, Mal Paharia clan and other Paharia Tribes. The Barharwa block, Udhwa block and the famous Rajmahal hills forms the second type of geographical division consists of plain land with multiple uplands, depression and ridges.

### 3.5 Demography

<b>Census - 2011</b>	
Total population	1,150,567
Male Population	5,89,391
Female Population	5,61,176
Rural Population	9,90,901
Urban Population	1,59,666
SC Population	72,341
ST Population	3,08,343
Population Growth	24.01%
Area Sq. Km	1599.00
Density/km <sup>2</sup>	558

Proportion to Jharkhand Population	3.49%
Sex Ratio (Per 1000)	952
Child Sex Ratio (0-6 Age)	960
Average Literacy	42 %
Male Literacy	49 %
Female Literacy	35 %
Total Child Population (0 - 6 ) Years	2,21,955
Male Population (0-6 Age)	1,13,220
Female Population (0-6 Age)	1,08,735
Literates	4,83,263
Male Literates	2,87,303
Female Literates	195,960
Child Proportion (0-6 Age)	19.29%
Boys Proportion (0-6 Age)	19.21%
Girls Proportion (0-6 Age)	19.38%

Source: Census Data, 2011

### 3.6 Forest

Total area covered under forest in Sahibganj district is about 767440 Acres or 30882 hectares, which is mostly barren. Owing to large scale unscrupulous felling the region once known for its thick and extensive forests is now bereft of much of its jungle wealth. The Forest department has under taken afforestation of these areas to some extent.

The most common tree found in the district is sal (*Shorea robusta*). Some teak of inferior variety is also found. Some tree found are jackfruit, murga, simal, bamboos, asan and satsal. Sal and simal logs and jackfruit are exported in large quantities to the neighboring districts and also to the places outside Jharkhand. Stray cattle are a common site in the district.

District-wise Forest Cover Area in Jharkhand (Area in Km<sup>2</sup>)

District	Geographical Area Km <sup>2</sup>	2011 Assessment			Total	Percent of GA	Change	Scrub
		Very Dense Forest	Moderate. Dense Forest	Open Forest				
Bokaro	1,929	64	244	252	560	29.03	0	48
Chatra	3,732	251	863	663	1,777	47.62	-5	15
Deoghar	2,479	0	84	85	169	6.82	0	5
Dhanbad	2,996	0	50	155	205	6.84	0	17
Dumka	6,212	0	314	323	637	10.25	0	58
Garhwa	4,092	124	406	835	1,365	33.36	0	55
Giridih	4,963	98	422	344	864	17.41	10	8
Godda	2,110	15	268	116	399	18.91	0	25
Gumla	9,077	324	919	1,414	2,657	29.27	0	33
Hazaribagh	5,998	272	626	1,164	2,062	34.38	9	44
Koderma	1,435	68	321	207	596	41.53	-4	0
Lohardaga	1,491	174	219	110	503	33.74	0	10
Pakur	1,571	3	172	108	283	18.01	0	19
Palamu	8,657	529	1,809	1,189	3,527	40.74	0	88
West Singhbhum	9,907	453	1,559	1,829	3,841	38.77	6	81
East Singhbhum	3,533	53	621	404	1,078	30.51	67	38
Ranchi	7,698	141	684	1,079	1,904	24.73	0	67
<b>Sahebganj</b>	<b>1,834</b>	<b>21</b>	<b>336</b>	<b>193</b>	<b>550</b>	<b>29.99</b>	<b>0</b>	<b>72</b>
<b>Grand Total</b>	<b>79,714</b>	<b>2,590</b>	<b>9,917</b>	<b>10,470</b>	<b>22,977</b>	<b>28.82</b>	<b>83</b>	<b>683</b>

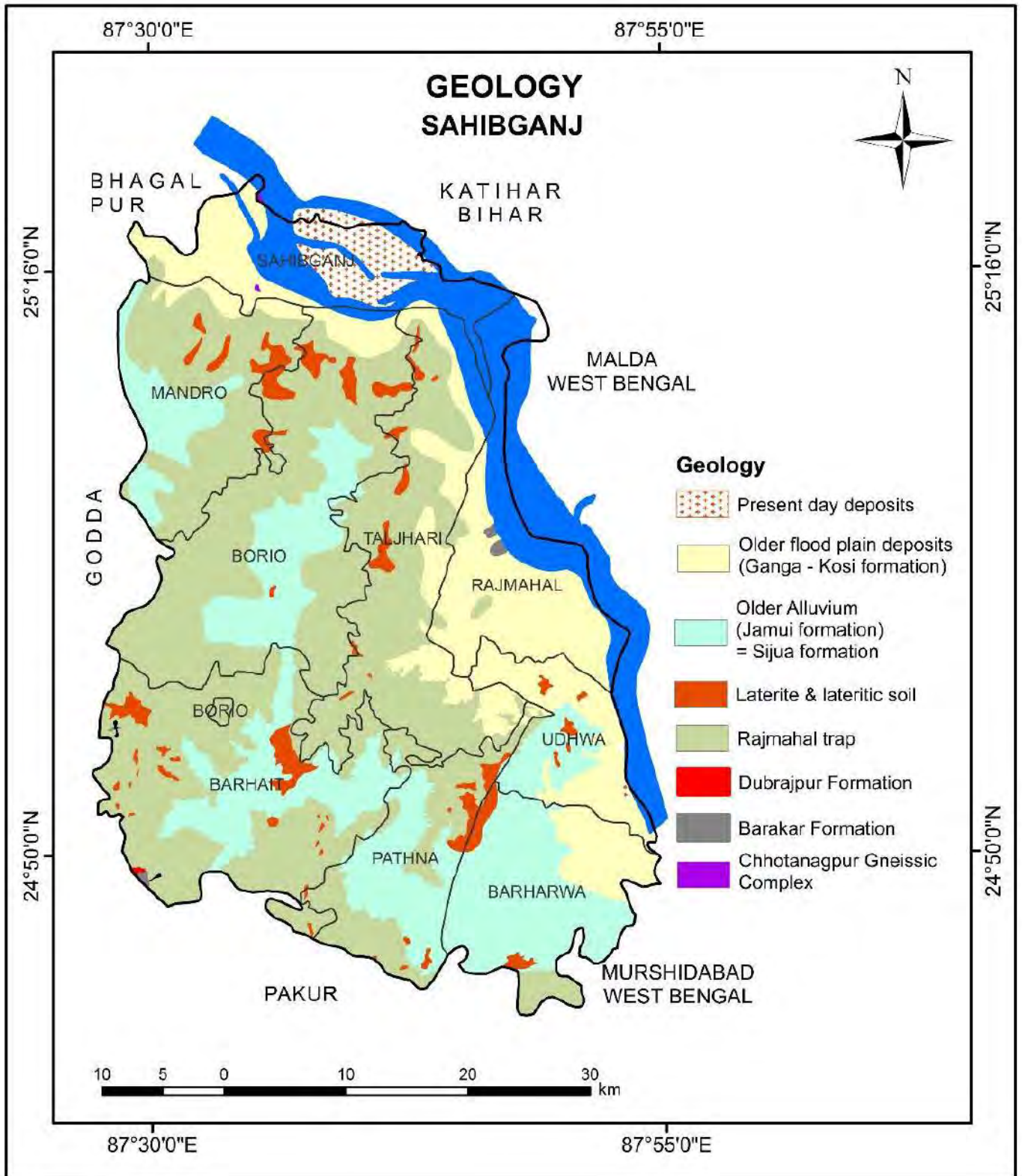
(Source: India state of forest report 2011-Jharkhand)

#### 4. GEOLOGY OF THE DISTRICT

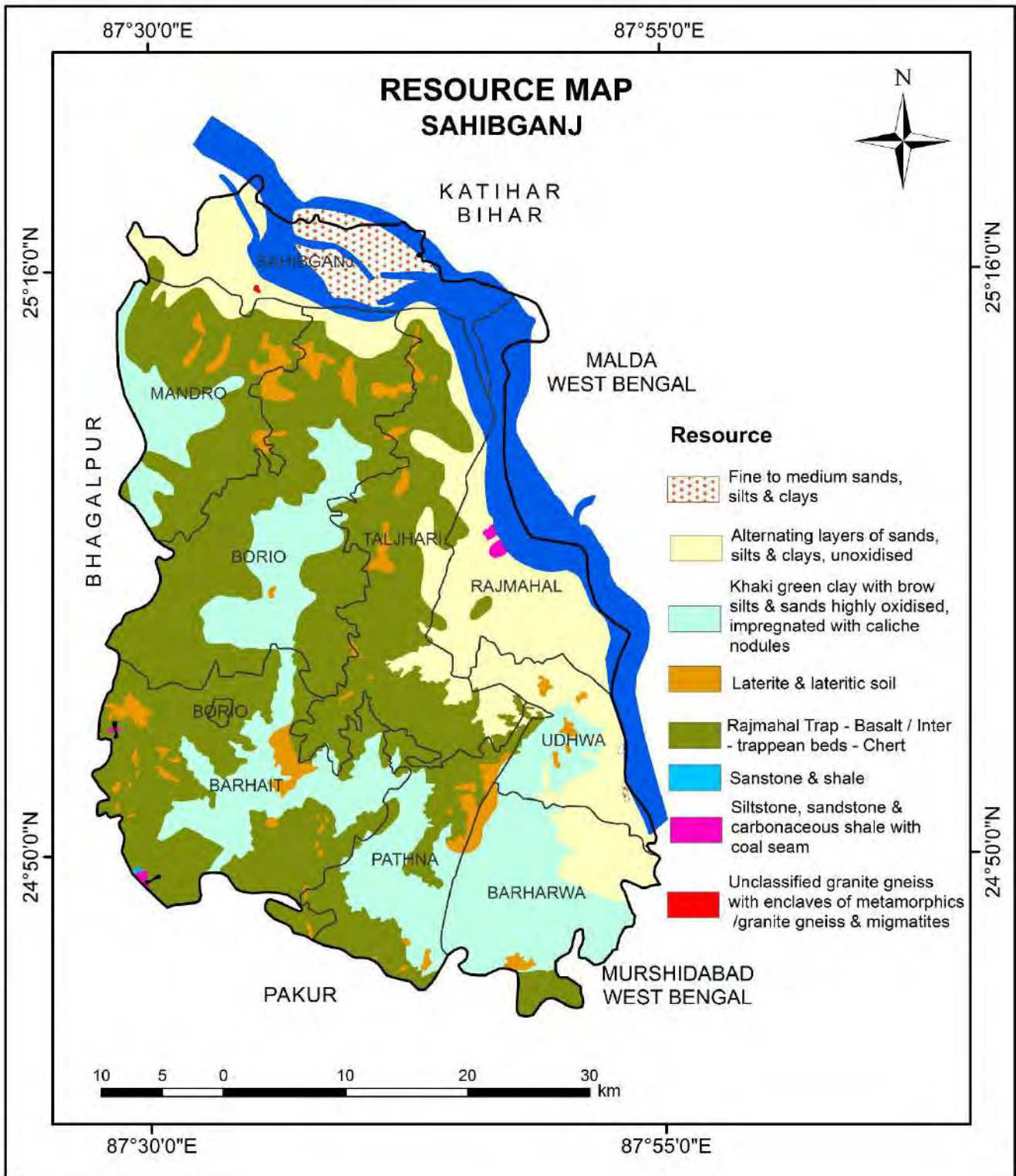
The major part of the district is represented by Rajmahal traps (volcanics) having a huge thickness of lava flows. It has been observed that at least seven successive flows of basalt in the area each flow ranging in thickness between 20m to 75m. The rocks are basaltic lava ranging in thickness from 450m to 550m. In basalt the intratrapeans are represented by tuffs, claystones and siltstone. Some of the rocks are silicified and porcelanide with quartz, Agate and Chalcedony. These intratrapeans are 40m thick. The rocks are of Jurassic to Cretaceous age. Radiometric age of these rocks varies from 11.8 to 70 million years. These rocks are extended for 125Km in Sahibganj near the river Ganges. Patchy occurrences of Chhotanagpur granite gneissic complex associated with granite gneiss and migmatites and Barakar formation of Gondwana super group consisting of siltstone, sandstone and carbonaceous shale with coal seam are found to occur in the western sector of the district. A continuous band of older alluvium with clay impregnated with caliche nodules is very much conspicuous in the eastern part of the area. In the eastern and northern margin of the area recent alluvium of the Ganga fringes the older rocks which is constituted by sands, silt and clays.

The generalised stratigraphic succession of the area, established by GSI is as follows :-

AGE	FORMATION	LITHOLOGY
Recent Quarternary / Tertiary	Alluvial undifferentiated surficial depth	Loose soil, silt & clay, laterites, lateritic soil, lateritic gravel with petrified wood & china clay
Middle Jurassic to lower creataceous	Unconformity Rajmahal Traps and intertrappeans	Flow of basalt and intertrappean sediments (sandstone, shale etc)
Lower Jurassic (Upper Triassic)	Unconformity Dubrajpur	Conglomerates, coarse to medium grained sand stone, grey siltstone, molted shale and thin coal bands.
Lower Permian	Unconformity Barakar	Coarse to medium grained sand stone, carbonaceous shale & c coal seam, greenish sandstone, siltstone, green shale.
Upper Carboniferous to lower Permian (Permocarboniferous)	Talchir	Granites and granitoids gneiss, pegmatite quartz veins and metabasic dykes.
Precambrian	Metamorphics	-----

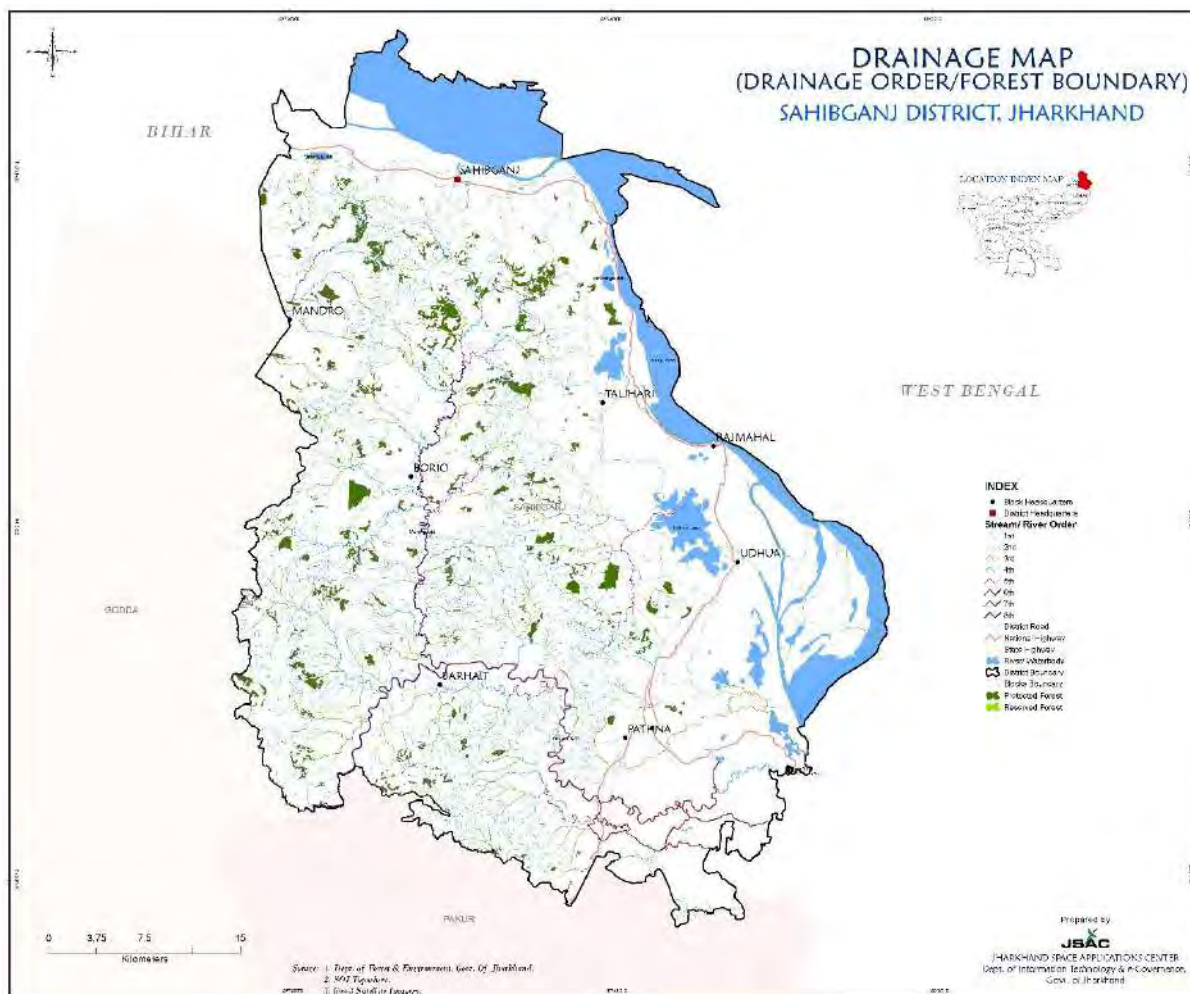


(Source: Geological Survey of India)



(Source: Geological Survey of India)

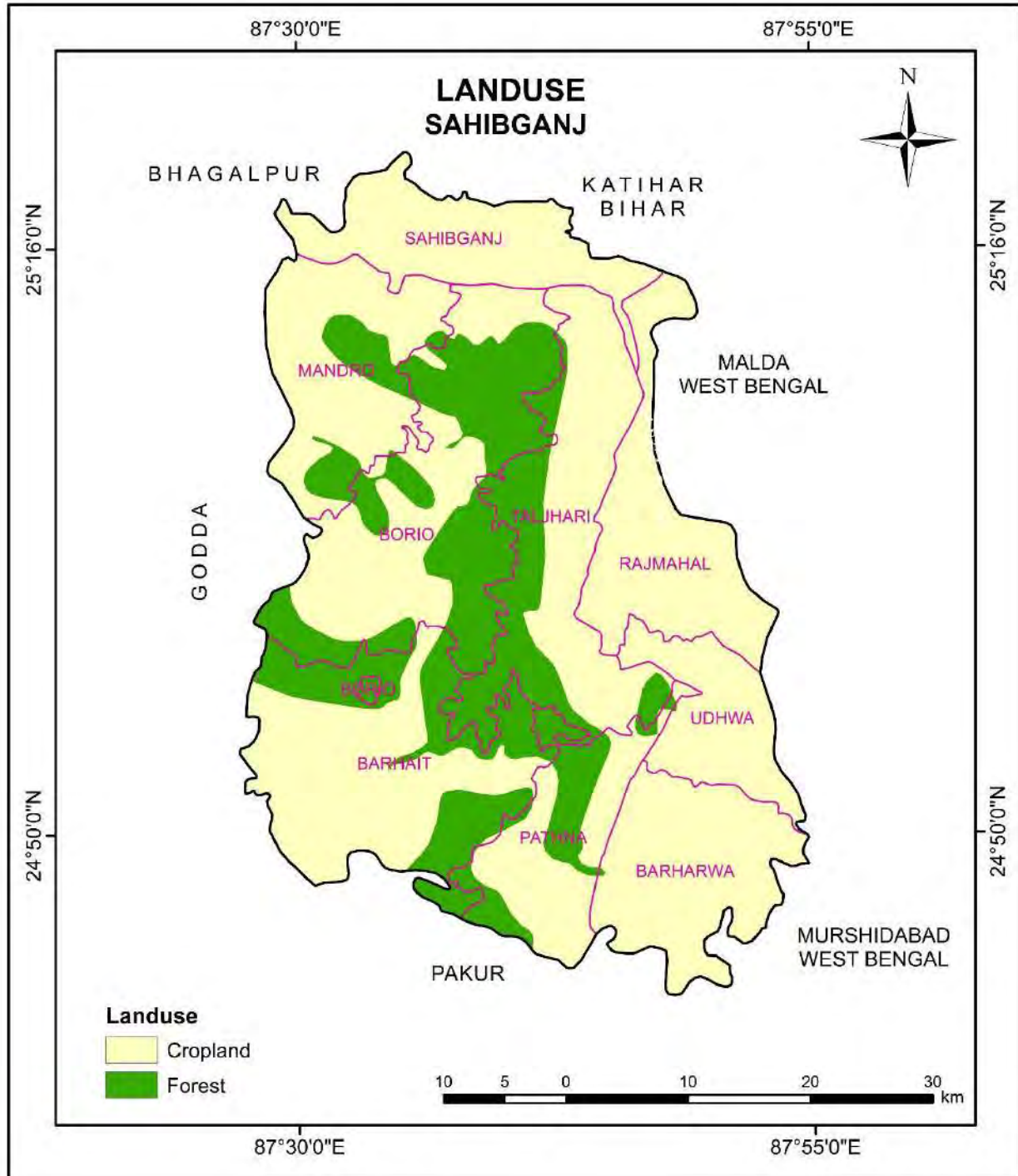
5. DRAINAGE OF IRRIGATION PATTERN



Paddy and maize are important crops grown in the district. Linseed, groundnuts, sweet potatoes and khesari are other crops grown widely in Rajmahal and its adjoining areas. Irrigational facilities are not adequate in this district. The most common source is the dug well, but this is not a very dependable source of irrigation. The major part of the district being rocky in nature, it is difficult to dig wells. The undulating nature of land makes it possible to store rain water by bunding. Apart from being dependent upon rains, these are by no means adequate. The result is that failure of rains invariably involves failure of crops except in small pockets.

IRRIGATION BY DIFFERENT SOURCES (Areas and Number of Structures)	Nos.	Area(Ha)
Dugwell	1361	906
Tube wells /Bore wells	187	672
Tanks / Ponds	133	225
Canals	Nil	-
Other Sources	797	1261
Net irrigated area		
Gross irrigated area (Ha)		3066

6. LAND UTILIZATION PATTERN IN THE DISTRICT



(Source: Geological Survey of India)

LAND USE (Sq Km.)	
a) Forest area:	427.4
b) Net area sown:	414.6
c) Cultivable area:	473.10

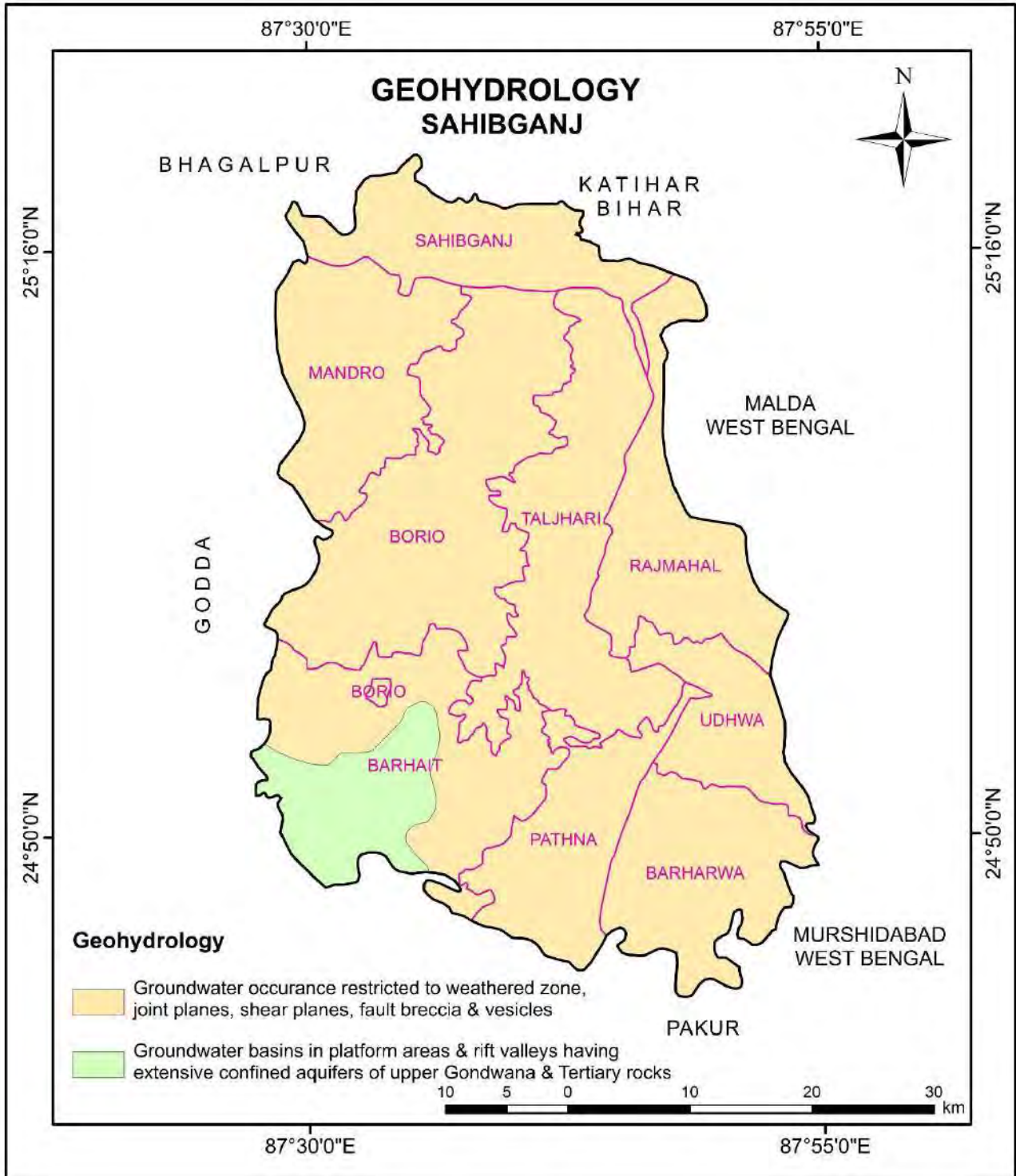
A large part of the district is hilly. The vast tract of land enclosed between hill ranges. The region on the bank of the Ganges is fertile and richly cultivated. The Ganges, Gumani and Bansloi rivers flow through this region. This area has plenty of fertile lands and is richly cultivated.

	Sahibganj	Jharkhand
1. Forest	21.18 %	29.2 %
2. Net sown area	22.85 %	22.7 %
3. Barren and unculturable waste	7.77 %	7.2 %
4. Non agricultural use	8.04 %	9.9 %
5. Orchards	1.46 %	2.5 %
6. Pasture	1.39 %	
7. Culturable wasteland	3.25 %	3.5 %
8. Current and other fallow	34.06 %	25.0 %

Source: Fertilizer and Agriculture Statistics, Eastern Region (2003-2004)

7. SURFACE WATER AND GROUND WATER SCENARIO OF THE DISTRICT

7.1 Hydrogeology



(Source: Geological Survey of India)

Rajmahal Trap is the major rock type in the district. The other geological formations of the district are alluvium and Laterite.

The alluvium occurs in the northern and eastern boundary of the district, which is composed mainly of sand and sub ordinate clay. Laterites are mainly of insitu origin and have been formed by sub-aerial erosion of underlying basalts under favorable climatic conditions. Laterites provide a productive ground water reservoir due to its very good porous and permeable in nature.

Rajmahal traps having a large thickness of basaltic lava flows occurs in the major part of the district. The different units of the lava flows are the main water bearing horizons in basaltic formation. The basic properties such as the ability to receive recharge, holding capacity of water to take into storage and transmit it as ground water by gravity are different for different litho units of the trappean flows. The massive basaltic unit is hard and compact in nature with negligible primary porosity and permeability. But the process of weathering and development of secondary porosity such as joints and fractures makes it to act as good ground water reservoir. The vesicular units have abundant vesicles that contribute towards hydrogeological properties and thus have high degree of porosity and permeability to serve as potential aquifers. The ground water occurs in near surface in weathered, jointed and fractured basalts zone under water table conditions. The water bearing zone occurring between depths of 15-40 m are either interflow weathered shear zones and directly connected to shallow aquifer in widely spaced major joints and fractures and forms semi confined aquifer. Below the depth of 40 m, where the fracture porosity is insignificant, the weathered flow contacts are completely cut-off from lower aquifer on account of intervening high impermeable massive basalts and intertrappean beds and thus give rise to confining conditions.

#### Exploratory wells:

To understand the sub – surface geology, identify the various water bearing horizons including their depth, thickness and compute the hydraulic characteristics such as transmissivity and storativity of the aquifers, exploratory drilling programme was carried out by Central Ground Water Board during AAP 1982 – 83 and 05 exploratory wells and 04 observation wells were drilled in the district. In addition, 3 exploratory wells and one observation well drilled during 2012. The depth of exploratory wells ranges between 44.20 to 100.00 mbgl. The static water level of these exploratory wells varies from 5.53 to 9.30 mbgl. The Transmissivity value varies from 32.30 to 176.00 m<sup>2</sup>/ day while the Storativity value varies from 07.00 X 10<sup>-5</sup> to 07.70 X 10<sup>-5</sup>. The detail of exploratory wells drilled by Central Ground Water Board in Sahebganj district is given in table – 2.

#### 7.2 Depth to Water Level: -

There are eight numbers of permanent observation well (HNS) of Central Ground Water Board is located in the district for monitoring of ground water regime. During the year 2012, the pre monsoon depth to water level was monitored between 4.60 to 12.00 mbgl. while the post monsoon water level observed between 2.85 to 7.93 mbgl. The pre monsoon and post monsoon depth to water level maps (2012) of the district prepared and shown in Figure 1 and 2 respectively.

### 7.3 Seasonal Fluctuation: -

From the pre monsoon and post monsoon depth to water level data collected during May 2012 and November 2012 respectively, water level fluctuation were computed for all the HNS located in the district. The water level fluctuation of the district varies from 0.28 to 9.15 m.

### 7.4 Long term water level trend: -

Water level of an area depends upon various factors like the storage of ground water development and variation in rainfall over a long period, recharge from rainfall and different sources. Central Ground Water Board has established eight National Hyrdograph Stations (NHS) for the study of water level behavior in the district. The water level data of each station has been analyzed. Pre monsoon and post monsoon long term water level trend has been calculated for the period of 2002 – 2011 (Table 4). The long term water level trend is showing rising trend between 0.006 – 0.530 m/year, 0.116 – 0.274 m/ year and 0.086 – 0.264 m/ year for pre monsoon, post monsoon and all season respectively. Similarly, the long term water level trend is showing falling trend between 0.018 – 0.404 m/year, 0.026 – 0.561 m/year and 0.018 – 0.413 m/ year for pre monsoon, post monsoon and all period respectively. About 37.5% of NHS showing rising trend of ground water while 25% of NHS showing falling trend for pre and post monsoon period. Similarly, about 37.50% of NHS shows rising trend and rest 62. 50% show declining trend for all seasons.

### 7.5 Ground Water Resources

Based on the recommendation of the Ground Water Estimation Committee – 1997 (GEC – 1997), block wise the ground water resource assessment has been carried out for all the blocks of the district. The net ground water availability of the district is 11613.70 ham. The gross ground water draft for all uses of the district is 2606.09 ham. The average stage of ground water development in the district is 22.44 %. All blocks of the district are falling under “Safe” category. The stage of ground water development varies from 8.20% to 46.26% (Table – 6, Fig. 4). The net ground water availability for future irrigation development for the district is 8513.63 ham. The State of Development map is shown in Figure 4.

### 7.6 Ground Water Quality

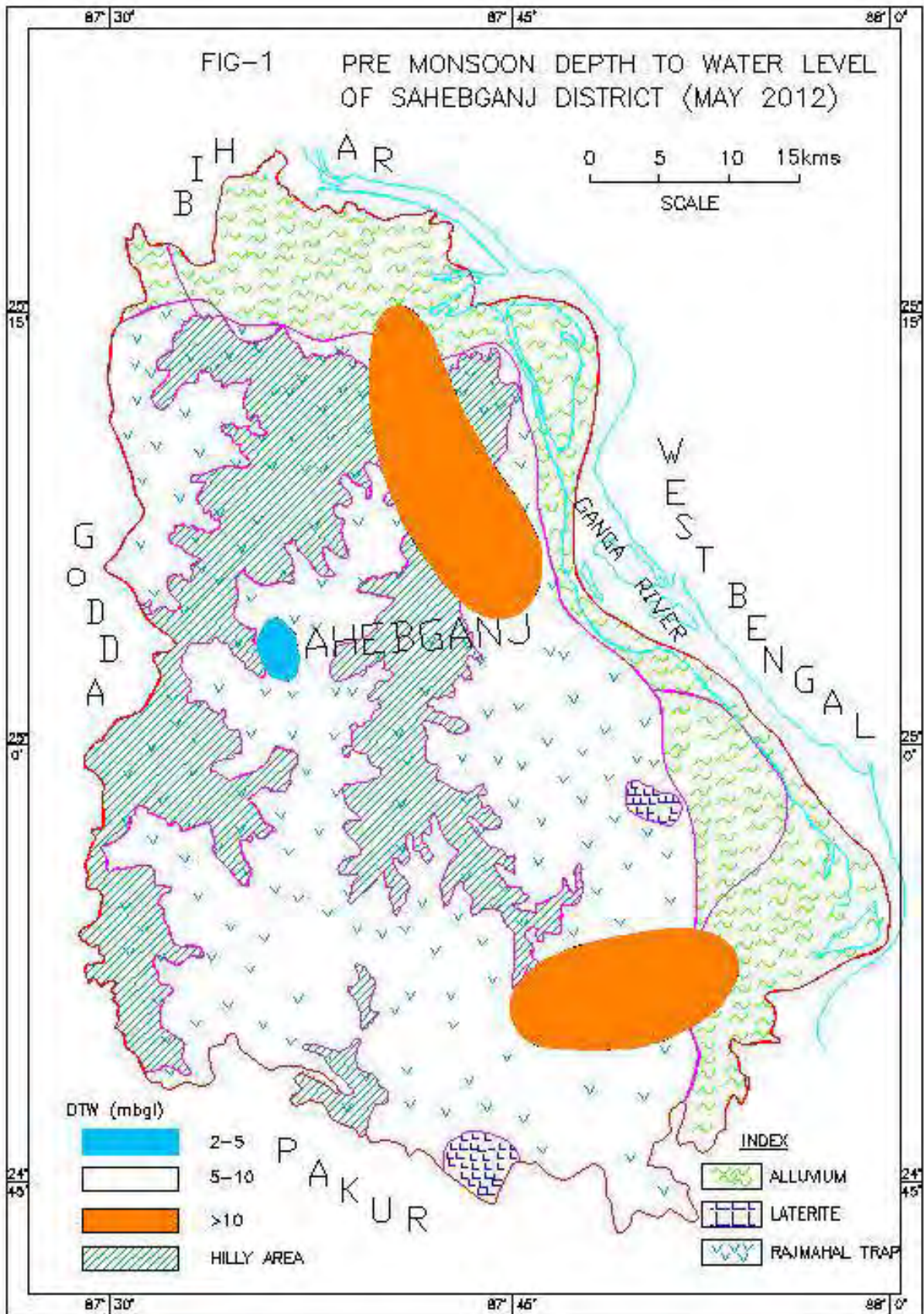
To evaluate the quality of ground water, samples have been collected from 5 representative HNS during the May – 2011. These samples were analyzed to assess the chemical quality of ground water and its suitability for drinking and irrigation purposes. The samples represent the quality of phreatic zone or the shallow zone. The ground water samples were analysed for major chemical constituents by using standard procedure at chemical laboratory in CGWB, MER, Patna. Analysed results are given in Table 5.

The results of ground water samples were analyzed in accordance with the standard (ISI – 1993) for drinking purpose. In general the quality of ground water in the phreatic aquifer is suitable for drinking and irrigation purpose except few samples, which shows nitrate concentration more than permissible limit. The EC value ranges from 193 – 1687 micro Siemens/cm at 250c. During the Ground Water Management Studies (AAP 2006 – 07), 60 acidified samples were collected from Gangetic alluvium of the district for the study of Arsenic in ground water. As per

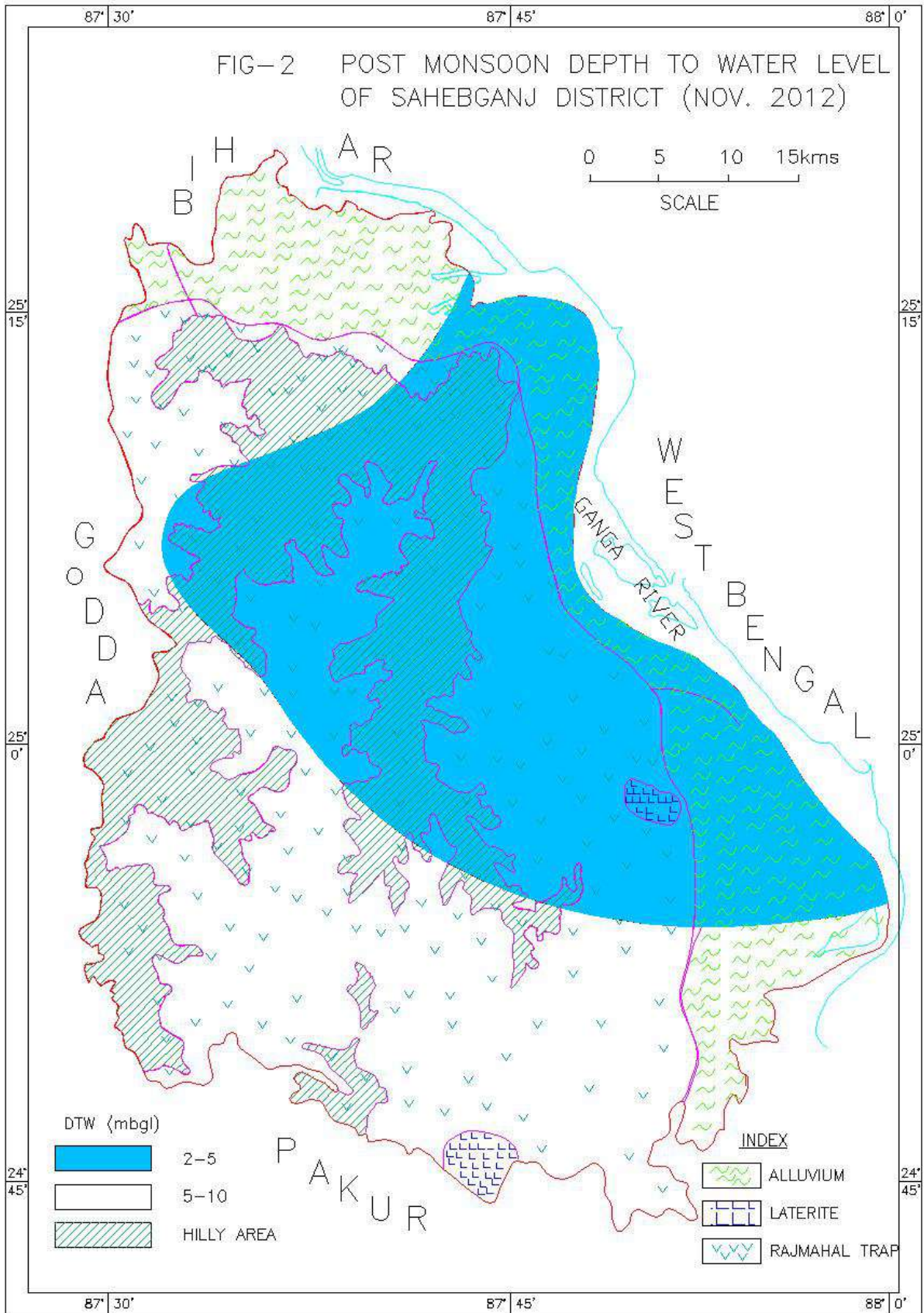
the analytical results of these samples, the Arsenic concentration is found more than 50 ppb in 20% of the samples and in 16.66% of the samples Arsenic value ranges between 10 – 50 ppb.

### 7.7 Status of Ground Water Development

There is sufficient scope for ground water development through shallow as wells deep bore wells. State Govt. department has been constructed a large number of bore wells to mitigate the drinking water problem in the district. Central Ground Water Board has drilled 8 exploratory wells 5 observation wells in the district. The depth of bore wells ranges between 44.20 – 200.00 mbgl. The yield of bore wells ranges from 1.08 to 30.00 m<sup>3</sup>/hr. The Transmissivity and Storativity value ranges from 32.30 to 176.00 m<sup>2</sup>/day and 01.40 x 10<sup>-4</sup> to 07.30 x 10<sup>-5</sup> respectively (Table 2). The stage of ground water development of the district is only 22.44%.

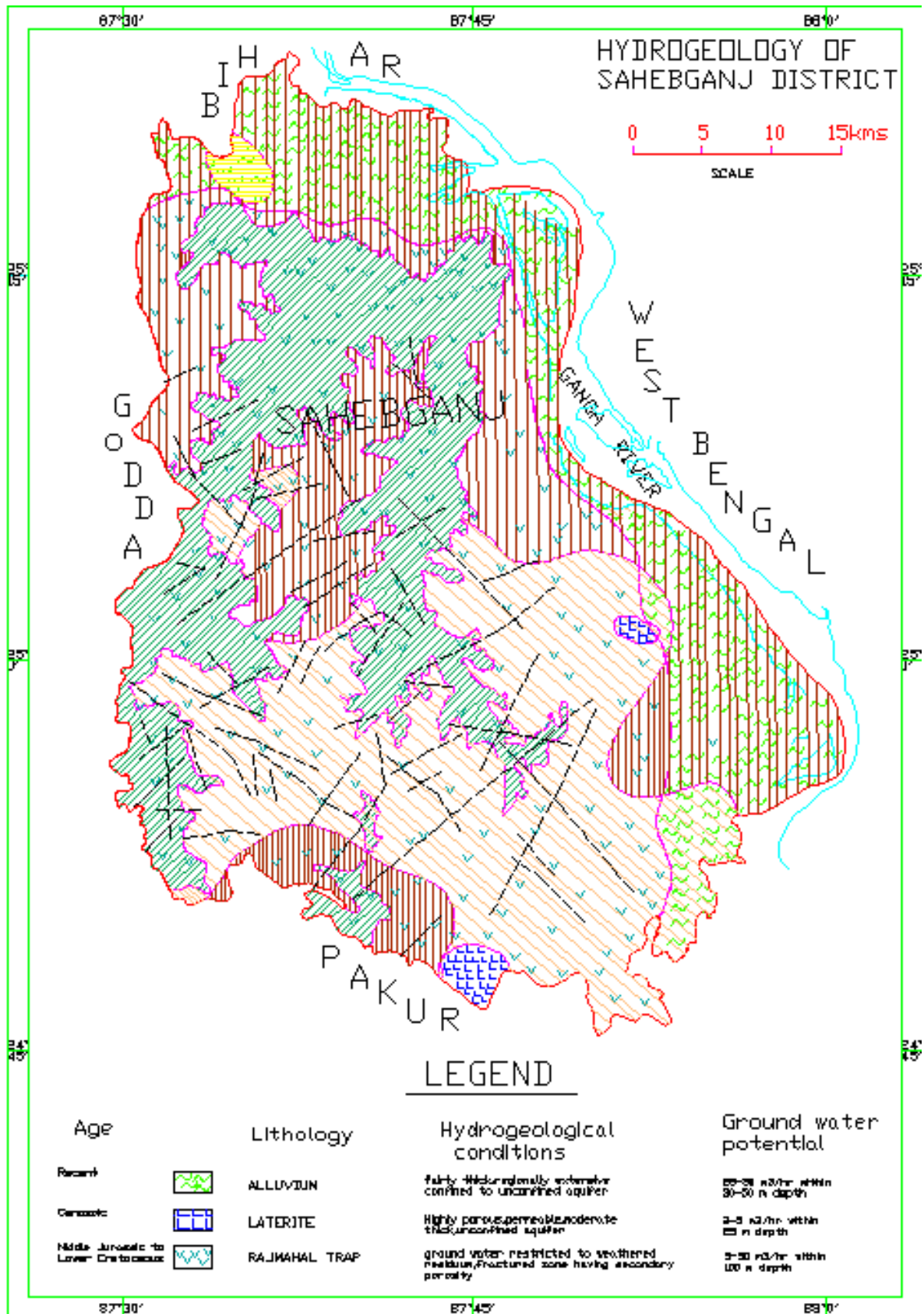


Map Showing Pre-Monsoon Depth of Water Level of Sahibganj District  
(Source: Central Ground Water Board Report)

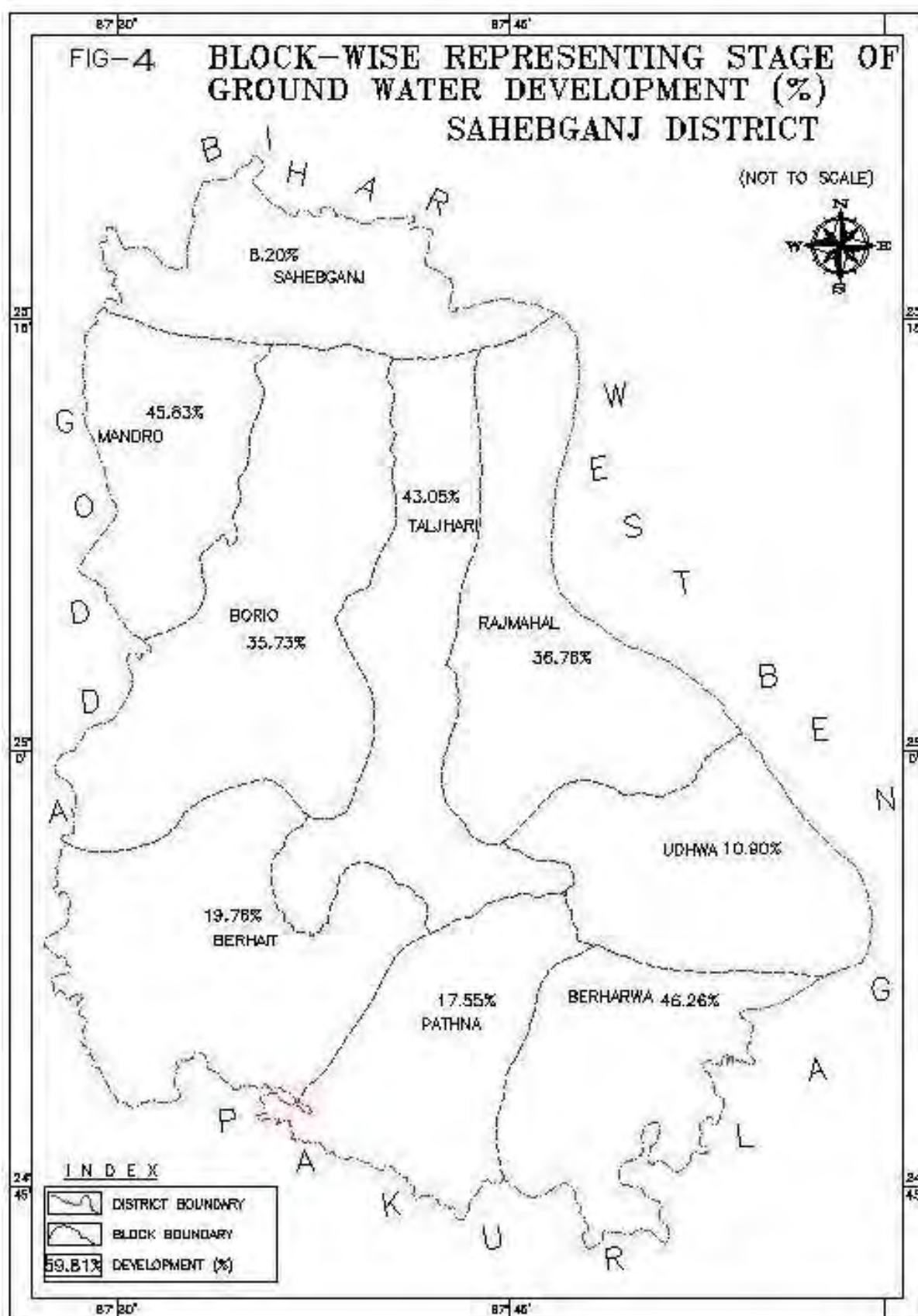


Map Showing Post-Monsoon Depth of Water Level of Sahibganj District

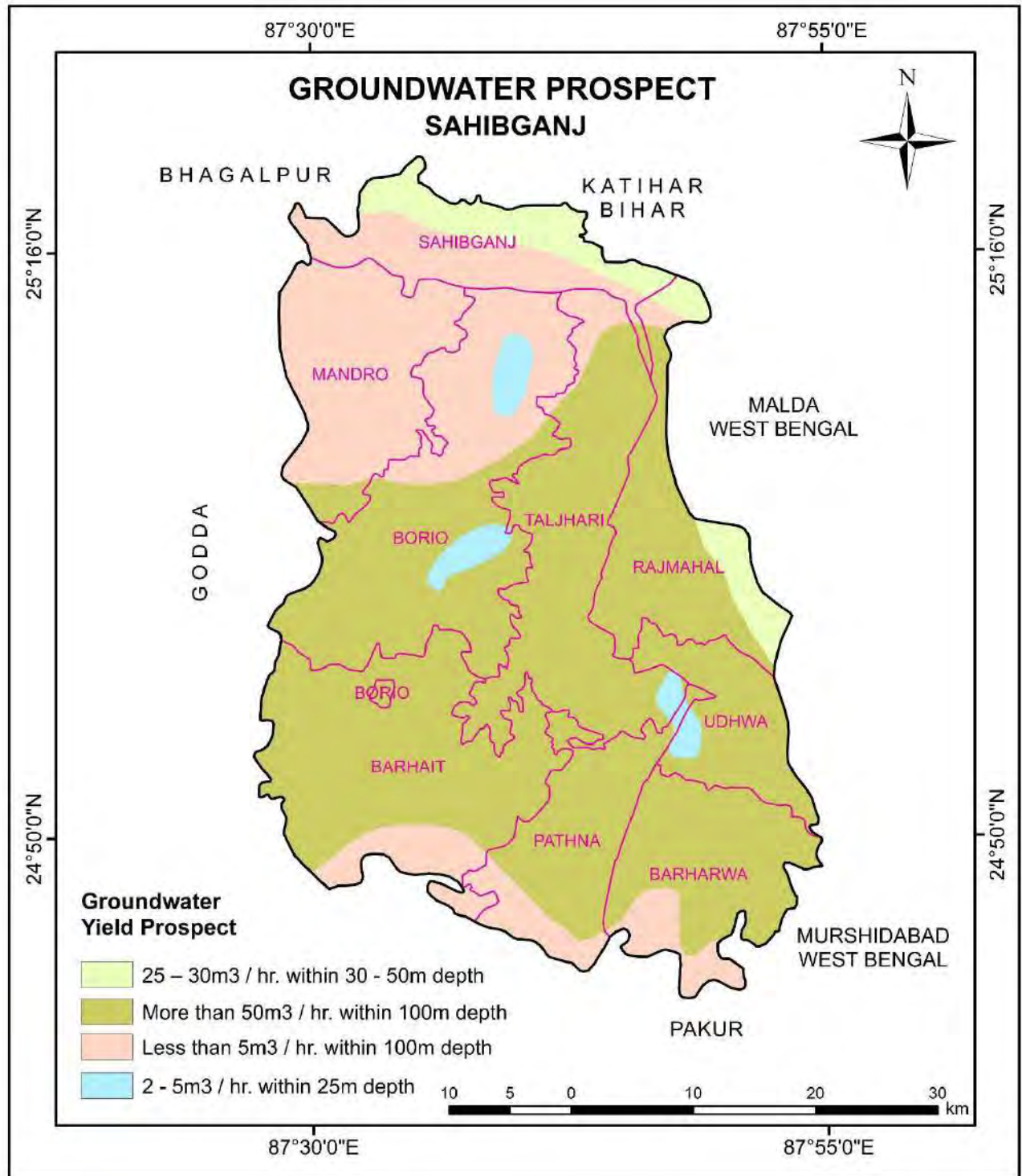
(Source: Central Ground Water Board Report)



(Source: Central Ground Water Board Report)



(Source: Central Ground Water Board Report)



(Source: Geological Survey of India)

## 7.8 Ground Water Development

Dug wells and shallow to medium depth (upto 50 m) bore wells are the main ground water extraction structures in the area to meet the increasing demand of domestic water supply and irrigation. The overall stage of ground water development of the district is 22.44% only. Thus, there is sufficient scope for development of ground water through dug wells, shallow and medium deep bore wells.

Construction of dug cum bore well structure is also suitable for enhancing the yield of dug wells, which will be cost effective. The ground water development varies in different places depending on the availability of favorable potential zones / aquifer. For the construction of ground water structures, knowledge of the local as well as regional hydrogeological condition of the area is necessary.

Ground water potential available for future development, considering the present ground water draft has been worked out as per norms of Ground Water Estimation Committee – 1997 (GEC – 1997) and the details of ground water recharge, net annual ground water availability, annual draft, net ground water balance and stage of ground water development has been assessed.

## 7.9 Water Conservation and Artificial Recharge

In view of the increasing thrust on development of ground water resources, there is urgent need to augment the depleting ground water resources. This gets augmented through natural recharge and can be augmented in an increased scale through artificial recharge. From hydrogeological point of view, rain water conservation is needed to arrest decline in ground water levels and to improve ground water quality by dilution. The construction of water conservation structures, artificial recharge structures, depends on the topographic features, hydrological and hydrogeological conditions of the area. From this point of view, the Sahibganj district may be divided into two parts – 1) the hard rock area i.e. basaltic terrain is undulating topographic setting with hills is suitable for check dam, gabion structures, percolation tank, contour bunding and trenching 2) the alluvial area is suitable for recharge shaft and percolation tank.

## 7.10 Ground Water Related Issue and Problems

The Arsenic concentration has been found more than permissible limits in some villages like Hazipur Bihta, Dihari, Bari Kudarjana, Nadhi Dera, Reza Nagar, Baluadiara and Chanan of Sahibganj block.

### ***Awareness and Training Activity***

**THE MASS AWARENESS PROGRAMME (MAP) BY CGWB - Nil**

**Participation in Exhibition, Mela, Fair etc. - Nil**

**Presentation and Lecture deliver in public forum / Radio / T.V / Institution of repute / Grassroots association / NGO / Academic institution etc. – Nil**

## 7.11 Area Notified by CGWB

As per the ground water resource assessment report of Jharkhand state, all blocks of the district fall under the safe category. Thus, the authority has not been notified any of the blocks.

## 7.12 RECOMMENDATION:-

1. Flouride concentration in ground water (bore well ) exceeds the permissible limits in/around villages Dharampur Morh, Amrapara, Bannawgram, Dhekiduba, Jatang

- Khakhsa and Rajdaha. In fluoride affected area, the ground water must be used after defluoridation through fluoride removal plants. Alternative source may be identified. The existing fluoride affected sources may be sealed.
2. Nitrate concentration in shallow aquifer (dug well) is found more than permissible limit in/around villages Bannawgram (Pakuria Block), Kairachhatar (Maheshpur Block) and Litipara (Litipara Block). The bore well may be a better alternate option for the drinking water purposes for the above villages.
  3. The exploration data indicates the poor percentage of successful bore wells in the district. Thus the geophysical surveys may be adopted for selection of suitable sites for ground water exploration.
  4. In order to conserve run – off water during monsoon, the water conservation and recharge structure may be constructed in and around Barharwa, Barhait, Borio, Sahebganj and Sakrigali villages where the long term (2002 – 2011) water level trend shows declining trend during post monsoon.

**DETAILS OF EXPLORATORY WELLS DRILLED BY CGWB IN SAHEBGANJ DISTRICT**

Sr. No	Location/ Block	Depth Drilled (mbgl)	Length of casing pipe/ Depth const. (m)	Static Water Level (mbgl)	Dis-charge (m <sup>3</sup> /hr )	Draw-down (m)	Specific Capacity (m <sup>3</sup> /hr/m)	Trans-missivity (m <sup>2</sup> /day)	Storativity
1	Barharwa	100.00	44.70	9.30	51.60	8.92	5.78	176.00	01.40 X 10 <sup>-4</sup>
	OW	90.70	--	--	--	--	--	--	--
2	Barhait	90.65	16.00	7.65	21.10	15.34	1.70	44.00	--
	OW	100.00	--	--	--	--	--	--	--
3	Borio	75.00	14.20	5.53	21.00	9.65	2.17	32.30	07.00 X 10 <sup>-5</sup>
	OW	44.20	--	--	--	--	--	--	--
4	Rajmahal	74.45	24.30	6.90	6.12	3.67	1.66	88.00	07.30 X 10 <sup>-5</sup>
	OW	74.45	--	--	--	--	--	--	--
5	Sahebganj	54.15	--	Abandoned					
6	Borio	200.00	29.70	Abandoned					
7	Mandro	200.00	32.00	Abandoned					
8	Taljhari	200.00	31.00	7.92	47.88	25.14	1.90	12.00	--

OW	200.00	32.00	7.84	47.88	11.76	4.07	17.50	01.25 X 10 <sup>-3</sup>
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**DEPTH TO WATER LEVEL OF EXISTING HYDROGRAPH NETWORK STATIONS OF SAHEBGANJ DISTRICT (2012)**

Sr. No.	Location	Depth to water level (mbgl)			
		May 2012	Aug. 2012	Nov. 2012	Jan. 2013
1	Sahenganj	10.00	8.52	7.93	8.00
2	Rajmahal	6.00	4.45	3.00	5.22
3	Taljhari	12.00	2.25	2.85	4.81
4	Berhait	9.00	8.20	7.63	8.15
5	Barharwa	10.80	7.20	5.55	6.08
6	Borio	4.60	4.45	4.32	4.38
7	Mandro	6.90	1.60	5.08	3.55
8	Sakrigali	7.10	7.70	4.09	4.62

**LONG TERM WATER LEVEL TREND FOR EXISTING HYDROGRAPH NETWORK STATIONS IN SAHEBGANJ DISTRICT (2002 – 2011)**

Sl. No.	Location	Pre monsoon trend (m/year)		Post monsoon trend (m/year)		All period trend (m/year)	
		Rise	Fall	Rise	Fall	Rise	Fall
1	Barhrwa	0.006	--	--	0.115	--	0.036
2	Barhait	--	0.018	--	0.561	--	0.270
3	Borio	0.530	--	--	0.026	0.201	--
4	Mandro	--	--	--	--	0.260	--
5	Rajmahal	--	0.404	0.116	--	--	0.104
6	Sahebganj	--	0.379	--	0.387	--	0.413
7	Sakrigali	--	0.072	--	0.058	--	0.018
8	Taljhari	0.484	--	0.274	--	0.086	--

**CHEMICAL ANALYSIS RESULT OF WATER SAMPLES COLLECTED FROM SELECTED HYDROGRAPH NETWORK STATIONS OF SAHEBGANJ DISTRICT (May 2011)**

Well No.	Location	Block	EC in micro siemens/ cm at 25°C	pH	TH as CaCO <sub>3</sub>	Ca	Mg	Na	K	HCO <sub>3</sub>	Cl
1	Rajmahal	Rajmahal	1667	8.32	360	68	46.2	126	140	442.8	109.89
2	Berhait	Berhait	313	8.22	30	4	4.9	30	38	98.40	14.18
3	Barharwa	Barharwa	193	8.28	45	16	1.21	17	3.2	98.40	14.18
4	Borio	Borio	1687	8.30	380	60	55.9	124	87	221.4	439.58
5	Sakrigali	Taljhari	1404	8.14	260	48	34	187	6.5	332.1	166.61

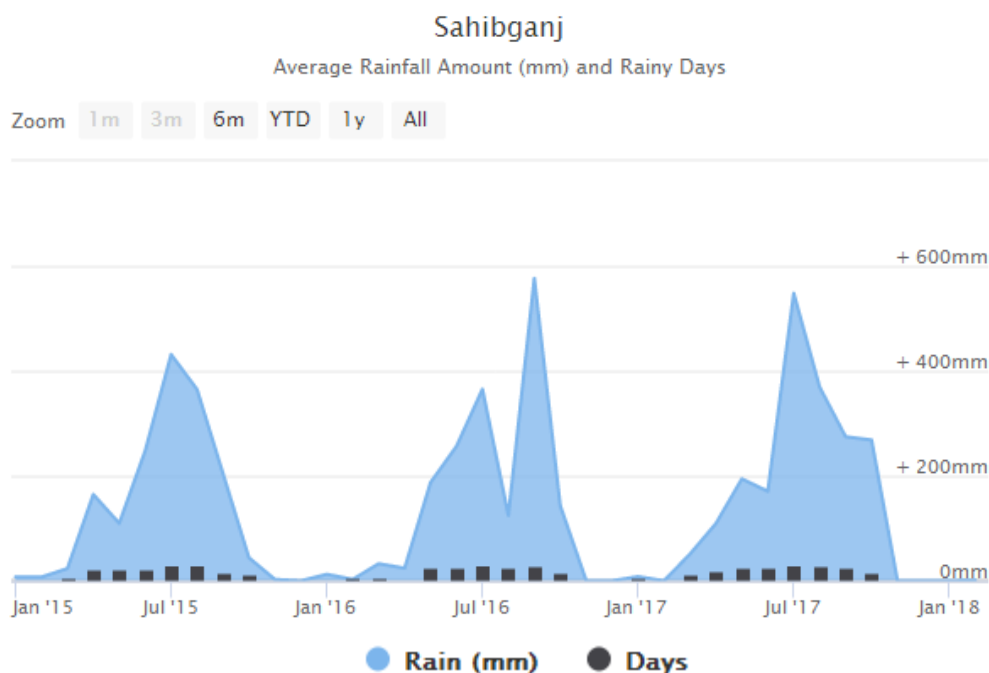
**DETAILS OF GROUND WATER RESOURCES AND STAGE OF GROUND WATER DEVELOPMENT OF SAHEBGANJ DISTRICT AS ON 31<sup>st</sup> MARCH 2009 (in hectare meters)**

Sr. No.	Assessment Unit/ District	Net Annual Ground Water Availability	Gross Ground Water Draft for Irrigation	Gross Ground Water Draft for Domestic and Industrial water Supply	Gross Ground Water Draft for all Uses (10+11)	Allocation for Domestic and Industrial Requirement supply upto next 25 years	Net Ground Water Availability for future irrigation development (9 – 12 – 13)	Stage of Ground Water Development (12/9)*100 (%)	Categorisation for future ground water development (safe/ critical/ over - exploited)
1	2	9	10	11	12	13	14	15	11
1	Sahebganj	2365.41	25.056	168.99	194.05	225.30	2115.06	8.20	Safe
2	Mandro	462.87	111.36	100.79	212.15	217.14	1194.18	45.83	Safe
3	Borio	787.12	142.912	138.31	281.23	459.81	1785.75	35.73	Safe
4	Taljhari	386.78	58.464	108.06	166.52	144.06	184.26	43.05	Safe
5	Rajmahal	747.22	68.316	206.37	274.69	275.14	403.76	36.76	Safe
6	Udhwa	1978.59	31.552	219.49	251.04	292.62	906.10	10.90	Safe
7	Pathna	1292.89	112.752	114.19	226.94	1027.90	1219.05	17.55	Safe
8	Barharwa	1334.42	375.512	241.82	617.33	322.40	636.51	46.26	Safe
9	Barhait	1934.22	197.664	184.48	382.14	245.95	1490.60	19.76	Safe
	<b>Total</b>	<b>11613.70</b>	<b>1123.59</b>	<b>1482.50</b>	<b>2606.09</b>	<b>1976.48</b>	<b>8513.63</b>	<b>22.44</b>	

## 8. RAINFALL OF THE DISTRICT AND CLIMATE CONDITION

### 8.1 Monthwise rainfall:

The driest month is December. There is on average 1 mm of precipitation in December. In July, the precipitation reaches its peak, with an average of 323 mm.

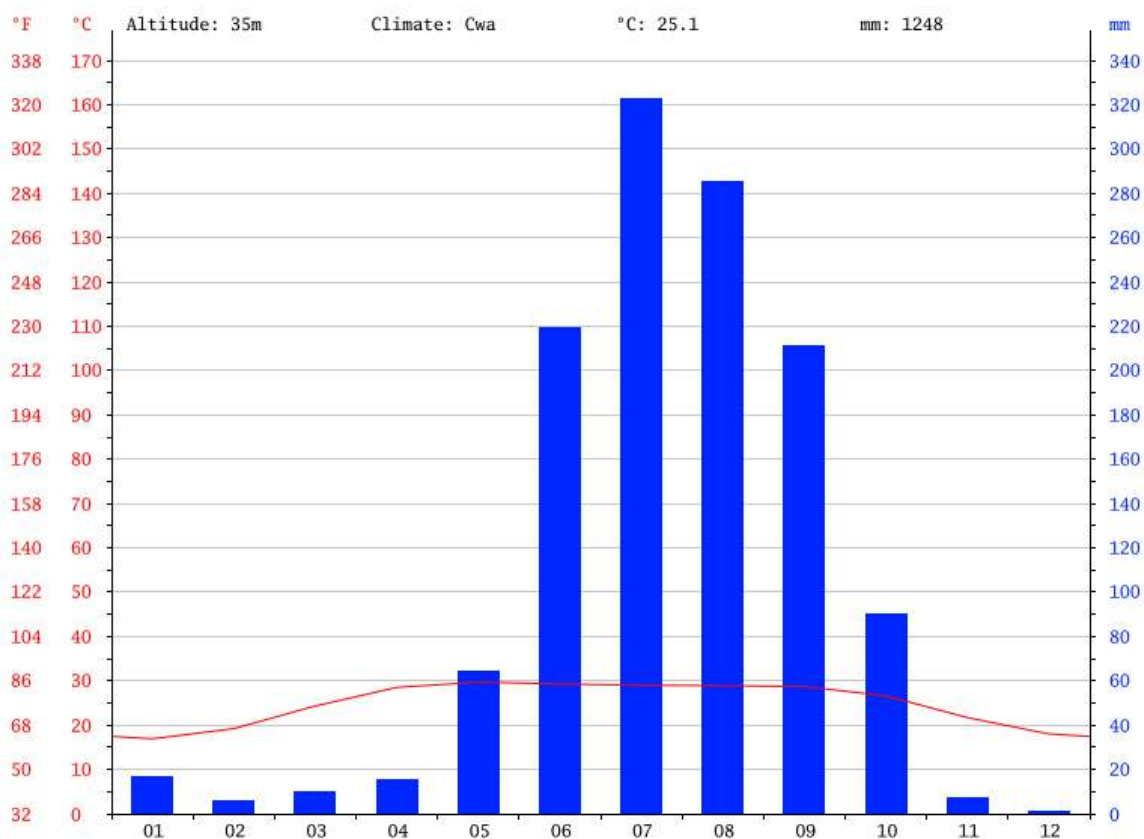


Year		2012	2013	2014	2015	2016
Sl. No.	Month	Avg(mm)	Avg(mm)	Avg(mm)	Avg(mm)	Avg(mm)
1	Jan	381.80	0.00	2.00	12.40	6.40
2	Feb	217.00	8.60	62.80	12.80	0.00
3	Mar	415.40	0.30	2.00	11.60	8.40
4	Apr	0.00	14.20	29.60	112.20	12.60
5	May	168.40	180.80	312.60	120.20	66.60
6	Jun	210.20	331.40	160.00	425.20	240.60
7	Jul	365.60	188.40	508.00	397.40	317.80
8	Aug	381.80	419.20	107.20	397.40	162.80
9	Sep	217.00	237.20	198.60	162.00	310.20
10	Oct	415.40	210.80	30.60	28.00	19.60
11	Nov	0.00	0.00	0.00	0.00	0.00
12	Dec	0.00	0.00	0.00	0.00	0.00

(Source: Indian Meteorological Department)

The Indian Meteorological Department, Nagpur, vide letter No. NAGPUR RMC/CS-312, dated 18th January, 2016 has provided the period of Rainy Season viz. Normal dates of Onset and Withdrawal of South West Monsoon over India as state-wise. The duration for the period is 10th June to 15th October.

## 8.2 Climate



**Climograph – Sahibganj**

The driest month is December. There is 1 mm of precipitation in December. In July, the precipitation reaches its peak, with an average of 323 mm. The district is characterized by humid to sub-humid climate. During summer the hot spell prevails from March to middle of June. Rainy season started from middle of June to end to September. Winter starts from the middle of November and continues till the end of February. With an average of 29.7 °C, May is the warmest month. At 16.9 °C on average, January is the coldest month of the year.

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	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	16.9	19.2	24.3	28.5	29.7	29.3	29	28.9	28.7	26.6	21.7	18
Min. Temperature (°C)	9.4	11.6	16.2	21	24.1	25.4	26	26	25.4	21.9	14.8	10.5
Max. Temperature (°C)	24.4	26.8	32.4	36.1	35.4	33.3	32	31.8	32.1	31.4	28.6	25.5
Avg. Temperature (°F)	62.4	66.6	75.7	83.3	85.5	84.7	84.2	84.0	83.7	79.9	71.1	64.4
Min. Temperature (°F)	48.9	52.9	61.2	69.8	75.4	77.7	78.8	78.8	77.7	71.4	58.6	50.9
Max. Temperature (°F)	75.9	80.2	90.3	97.0	95.7	91.9	89.6	89.2	89.8	88.5	83.5	77.9
Precipitation / Rainfall (mm)	17	6	10	15	64	219	323	285	211	90	7	1

Source: Indian Meteorological Department

## 9. DETAILS OF MINING LEASE IN THE DISTRICT

### 9.1 List of Mines in operation in the district-

(Source: <http://www.jharkhandminerals.gov.in>, List as on 03/08/2018)

Sl#	Lessee Name	Location	Mineral
1	ABDUL RAJJAK	BOARNA	STONE
2	AKASH ALI	MALITOK	STONE
3	BHAGWAN STONE WORKS	BORNA	STONE
4	BIHAR BENTONITE SUPPLY CO	BANAPARA AND MOTIYANI	STONE (CHIPS), STONE DUST, STONE
5	BIHAR BENTONITE SUPPLY CO	BARA BANAPARA	STONE
6	BIKASH STONE WORKS	BUNDABEDO BARAGHATI	STONE
7	BUDHAWA PAHARIA	MUNDLI	STONE, STONE (CHIPS), STONE DUST
8	KAISHER RABBANI	BARHAIT	SAND
9	MD JAHID ABBAS	DHATAPARA AND FATEHPUR	STONE
10	MD SAMIM ALAM	GANGOPARA BEDO	STONE
11	MD. MOJIBUR REHMAN	BORNA	STONE
12	MD. TAUHIR ALAM	BORNA	STONE
13	MS R.P SINGH STONE WORKS	BANSKOLA	STONE
14	MS ABBAS AND SONS	DHAMDHAMIA	STONE
15	MS ADARSH GROUP	JOKMARI	STONE
16	MS ANSARI STONE WORK	GANGOPARA BEDO	STONE
17	MS AYACHI ENTERPRISES	GILAMARI	STONE
18	MS B.B.A STONE WORKS	TALMI	STONE
19	MS BABA PROJECT PVT.LTD	PACHRUKHI	STONE
20	MS BAGRANJBALI STONE WORKS	GANGOPARA MAKO	STONE
21	MS BAJRANG BALI STONE WORKS	GANGOPARA MACO AND BEDO	STONE
22	MS BANDANA STONE WORKS	LOHANDA MACO	STONE
23	MS BHAGWAN STONE WORKS	BORNA	STONE
24	MS BHAGWAN STONE WORKS	BORNA	STONE
25	MS BHAI BHAI STONE WORKS	BANSPAHAR	STONE
26	MS BIHAR BENTONITE SUPPLY CO	CHALPAHAR AND PATNIBONA	STONE, STONE (CHIPS), STONE DUST
27	MS BLACK STONE WORKS	DESHPOKHRIA AND AMJHOR	STONE
28	MS BOBY STONE WORKS	GADAITUNGI	STONE
29	MS CTS INDUSTRIES LTD	CHOTA DAMINBHITA	STONE, STONE (CHIPS), STONE DUST

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30	MS CTS INDUSTRIES LTD	JOKMARI MAHADEGANJ	STONE, STONE (CHIPS), STONE DUST
31	MS DALMIA AGENCIES PVT.LTD.	KASBA	CHINACLAY, SILICA SAND, SANDSTONE
32	MS DEV BLACK STONE WORKS	BORNA	STONE
33	MS DOKNIA STONE WORKS	CHAPANDE	STONE
34	MS DOKNIA STONE WORKS	CHAPANDE	STONE
35	MS G.D.STONE COMPANY	TELO	STONE
36	MS GANGA STONE WORKS	TELO	STONE
37	MS GHOSH STONE WORKS	GANGOPARA BEDO	STONE, STONE (CHIPS), STONE DUST
38	MS HARILAL AJOY AND CO.	GODAITUNGI	STONE (CHIPS), STONE DUST, STONE
39	MS HARILAL AJOY AND CO.	PATANIBONA AND CHAWKIPAHAR	STONE
40	MS HARILAL AJOY AND COMPANY	PATNIBONA	STONE
41	MS HARILAL AJOY AND COMPANY	GADAITUNGI	STONE
42	MS HILL MOVEMENT	GUDWA	STONE, STONE (CHIPS), STONE DUST
43	MS HINDUSTHAN INDUSTRIES AND MINING CORPORATION	BAKUDIH	STONE, STONE DUST
44	MS JAI BAGRANG WALEE STONE WORKS	GUDWA	STONE
45	MS JAI MAA BHAGWATI STONE WORKS	BELBHADRI	STONE
46	MS JIAL DAS COMPENY	PAKTURI	STONE, STONE (CHIPS), STONE DUST
47	MS JIAL DAS AND CO	PAKTURI	STONE, STONE (CHIPS), STONE DUST
48	MS JINDAL STONE WORKS	LOHANDA BEDO	STONE
49	MS K.P. AND G. SONS	AAMDANDA	STONE
50	MS KARAMBI STONE WORKS	KARAMBI	STONE, STONE (CHIPS), STONE DUST
51	MS KWALITY STONE PRODUCT	DHATPARA AND FATHPUR	STONE
52	MS MAA AMBA STONE WORKS	DEMBA	STONE
53	MS MAA BASNAVI STONE WORKS	MUNDLI	STONE
54	MS MAA CHINAMASTIKA STIL INDIA PVT LTD	CHAGJO AND BUNDA BARAGHATI	STONE
55	MS MAA DURGE STONE WORKS	GILAMARI	STONE
56	MS MAA GAYATRI STONE WORKS	BAKUDIH	STONE

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57	MS MAA KALIKA STONE WORKS	AMBADE	STONE
58	MS MAA R.K. CONSTRUCTION	BASKO	STONE
59	MS MAA VAISHNAVI STONE WORKS	MUNDLI	STONE
60	MS MAHAVEER ENGICONS PVT LTD	DEMBA	STONE
61	MS MAYUR MACHINE PVT LTD	MOTIJHARNA	STONE, STONE (CHIPS), STONE DUST
62	MS MD ALAM AND BROTHER	GODIATUNGI	STONE
63	MS MINERAL INDIA	GUDWA	STONE
64	MS MIRA PAHAR STONE MINES	MIRAPARA	STONE
65	MS MOHAN AND SANJAY STONE WORKS	GUDWA	STONE
66	MS NARSINGH LAGHIR	PATNIBONA	STONE, STONE DUST, STONE (CHIPS)
67	MS NEHA BLACK STONE WORKS	GANGOPARA BEDO	STONE
68	MS NETURAL MINING AND CONSTRUCTION PVT LTD	GANGOPARA BEDO	STONE
69	MS PATNIBONA STONE QUARRY	PATNIBONA	STONE
70	MS PIXI STONE WORK	SUNDRE	STONE
71	MS PRATIK STONE WORKS	GILAMARI	STONE
72	MS RAJA MINERAL AND COMAPNY	SEDPUR BUJRUG	CHINACLAY, SANDSTONE
73	MS RAJAN STONE WORKS	BORNA	STONE
74	MS RAJAN STONE WORKS	BORNA	STONE
75	MS RATAN BLACK STONE	SAHIBGANJ TOWN	STONE
76	MS S S BLACK STONE WORKS	MIRZACHOUKI	STONE
77	MS S.S. ENTERPRESES	BORNA	STONE
78	MS SHAH STONE	BARA PANCHKULI	STONE
79	MS SHAKTI STONE WORKS	SAHEBGANJ	STONE
80	MS SHIV INDRA PATHOR UDOGE	CHATROGOGA	STONE, STONE (CHIPS), STONE DUST
81	MS SHIV SHAKTI STONE WORK	BARHARWA	STONE
82	MS SHIV SHAKTI STONE WORKS	BORNA	STONE
83	MS SINGH STONE WORKS	BUNDAMOCO	STONE
84	MS SIYRAM ENTERPRISES	MARIKUTI, DESIPOKHARIA	STONE
85	MS SRI RAM STONE WORKS	PAKRIA	STONE
86	MS STANDARD MERCANTILE COMPANY M D PVT LTD	RAIBAZAR	CHINACLAY, SILICA SAND, SANDSTONE, QUARTZ
87	MS STAR INDIA INDUSTRIES	CHOTA DAMINBHITA	STONE

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88	MS STAR INDIA MINING MINERALS	MIRZACHOUKI	STONE, STONE (CHIPS)
89	MS SWASTIK MINERAL AGENCY	TALJHARI	STONE
90	MS SWASTIK MINERAL AGENCY	KARIGONIA	STONE, STONE (CHIPS), STONE DUST
91	MS SWASTIK MINERAL AGENCY	CHALPAHAR	STONE
92	MS USHA STONE WORKS	LOHANDA MAKO	STONE
93	MS VANSLA GRANITE	CHALPAHAR	STONE
94	MS VANSLA GRANITE	PATNIBONA AND CHALPHAHAR	STONE
95	MS VEESHNAV STONE WORKS	DAMIN BHITA	STONE
96	MS VIDHYARTHI STONE WORKS	GADWA	STONE
97	MS YASHRAJ BLACK STONE WORKS	DEMBA, MAHADEVGANJ	STONE
98	MS ZEON EARTH MINERAL RESOURCE PVT LTD	BANSHPAHAR,RANGA	STONE, STONE (CHIPS), STONE DUST
99	NAJRUL HAQU	DAHUJOR	SAND
100	NETINCON MARKETING PVT LTD	AMBADE	STONE
101	RAMESH KUMAR DOKANIA	IDPE	STONE
102	RIPLEY AND COMPANY STEVEDORING AND HANDING PVT LTD	AMBADE,BADE,IDPE	STONE
103	SAHIN RABANI	BERHET	SAND
104	SAHIN RABBANI	GOPLADIH	SAND
105	SHREE SHANKAR AND CO	BAKUDI	STONE
106	SHRI SATYNATH SAH	BINDARI BANDAR KOLA	STONE
107	SMT MIRU SOREN	BORNA	STONE
108	SMT NAJNIN BIBI	MARGARO	STONE
109	SOMNATH GHOSH	PATHARIA	STONE
110	SRI CHAMAN TULSYAN	JOKMARI	STONE
111	SRI CHANDRESWAR PRASAD SINHA	KORDAR	STONE
112	SRI KRISHNA KUMAR SAHA	BORNA	STONE
113	SRI KRISHNA KUMAR SAHA	CHAPANDEY	STONE
114	SRI KRISHNA KUMAR SAHA	BORNA	STONE
115	SRI MADAN KANT	KIROKURIA	STONE
116	SRI MANOJ KUMAR SAH	MUNDLI	STONE
117	SRI RAM SAWARE TIWARI	DAMINBHITA	STONE
118	SRI SHANKAR KUMAR	BORNA	STONE
119	SRI TARKESHWAR JAISHWAL	MUNDLI	STONE
120	SWASTIK MINERAL AGENCY	PATNIBONA AND CHALPHAHAR	STONE, STONE (CHIPS), STONE DUST

## 9.2 List of Mines not in operation in the district -

(Source: <http://www.jharkhandminerals.gov.in>, List as on 03/08/2018)

Sl#	Lessee Name	Location	Mineral
1	SRI HIRALAL BHGAT	NA	STONE
2	ABDUL FATTAH AND SUNITA MURMU	CHOTA PANCHRUKHI	STONE
3	ABDUL KADIR	FATEHPUR	STONE
4	ASERA KHATUN	NA	STONE
5	BHAGWAN STONE WORKS	BORNA	STONE
6	GOOLAM KEEWARIYA BISHWAS	NA	STONE
7	JHARKHAND STATE MINERAL DEVELOPMENT CORP. LTD.	CHANDOLA	STONE
8	JHARKHAND STATE MINERAL DEVELOPMENT CORP. LTD.	SIMALGODA	STONE
9	KRISHNA STONE WORKS	AMBADE	STONE
10	M.S C.S.R. CONS.	BINDRI BANDARKOLA	STONE
11	M/ MAA KALI STONE WORKS	NA	STONE
12	M/S A.D. STONE WORK	NA	STONE
13	M/S A.K. BHGAT & R.K.BHGAT	NA	STONE
14	M/S A.R.J STONE WORK	NA	STONE
15	M/S AADERSH STONE WORKS	NA	STONE
16	M/S AANANDMAY STONE WORK	NA	STONE
17	M/S AARYAN STONE WORKS	NA	STONE
18	M/S AMBA STONE WORKS	NA	STONE
19	M/S ANBARUL HAK	NA	STONE
20	M/S ANSARI STONE WORK	NA	STONE
21	M/S ASHOKA ENGINIYARING STONE	NA	STONE
22	M/S B.S.M.D.C	NA	STONE
23	M/S BADAL STONE WORKS	NA	STONE
24	M/S BINA STONE WORKS	NA	STONE
25	M/S BIRSA MUNDA STONE MINES	NA	STONE
26	M/S BISHWKARMA MARCHENT	NA	STONE
27	M/S BLACK STONE WORKS	NA	STONE
28	M/S D. & BHGAT & COMPANY	NA	STONE
29	M/S D.T.C. MINRALS PVT.	NA	STONE
30	M/S DEV STONE WORK	NA	STONE
31	M/S DEV STONE WORKS	NA	STONE
32	M/S DURGA STONE WORKS	NA	STONE
33	M/S F.A. STONE	NA	STONE
34	M/S G.H. STONE WORKS	NA	STONE
35	M/S GANGA & KUMAR STONE WORKS	NA	STONE
36	M/S GOOURI STONE WORKS	NA	STONE
37	M/S GOPE STONE WORKS	NA	STONE
38	M/S GURUDEV STONE WORKS	NA	STONE
39	M/S HIND STONE WORK	NA	STONE

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40	M/S HINDUSTAN CONS. COMPANY LIMITED	NA	STONE
41	M/S HINDUSTAN CONS. COMPANY LIMITED	NA	STONE
42	M/S HINDUSTHAN STONE WORKS	NA	STONE
43	M/S JAGDAMBA STONE WORKS	NA	STONE
44	M/S JAI BAJRANG BALI STONE WORKS	NA	STONE
45	M/S JAI JHARKHAND STONE WORKS	NA	STONE
46	M/S JAI MAA BHAWANI STONE WORK	NA	STONE
47	M/S JAI MAA TARA STONE WORKS	NA	STONE
48	M/S JAI MATA DI STONE WORKS	NA	STONE
49	M/S JAI MATA DI STONE WORKS	NA	STONE
50	M/S K.G.N. STONE WORKS	NA	STONE
51	M/S K.G.N. STONE WORKS	NA	STONE
52	M/S KAMALUDDEN	NA	STONE
53	M/S KAMALUDDEN	NA	STONE
54	M/S KARAN STONE WORKS	NA	STONE
55	M/S KHAWAJA STONE WORKS	NA	STONE
56	M/S KOHINOOR STONE WORKS	NA	STONE
57	M/S KOSHALYA STONE WORK	NA	STONE
58	M/S KRISHNA STONE WORKS	NA	STONE
59	M/S LAKSHMI STONE WORKS	NA	STONE
60	M/S M. ALAM & BROTHERS	NA	STONE
61	M/S MAA BHAGWATI STONE WORKS	NA	STONE
62	M/S MAA BINDVASHNI STONE WORK	NA	STONE
63	M/S MAA KALI STONE WORKS	NA	STONE
64	M/S MAA KALI STONE WORKS	NA	STONE
65	M/S MAA KALIKA STONE WORK	NA	STONE
66	M/S MAA PADMINI STONE WORK	NA	STONE
67	M/S MAA SADHNA STONE WORKS	NA	STONE
68	M/S MAA STONE WORKS	NA	STONE
69	M/S MAA STONE WORKS	NA	STONE
70	M/S MAA TARA STONE WORKS	NA	STONE
71	M/S MAA TARA STONE WORKS	NA	STONE
72	M/S MADINA STONE WORKS	NA	STONE
73	M/S MAMTA STONE WORK	NA	STONE
74	M/S MANISH KUMAR BROTHERS	NA	STONE
75	M/S MAYA STONE WORKS	NA	STONE
76	M/S MUMTAZ STONE WORKS	NA	STONE
77	M/S NARSINGH LAGDHIR	NA	STONE
78	M/S NILKANTH PATHER UDDOGE	NA	STONE
79	M/S NURANI & BROTHER	NA	STONE
80	M/S OM SHANTI STONE WORKS	NA	STONE
81	M/S OM STONE WORKS	NA	STONE
82	M/S OM STONE WORKS	NA	STONE

District Survey Report of Sahibganj, Jharkhand

83	M/S PANDEY STONE WORKS	NA	STONE
84	M/S PARWATI STONE WORKS	NA	STONE
85	M/S PATNIBONA STONE KYAVARI	NA	STONE
86	M/S PATNIBONA STONE KYAVARI	NA	STONE
87	M/S PUJA STONE WORKS	NA	STONE
88	M/S PUSPANJALI STONE WORK	NA	STONE
89	M/S RAJA INRAL & COMPANY	NA	STONE
90	M/S RAJMAHAL STONE COMPENY	NA	STONE
91	M/S RAM JANKI STONE WORKS	NA	STONE
92	M/S RAM RAHIM STONE WORKS	NA	STONE
93	M/S S K TEKRIWAL & SRI VEER KUMAR TEKRIWAL	NA	STONE
94	M/S S.D. ENTERPRISES	NA	STONE
95	M/S S.P. STONE WORKS	NA	STONE
96	M/S S.P. STONE WORKS	NA	STONE
97	M/S S.S STONE WORKS	NA	STONE
98	M/S S.S STONE WORKS	NA	STONE
99	M/S S.S. STONE WORKS	NA	STONE
100	M/S SADHBHAWANA STONE WORKS	NA	STONE
101	M/S SANJAY MAINING & MINRAL	NA	STONE
102	M/S SARASWATI STONE WORK	NA	STONE
103	M/S SHIV BINOD & COMPANY	NA	STONE
104	M/S SHIV STONE WORKS	NA	STONE
105	M/S SHIV STONE WORKS	NA	STONE
106	M/S SHIVA STONE WORKS	NA	STONE
107	M/S SHIVAM STONE WORKS	NA	STONE
108	M/S SHOBHA TREDERS	NA	STONE
109	M/S SRI SANT STONE WORKS	NA	STONE
110	M/S STAR STONE WORKS	NA	STONE
111	M/S SUNNY STONE WORK	NA	STONE
112	M/S SWASTI STONE CHIPS	NA	STONE
113	M/S TAJ STONE WORKS	NA	STONE
114	M/S TAZ STONE WORKS	NA	STONE
115	M/S UNIK STONE MATERIARL	NA	STONE
116	M/S URMILA STONE WORKS	NA	STONE
117	M/S VIDHAYATHARI STONE WORKS	NA	STONE
118	M/S VIDHYARTHI STONE WORKS	NA	STONE
119	M/S YESRAJ BLACK STONE	NA	STONE
120	M/S YESRAJ BLACK STONE	NA	STONE
121	M/S- AATMA STONE WORKS	NA	STONE
122	M/S- BABA PROJECTS PRA. LTD.	NA	STONE
123	M/S- BLACK DAIMOND STONE WORKS	NA	STONE
124	M/S- BLACK DAIMOND STONE WORKS	NA	STONE
125	M/S- LAKHI STONE WORKS	NA	STONE

## District Survey Report of Sahibganj, Jharkhand

126	M/S- OM NAMHA SHIWAY STONE WORKS	NA	STONE
127	M/S- R.D. SINGH & D. N. SINGH CO.	NA	STONE
128	M/S- RAM STONE WORKS	NA	STONE
129	M/S-NAJIR	NA	STONE
130	M/S-NAJIR	NA	STONE
131	M/S-NEHAL STONE WORKS	NA	STONE
132	MD IQBAL	DHATAPARA	STONE
133	MD YASHIN ANSARI	NA	STONE
134	MD. FARSAD	NA	STONE
135	MD. JAHID ANSARI	NA	STONE
136	MD. MEENUL ANSARI	NA	STONE
137	MD. SAMIRUDDIN	NA	STONE
138	MD. VIHID SEKH	NA	STONE
139	MD. VIHID SEKH	NA	STONE
140	MD.GULAM ALI	NA	STONE
141	MD.GULAM ALI	NA	STONE
142	MD.IBRAHIM	NA	STONE
143	MD.JAFAR	NA	STONE
144	MS ABHI STONE WORKS	ROHRE	STONE
145	MS ABHISHEK STONE WORKS	TELO	STONE
146	MS ALFA MINING CORPORATION	CHAPANDEY	STONE
147	MS ALOK STONE WORKS	MANOHARPUR	STONE
148	MS ASTHA STONE WORKS	PATNIBONA	STONE
149	MS BABA PROJECT PVT LTD	CHATROGOGA	STONE
150	MS BAJRANG STONE	CHUBE	STONE
151	MS BIHAR BENTONITE SUPPLY CO	PATNIBONA	STONE
152	MS BIHAR BENTONITE SUPPLY CO	BARA BANAPARA	STONE
153	MS FARUK SEKH	MAYURKOLA	STONE
154	MS HANS STONE WORKS	BORNA	STONE
155	MS HINDUSTAN STONE BUILD	CHAPANDEY AND KUNDI	STONE
156	MS JAI BAJRANG WALEE STONE WORKS	SAKRIGALI	STONE
157	MS JAI MAA TARA STONE WORKS	BORNA	STONE
158	MS JHARKHAND MINRALRS	MIRAPARA	STONE
159	MS JIAL DAS AND CO	PAKTURI	STONE
160	MS KARAMBI STONE WORKS	KARAMBI	STONE
161	MS KOHITUR MAINING	MIRAPARA	STONE
162	MS MAA DURGE STONE WORKS	GILAMARI	STONE
163	MS MAA DURGE STONE WORKS	GILAMARI	STONE
164	MS MAA DURGE STONE WORKS	JOKMARI	STONE
165	MS MAA JAMNI STONE WORKS	JAMNI	STONE
166	MS MAA RAKSHA KALI STONE WORKS	MALITOK	STONE
167	MS MAA TARA STONE WORKS	GUDAITUNGI	STONE
168	MS MAHADEV BLACK STONE CO	KORDRA	STONE
169	MS MAHARANI STONE WORKS	DEMBA	STONE

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170	MS MAHAVEER ENGICONS PVT LTD	DEMBA	STONE
171	MS MINAKSHI STONE WORKS	DEMBA	STONE
172	MS P.L. STONE WORKS	GHOCHI MAKO	STONE
173	MS PAHARIA STONE WORKS	NA	STONE
174	MS PRIYA MINRAL	CHENGDO	STONE
175	MS R P SHARMA AND SONS	CHAPANDEY	STONE
176	MS S S BLACK STONE WORKS	MIRZACHOUKI	STONE
177	MS SHIV SHAKTI STONE WORKS	BORNA	STONE
178	MS SHIV SHAKTI STONE WORKS	BORNA	STONE
179	MS SHIV STONE WORKS	GANGOPARA BEDO	STONE
180	MS SINGH STONE WORKS	BUNDAMOCO	STONE
181	MS SKY STONE WORKS	MAYURKOLA	STONE
182	MS SRASWATI STONE WORKS	KIROKURIA	STONE
183	MS TRIDEV STONE WORKS	BEKCHURI	STONE
184	MS VIDHYARTHI STONE WORKS	GADWA	STONE
185	RAJESH KUMAR JAISWAL	MUNDLI	STONE
186	SEKH MD SIRAJ	BORNA	STONE, STONE (CHIPS), STONE DUST
187	SHARVSRI ASTHA STONE WORKS	NA	STONE
188	SHREE SHANKAR AND CO	BAKUDI	STONE
189	SHREE SHANKAR AND CO	BAKUDI	STONE
190	SHRI ANUPAM KUMAR	NA	STONE
191	SHRI ARUN KUMAR SAW	NA	STONE
192	SHRI BANSHIDHAR YADAV	NA	STONE
193	SHRI GAURABH KUMAR CHODHRY	NA	STONE
194	SHRI GAUTAM KUMAR SINGH	NA	STONE
195	SHRI RAM KISHUN MANDAL	NA	STONE
196	SHRI SUNIL KUMAR SINGH	NA	STONE
197	SHRI VEDANAND PANDEY	NA	STONE
198	SMT JEFSIN KISKU	NA	STONE
199	SMT. LAKSHMI DEVI	NA	STONE
200	SMT. PUNAM KUMARI	NA	STONE
201	SMT. SUSANA HEMBREM	NA	STONE
202	SMT. TALAMAY MURMU	NA	STONE
203	SRI ABHISHEK KUMSR CHOUDHARY	NA	STONE
204	SRI AMARNATH YADAV	NA	STONE
205	SRI AMARNATH YADAV	NA	STONE
206	SRI ANIL KUMAR	NA	STONE
207	SRI ANIL KUMAR	NA	STONE
208	SRI ANIL YADAV & OTHER	NA	STONE
209	SRI ARJUN YADAV	KIROKURIA	STONE
210	SRI ASHOK YADAV	NA	STONE
211	SRI ASHOK YADAV	NA	STONE
212	SRI ASHOK YADAV	NA	STONE

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213	SRI AWAD KISHOR RAM	NA	STONE
214	SRI BASHUDEV RAY & OTHER	NA	STONE
215	SRI BASHUKI NATH YADAV AND YOGESH PRASAD YADAV	BARE PARTE	STONE
216	SRI BIJAY KUMAR	NA	STONE
217	SRI BIKRAM YADAV	NA	STONE
218	SRI BIMAL KUMAR SINHA	NA	STONE
219	SRI BIMAL KUMAR SINHA	NA	STONE
220	SRI BINOD BIHARI RANJAN	NA	STONE
221	SRI BINOD KUMAR JAISHWAL	NA	STONE
222	SRI CHATURANAND PANDEY	JOKMARI	STONE
223	SRI DHRMA PAHARIA, & OTHERS	NA	STONE
224	SRI DIGAMBAR KARMKAR	NA	STONE
225	SRI GANESH PRASAD YADAV	NA	STONE
226	SRI GOBHARDAN MANDAL	NA	STONE
227	SRI HARE NATH GUPTA	NA	STONE
228	SRI HARERAM YADAV	NA	STONE
229	SRI KAMAL KISHOR KUAR SAH	NA	STONE
230	SRI KAMLESHWARI MANDAL	NA	STONE
231	SRI KEDAR NATH MUKHARJI	NA	STONE
232	SRI KEDAR NATH MUKHARJI	NA	STONE
233	SRI KISHOR KUMAR	NA	STONE
234	SRI KISHOR KUMAR	NA	STONE
235	SRI KUMAR ABHISEKH	NA	STONE
236	SRI KUNDAN KUMAR	NA	STONE
237	SRI LAKHAN PANDIT	NA	STONE
238	SRI LALAN SINGH	NA	STONE
239	SRI LALAN SINGH AND DILIP TIWARI	CHENGDO	STONE
240	SRI MADAN KANT	KIROKURIA	STONE
241	SRI MADAN KANT	NA	STONE
242	SRI MAHESH MAHTO	NA	STONE
243	SRI MANIKANT MANDAL	NA	STONE
244	SRI MANOJ KUMAR YADAV	NA	STONE
245	SRI MANOJ KUMAR YADAV	NA	STONE
246	SRI MATLA HANSDA	NA	STONE
247	SRI MOHAN YADAV & OTHER	NA	STONE
248	SRI MUKESH YADAV	NA	STONE
249	SRI MUSHRAF HUSHEN	NA	STONE
250	SRI NIKHIL YADAV	NA	STONE
251	SRI PAWAN CHIRANIA	NA	STONE
252	SRI PINTU KUMAR SINGH & OTHER	NA	STONE
253	SRI PINTU KUMAR SINGH & OTHER	NA	STONE
254	SRI PINTU KUMAR SINGH & OTHER	NA	STONE
255	SRI PRADHAN MURMU & OTHER	NA	STONE
256	SRI R.P SINGH	NA	STONE

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257	SRI RAJENDRA PRASAD CHODHARY	NA	STONE
258	SRI RAJESH CHIRANIYA	NA	STONE
259	SRI RAJESH CHIRANIYA AND OTHER	NA	STONE
260	SRI RAKESH KUMAR SINGH	NA	STONE
261	SRI RAKESH KUMAR SINHA	NA	STONE
262	SRI RAKESH KUMAR SINHA	NA	STONE
263	SRI RAM DEO MANDAL	NA	STONE
264	SRI RAMPHAL CHOUDHARY	DEMBA	STONE
265	SRI RAVI SHANKAR SINHA	NA	STONE
266	SRI SANJEEV KUMAR DEV	NA	STONE
267	SRI SANJHLA MURMU	NA	STONE
268	SRI SESH NATH YADAV	NA	STONE
269	SRI SHAMBHU NATH BHGAT	NA	STONE
270	SRI SHANKAR AND COMPANY	BAKUDIH	STONE, STONE (CHIPS), STONE DUST
271	SRI SHYAMAL KUMAR DAS	AMBADE	STONE
272	SRI SUNIL KUMAR	NA	STONE
273	SRI SUNIL KUMAR BHGAT	NA	STONE
274	SRI SUNIL KUMAR YADAV	NA	STONE
275	SRI SUNIL KUMAR YADAV	NA	STONE
276	SRI SURYA KUMAR MALTO	NA	STONE
277	SRI TARKESHWAR JAISWAL AND OTHERS	DAMDA DAMIN BHITA	STONE
278	SRI TERKESHWAR KUMAR JAISHWAL	NA	STONE
279	USMAN SEKH	DHATAPARA	STONE
280	VIKRAM PRATAP	BAKUDI	STONE
281	VIKRAM PRATAP	BAKUDI	STONE
282	VIKRAM PRATAP	BAKUDI	STONE

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*10. DETAIL OF ROYALTY OR REVENUE RECEIVED IN LAST THREE YEARS*

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Sl. No.	Year	Amount (Lakh)
1	2015-16	4105.85
2	2016-17	5151.78
3	2017-18	6865.04

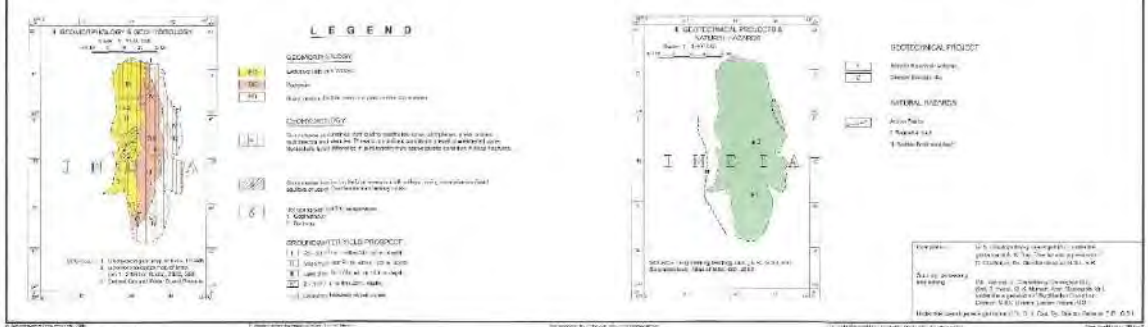
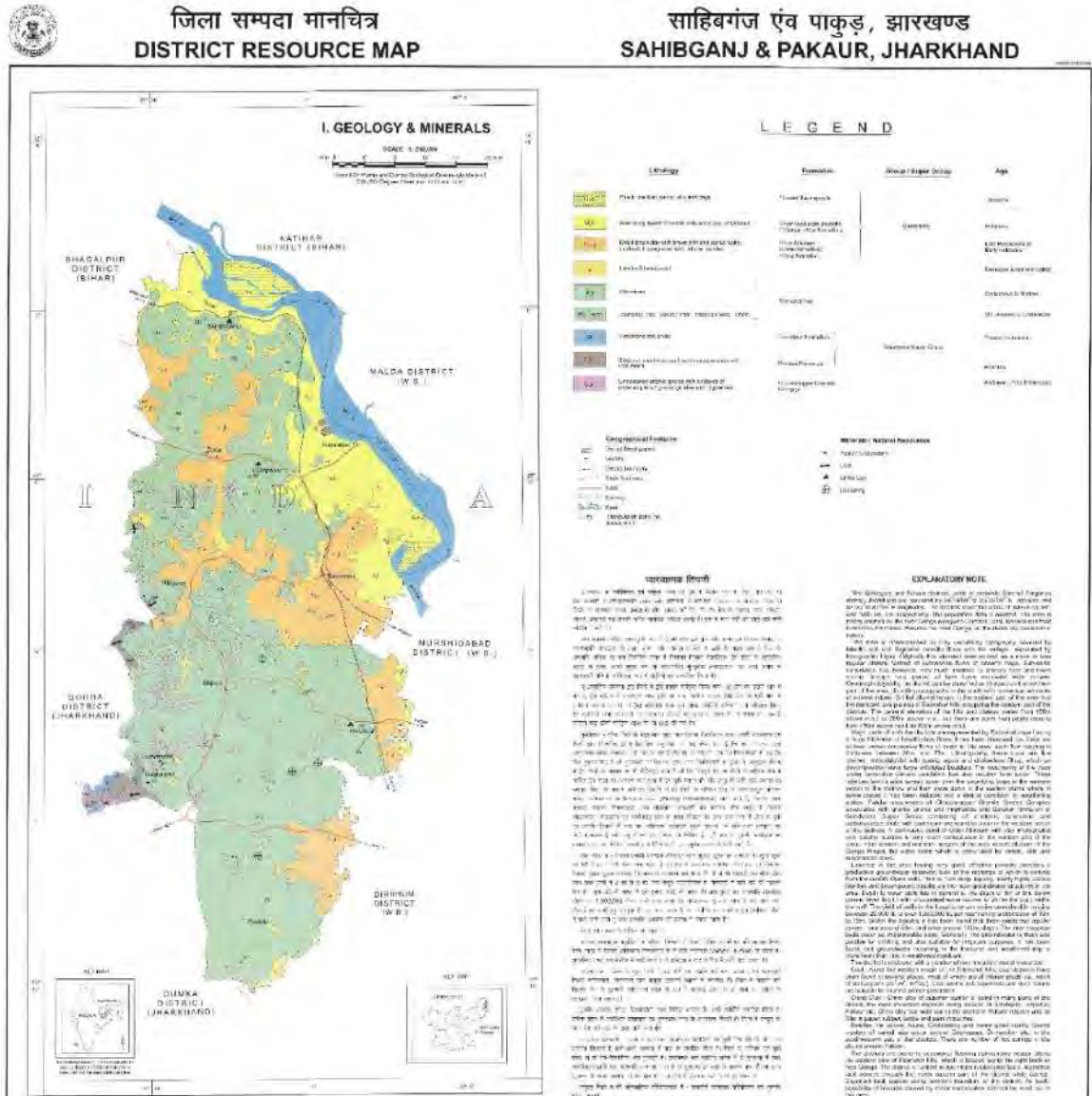
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*11. DETAIL OF PRODUCTION OF MINOR MINERALS IN LAST THREE YEARS*

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Sl. No.	Year	Production (cft.)
1	2015-16	118,019,586
2	2016-17	140,699,287
3	2017-18	195,042,738

12. MINERAL MAP OF THE DISTRICT



**13. LIST OF LETTER OF INTENT (LOI) HOLDERS IN THE DISTRICT ALONG WITH ITS VALIDITY**

(Source: Department of Mines, Sahibganj)

Sl. No.	Name of the Mineral	Name of the Lessee	Address & Contact No. of Letter of Intent Holder	Letter of Intent Grant Order No. & date	Area of Mining lease to be allotted	Validity of Loi	Use (Captive/ Non-Captive)	Location of the Mining lease (Latitude & Longitude)

## 14. TOTAL MINERAL RESERVE AVAILABLE IN THE DISTRICT

Sahibganj district is basically occupied by volcanic rock in general and basaltic rock in particular, where no mining activity has taken place, was selected for study and suitable area for mining has been selected along the running hill ranges, which may be considered as plateau with shrubs and bushes and may or may not be in forest area as per the field observation and toposheet. Selecting the area, we have also considered the approach of the proposed projects with some modification and alteration. It is proposed that the areas identified can be sub-divided into suitable blocks for mining operation, but not less than 5 hectare. It will always be better if bigger blocks in the range of 25 to 50 hectare is made in such cases losses of minerals will be reasonably less, keeping in view of conservation of mineral.

Parametres considered :

(i) *These blocks were identified based on geological studies through field observation.*

(ii) *Mineable resource was calculated by considering 60% of recovery factor, by Cross Sectional Method. Actual reserve may vary based on detail prospectig.*

(iii) Area calculated as per GPS co-ordinates and information obtained from local people. Land detail need to be verified from revenue record.

(iv) Since this is an interim report, as per the present requirement of minerals, more such blocks need to be identified and the data should be updated periodically, after certain intervals to update the data bank of DSR.

Sl. No.	Name of Block	No. of Potential Blocks identified	Total Area (Ha)	Calculated Reserve in Million Tton
1	Barhait	6	6410	14251.53
2	Taljhari	4	9791	22558.05
3	Borio	4	7582	17678.95
4	Mandro	4	10228	20787.12
5	Pathna	4	2466	2457.62
6	Barharwa	3	41	9.18129492
7	Rajmahal	2	83	21.81537444
	<b>Total</b>	<b>27</b>	<b>36601</b>	<b>77764.26667</b>
8	Udhwa	NIL	Has not been considered due to existence of Bird Sanctuary	
9	Sahibganj	NIL	Has not been considered due to presence of Ganges river in the north and north-east and habilitation area.	

Block - Barhait

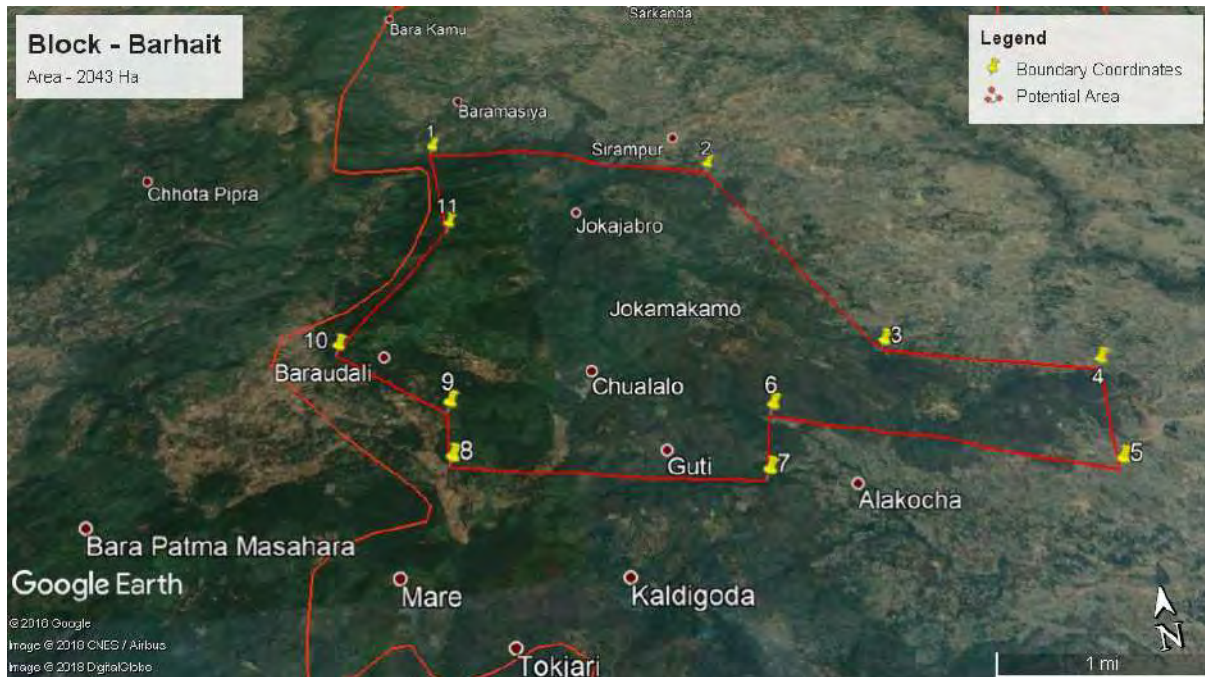
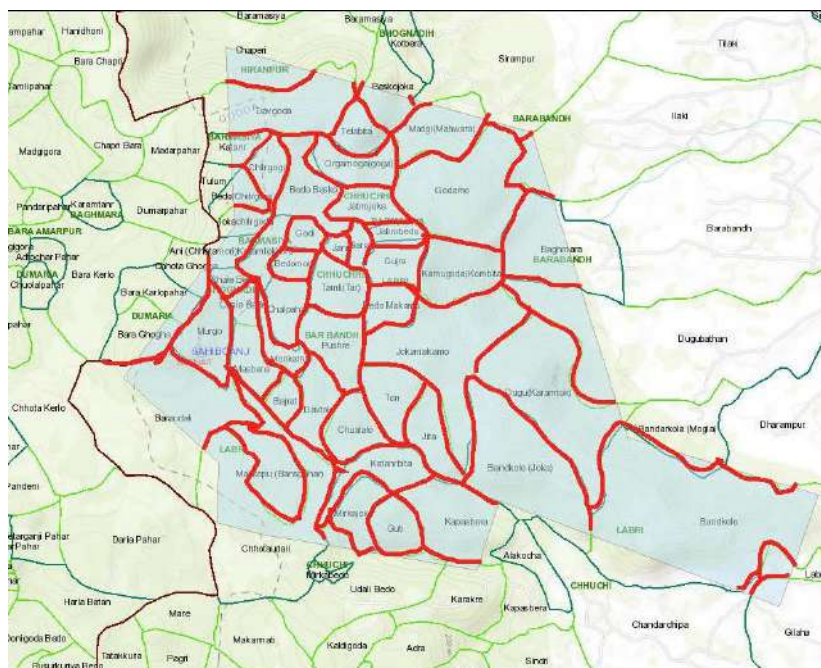


Image showing the Potential Area (Block – A, Mineral - Basalt) As Per KML Data

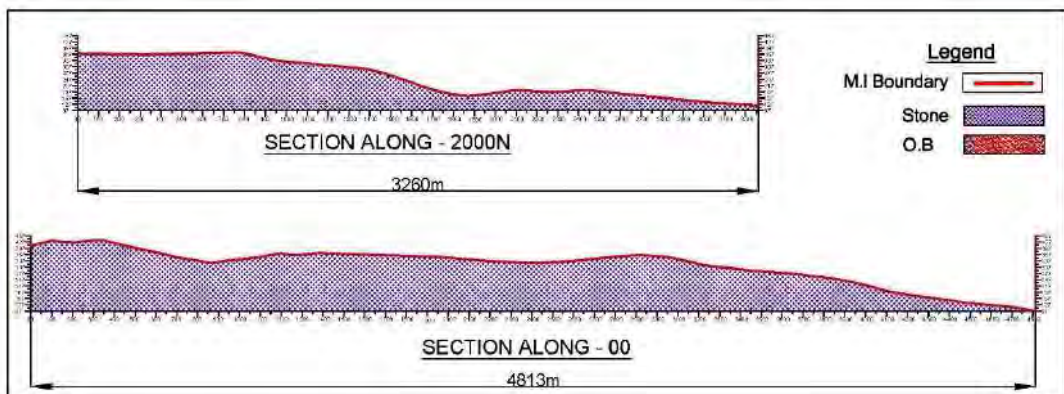
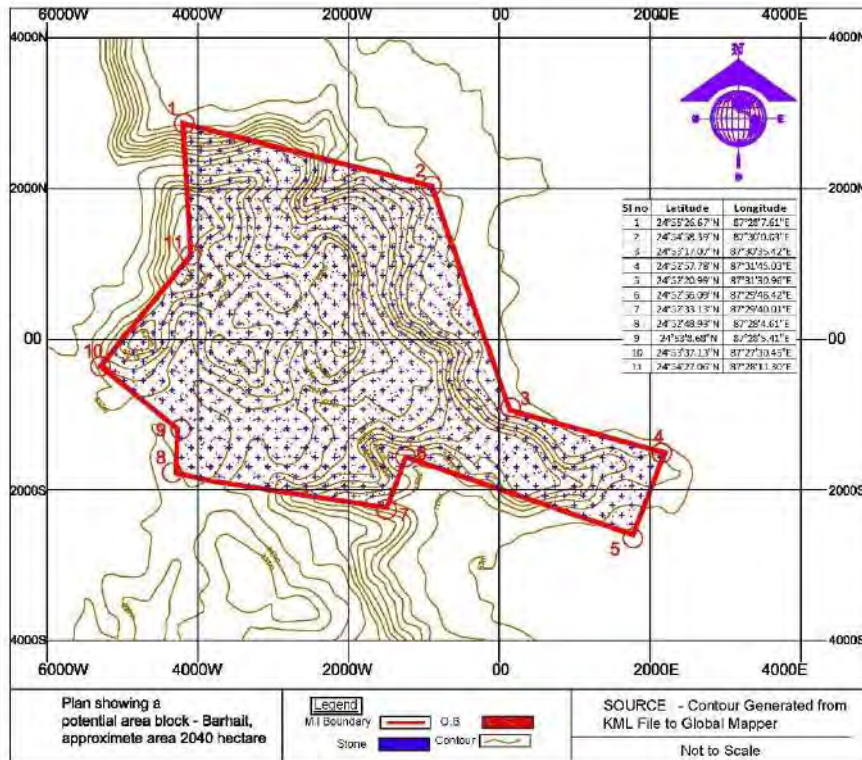
Sl no	Latitude	Longitude
1	24°55'26.67"N	87°28'7.61"E
2	24°54'58.39"N	87°30'0.03"E
3	24°53'17.07"N	87°30'35.42"E
4	24°52'57.78"N	87°31'45.03"E
5	24°52'20.99"N	87°31'30.96"E
6	24°52'56.09"N	87°29'48.42"E

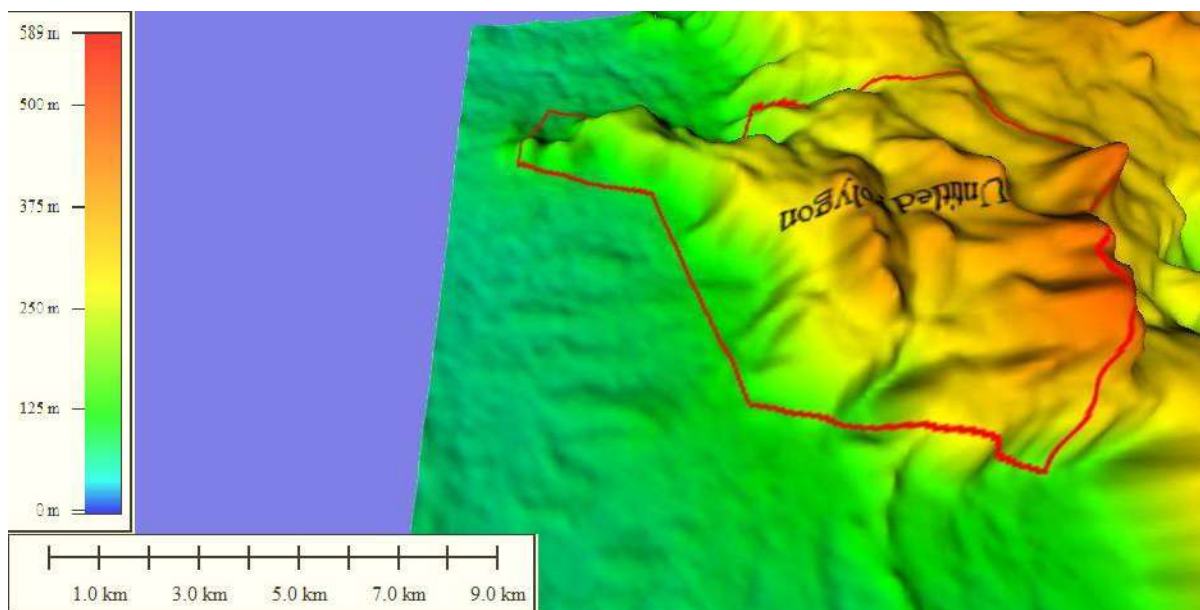
Sl no	Latitude	Longitude
7	24°52'33.13"N	87°29'40.01"E
8	24°52'48.93"N	87°28'4.61"E
9	24°53'8.68"N	87°28'5.41"E
10	24°53'37.13"N	87°27'30.45"E
11	24°54'27.06"N	87°28'11.30"E



**Villages lying inside the potential area:**

Chaperi, Davgoda, Telabita, Madgi, Chitrgoda, Godamo, Orgamoga, Bedo Basko, Jabrojoka, Jokachitrgoda, Jabrojoka, Jani, Garia, Jokamakamo, Bedo Makaro, Talmi, Bedo Mako, Murgo, Chalpahar, Pusre, Mrikuti, Masbera, Dugu, Barauidali, Banspahar, Bajrat , Tori, Jita, Bandkolo, Chualalo, Mirkajok, Gutu, Kapasbera.





**Image showing 3D Topographic view of the Potential Area**

**Volume of Potential Area - A, Block - Barhait, Area 2043 Hectare**

Section Proved 437 TO 97	Cross sectional area of O.B in sqm	Total Cross Sectional area in sqm	Influence Length m	Total Volume of O.B in Cum situ (B)	Total Volume in Cum situ (A)	Total Volume of Stone Cum situ (A-B)	Recovery 60% in m cum situ	Million tons of Stone
2000N	13164	504913.00	1700	22378800	858352100.00	835973300.00	2262.31608	6108.25
0.00	19400	1031315.00	2900	56260000	2990813500.00	2934553500.00		
<b>Total</b>				<b>78638800</b>	<b>3849165600.00</b>	<b>3770526800.00</b>		

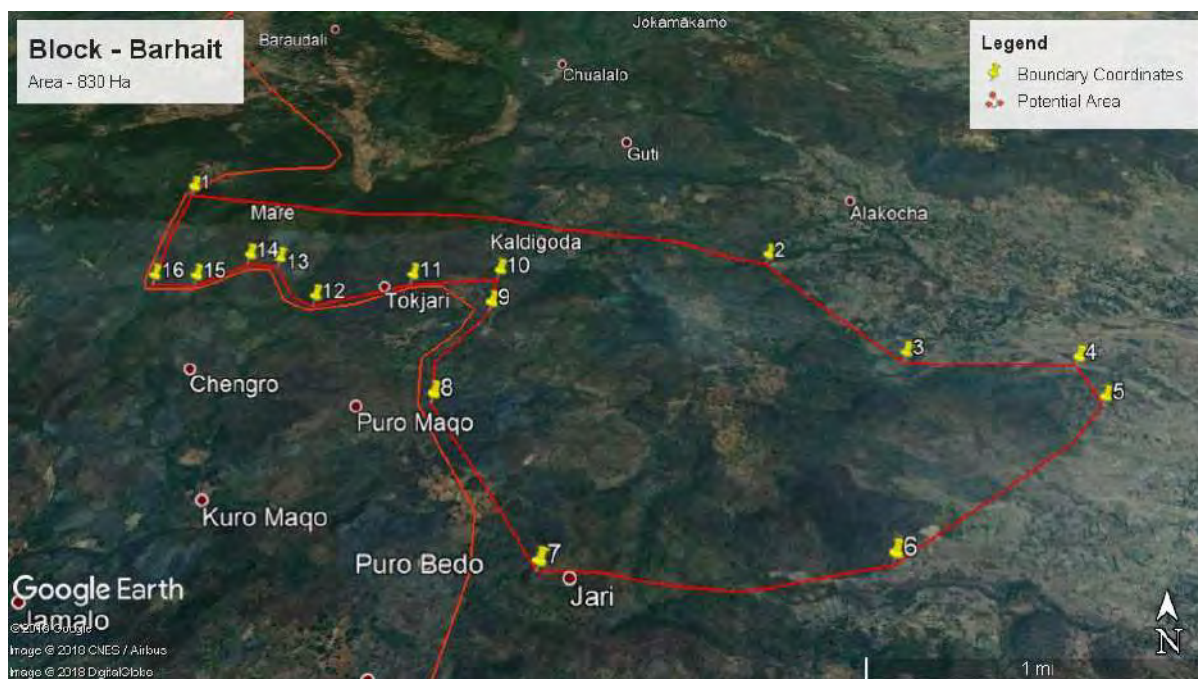


Image showing the Potential Area (Block – B, Mineral - Basalt) As Per KML Data

Sl no	Latitude	Longitude
1	24°52'20.04"N	87°27'26.31"E
2	24°52'5.39"N	87°29'43.34"E
3	24°51'36.71"N	87°30'9.34"E
4	24°51'36.20"N	87°30'46.30"E
5	24°51'25.70"N	87°30'48.19"E
6	24°50'50.71"N	87°29'57.25"E
7	24°50'45.74"N	87°28'54.01"E
8	24°51'20.19"N	87°28'31.55"E

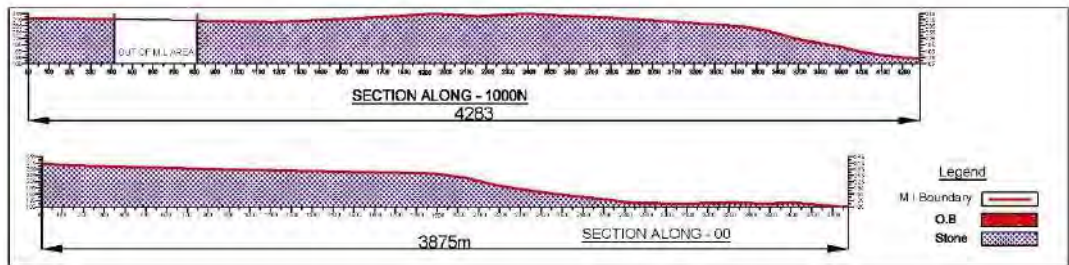
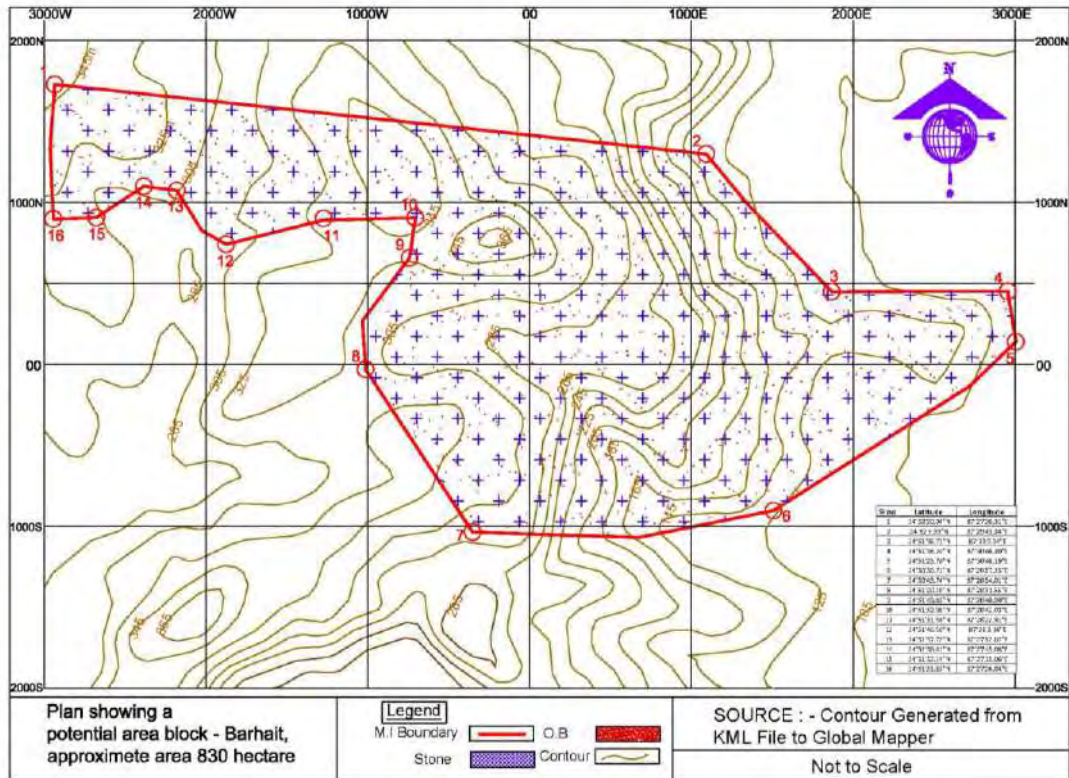
Sl no	Latitude	Longitude
9	24°51'43.65"N	87°28'40.90"E
10	24°51'52.06"N	87°28'42.03"E
11	24°51'51.58"N	87°28'22.91"E
12	24°51'46.50"N	87°28'2.36"E
13	24°51'57.72"N	87°27'52.02"E
14	24°51'58.61"N	87°27'45.08"E
15	24°51'52.14"N	87°27'35.06"E
16	24°51'51.85"N	87°27'26.04"E

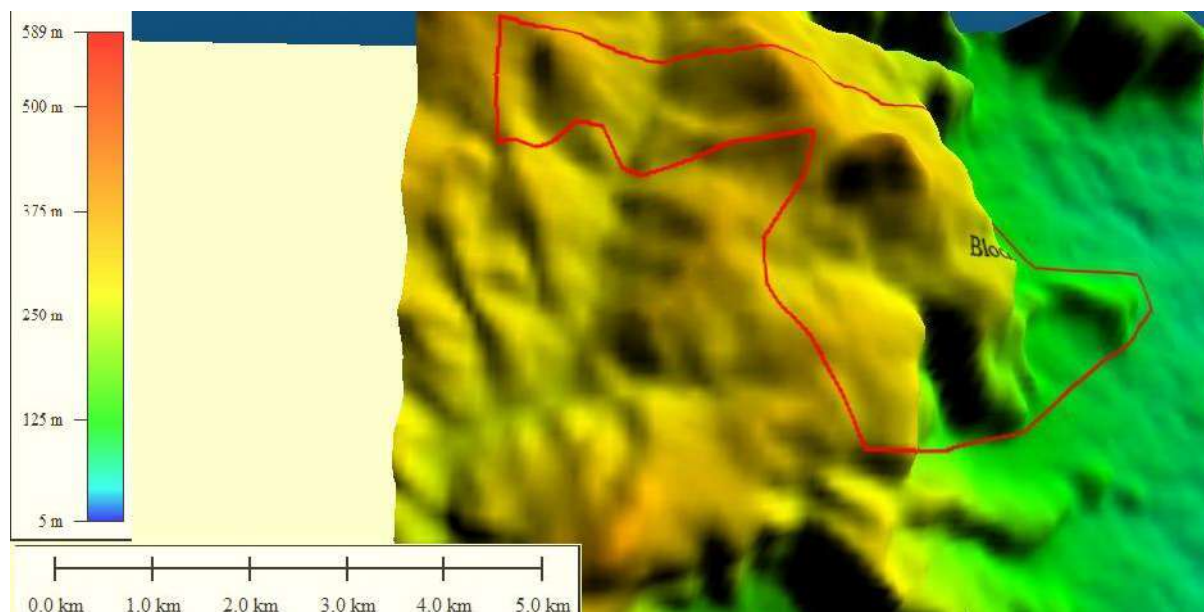


**List of villages falling under the potential area**

Mare, Tatakuria, Pagri, Makamati, Tokjari, Kaldigoda, Adro, Lakmi, Jokahan, Rohni, Tamli, Jokhan, Mangu Sevn, Janbedo, Ketermao, Jaribedo, Jaribedo, Godapuli, Chhuchi.

# District Survey Report of Sahibganj, Jharkhand





**Image showing 3D Topographic view of the Potential Area**

**Volume of Potential Area - B, Block - Barhait, Area 830 Hectare**

Section Proved 325 TO 105	Cross sectional area of O.B in sqm	Total Cross Sectional area in sqm	Influence Length m	Total Volume of O.B in Cum situ (B)	Total Volume in Cum situ (A)	Total Volume of Stone Cum situ (A-B)	Recovery 60% in m cum situ	Million tons of Stone
1000N	27914	721304.00	1100	30705400	793434400.00	762729000.00	839.8857984	2267.69
0.00	15447	419686.00	1576	24344472	661425136.00	637080664.00		
<b>Total</b>				<b>55049872</b>	<b>1454859536.00</b>	<b>1399809664.00</b>		

## District Survey Report of Sahibganj, Jharkhand



**Image showing the Potential Area (Block – C, Mineral – Basalt & Granite Gneiss) As Per KML Data**

SI no	Latitude	Longitude
1	24°50'42.86"N	87°28'45.46"E
2	24°50'43.19"N	87°29'29.48"E
3	24°50'35.01"N	87°30'11.09"E
4	24°49'59.93"N	87°30'0.11"E
5	24°49'46.98"N	87°30'4.31"E

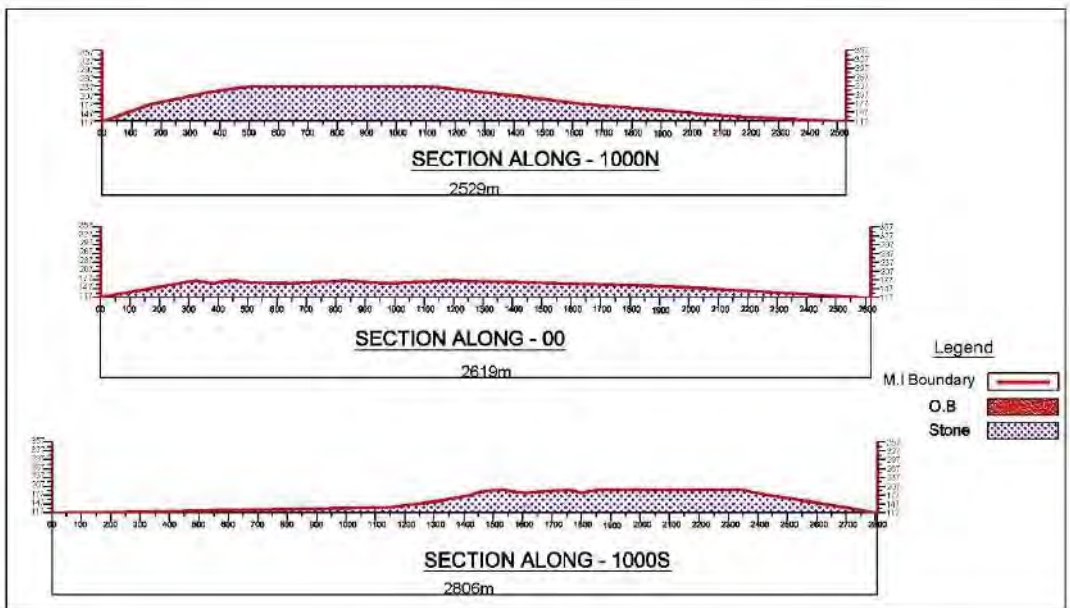
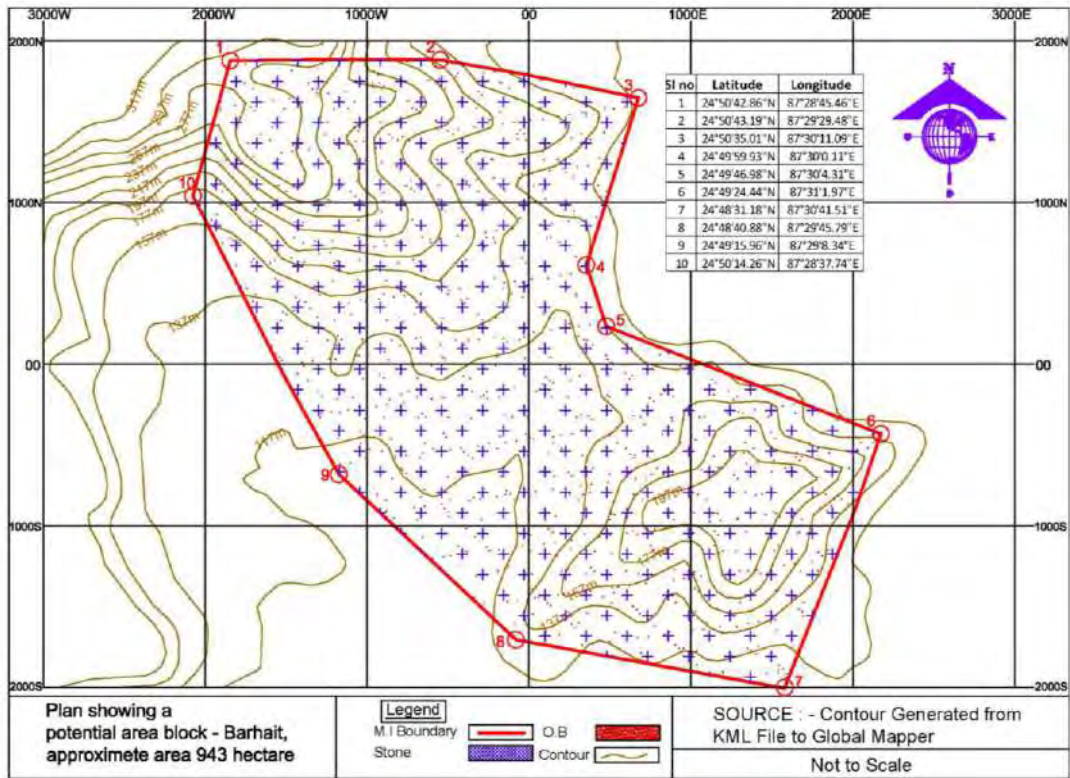
SI no	Latitude	Longitude
6	24°49'24.44"N	87°31'1.97"E
7	24°48'31.18"N	87°30'41.51"E
8	24°48'40.88"N	87°29'45.79"E
9	24°49'15.96"N	87°29'8.34"E
10	24°50'14.26"N	87°28'37.74"E

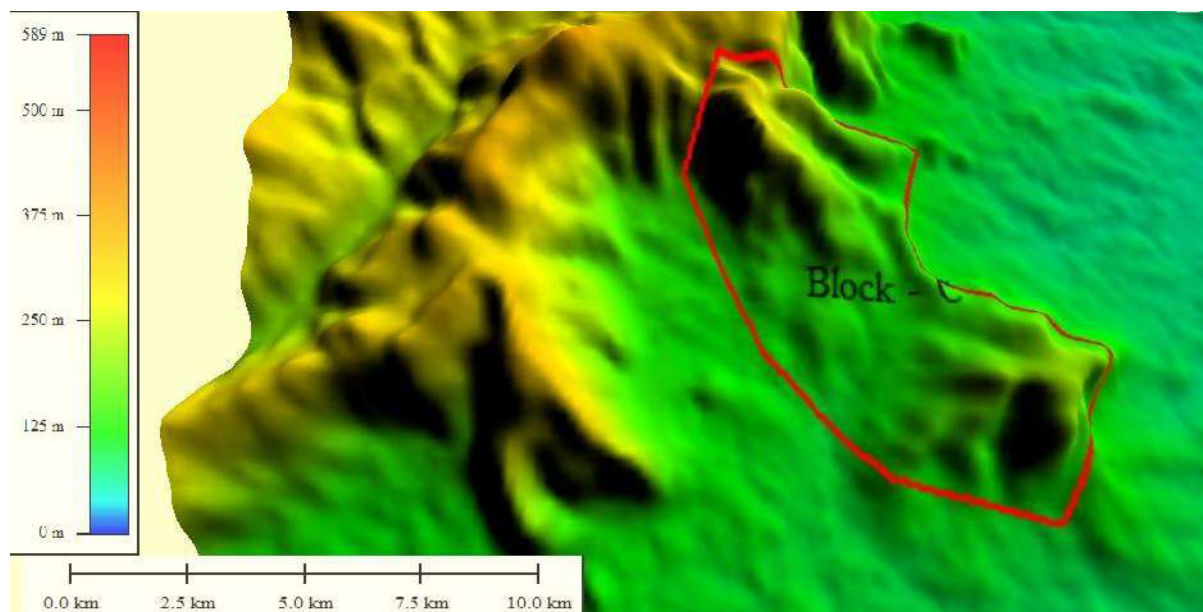


**List of villages falling under the potential area**

Chhuchi, Jarl, Godapuli, Kamchi, Kosapuchi, Litipara, Kusma, Meter, Garapuchi, Mugdi, Rajapani.

## District Survey Report of Sahibganj, Jharkhand





**Image showing 3D Topographic view of the Potential Area**

**Volume of Potential Area - C, Block - Barhait, Area 943 Hectare**

Section Proved 325 TO 105	Cross sectional area of O.B in sqm	Total Cross Sectional area in sqm	Influence Length m	Total Volume of O.B in Cum situ (B)	Total Volume in Cum situ (A)	Total Volume of Stone Cum situ (A-B)	Recovery 60% in m cum situ	Million tons of Stone
1000N	10010	169564.00	1400	14014000	237389600.00	223375600.00	262.42332	708.54
0.00	10383	98178.00	1000	10383000	98178000.00	87795000.00		
1000S	10785	100929.00	1400	15099000	141300600.00	126201600.00		
<b>Total</b>				<b>39496000</b>	<b>476868200.00</b>	<b>437372200.00</b>		

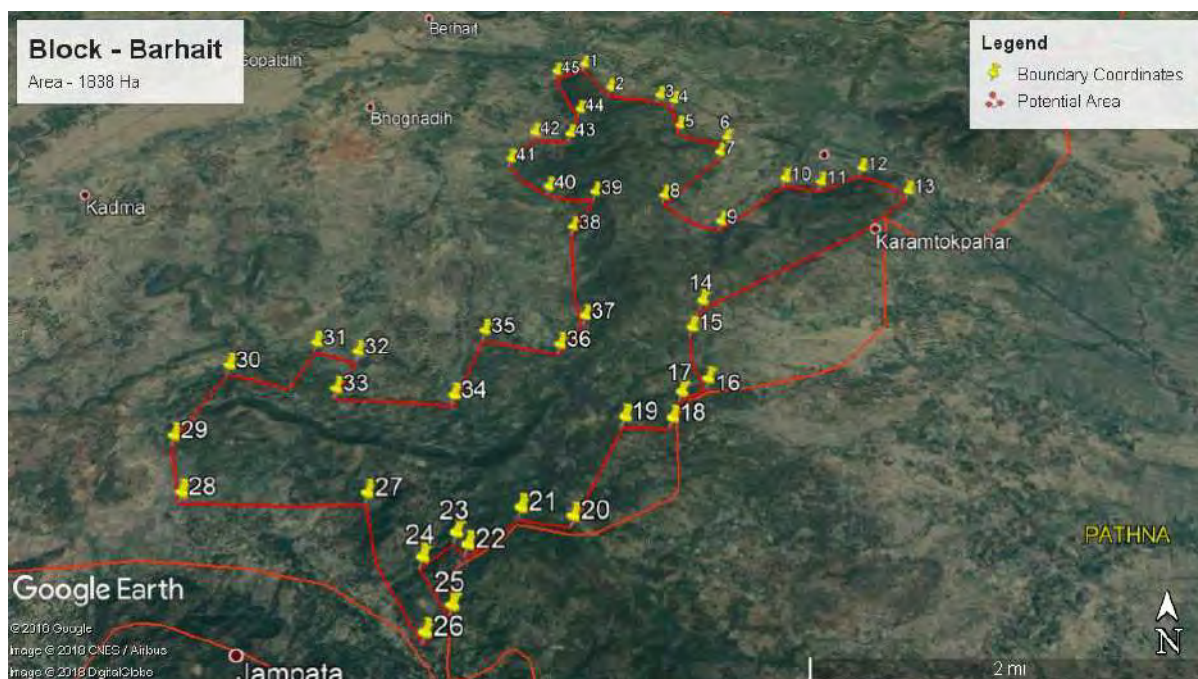
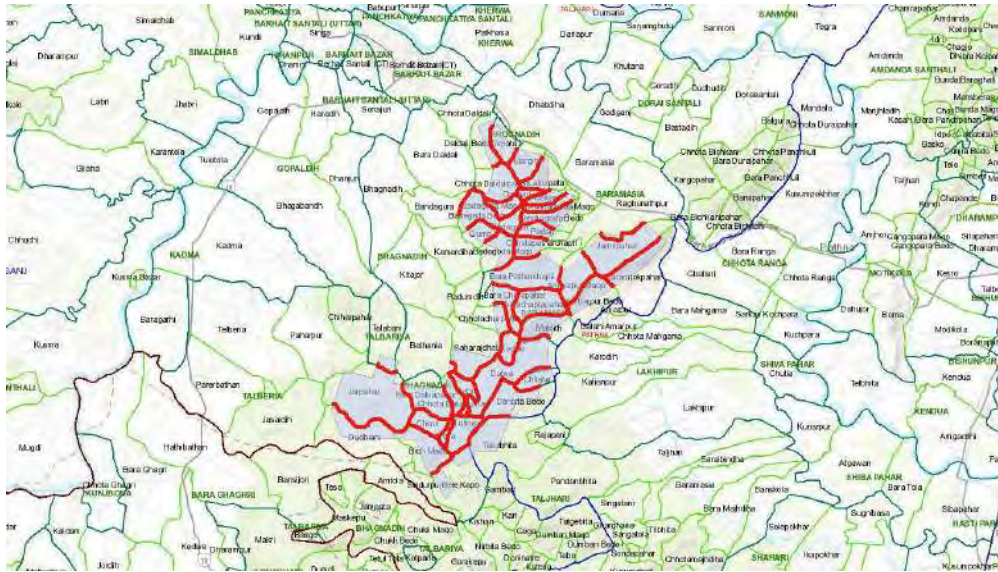


Image showing the Potential Area (Block – D, Mineral - Basalt) As Per KML Data

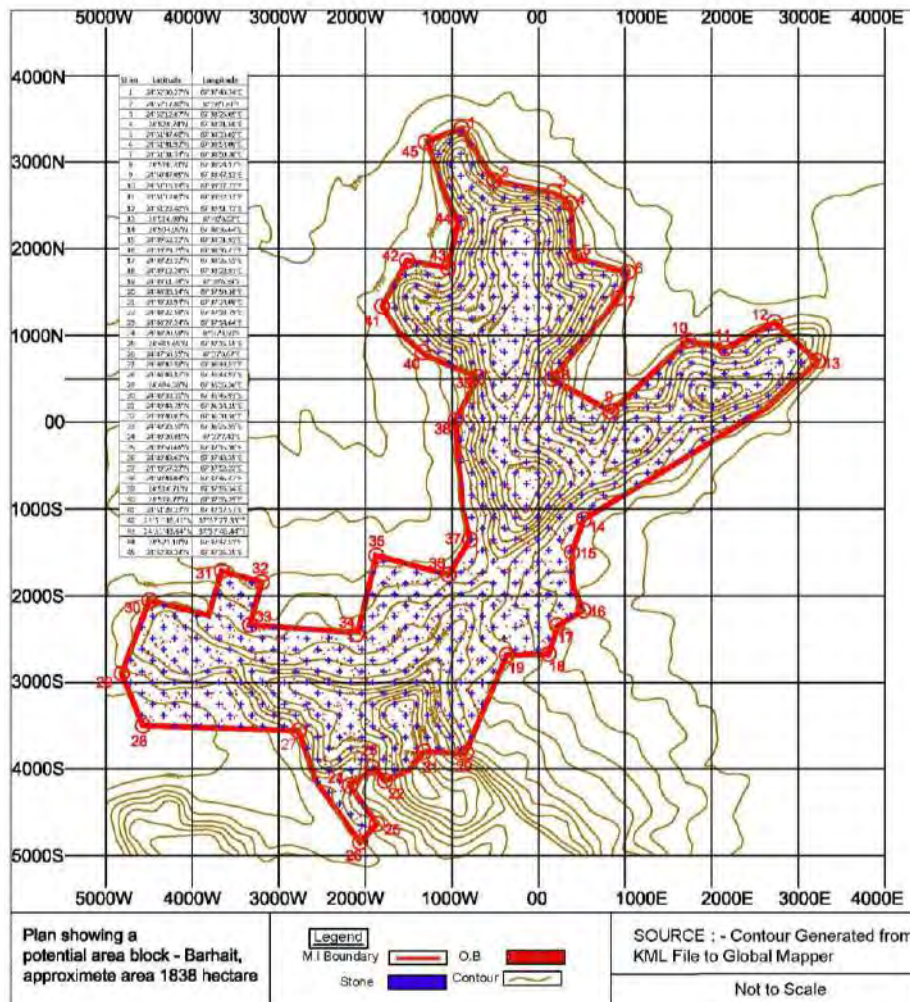
Sl no	Latitude	Longitude
1	24°52'38.27"N	87°37'48.74"E
2	24°52'17.80"N	87°38'1.61"E
3	24°52'12.87"N	87°38'25.09"E
4	24°52'8.74"N	87°38'31.58"E
5	24°51'47.60"N	87°38'33.02"E
6	24°51'41.93"N	87°38'54.00"E
7	24°51'31.74"N	87°38'50.30"E
8	24°51'0.20"N	87°38'24.17"E
9	24°50'47.05"N	87°38'47.12"E
10	24°51'15.19"N	87°39'17.21"E
11	24°51'12.03"N	87°39'32.13"E
12	24°51'22.40"N	87°39'51.72"E
13	24°51'6.98"N	87°40'8.52"E
14	24°50'4.96"N	87°38'36.64"E
15	24°49'52.22"N	87°38'31.91"E
16	24°49'29.25"N	87°38'36.41"E
17	24°49'23.32"N	87°38'26.51"E
18	24°49'12.28"N	87°38'22.91"E
19	24°49'11.78"N	87°38'6.59"E
20	24°48'33.14"N	87°37'50.18"E
21	24°48'33.94"N	87°37'34.08"E
22	24°48'22.58"N	87°37'18.79"E

Sl no	Latitude	Longitude
23	24°48'27.24"N	87°37'14.64"E
24	24°48'20.58"N	87°37'4.90"E
25	24°48'5.65"N	87°37'15.55"E
26	24°47'58.55"N	87°37'8.67"E
27	24°48'42.18"N	87°36'44.51"E
28	24°48'44.13"N	87°35'43.93"E
29	24°49'4.56"N	87°35'35.36"E
30	24°49'33.31"N	87°35'45.93"E
31	24°49'44.75"N	87°36'14.15"E
32	24°49'40.83"N	87°36'30.16"E
33	24°49'23.50"N	87°36'25.91"E
34	24°49'20.85"N	87°37'7.40"E
35	24°49'50.66"N	87°37'15.10"E
36	24°49'43.63"N	87°37'43.35"E
37	24°49'57.23"N	87°37'52.23"E
38	24°50'44.04"N	87°37'46.42"E
39	24°51'0.71"N	87°37'55.34"E
40	24°51'8.77"N	87°37'35.39"E
41	24°51'28.23"N	87°37'17.57"E
42	4°51'46.41"N	87°37'27.33"E
43	4°51'43.64"N	87°37'43.44"E
44	24°52'1.18"N	87°37'47.51"E
45	24°52'33.24"N	87°37'35.35"E



**List of villages falling under the potential area**

Bedo Torpata, Margro, Daldalipahar, Lakiapata, Chapri, Koskera, Badegoda, Nandurgodadedo, Kangarogoda, Padri, Gumo, Chhotapatharchapri, Jamripahar, Karamtokpahar, Bara patharchapri, Badegoda Maqo, Jamri Pahar, Maklith, Chhotachapta Pahar, Amarpura Maqo, Bara Chura Pahar, Kocklo, Dalwa, Chailako, Danbita Bedo, Saharajdhab, Chimn, Tulmi, Tetulbhita, Bich Maqo, DudhianiJarpahar, Bara Dalupoahar, Dabra.



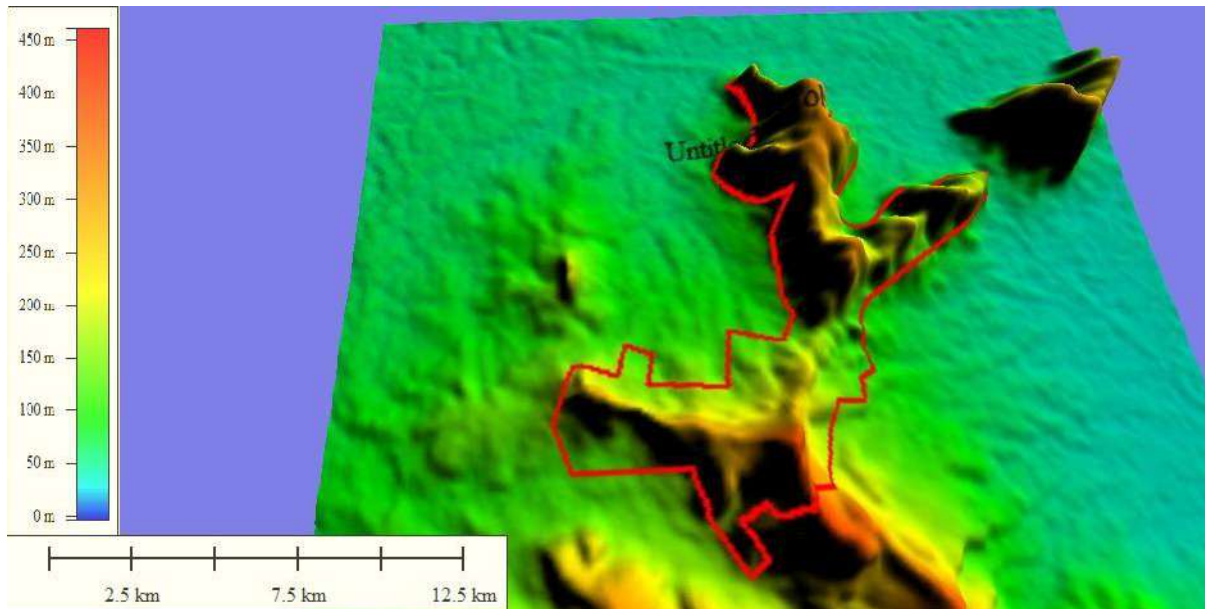
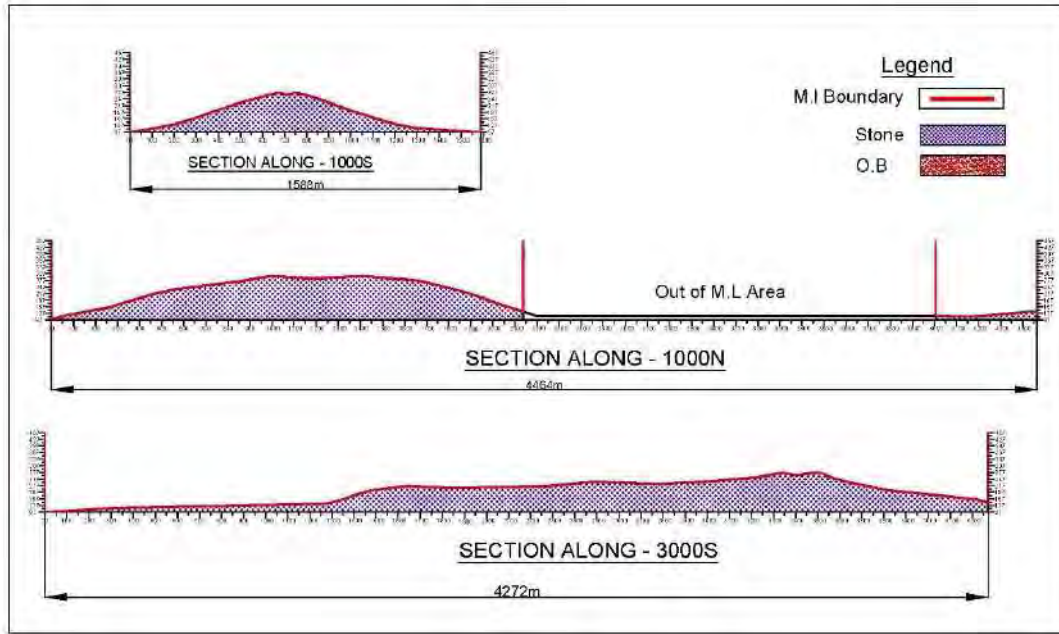


Image showing 3D Topographic view of the Potential Area

**Volume of Potential Area - D, Block - Barhait, Area 1838 Hectare**

Section Proved 297 TO 97	Cross sectional area of O.B in sqm	Total Cross Sectional area in sqm	Influence Length m	Total Volume of O.B in Cum situ (B)	Total Volume in Cum situ (A)	Total Volume of Stone Cum situ (A- B)	Recovery 60% in m cum situ	Million tons of Stone
1000S	6417	118474.00	1500	9625500	177711000.00	168085500.00	1378.0113	3720.63
1000N	10565	297850.00	2400	25356000	714840000.00	689484000.00		
3000S	17094	376873.00	4000	68376000	1507492000.00	1439116000.00		
<b>Total</b>				<b>103357500</b>	<b>2400043000.00</b>	<b>2296685500.00</b>		

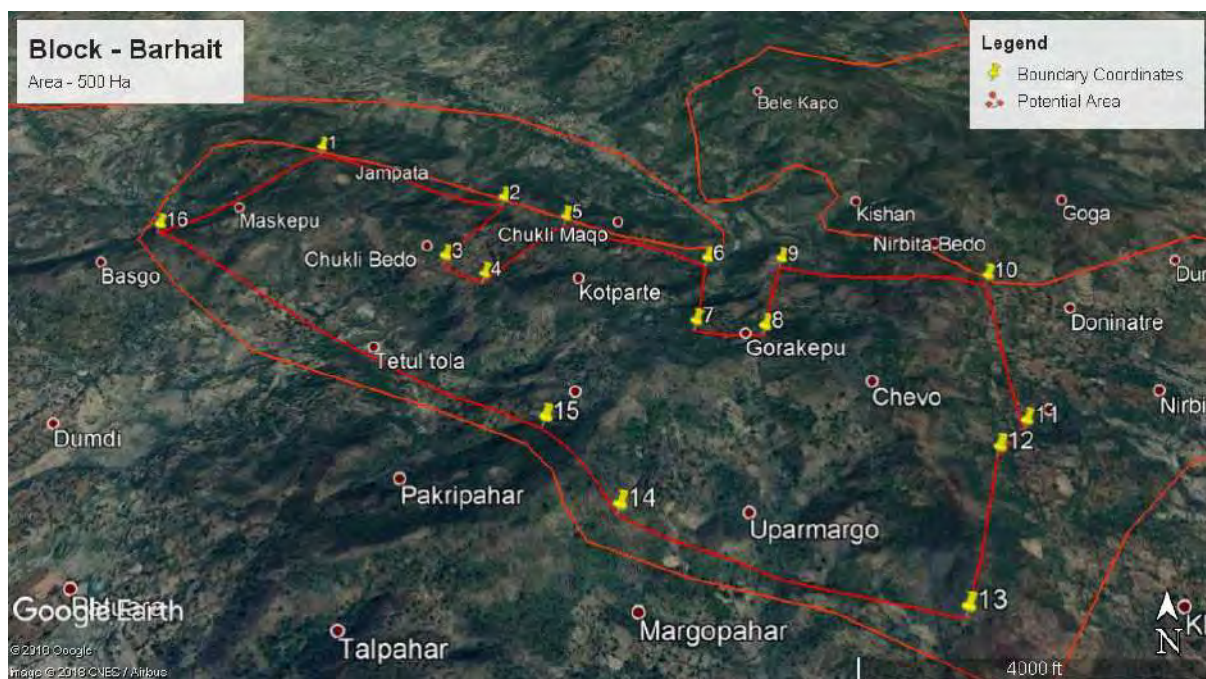


Image showing the Potential Area (Block – E, Mineral – Basalt & Granite Gneiss) As Per KML Data

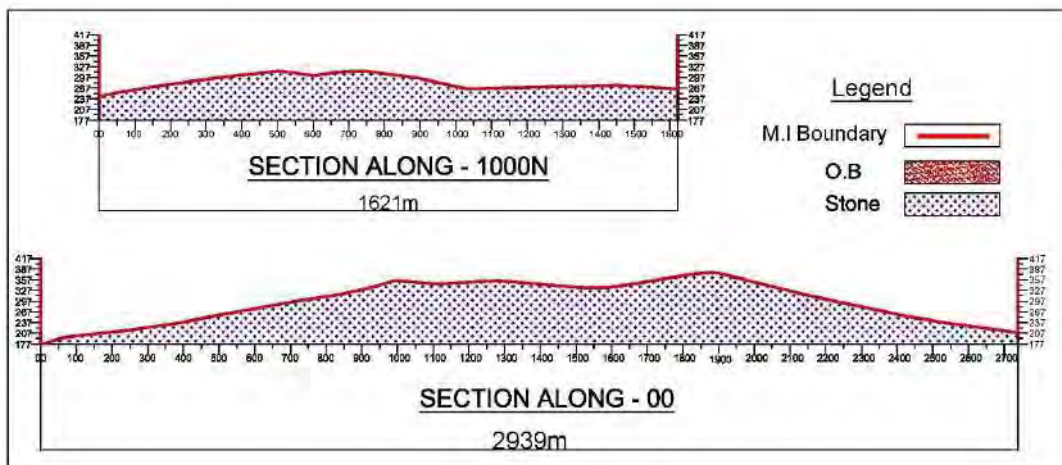
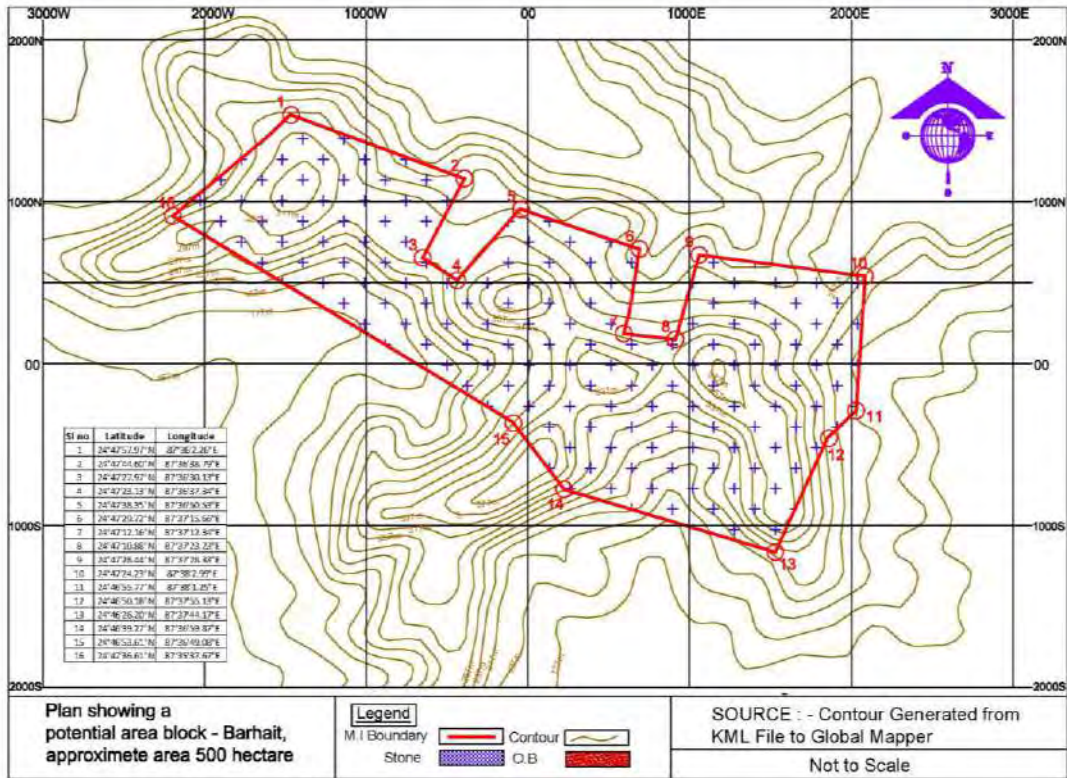
Sl no	Latitude	Longitude
1	24°47'57.97"N	87°36'2.26"E
2	24°47'44.60"N	87°36'38.79"E
3	24°47'27.97"N	87°36'30.13"E
4	24°47'23.13"N	87°36'37.34"E
5	24°47'38.35"N	87°36'50.53"E
6	24°47'29.72"N	87°37'15.66"E
7	24°47'12.16"N	87°37'12.34"E
8	24°47'10.88"N	87°37'23.23"E

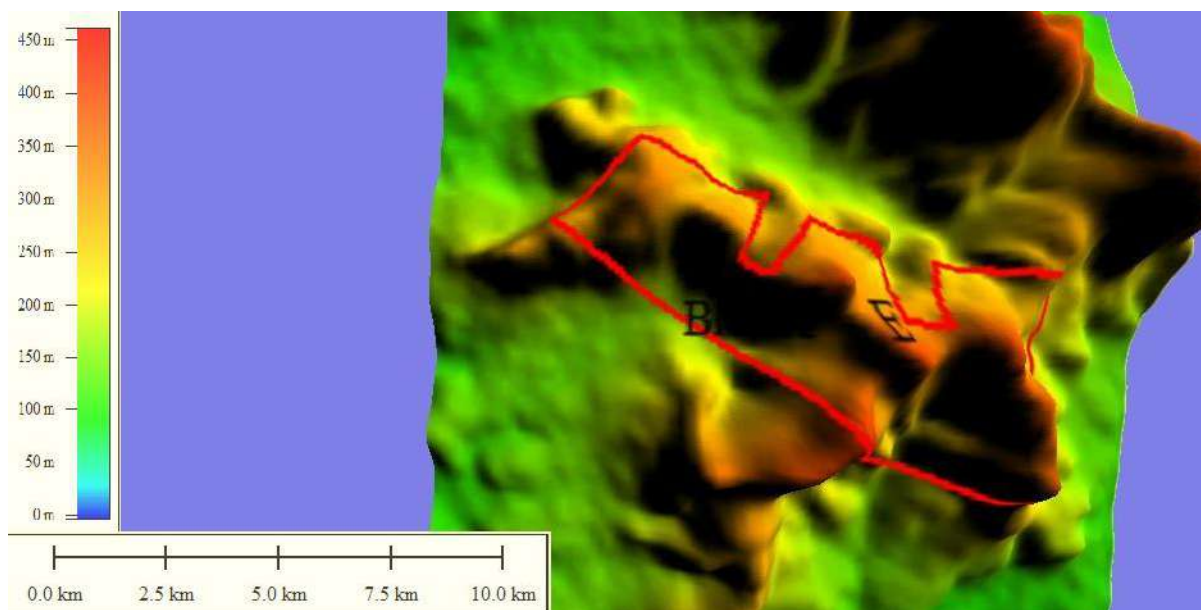
Sl no	Latitude	Longitude
9	24°47'28.44"N	87°37'28.33"E
10	24°47'24.23"N	87°38'2.99"E
11	24°46'55.77"N	87°38'1.25"E
12	24°46'50.18"N	87°37'55.13"E
13	24°46'26.20"N	87°37'44.17"E
14	24°46'39.27"N	87°36'59.87"E
15	24°46'53.61"N	87°36'49.08"E
16	24°47'36.61"N	87°35'37.67"E



**List of villages lying under the potential area:**

Jampata, Maskepu, Chuki Bedo, Tetul Tola, Chuki Maqo, Gora Kepu, Kotparte, Uparmargo, Pakeri, Chevo, Nirbita Bedo, Tori, Karrobasa, Hajarpura, Margo pahar.





**Image showing 3D Topographic view of the Potential Area**

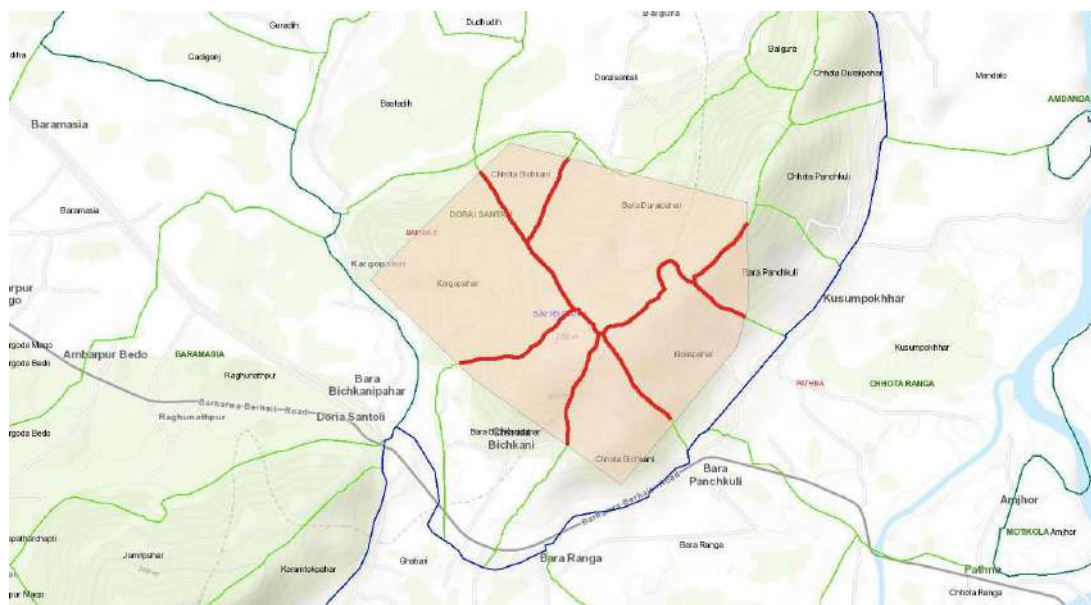
**Volume of Potential Area - E, Block - Barhait, Area 500 Hectare**

Section Proved 377 TO 177	Cross sectional area of O.B in sqm	Total Cross Sectional area in sqm	Influence Length m	Total Volume of O.B in Cum situ (B)	Total Volume in Cum situ (A)	Total Volume of Stone Cum situ (A-B)	Recovery 60% in m cum situ	Million tons of Stone
1000N	6534	170113.00	1000	6534000	170113000.00	163579000.00	303.21996	818.69
0.00	11088	321804.00	1100	12196800	353984400.00	341787600.00		
<b>Total</b>				<b>18730800</b>	<b>524097400.00</b>	<b>505366600.00</b>		



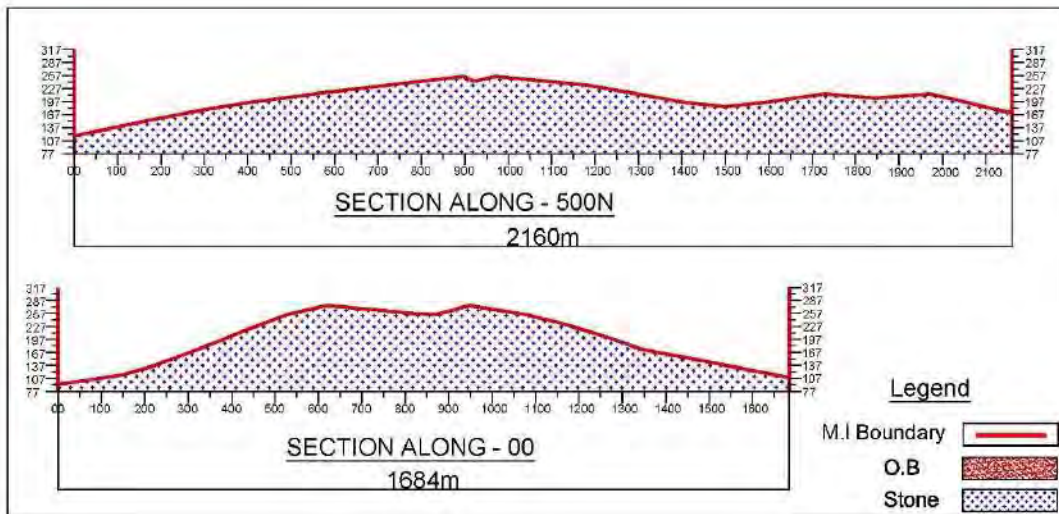
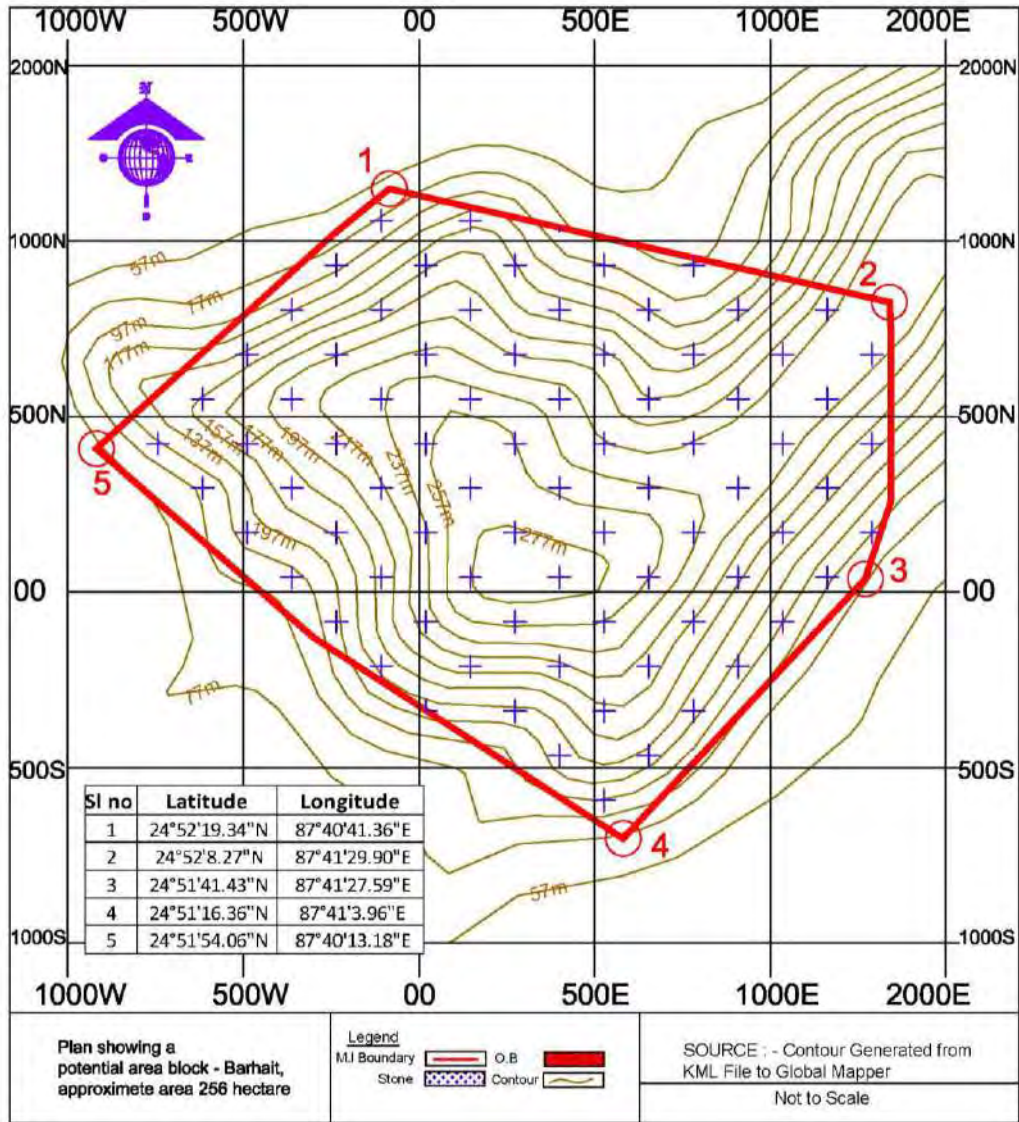
**Image showing the Potential Area (Block – F, Mineral - Basalt) As Per KML Data**

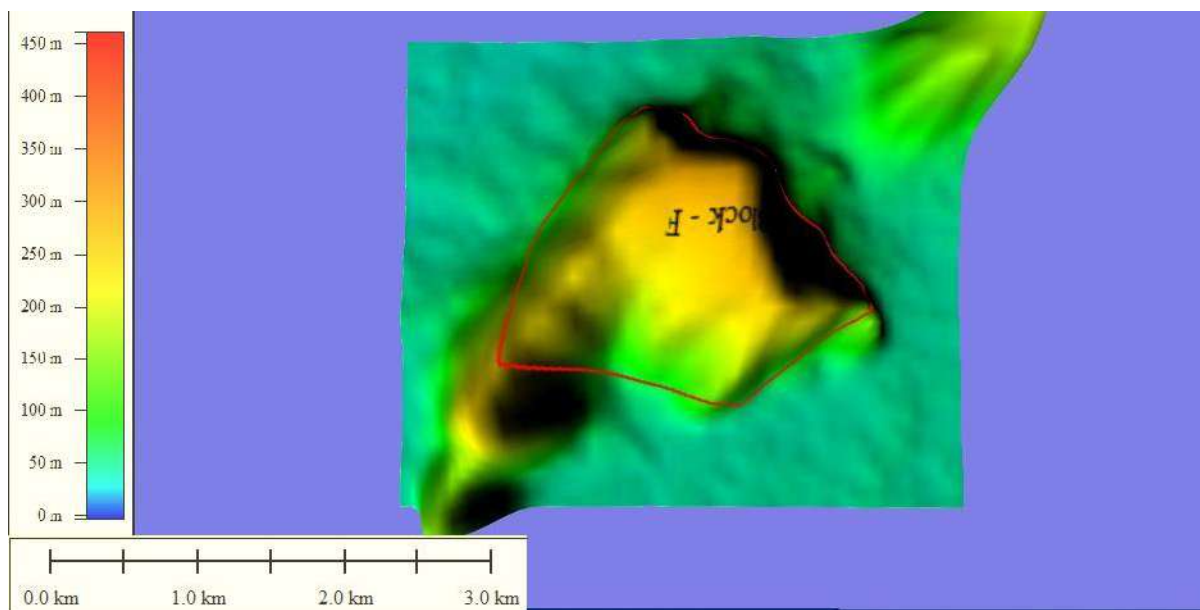
SI no	Latitude	Longitude
1	24°52'19.34"N	87°40'41.36"E
2	24°52'8.27"N	87°41'29.90"E
3	24°51'41.43"N	87°41'27.59"E
4	24°51'16.36"N	87°41'3.96"E
5	24°51'54.06"N	87°40'13.18"E



**List of villages falling under the potential area:**

Chhota Eichkani, Kargopahar, Bara Bichkhani, Chhota Bichkhani, Banspahar, Bara Panchkuli.





**Image showing 3D Topographic view of the Potential Area**

**Volume of Potential Area - F, Block - Barhait, Area 256 Hectare**

Section Proved 277 TO 77	Cross sectional area of O.B in sqm	Total Cross Sectional area in sqm	Influence Length m	Total Volume of O.B in Cum situ (B)	Total Volume in Cum situ (A)	Total Volume of Stone Cum situ (A-B)	Recovery 60% in m cum situ	Million tons of Stone
500.00	8750	273687.00	650	5687500	177896550.00	172209050.00	232.49271	627.73
0.00	6946	202654.00	1100	7640600	222919400.00	215278800.00		
<b>Total</b>				<b>13328100</b>	<b>400815950.00</b>	<b>387487850.00</b>		

Block - Taljhari



Image showing the Potential Area (Block – A, Mineral - Basalt) As Per KML Data

SI no	Latitude	Longitude
1	25°14'7.00"N	87°42'18.75"E
2	25°14'1.09"N	87°42'38.39"E
3	25°14'15.77"N	87°42'58.65"E
4	25°14'15.98"N	87°43'22.15"E
5	25°13'9.65"N	87°43'33.67"E

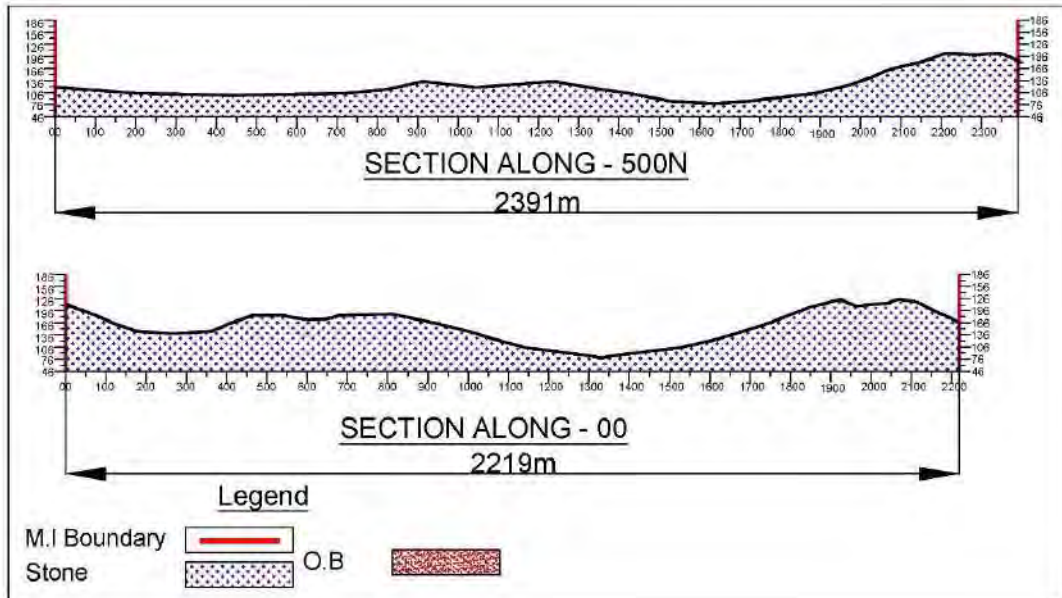
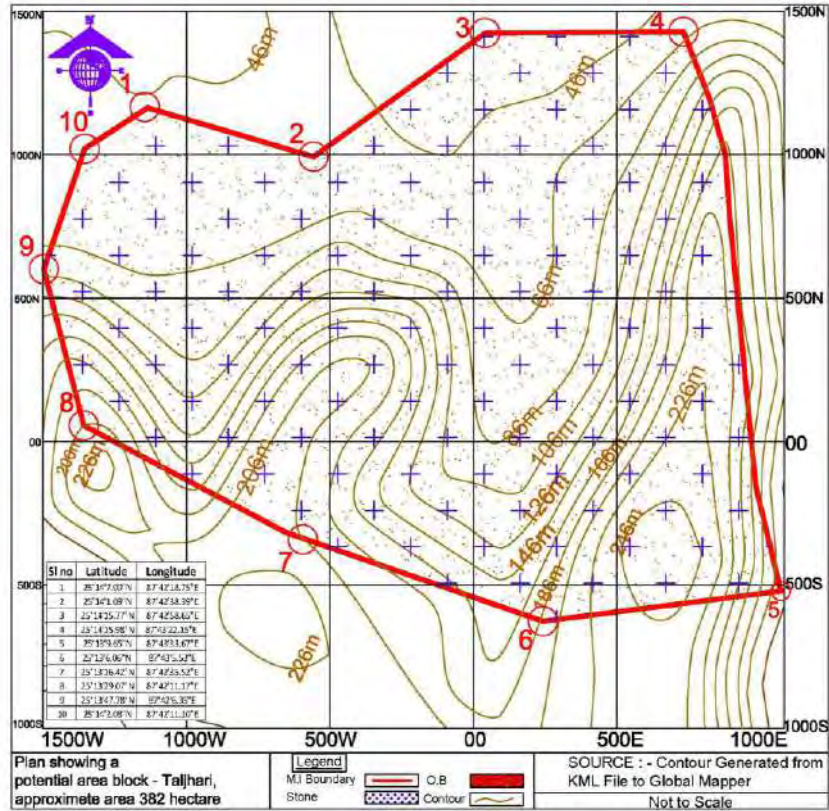
SI no	Latitude	Longitude
6	25°13'6.06"N	87°43'5.53"E
7	25°13'16.42"N	87°42'35.52"E
8	25°13'29.07"N	87°42'11.17"E
9	25°13'47.78"N	87°42'6.35"E
10	25°14'2.08"N	87°42'11.10"E

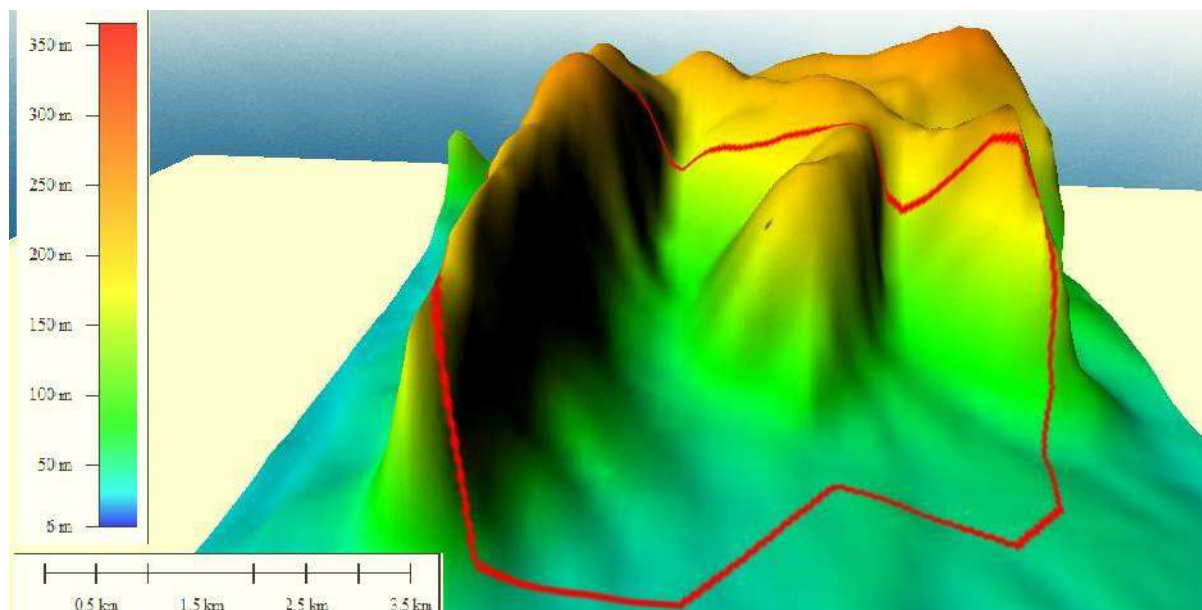


List of villages falling under the potential area:

Chota Bhagamari, Korokuriya, Badi Bhogiamari, Baraparte, Chongro, Godwa, Jamni

# District Survey Report of Sahibganj, Jharkhand



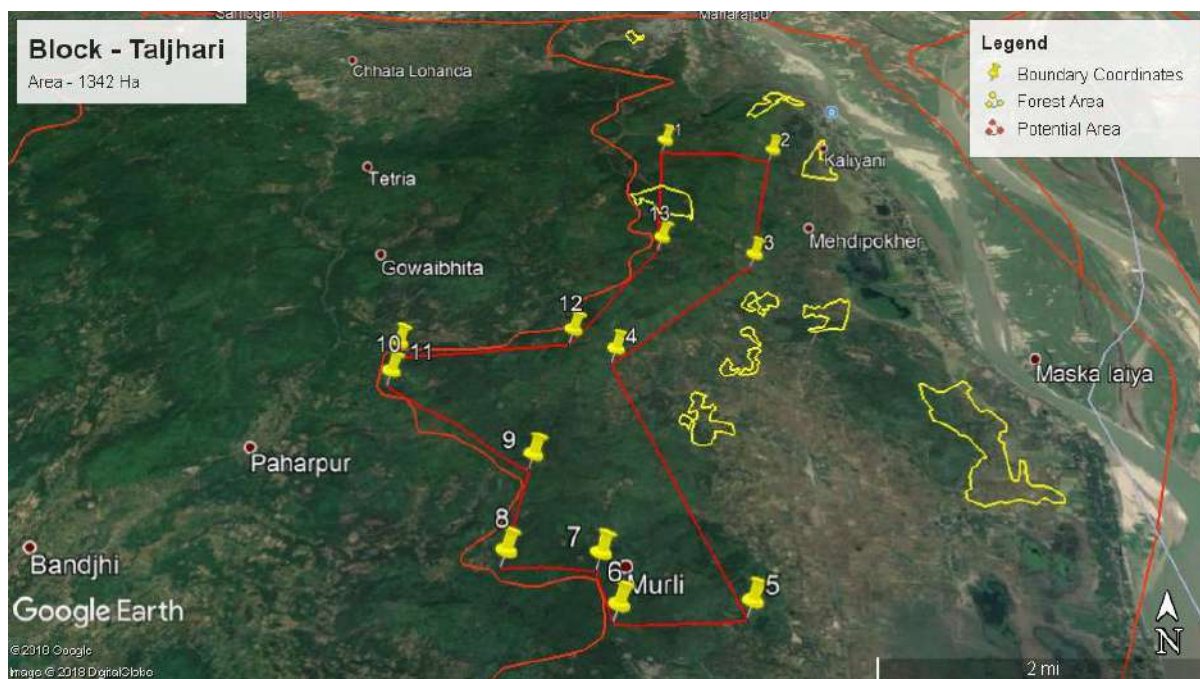


**Image showing 3D Topographic view of the Potential Area**

**Volume of Potential Area - A, Block - Taljhari, Area 382 Hectare**

Section Proved 246 TO 46	Cross sectional area of O.B in sqm	Total Cross Sectional area in sqm	Influence Length m	Total Volume of O.B in Cum situ (B)	Total Volume in Cum situ (A)	Total Volume of Stone Cum situ (A-B)	Recovery 60% in m cum situ	Million tons of Stone
500N	9686	172275.00	925	8959550	159354375.00	150394825.00	243.207735	656.66
0.00	9170	240944.00	1100	10087000	265038400.00	254951400.00		
<b>Total</b>				<b>19046550</b>	<b>424392775.00</b>	<b>405346225.00</b>		

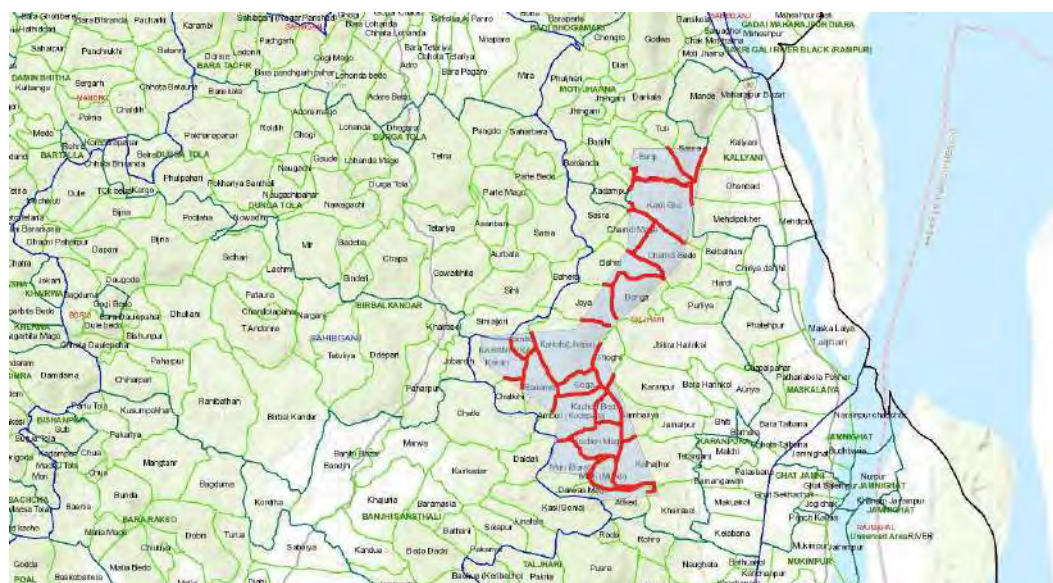
## District Survey Report of Sahibganj, Jharkhand



**Image showing the Potential Area (Block – B, Mineral - Basalt) As Per KML Data**

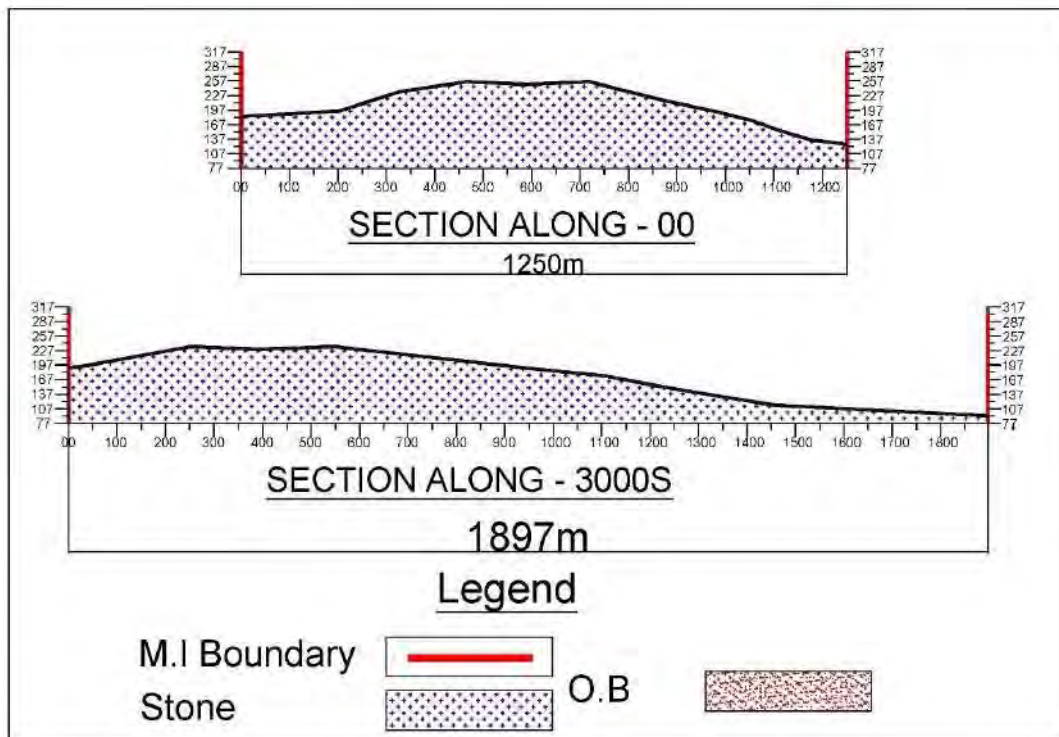
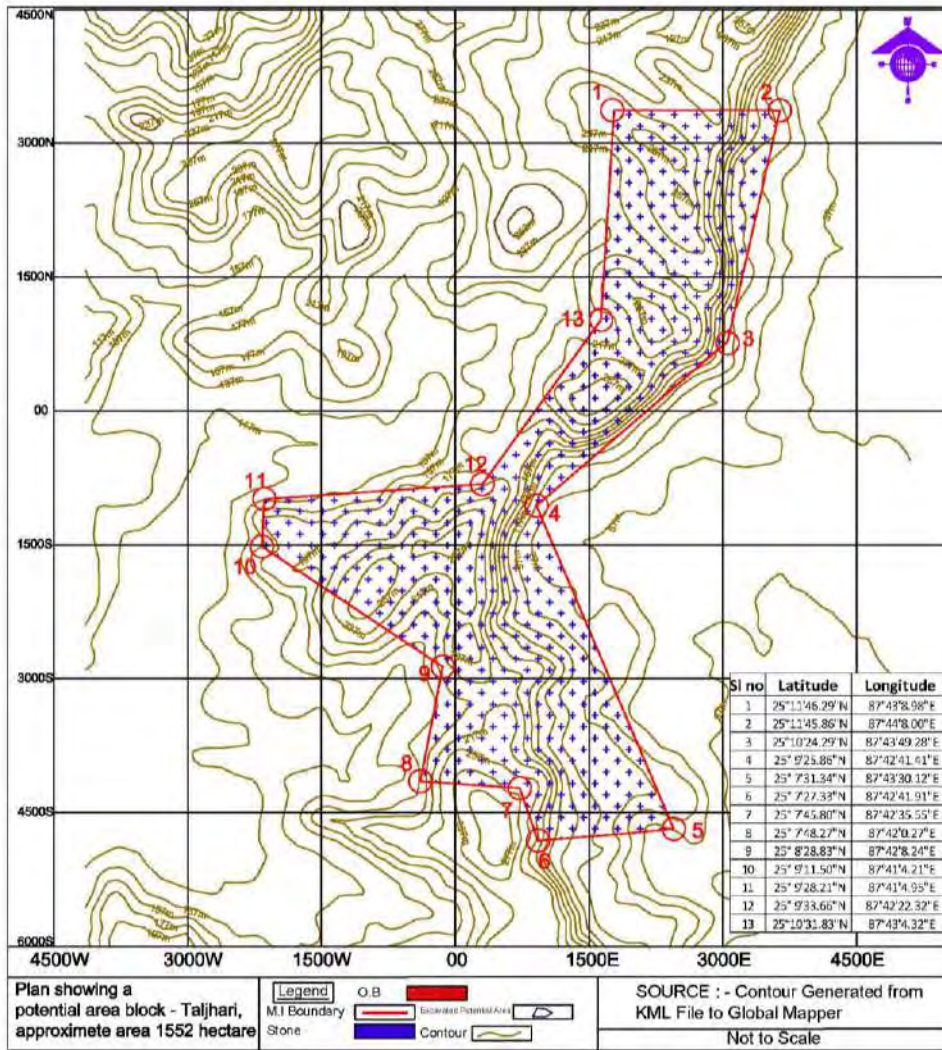
Sl no	Latitude	Longitude
1	25°11'46.29"N	87°43'8.98"E
2	25°11'45.86"N	87°44'8.00"E
3	25°10'24.29"N	87°43'49.28"E
4	25° 9'25.86"N	87°42'41.41"E
5	25° 7'31.34"N	87°43'30.12"E
6	25° 7'27.33"N	87°42'41.91"E
7	25° 7'45.80"N	87°42'35.55"E

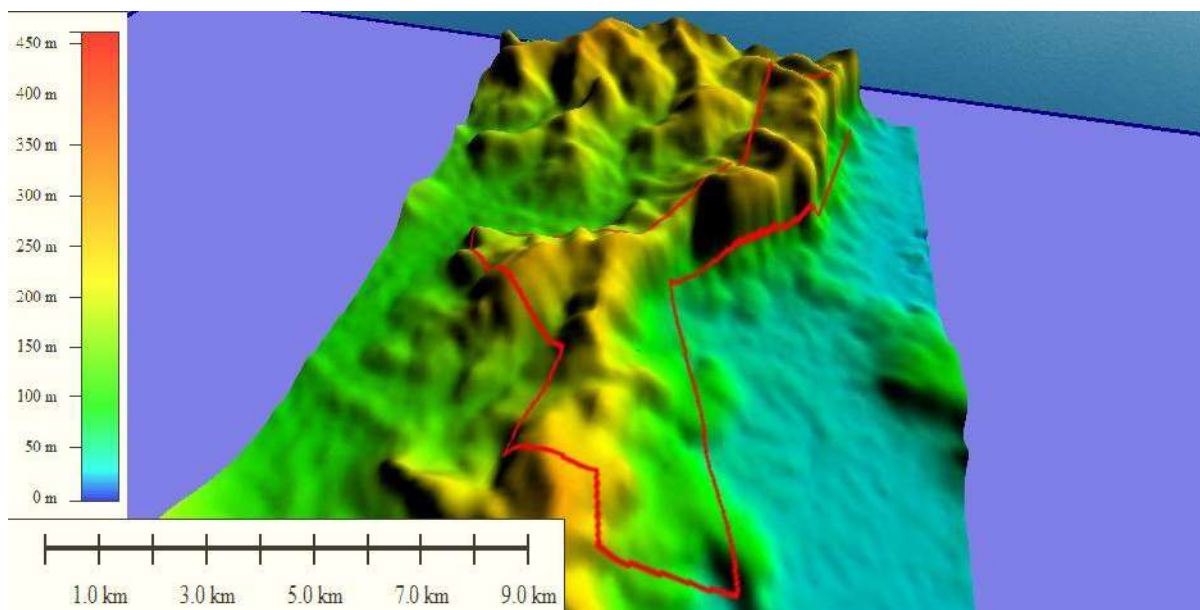
Sl no	Latitude	Longitude
8	25° 7'48.27"N	87°42'0.27"E
9	25° 8'28.83"N	87°42'8.24"E
10	25° 9'11.50"N	87°41'4.21"E
11	25° 9'28.21"N	87°41'4.95"E
12	25° 9'33.66"N	87°42'22.32"E
13	25°10'31.83"N	87°43'4.32"E



**List of villages falling under the potential area:**

Saura, Banji, Kaldi Bitra, Chamdi Mago, Chamdi Bedo, Behra, Danga, Joya, Kakbita (Jhapsi), Ghoghi, Goga, Jamba, Kasari, Chatkihi, Bademe, Kachori Bedo, Kachori Mago, Muri, Kalhajhor, Joya, Ambori.





**Image showing 3D Topographic view of the Potential Area**

**Volume of Potential Area - B, Block - Taljhari, Area 1342 Hectare**

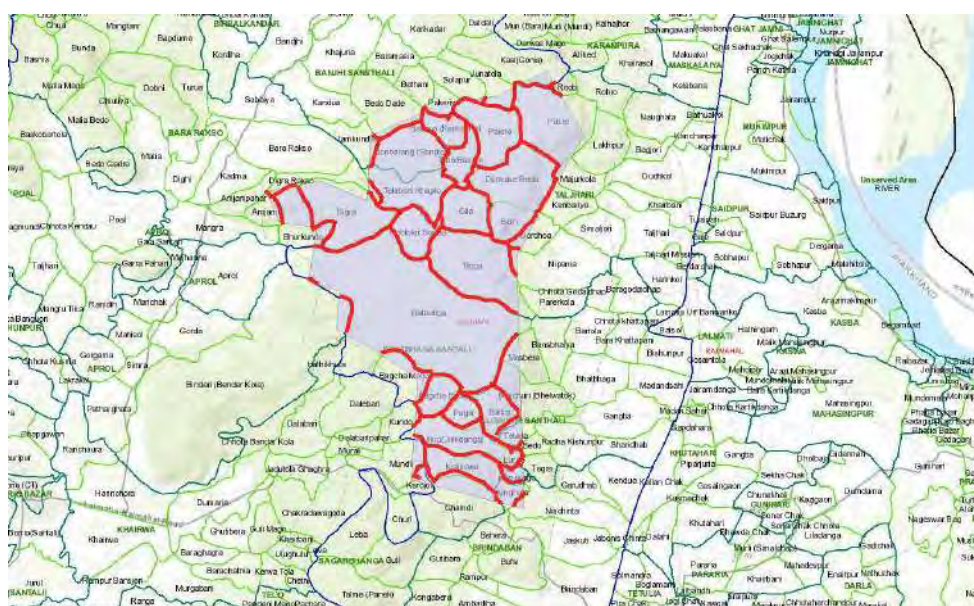
Section Proved 265 TO 85	Cross sectional area of O.B in sqm	Total Cross Sectional area in sqm	Influence Length m	Total Volume of O.B in Cum situ (B)	Total Volume in Cum situ (A)	Total Volume of Stone Cum situ (A-B)	Recovery 60% in m cum situ	Million tons of Stone
0.00	5101	164622.00	3600	18363600	592639200.00	574275600.00	847.5804	2288.47
3000S	7640	182298.00	4800	36672000	875030400.00	838358400.00		
<b>Total</b>				<b>55035600</b>	<b>1467669600.00</b>	<b>1412634000.00</b>		



Image showing the Potential Area (Block – C, Mineral - Basalt) As Per KML Data

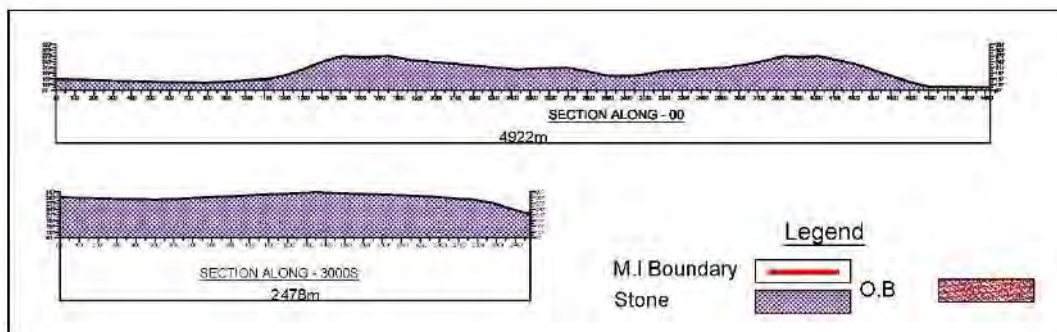
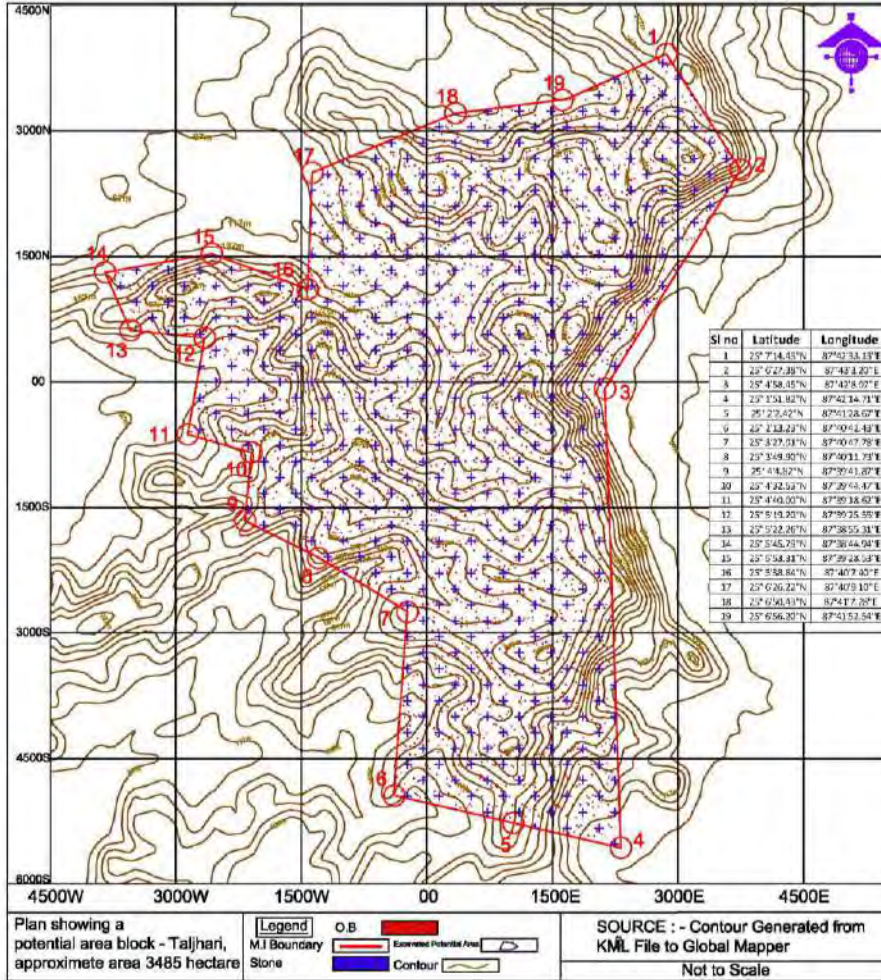
Sl no	Latitude	Longitude
1	25° 7'14.43"N	87°42'33.13"E
2	25° 6'27.38"N	87°43'3.20"E
3	25° 4'58.45"N	87°42'8.07"E
4	25° 1'51.82"N	87°42'14.71"E
5	25° 2'2.42"N	87°41'28.67"E
6	25° 2'13.23"N	87°40'42.43"E
7	25° 3'27.91"N	87°40'47.78"E
8	25° 3'49.90"N	87°40'11.73"E
9	25° 4'4.82"N	87°39'41.87"E
10	25° 4'32.53"N	87°39'44.47"E

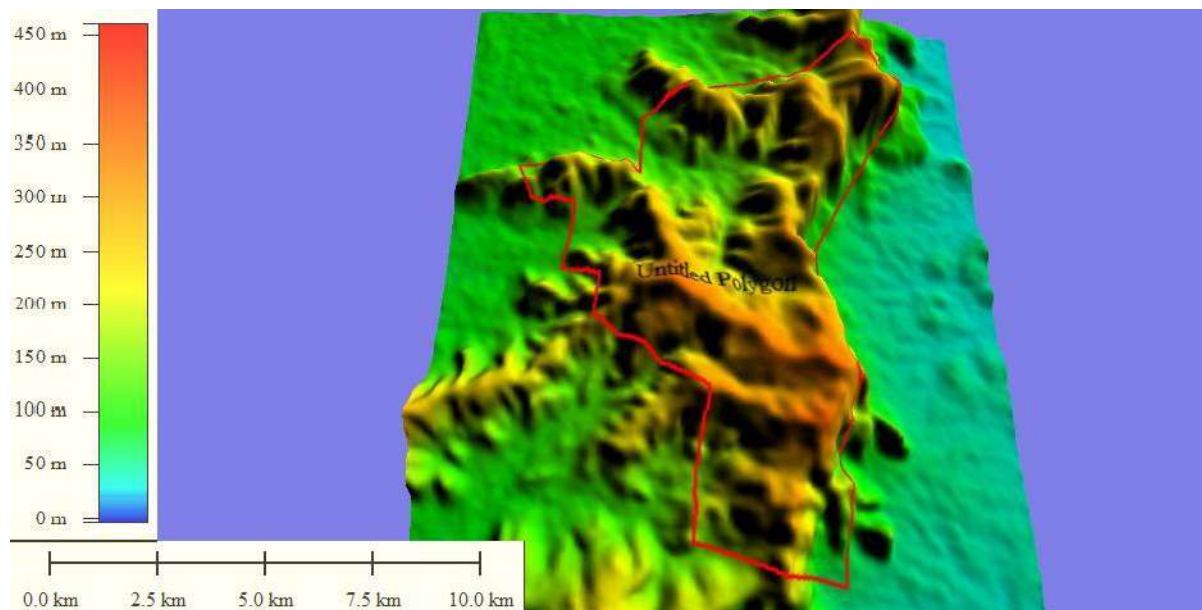
Sl no	Latitude	Longitude
11	25° 4'40.00"N	87°39'18.62"E
12	25° 5'19.20"N	87°39'25.55"E
13	25° 5'22.26"N	87°38'55.31"E
14	25° 5'45.73"N	87°38'44.94"E
15	25° 5'53.31"N	87°39'28.53"E
16	25° 5'38.84"N	87°40'7.40"E
17	25° 6'26.22"N	87°40'9.10"E
18	25° 6'50.43"N	87°41'7.28"E
19	25° 6'56.20"N	87°41'52.54"E



**List of villages falling under the potential area:**

Pusru, Pakri, Badhua, Darwasi Bedo, Botri, Gila, Boga, Telabani Khaplo, Digra, Batbanga, Bagcha Mago, Bagcha Bedo, Jilkur, Katikewa, Tetaria, Balko, Chamdi, Mundli, Kerojoi, Kundo, Hathikhuta, Masbera, Gordhoa.





**Image showing 3D Topographic view of the Potential Area**

**Volume of Potential Area - C, Block - Taljhari, Area 3485 Hectare**

Section Proved 277 TO 97	Cross sectional area of O.B in sqm	Total Cross Sectional area in sqm	Influence Length m	Total Volume of O.B in Cum situ (B)	Total Volume in Cum situ (A)	Total Volume of Stone Cum situ (A-B)	Recovery 60% in m cum situ	Million tons of Stone
0.00	19909	477448.00	4800	95563200	2291750400.00	2196187200.00	3349.53288	9043.74
3000S	9962	515390.00	6700	66745400	3453113000.00	3386367600.00		
<b>Total</b>				<b>162308600</b>	<b>5744863400.00</b>	<b>5582554800.00</b>		

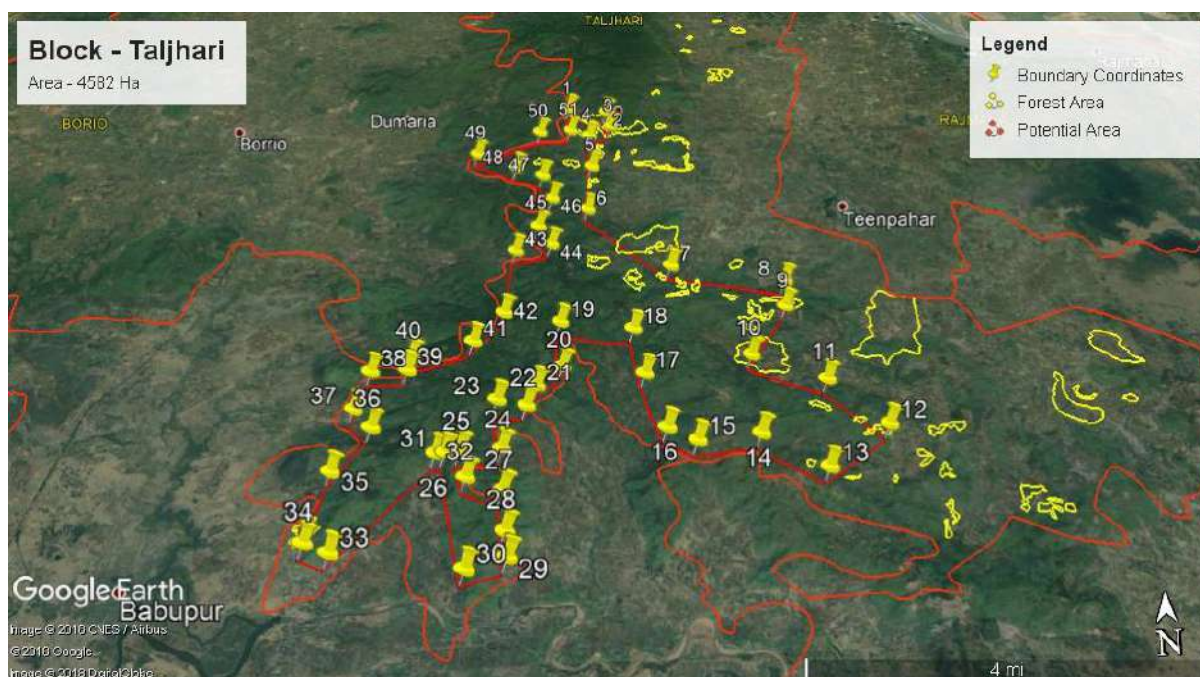
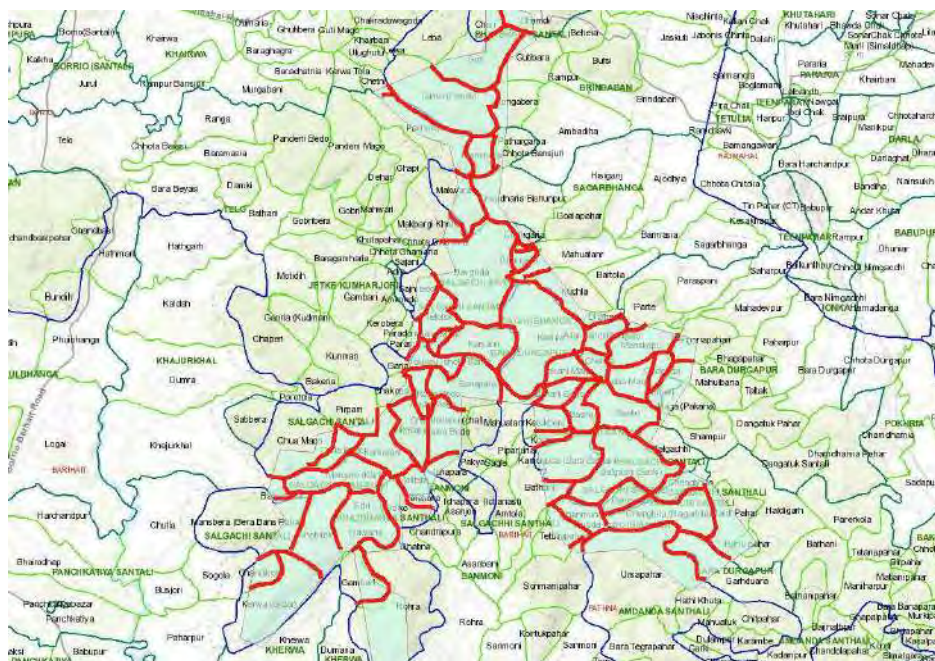


Image showing the Potential Area (Block – D, Mineral – Basalt & Granite Gneiss) As Per KML Data

Sl no	Latitude	Longitude
1	25° 1'53.16"N	87°40'34.74"E
2	25° 1'45.87"N	87°41'8.97"E
3	25° 1'27.22"N	87°41'12.11"E
4	25° 1'13.84"N	87°40'51.25"E
5	25° 0'30.67"N	87°40'51.16"E
6	4°59'34.58"N	87°40'44.09"E
7	4°58'24.33"N	87°41'46.69"E
8	24°58'2.88"N	87°43'14.26"E
9	24°57'35.33"N	87°43'9.07"E
10	24°56'49.33"N	87°42'34.50"E
11	24°56'25.02"N	87°43'24.72"E
12	24°55'44.89"N	87°43'58.56"E
13	24°55'11.86"N	87°43'8.76"E
14	24°55'40.44"N	87°42'28.72"E
15	24°55'37.16"N	87°41'44.72"E
16	24°55'50.38"N	87°41'25.72"E
17	24°56'37.62"N	87°41'15.10"E
18	24°57'19.09"N	87°41'10.66"E
19	24°57'24.39"N	87°40'16.47"E
20	24°56'45.73"N	87°40'16.09"E
21	24°56'30.82"N	87°39'57.49"E
22	24°56'13.63"N	87°39'50.09"E
23	24°56'17.57"N	87°39'29.70"E
24	24°55'40.24"N	87°39'32.98"E
25	24°55'38.05"N	87°39'5.39"E

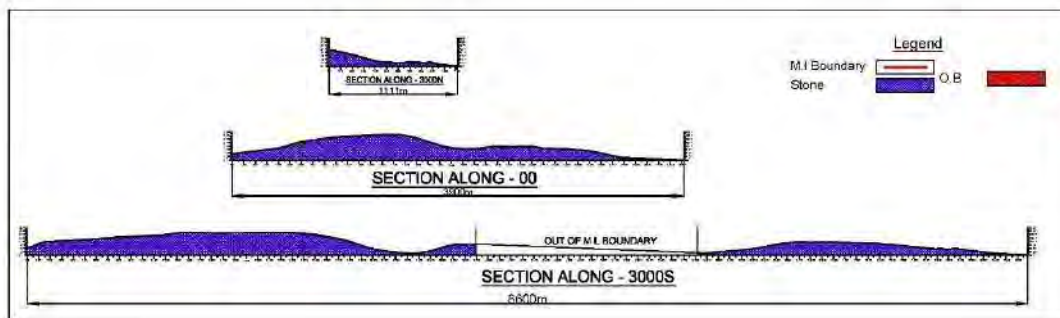
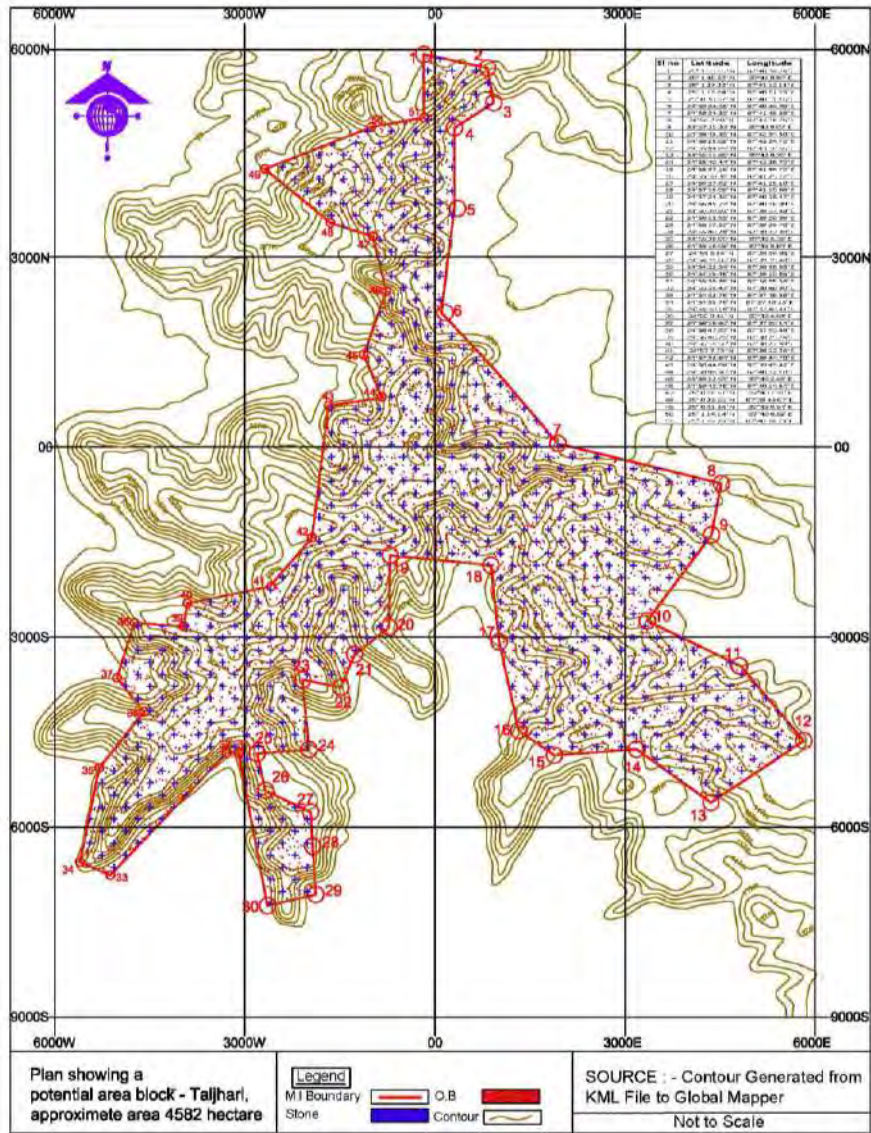
Sl no	Latitude	Longitude
26	24°55'18.09"N	87°39'9.84"E
27	24°55'6.54"N	87°39'34.05"E
28	24°54'39.00"N	87°39'35.49"E
29	24°54'22.54"N	87°39'36.63"E
30	24°54'16.48"N	87°39'10.85"E
31	24°55'38.26"N	87°38'55.38"E
32	24°55'38.42"N	87°38'48.90"E
33	24°54'32.78"N	87°37'46.58"E
34	24°54'39.78"N	87°37'30.13"E
35	24°55'30.14"N	87°37'40.41"E
36	24°56'0.41"N	87°38'4.44"E
37	24°56'18.60"N	87°37'50.14"E
38	24°56'47.87"N	87°37'59.46"E
39	24°56'46.29"N	87°38'25.74"E
40	24°56'58.58"N	87°38'27.89"E
41	24°57'7.73"N	87°39'12.24"E
42	24°57'33.84"N	87°39'34.70"E
43	24°58'44.64"N	87°39'43.47"E
44	24°58'48.90"N	87°40'12.18"E
45	24°59'12.05"N	87°40'2.43"E
46	24°59'45.78"N	87°40'14.54"E
47	25° 0'15.51"N	87°40'7.31"E
48	25° 0'22.65"N	87°39'44.67"E
49	25° 0'51.55"N	87°39'9.54"E
50	25° 1'14.14"N	87°40'6.52"E
51	25° 1'19.29"N	87°40'34.73"E

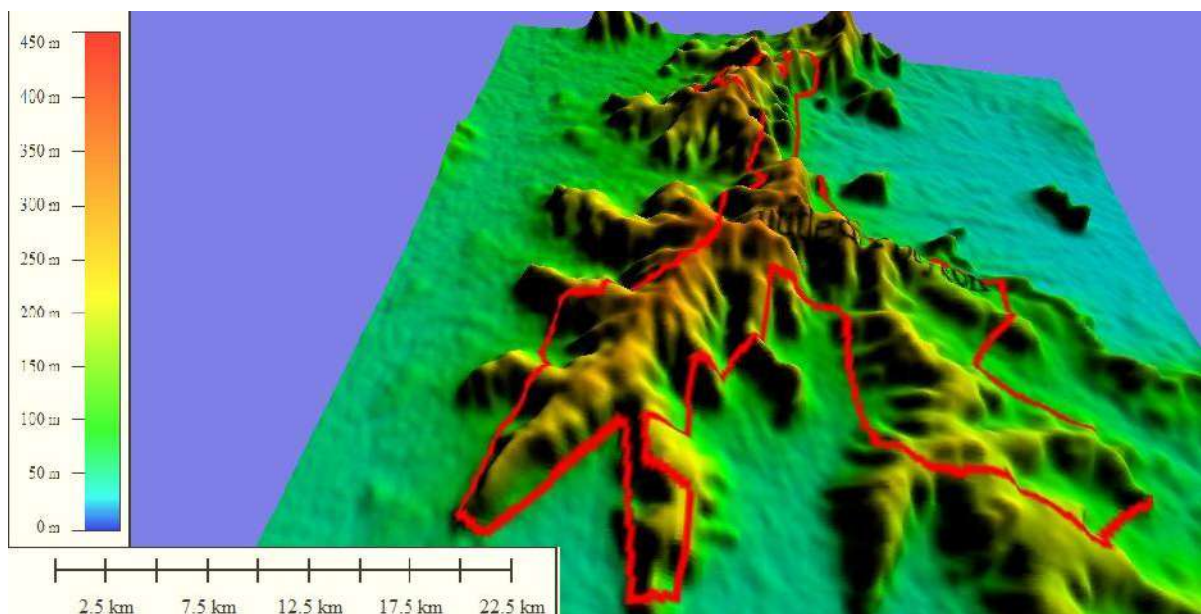


**List of villages falling under the potential area:**

Guti, Talmi, Pachare, Mansbera, Pathargama, Chota Bansjuri, Makwara, Kongabera, Chaudharia Bishunpur, Makbargi Khuta, Davgoda, Sajni Bedo, Chaugaria, Dhangona, Kuchla, Mahuatanr, Chamdi, Telotok, Amlonde, Manskepu, Baga (Pakaria), Basko, Lokani Mako, Lokani Bedo, Banapara, Chakopara, Bara Bathani, Malibita, Edri, Chua Bedo, Dawana, Chabitok, Bera Bans Pahar, Gambari, Kerwa, Rohra, Ursapahar, Garhduara, Partu Pahar, Haldi Pahar, Chengbita (Nagarbita), Salgachi, Galgachhi, Ketekbera.

# District Survey Report of Sahibganj, Jharkhand





**Image showing 3D Topographic view of the Potential Area**

**Volume of Potential Area - D, Block - Taljhari, Area 4582 Hectare**

Section Proved 317 TO 97	Cross sectional area of O.B in sqm	Total Cross Sectional area in sqm	Influence Length m	Total Volume of O.B in Cum situ (B)	Total Volume in Cum situ (A)	Total Volume of Stone Cum situ (A-B)	Recovery 60% in m cum situ	Million tons of Stone
3000N	4515	56621.00	3100	13996500	175525100.00	161528600.00	3914.51016	10569.18
0.00	15769	429919.00	3000	47307000	1289757000.00	1242450000.00		
3000S	27290	709984.00	7500	204675000	5324880000.00	5120205000.00		
<b>Total</b>				<b>265978500</b>	<b>6790162100.00</b>	<b>6524183600.00</b>		

Block - Borio

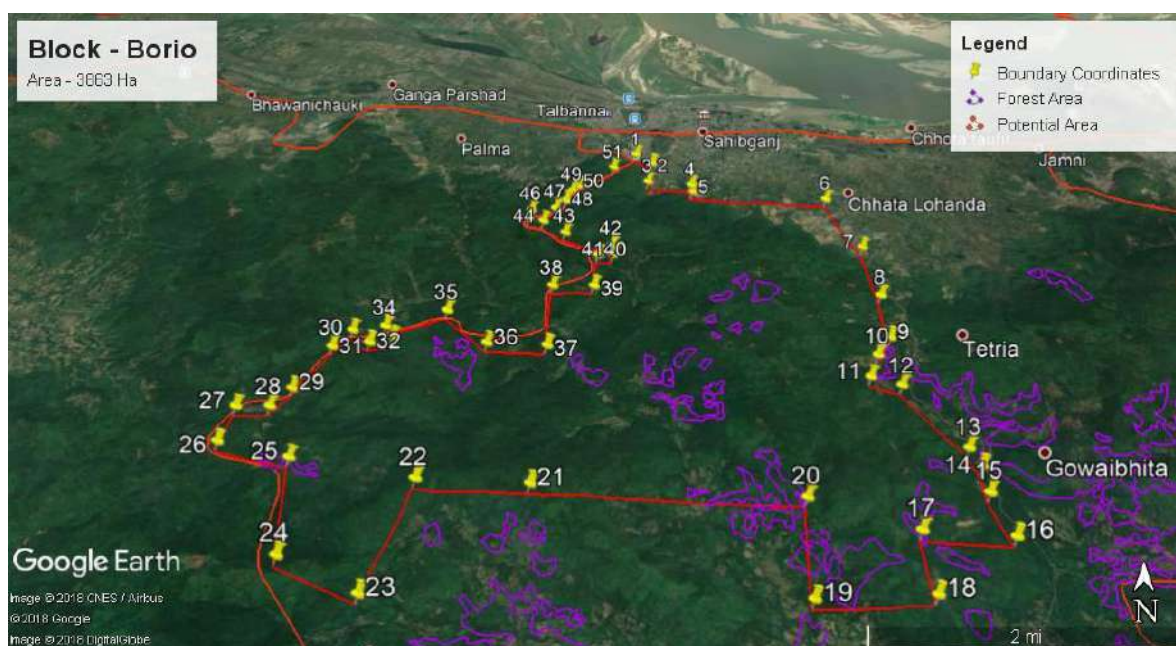


Image showing the Potential Area (Block – A, Mineral - Basalt) As Per KML Data

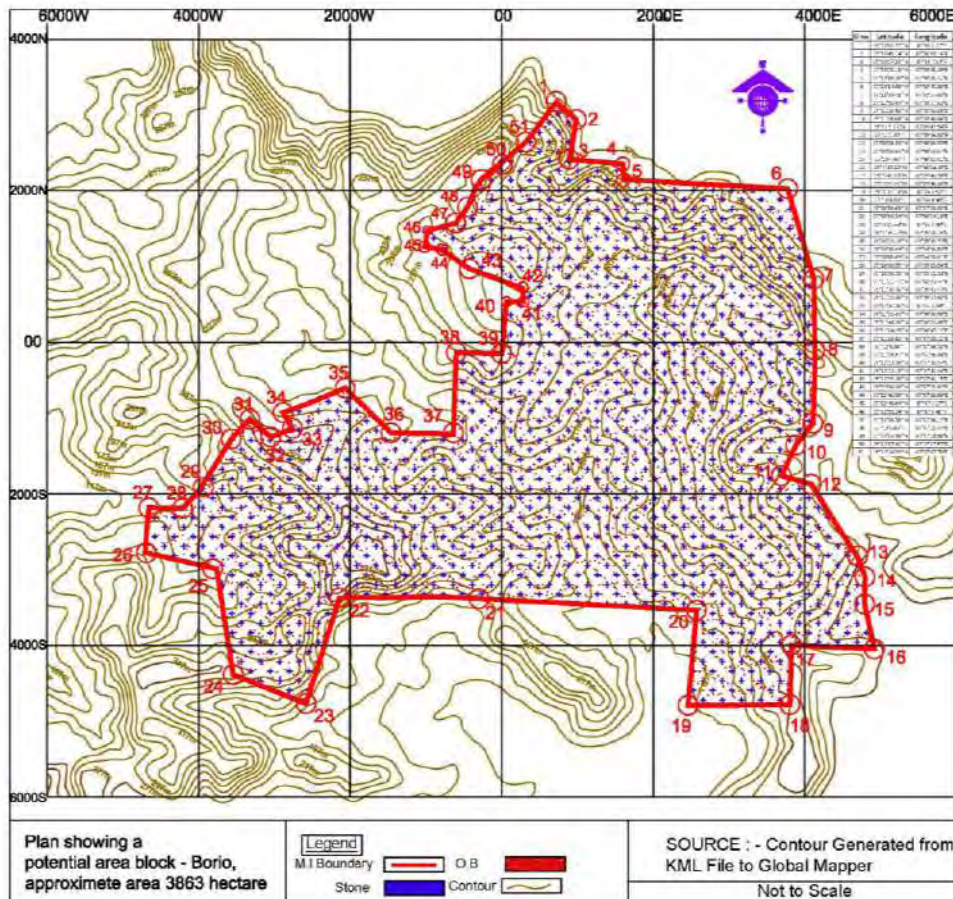
Sl no	Latitude	Longitude
1	25°13'52.77"N	87°38'1.27"E
2	25°13'45.14"N	87°38'10.16"E
3	25°13'27.23"N	87°38'7.14"E
4	25°13'25.11"N	87°38'31.29"E
5	25°13'18.20"N	87°38'31.51"E
6	25°13'14.00"N	87°39'45.30"E
7	25°12'33.41"N	87°39'57.03"E
8	25°11'55.03"N	87°39'57.63"E
9	25°11'28.56"N	87°39'56.65"E
10	25°11'18.68"N	87°39'48.86"E
11	25°11'5.18"N	87°39'42.54"E
12	25°11'1.34"N	87°39'56.02"E
13	25°10'28.31"N	87°40'16.93"E
14	25°10'19.65"N	87°40'20.07"E
15	25°10'7.46"N	87°40'19.91"E
16	25° 9'47.22"N	87°40'24.25"E
17	25° 9'48.96"N	87°39'46.99"E
18	25° 9'22.31"N	87°39'46.30"E
19	25° 9'22.09"N	87°39'0.53"E
20	25°10'4.54"N	87°39'4.40"E
21	25°10'10.63"N	87°37'10.92"E
22	25°10'10.24"N	87°36'24.18"E
23	25° 9'22.83"N	87°36'8.90"E
24	25° 9'35.67"N	87°35'36.15"E
25	25°10'23.19"N	87°35'28.73"E

Sl no	Latitude	Longitude
26	25°10'30.64"N	87°34'56.53"E
27	25°10'50.69"N	87°34'58.31"E
28	25°10'50.59"N	87°35'13.54"E
29	25°10'59.55"N	87°35'21.53"E
30	25°11'21.77"N	87°35'35.47"E
31	25°11'30.36"N	87°35'43.73"E
32	25°11'22.45"N	87°35'53.06"E
33	25°11'26.25"N	87°36'2.84"E
34	25°11'33.43"N	87°35'58.55"E
35	25°11'44.38"N	87°36'26.40"E
36	25°11'24.25"N	87°36'47.12"E
37	25°11'23.82"N	87°37'15.12"E
38	25°12'0.36"N	87°37'16.52"E
39	25°11'59.97"N	87°37'36.88"E
40	25°12'23.20"N	87°37'38.97"E
41	25°12'23.19"N	87°37'46.64"E
42	25°12'29.30"N	87°37'46.15"E
43	25°12'38.33"N	87°37'21.82"E
44	25°12'46.59"N	87°37'10.09"E
45	25°12'48.04"N	87°37'2.27"E
46	25°12'55.24"N	87°37'3.41"E
47	25°12'58.58"N	87°37'16.17"E
48	25°13'5.65"N	87°37'21.47"E
49	25°13'13.98"N	87°37'24.88"E
50	25°13'17.96"N	87°37'27.57"E
51	25°13'34.99"N	87°37'47.70"E

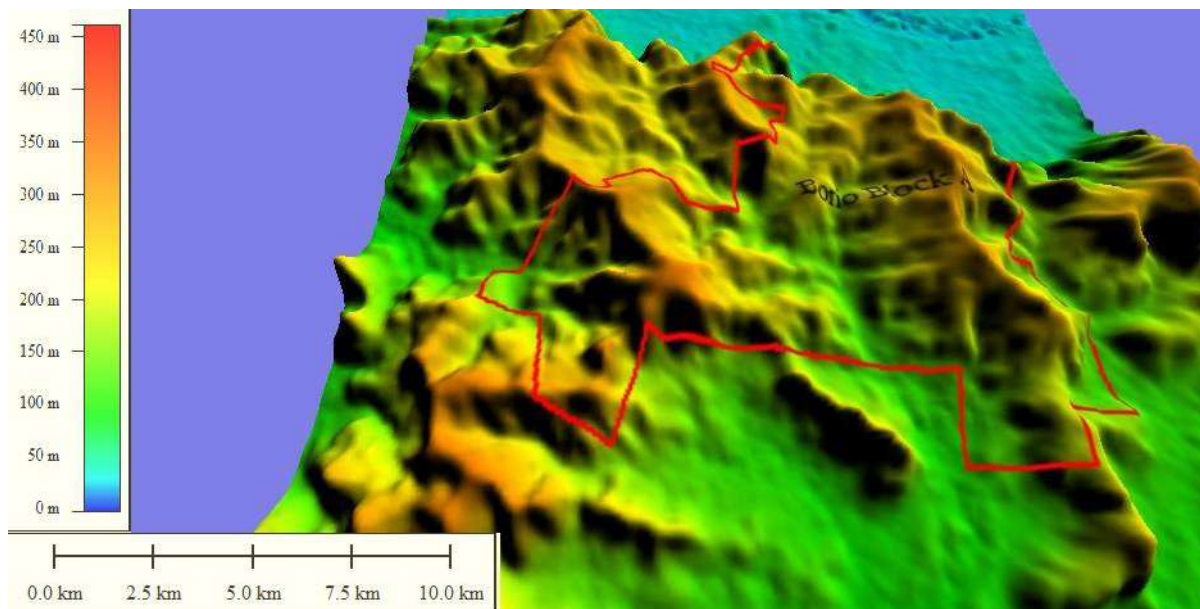
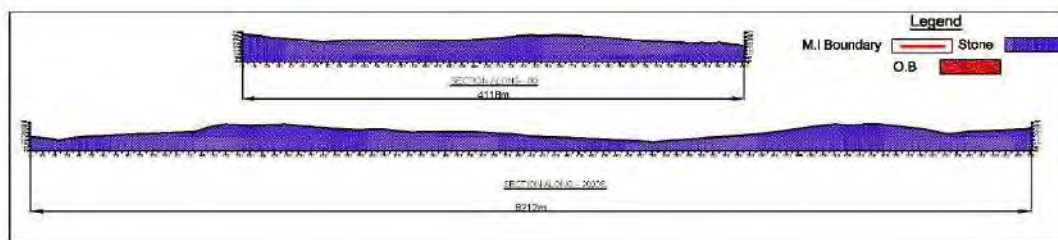


**List of villages falling under the potential area:**

Dorme, Kanri, Ladonri, Rpldih, Adore Bedo, Adore Mago, Gaude, Dule, Dapanmi, Jokani, Dhuliani, Chiharpari, Nargang, Khairsol, Gowaibhita, Tetria, Damdama, Mir, Ghogi, Lohanda Bedo, Lohanda Mako, Durgatola, Belra, Bijria, Bara Panchgarh Pahar, Panchgarh, Chapa, Sidhari, Daugoda, Gogi Bedo, Bagduma, Lachmi, Podiaha, Phulpahari, Gaude, Naugachi, Roldih, Banskola.



## District Survey Report of Sahibganj, Jharkhand



**Image showing 3D Topographic view of the Potential Area**

### Volume of Potential Area - A, Block - Broio, Area 3863 Hectare

Section Proved 237 TO 57	Cross sectional area of O.B in sqm	Total Cross Sectional area in sqm	Influence Length m	Total Volume of O.B in Cum situ (B)	Total Volume in Cum situ (A)	Total Volume of Stone Cum situ (A-B)	Recovery 60% in m cum situ	Million tons of Stone
0.00	16519	744491.00	2400	39645600	1786778400.00	1747132800.00	4163.3175	11240.96
2000S	33005	1240384.00	4300	141921500	5333651200.00	5191729700.00		
<b>Total</b>				<b>181567100</b>	<b>7120429600.00</b>	<b>6938862500.00</b>		

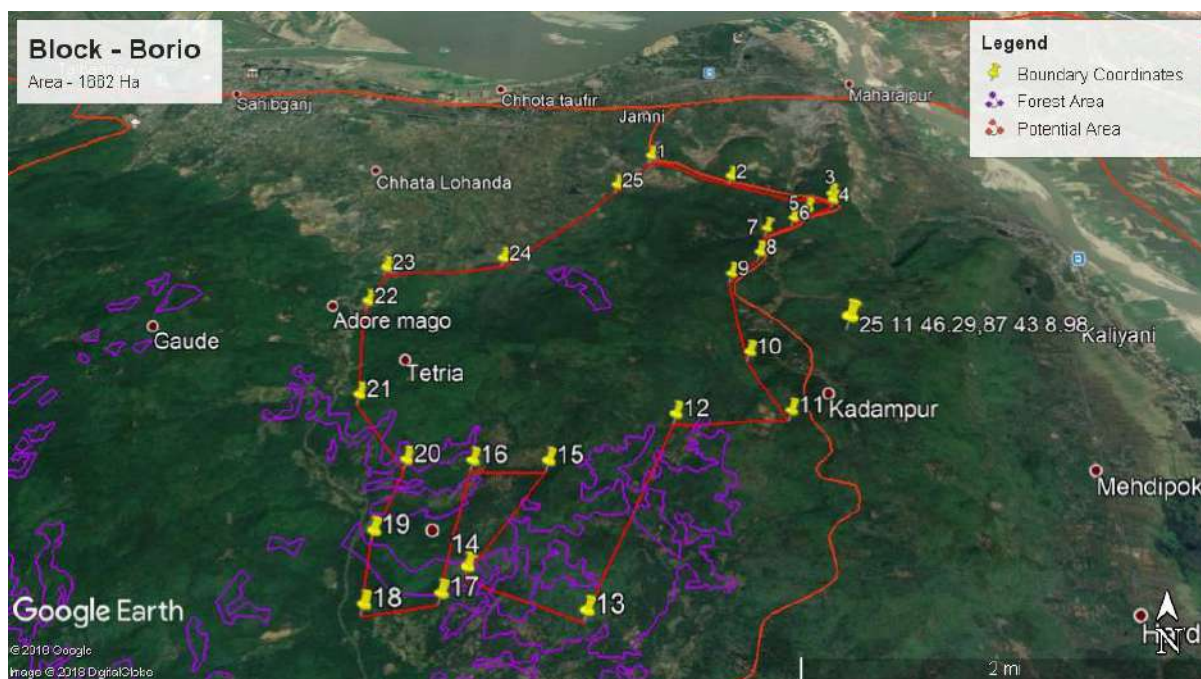


Image showing the Potential Area (Block – B, Mineral - Basalt) As Per KML Data

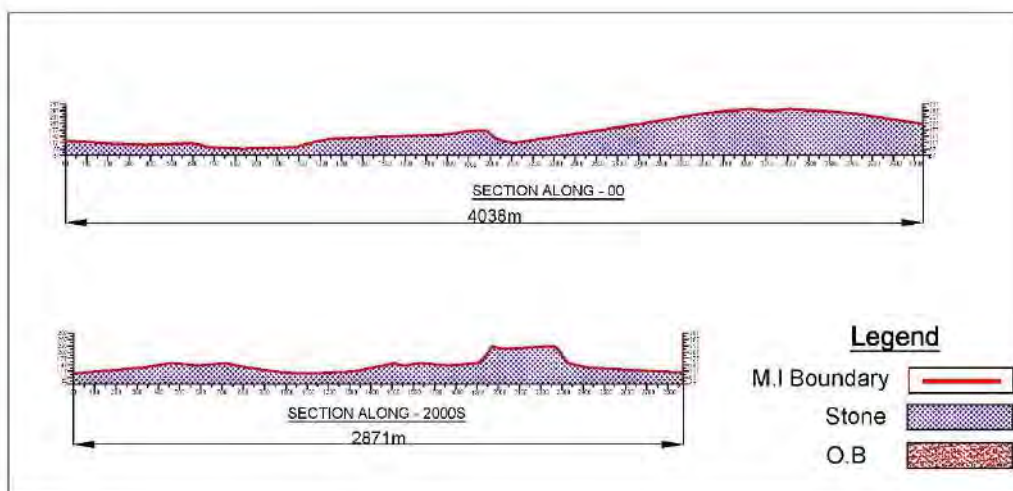
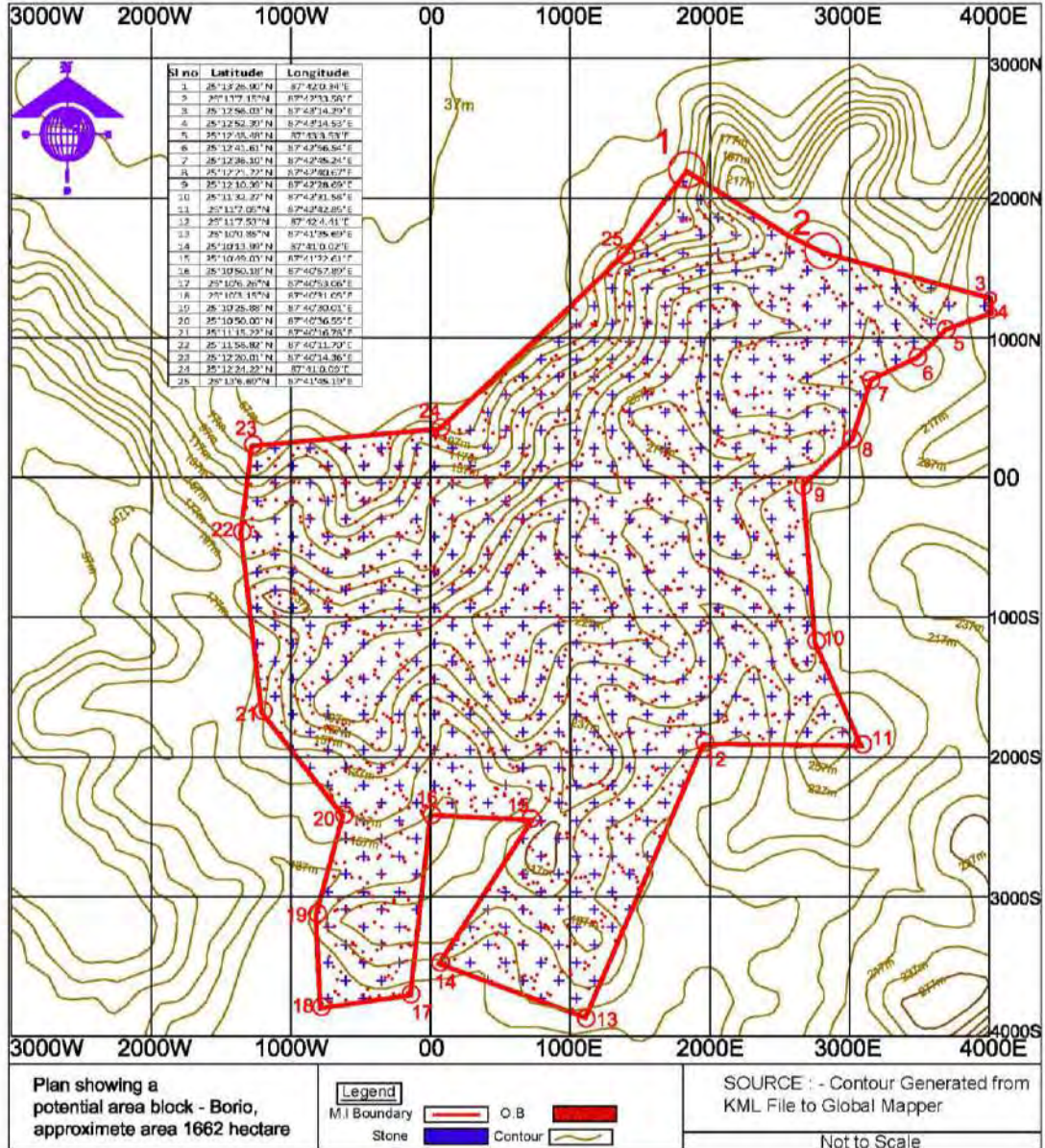
Sl no	Latitude	Longitude
1	25°13'26.90"N	87°42'0.34"E
2	25°13'7.15"N	87°42'33.58"E
3	25°12'56.03"N	87°43'14.29"E
4	25°12'52.39"N	87°43'14.53"E
5	25°12'48.48"N	87°43'3.53"E
6	25°12'41.61"N	87°42'56.54"E
7	25°12'36.10"N	87°42'45.24"E
8	25°12'21.72"N	87°42'40.67"E
9	25°12'10.39"N	87°42'28.69"E
10	25°11'32.27"N	87°42'31.58"E
11	25°11'7.05"N	87°42'42.85"E
12	25°11'7.53"N	87°42'4.41"E
13	25°10'0.85"N	87°41'35.69"E

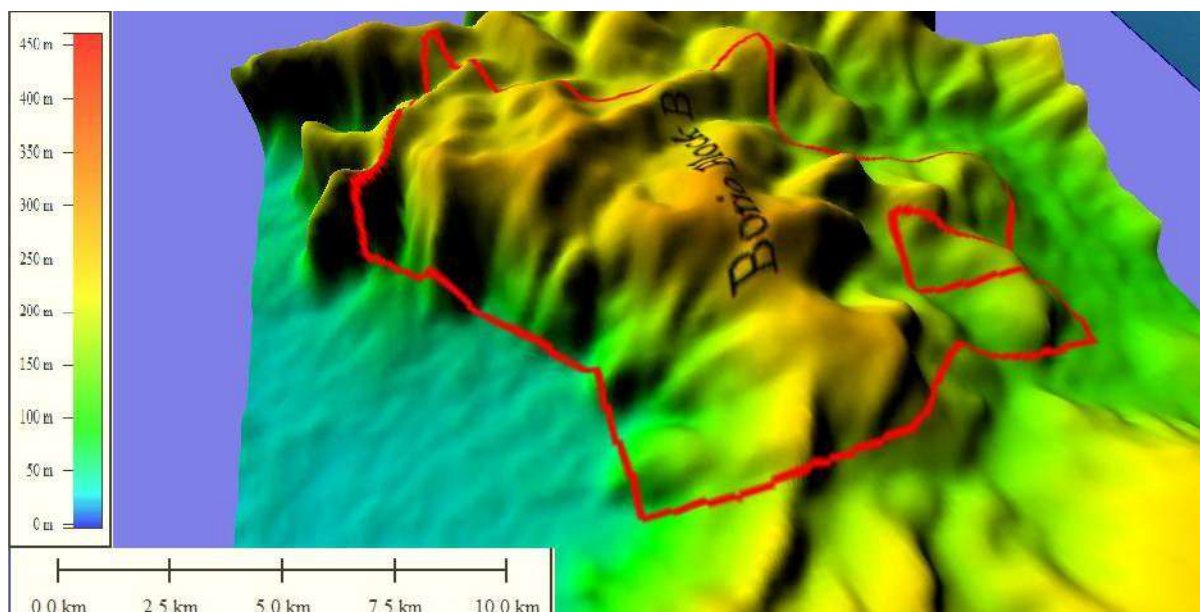
Sl no	Latitude	Longitude
14	25°10'13.99"N	87°41'0.02"E
15	25°10'49.03"N	87°41'22.61"E
16	25°10'50.18"N	87°40'57.89"E
17	25°10'6.26"N	87°40'53.06"E
18	25°10'3.15"N	87°40'31.05"E
19	25°10'25.88"N	87°40'30.01"E
20	25°10'50.00"N	87°40'36.55"E
21	25°11'15.22"N	87°40'16.78"E
22	25°11'58.82"N	87°40'11.70"E
23	25°12'20.01"N	87°40'14.36"E
24	25°12'24.22"N	87°41'0.09"E
25	25°13'6.69"N	87°41'45.19"E



**List of villages falling under the potential area:**

Nirapara, Baraparte, Chongro, Diari, Phuljhari, Jhingani, Mira, Barapagaro, Saharbera, Pangdo, Adremago, Tetria, Parte Mago, Asanbani, Sarsa, Aurbata, Sihli, Gowaibhita, Durgatola.





**Image showing 3D Topographic view of the Potential Area**

Volume of Potential Area - B, Block - Broio, Area 1662 Hectare								
Section Proved 237 TO 57	Cross sectional area of O.B in sqm	Total Cross Sectional area in sqm	Influence Length m	Total Volume of O.B in Cum situ (B)	Total Volume in Cum situ (A)	Total Volume of Stone Cum situ (A-B)	Recovery 60% in m cum situ	Million tons of Stone
0.00	16326	447808	2200	35917200	985177600.00	949260400.00	1073.2704	2897.83
2000S	11863	245064.00	3600	42706800	882230400.00	839523600.00		
<b>Total</b>				<b>78624000</b>	<b>1867408000.00</b>	<b>1788784000.00</b>		

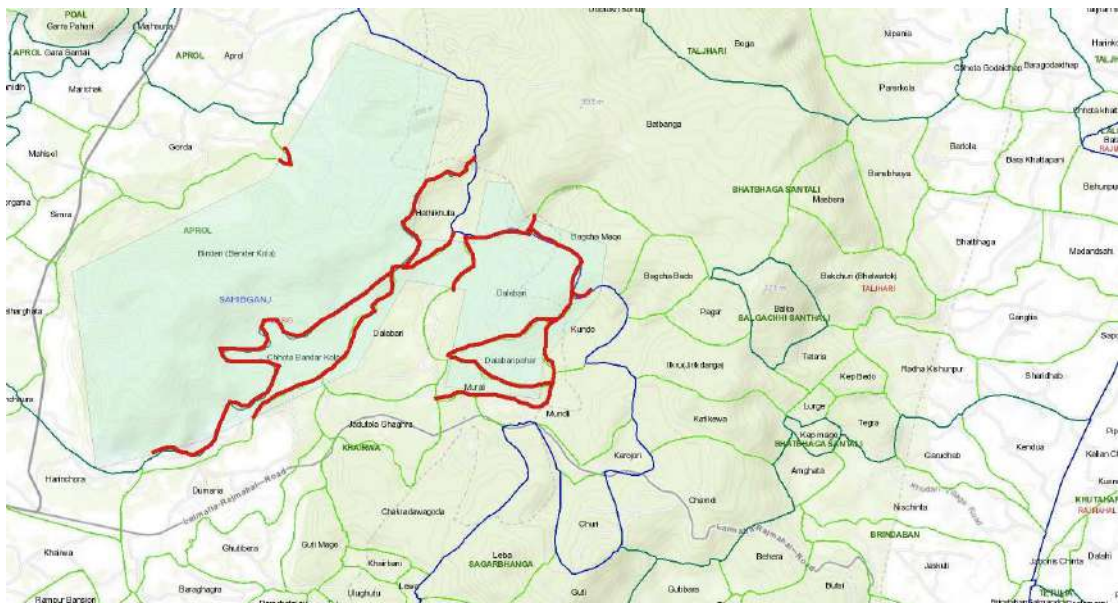
## District Survey Report of Sahibganj, Jharkhand



**Image showing the Potential Area (Block – C, Mineral - Basalt) As Per KML Data**

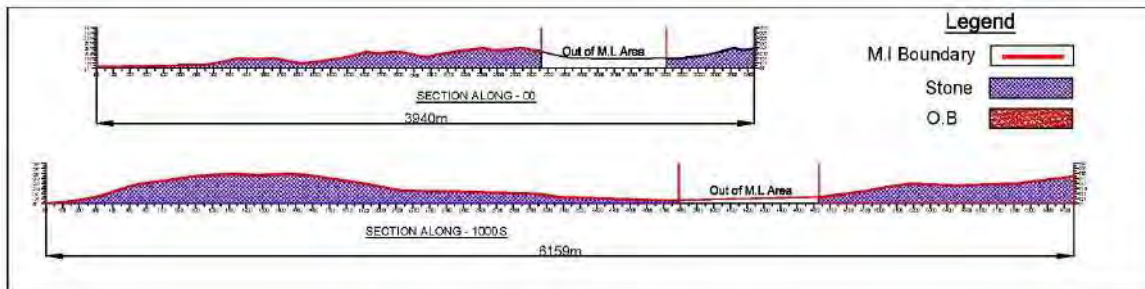
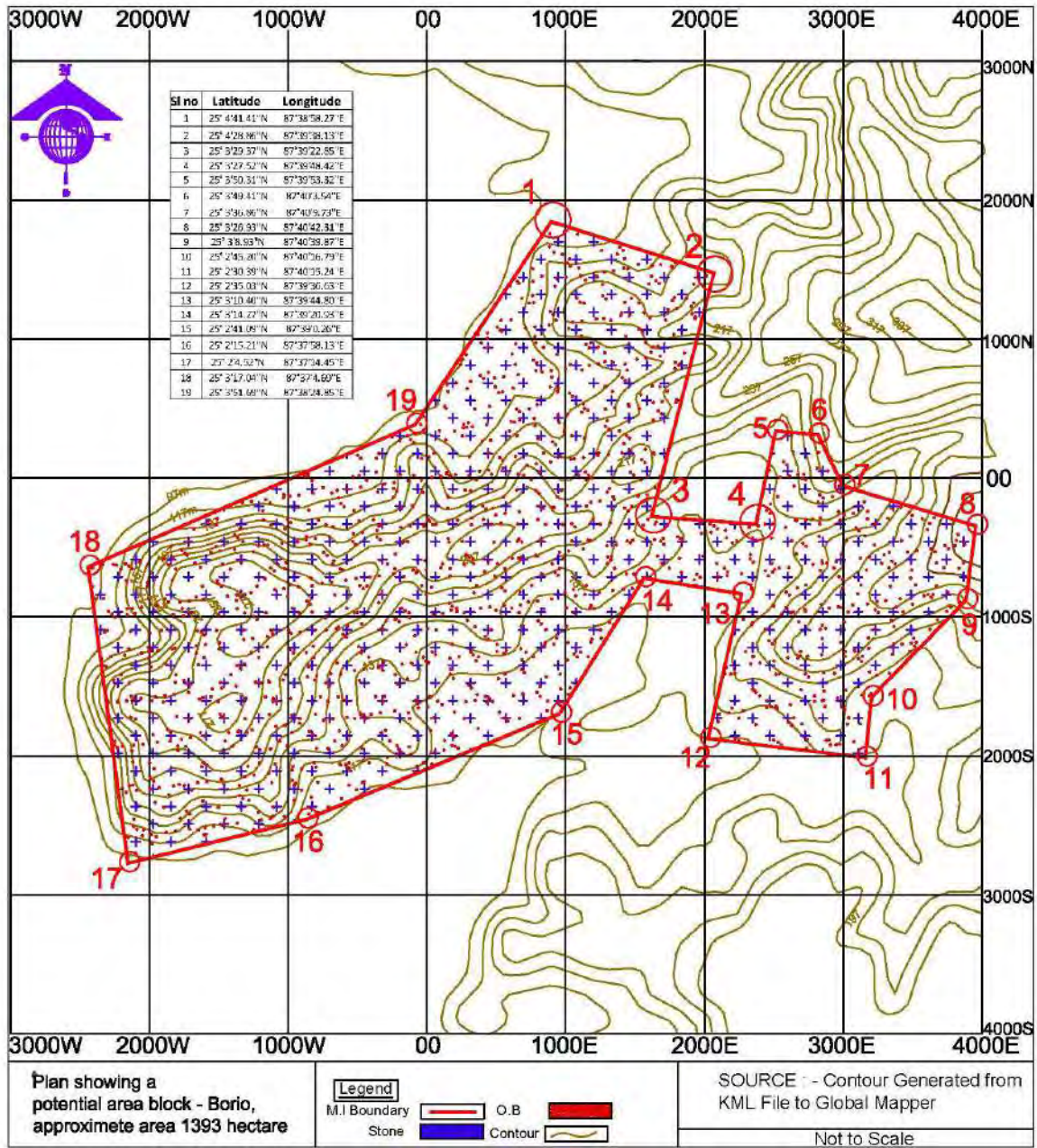
Sl no	Latitude	Longitude
1	25° 4'41.41"N	87°38'58.27"E
2	25° 4'28.86"N	87°39'38.13"E
3	25° 3'29.37"N	87°39'22.85"E
4	25° 3'27.52"N	87°39'48.42"E
5	25° 3'50.31"N	87°39'53.32"E
6	25° 3'49.41"N	87°40'3.54"E
7	25° 3'36.86"N	87°40'9.73"E
8	25° 3'26.93"N	87°40'42.31"E
9	25° 3'8.93"N	87°40'39.87"E
10	25° 2'45.20"N	87°40'16.79"E

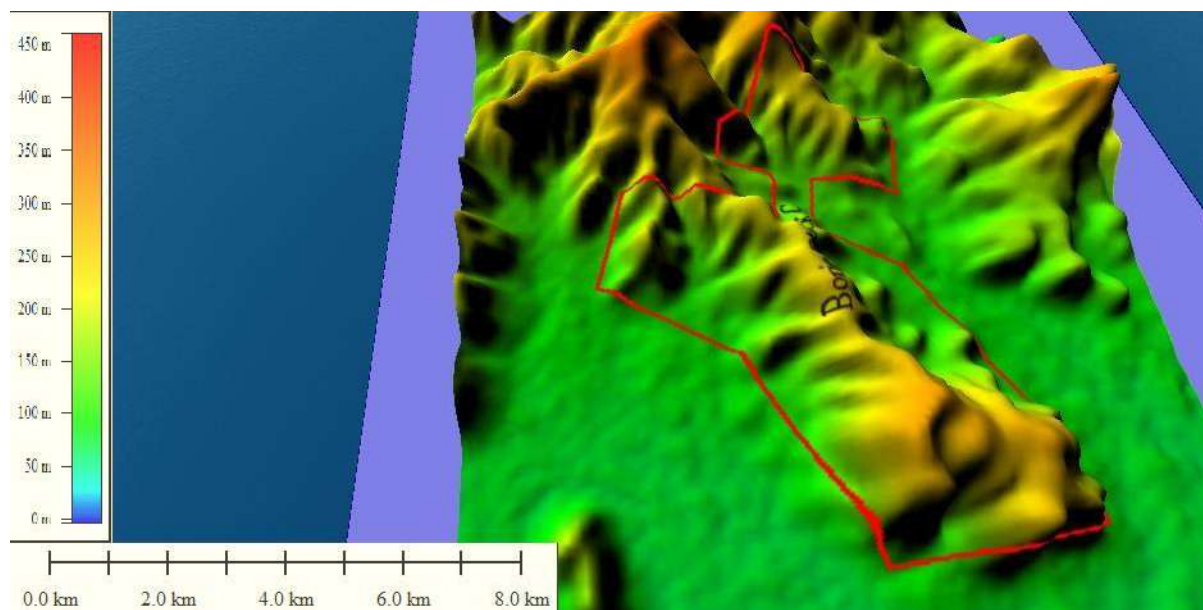
Sl no	Latitude	Longitude
11	25° 2'30.39"N	87°40'15.24"E
12	25° 2'35.03"N	87°39'36.63"E
13	25° 3'10.40"N	87°39'44.80"E
14	25° 3'14.27"N	87°39'20.93"E
15	25° 2'41.09"N	87°39'0.26"E
16	25° 2'15.21"N	87°37'58.13"E
17	25° 2'4.52"N	87°37'14.45"E
18	25° 3'17.04"N	87°37'4.69"E
19	25° 3'51.69"N	87°38'24.85"E



**List of villages falling under the potential area:**

Aprol, Binderi, Hathikhuta, Bagcha Maqo, Dalebari, Dalabaripahar, Kundo, Hatikhuta, Chhota bandar Kola, Simra.





**Image showing 3D Topographic view of the Potential Area**

**Volume of Potential Area - C, Block - Broio, Area 1393 Hectare**

Section Proved 277 TO 97	Cross sectional area of O.B in sqm	Total Cross Sectional area in sqm	Influence Length m	Total Volume of O.B in Cum situ (B)	Total Volume in Cum situ (A)	Total Volume of Stone Cum situ (A-B)	Recovery 60% in m cum situ	Million tons of Stone
0.00	12891	196380	1600	20625600	314208000.00	293582400.00	853.38576	2304.14
1000S	21361	491664.00	2400	51266400	1179993600.00	1128727200.00		
<b>Total</b>				<b>71892000</b>	<b>1494201600.00</b>	<b>1422309600.00</b>		

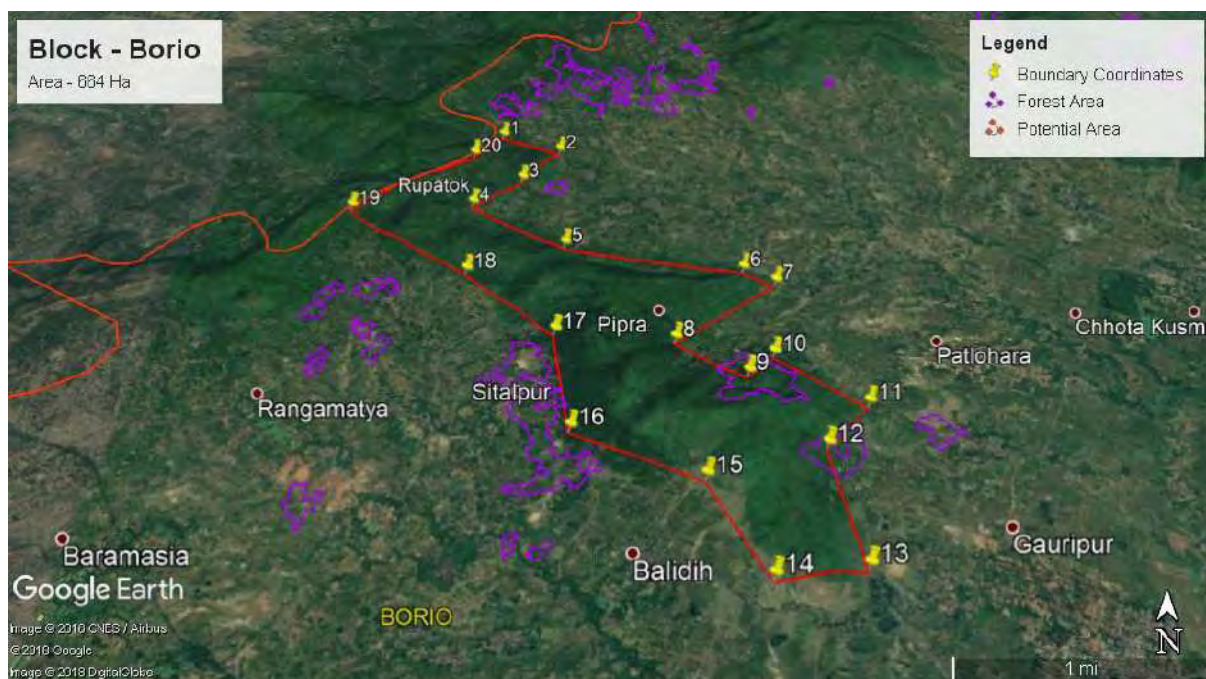


Image showing the Potential Area (Block – D, Mineral - Basalt) As Per KML Data

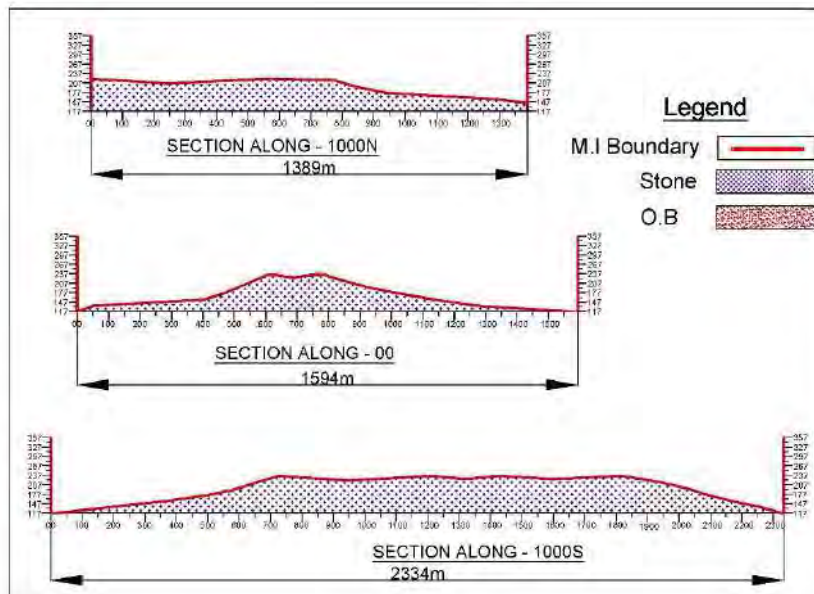
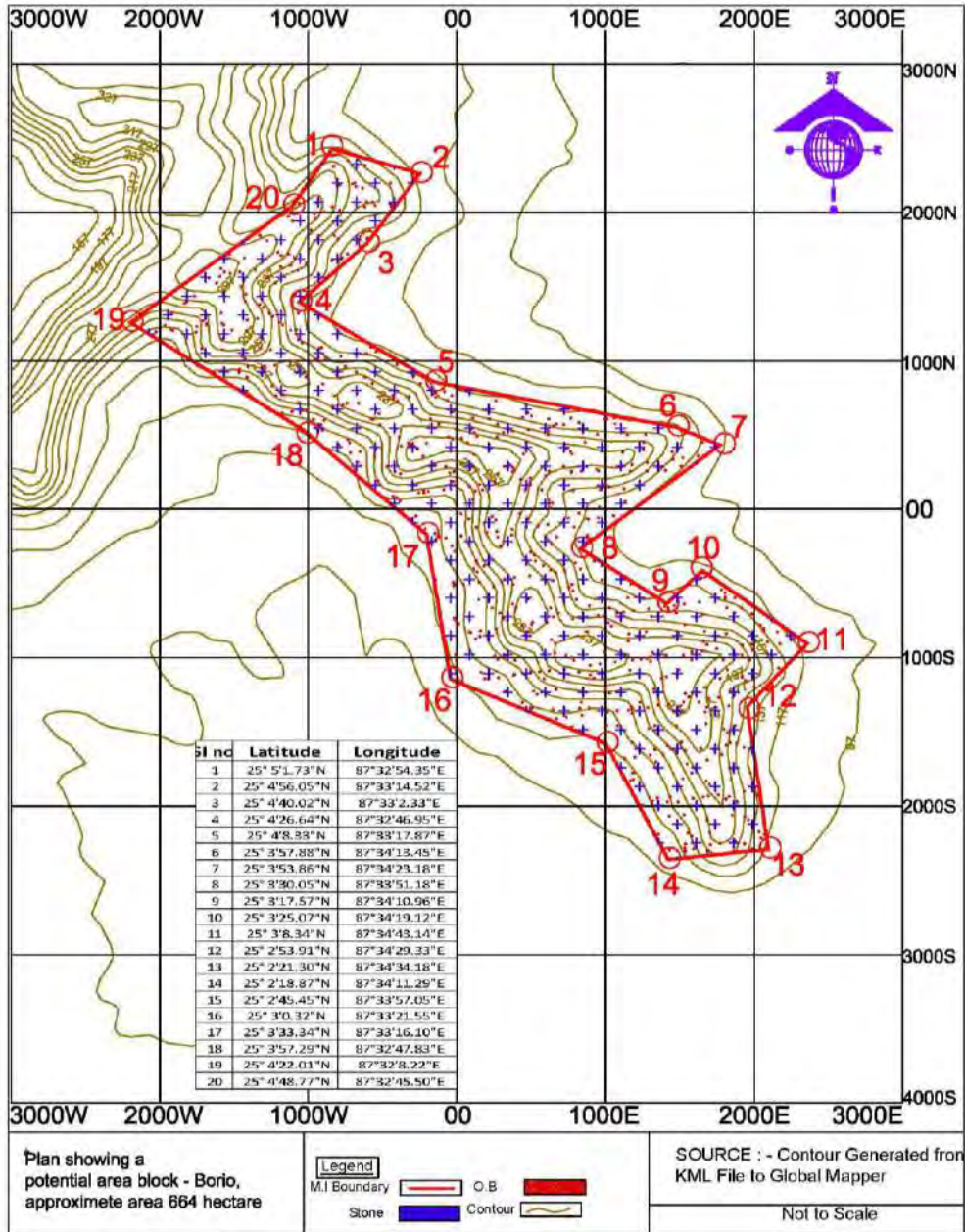
Sl no	Latitude	Longitude
1	25° 5'1.73"N	87°32'54.35"E
2	25° 4'56.05"N	87°33'14.52"E
3	25° 4'40.02"N	87°33'2.33"E
4	25° 4'26.64"N	87°32'46.95"E
5	25° 4'8.33"N	87°33'17.87"E
6	25° 3'57.88"N	87°34'13.45"E
7	25° 3'53.86"N	87°34'23.18"E
8	25° 3'30.05"N	87°33'51.18"E
9	25° 3'17.57"N	87°34'10.96"E
10	25° 3'25.07"N	87°34'19.12"E

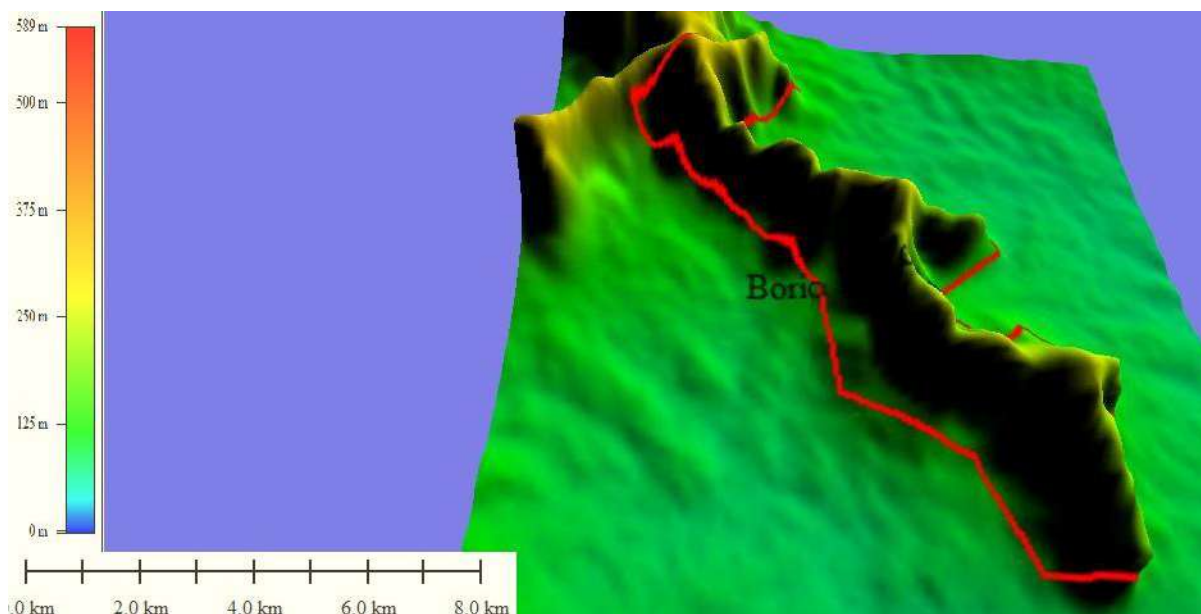
Sl no	Latitude	Longitude
11	25° 3'8.34"N	87°34'43.14"E
12	25° 2'53.91"N	87°34'29.33"E
13	25° 2'21.30"N	87°34'34.18"E
14	25° 2'18.87"N	87°34'11.29"E
15	25° 2'45.45"N	87°33'57.05"E
16	25° 3'0.32"N	87°33'21.55"E
17	25° 3'33.34"N	87°33'16.10"E
18	25° 3'57.29"N	87°32'47.83"E
19	25° 4'22.01"N	87°32'8.22"E
20	25° 4'48.77"N	87°32'45.50"E



**List of villages falling under the potential area:**

Karambi, Rupatok, Mahwari Bedo, Daugoda, Gidakole, Pipra, Pertoki, Chitrtoke, Danware, Demchake, Rangmatia, Sitalpur, Bishunpur.





**Image showing 3D Topographic view of the Potential Area**

**Volume of Potential Area - D, Block - Broio, Area 664 Hectare**

Section Proved 237 TO 117	Cross sectional area of O.B in sqm	Total Cross Sectional area in sqm	Influence Length m	Total Volume of O.B in Cum situ (B)	Total Volume in Cum situ (A)	Total Volume of Stone Cum situ (A-B)	Recovery 60% in m cum situ	Million tons of Stone
1000N	5584	104609	1700	9492800	177835300.00	168342500.00	457.78578	1236.02
0.00	6354	74567	1900	12072600	141677300.00	129604700.00		
1000S	9345	181578	2700	25231500	490260600.00	465029100.00		
<b>Total</b>				<b>34724300</b>	<b>668095900.00</b>	<b>762976300.00</b>		

Block - Mandro

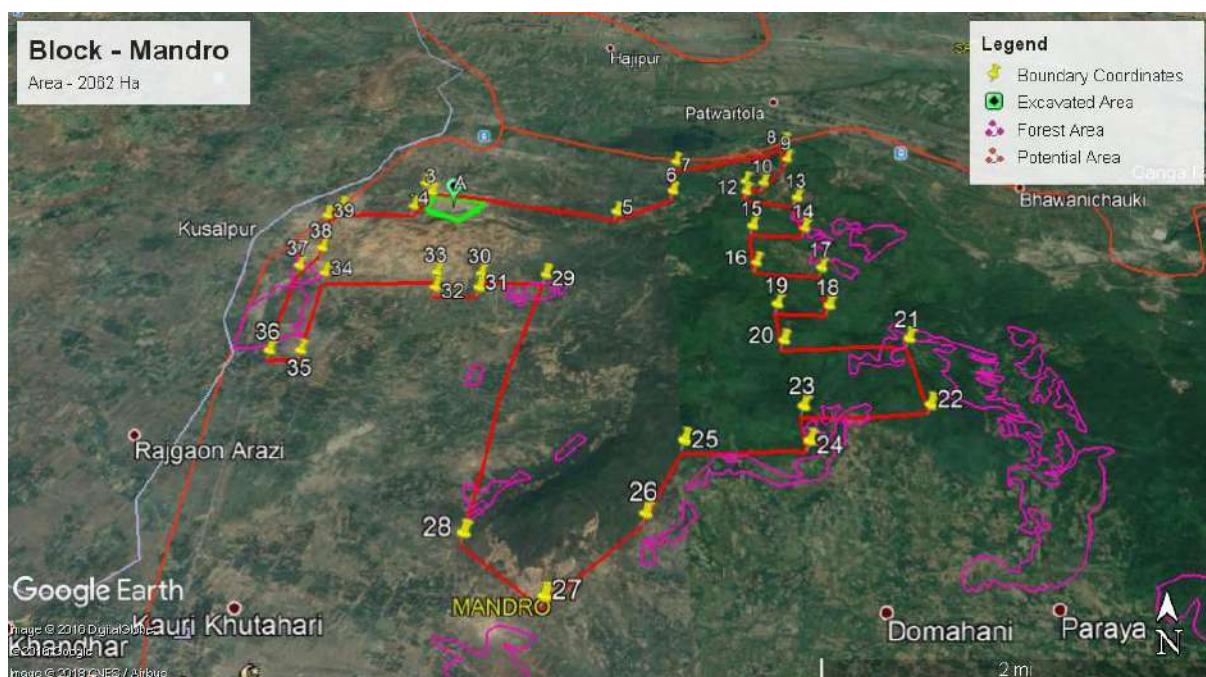
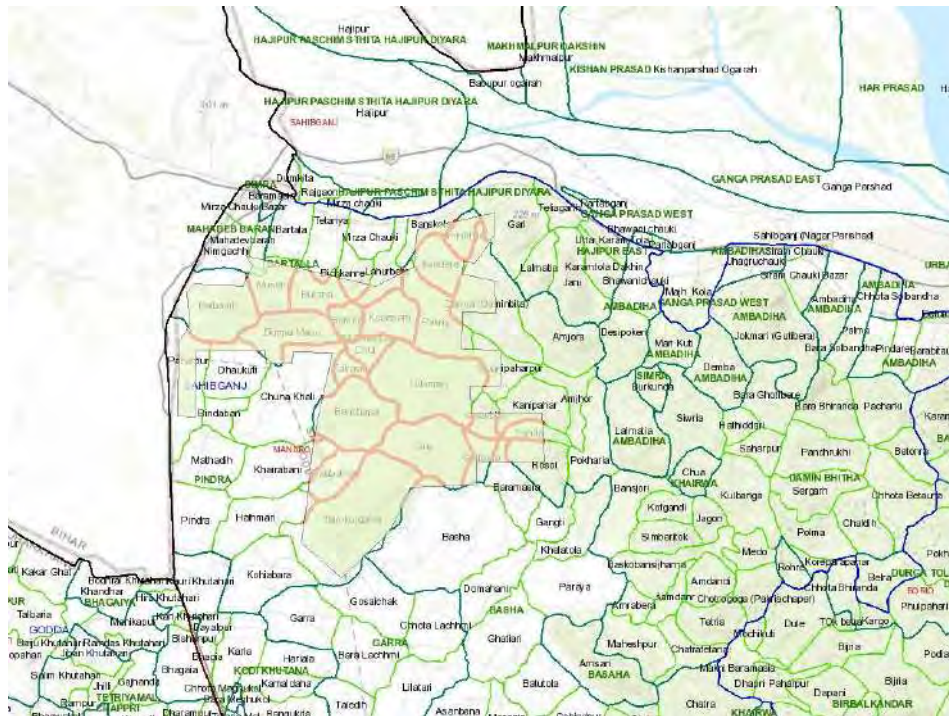


Image showing the Potential Area (Block – A, Mineral – Basalt & Granite Gneiss) As Per KML Data

Sl no	Latitude	Longitude
1	25°14'40.14"N	87°28'53.34"E
2	25°14'38.37"N	87°29'25.79"E
3	25°14'50.45"N	87°29'31.95"E
4	25°14'56.57"N	87°29'27.99"E
5	25°14'38.24"N	87°30'55.26"E
6	25°14'50.36"N	87°31'20.61"E
7	25°15'12.34"N	87°31'23.09"E
8	25°15'23.04"N	87°32'14.93"E
9	25°15'9.19"N	87°32'14.22"E
10	25°14'52.52"N	87°32'1.36"E
11	25°14'53.94"N	87°31'53.44"E
12	25°14'45.45"N	87°31'52.90"E
13	25°14'41.60"N	87°32'14.91"E
14	25°14'22.16"N	87°32'15.45"E
15	25°14'22.52"N	87°31'53.18"E
16	25°14'0.20"N	87°31'52.24"E
17	25°13'59.67"N	87°32'19.31"E
18	25°13'38.23"N	87°32'18.67"E
19	25°13'37.90"N	87°31'58.20"E
20	25°13'21.02"N	87°31'58.61"E

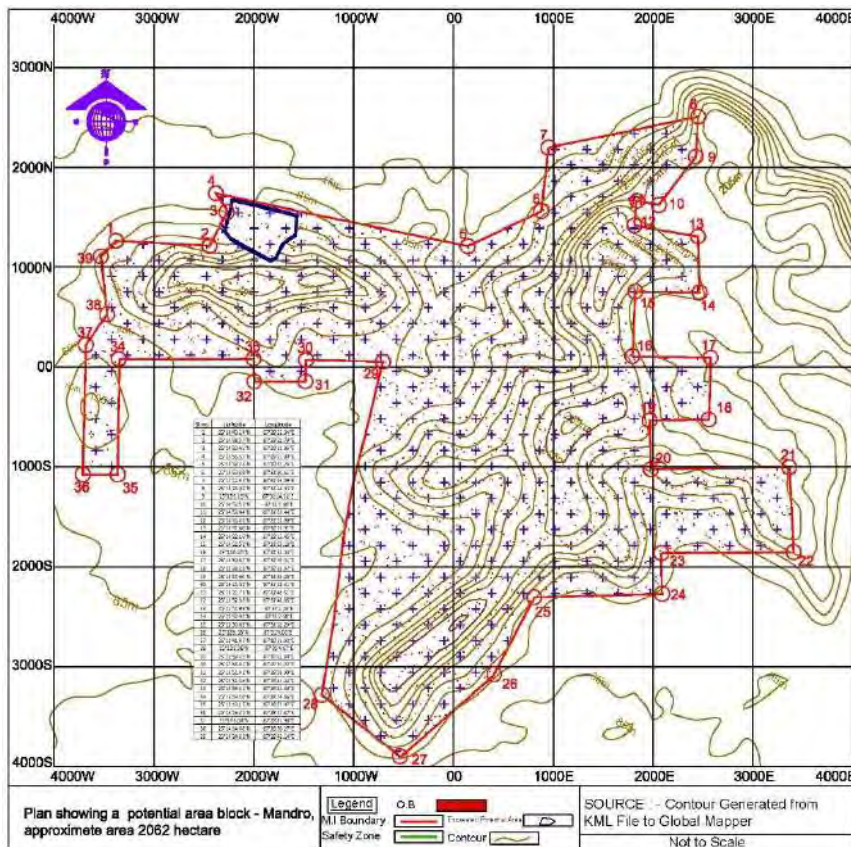
Sl no	Latitude	Longitude
21	25°13'21.73"N	87°32'46.51"E
22	25°12'52.35"N	87°32'48.06"E
23	25°12'51.99"N	87°32'2.23"E
24	25°12'37.91"N	87°32'2.50"E
25	25°12'36.69"N	87°31'18.29"E
26	25°12'9.53"N	87°31'4.00"E
27	25°11'41.47"N	87°30'31.93"E
28	25°12'2.96"N	87°30'4.67"E
29	25°13'58.25"N	87°30'25.80"E
30	25°13'58.81"N	87°29'59.22"E
31	25°13'51.41"N	87°29'58.99"E
32	25°13'51.36"N	87°29'41.24"E
33	25°13'59.31"N	87°29'41.00"E
34	25°13'59.20"N	87°28'54.66"E
35	25°13'19.17"N	87°28'53.97"E
36	25°13'19.21"N	87°28'41.87"E
37	25°14'4.04"N	87°28'42.98"E
38	25°14'14.68"N	87°28'50.27"E
39	25°14'34.61"N	87°28'48.14"E

Central Coordinate of Excavated Area			
Sl no	Latitude	Longitude	Area (Ha)
A	25°14'44.19"N	87°29'43.65"E	30

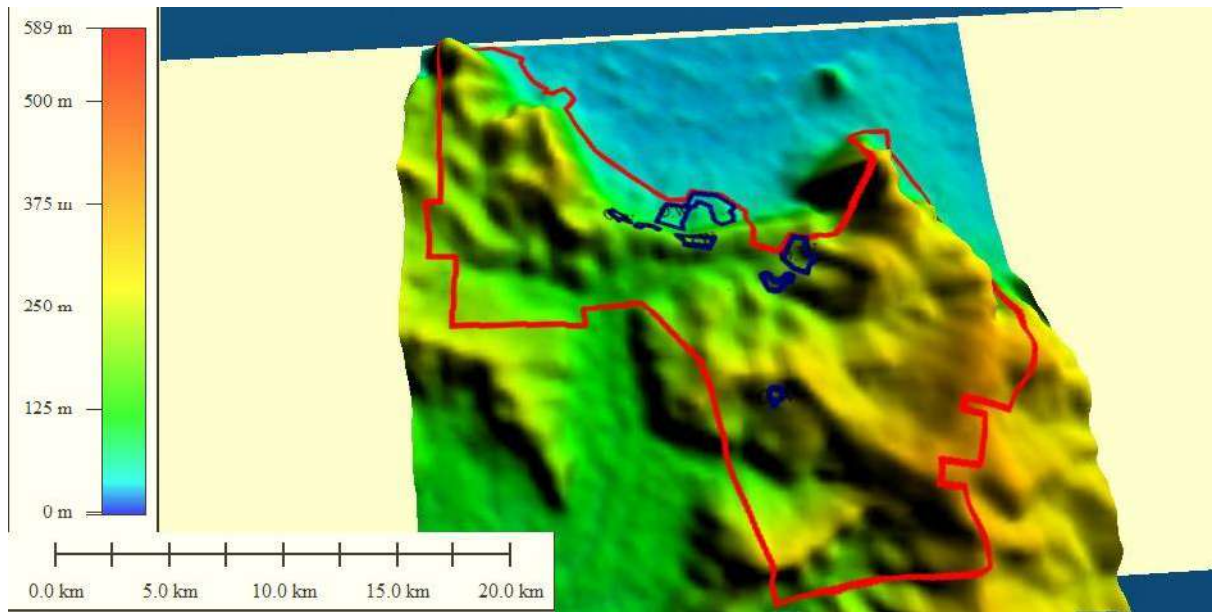
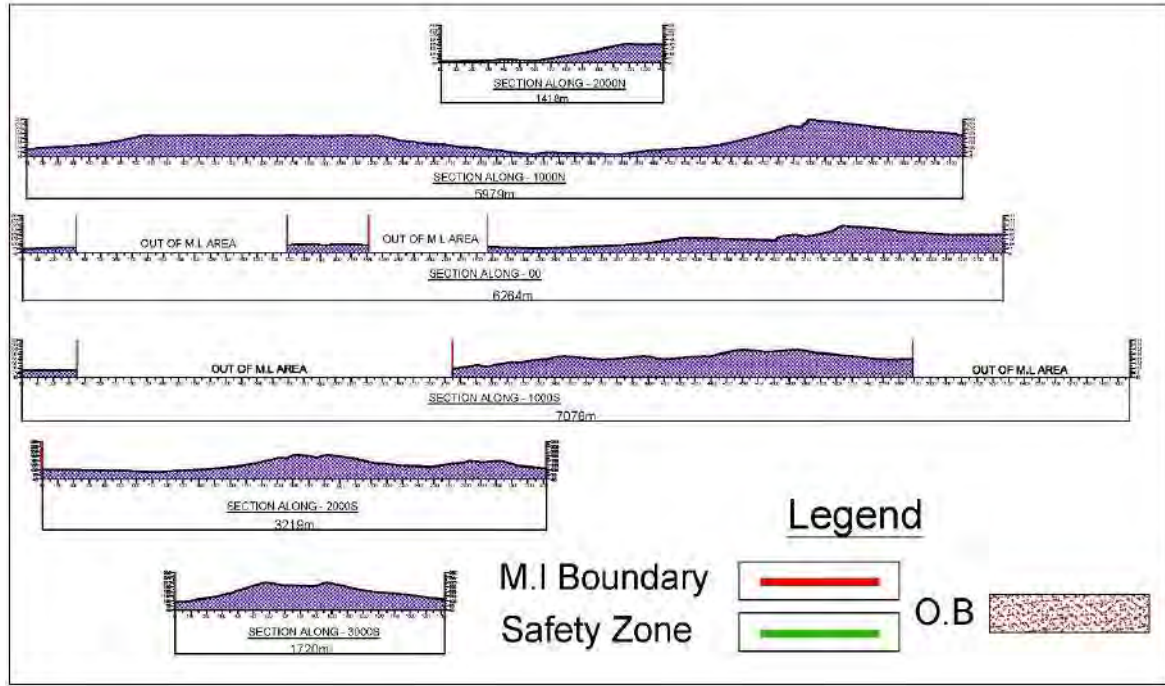


**List of villages falling under the potential area:**

Sundere, Daminbhita, Damra (Daminbhita), Pakria, Kodepara, Sugnipaharpur, Bomria, Butaha, Mundli, Bumra Mago, Balbadri, Kairasol, Chui, Banskola, Gari, Banchapa, Gutu, Talmi, Baubathan, Sonda, Kanipahar, Hathmari, Khairabani, Chuna Khali, Dhaukuti, Paharpur, Rosoi, Tetaria, Bichkanre, Bartala, Nimgachhi.



## District Survey Report of Sahibganj, Jharkhand



**Image showing 3D Topographic view of the Potential Area**

**Volume of Potential Area - A, Block - Mandro, Area 2000 Hectare**

Section Proved 245 TO 45	Cross sectional area of O.B in sqm	Total Cross Sectional area in sqm	Influence Length m	Total Volume of O.B in Cum (B)	Total Volume in Cum (A)	Total Volume of Stone Cum (A-B)	Recovery 60% in m cum	Million tons of
2000N	5726	74461.00	850	4867100	63291850.00	58424750.00	1111.852	3002.00
1000N	24180	631296.00	1000	24180000	631296000.00	607116000.00		
0.00	16758	342980.00	1000	16758000	342980000.00	326222000.00		
1000S	13275	386615.00	1000	13275000	386615000.00	373340000.00		
2000S	13020	284142.00	1000	13020000	284142000.00	271122000.00		
3000S	7007	204154.00	1100	7707700	224569400.00	216861700.00		
<b>Total</b>				<b>79807800</b>	<b>1932894250.00</b>	<b>1853086450.00</b>		

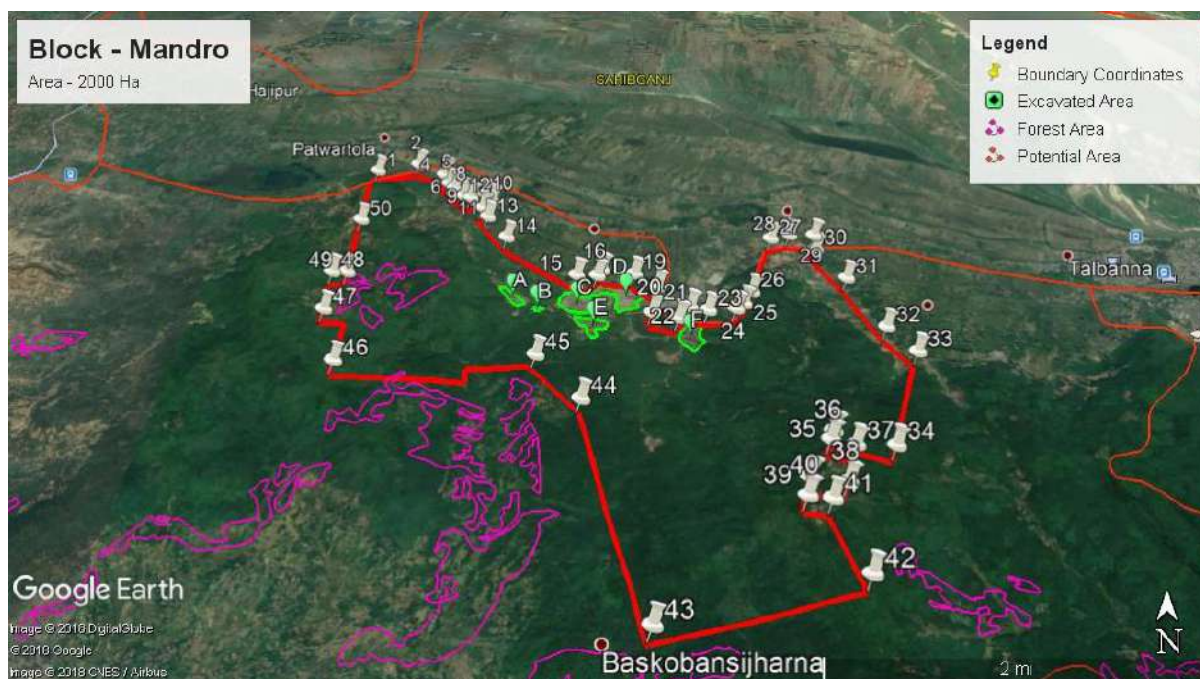


Image showing the Potential Area (Block – B, Mineral - Basalt) As Per KML Data

Sl no	Latitude	Longitude
1	25°15'25.53"N	87°32'18.04"E
2	25°15'35.95"N	87°32'34.60"E
3	25°15'30.84"N	87°32'48.28"E
4	25°15'28.64"N	87°32'47.59"E
5	25°15'22.32"N	87°32'50.76"E
6	25°15'19.01"N	87°32'53.62"E
7	25°15'14.72"N	87°32'59.12"E
8	25°15'13.11"N	87°32'58.62"E
9	25°15'12.12"N	87°33'1.92"E
10	25°15'15.17"N	87°33'7.47"E
11	25°15'10.98"N	87°33'11.81"E
12	25°15'4.84"N	87°33'7.94"E
13	25°14'58.87"N	87°33'10.97"E
14	25°14'46.40"N	87°33'20.35"E
15	25°14'23.73"N	87°33'51.55"E
16	25°14'23.34"N	87°34'0.26"E
17	25°14'26.87"N	87°34'2.23"E
18	25°14'24.36"N	87°34'15.99"E
19	25°14'16.53"N	87°34'25.28"E
20	25°13'59.35"N	87°34'22.57"E
21	25°13'56.19"N	87°34'32.99"E
22	25°14'1.85"N	87°34'37.88"E
23	25°13'59.61"N	87°34'45.03"E
24	25°14'0.46"N	87°34'56.22"E
25	25°14'3.26"N	87°34'59.61"E

Sl no	Latitude	Longitude
26	25°14'9.25"N	87°35'3.47"E
27	25°14'44.63"N	87°35'15.73"E
28	25°14'47.59"N	87°35'24.31"E
29	25°14'47.60"N	87°35'35.12"E
30	25°14'38.90"N	87°35'34.56"E
31	25°14'21.95"N	87°35'45.06"E
32	25°13'53.21"N	87°35'55.57"E
33	25°13'40.86"N	87°36'5.10"E
34	25°12'54.58"N	87°35'46.04"E
35	25°12'59.31"N	87°35'24.45"E
36	25°12'55.96"N	87°35'23.07"E
37	25°12'53.91"N	87°35'31.41"E
38	25°12'39.00"N	87°35'26.09"E
39	25°12'40.88"N	87°35'13.40"E
40	25°12'33.86"N	87°35'11.71"E
41	25°12'32.62"N	87°35'19.80"E
42	25°13'16.01"N	87°35'28.23"E
43	25°11'53.26"N	87°34'18.73"E
44	25°11'51.39"N	87°33'54.95"E
45	25°13'38.59"N	87°33'36.88"E
46	25°13'34.09"N	87°32'20.15"E
47	25°14'0.56"N	87°32'10.73"E
48	25°14'20.43"N	87°32'10.21"E
49	25°14'20.50"N	87°32'16.34"E
50	25°14'52.51"N	87°32'16.11"E

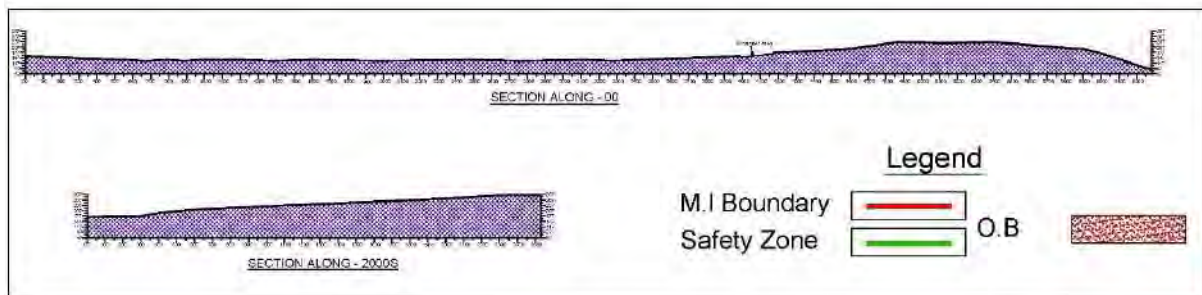
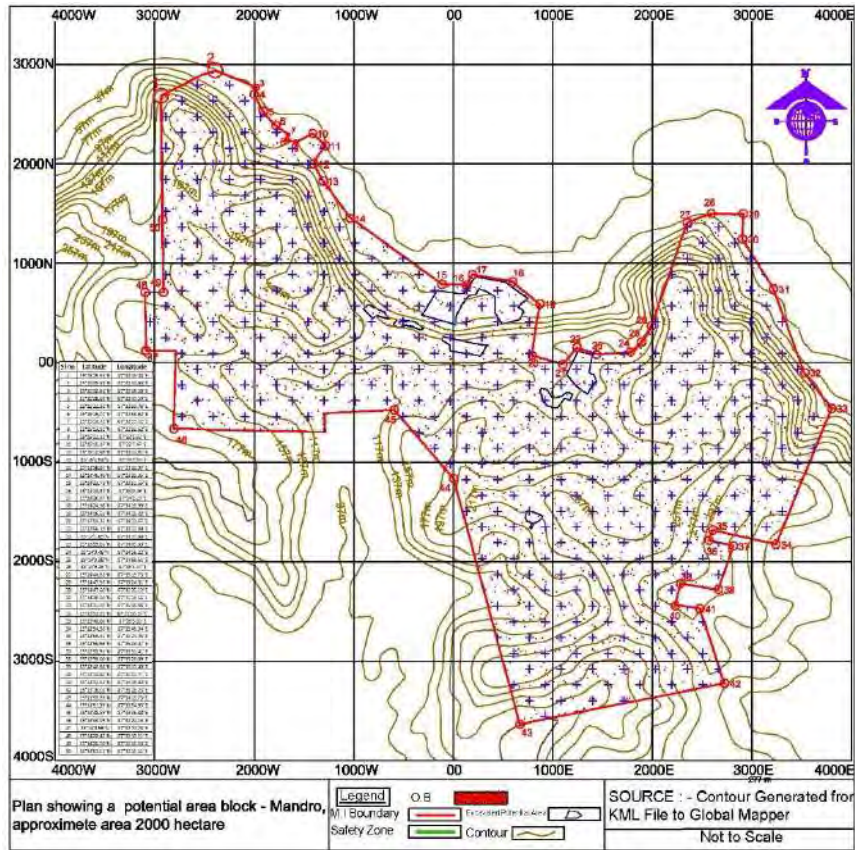
Details of Excavated Area within this potential area			
Sl no	Latitude	Longitude	Area (Ha)
A	25°14'16.00"N	87°33'27.20"E	4
B	25°14'9.87"N	87°33'37.60"E	0.68
C	25°14'14.07"N	87°33'53.71"E	12.5
D	25°14'18.66"N	87°34'14.00"E	14
E	25°14'0.14"N	87°34'0.61"E	6.58
F	25°13'52.75"N	87°34'39.11"E	8
Total			45.76

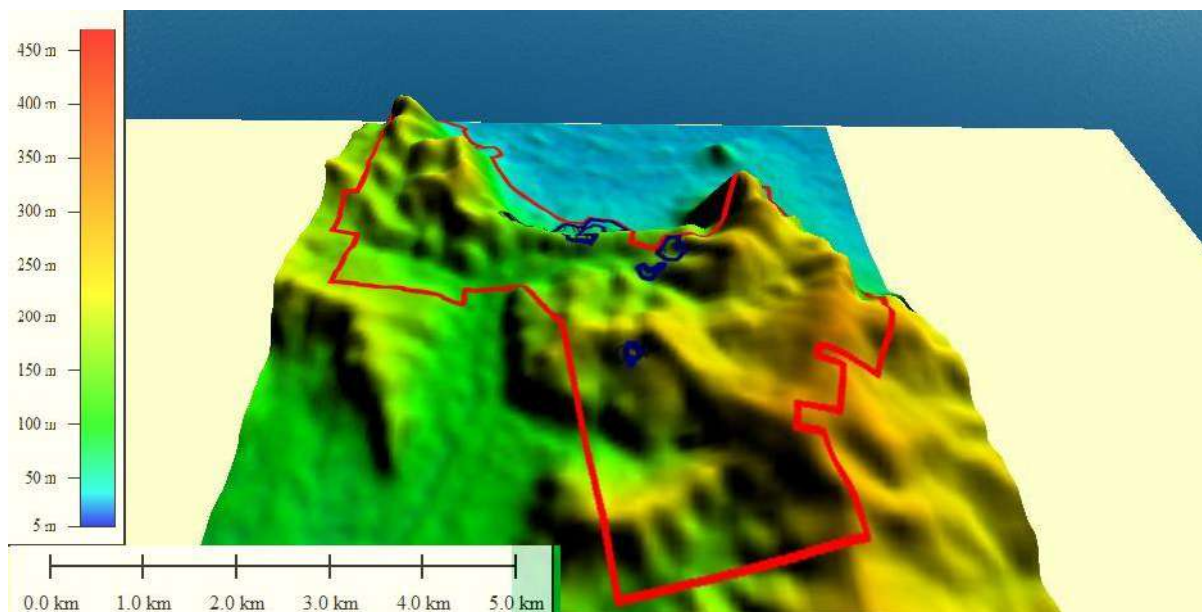


**List of villages falling under the potential area:**

Gari, Daminbita, Amjora, Sugnipahar, Amjhor, Jani, Karamtola Dakhin, Bhawanichauki, Desipokeria, Marikuti, Burkunda, Siwria, Demba, Majh Kola, Hathidari, Chua, Kulbanga, Jagori, Kotgandi, Baskobansijharna, Medo, Polma, Bara Gutibera, Bara Bhiranda, Ambadiha, Teliagarhi, Kanipahar, Sergarh.

# District Survey Report of Sahibganj, Jharkhand





**Image showing 3D Topographic view of the Potential Area**

Volume of Potential Area - B, Block - Mandro, Area 1828 Hectare								
Section Proved 237 TO 57	Cross sectional area of O.B in sqm	Total Cross Sectional area in sqm	Influence Length m	Total Volume of O.B in Cum situ (B)	Total Volume in Cum situ (A)	Total Volume of Stone Cum situ (A-B)	Recovery 60% in m cum situ	Million tons of Stone
0.00	24476	625196.00	2800	68532800	1750548800.00	1682016000.00	1943.8419	5248.37
2000S	10136	455199.00	3500	35476000	1593196500.00	1557720500.00		
<b>Total</b>				<b>104008800</b>	<b>3343745300.00</b>	<b>3239736500.00</b>		

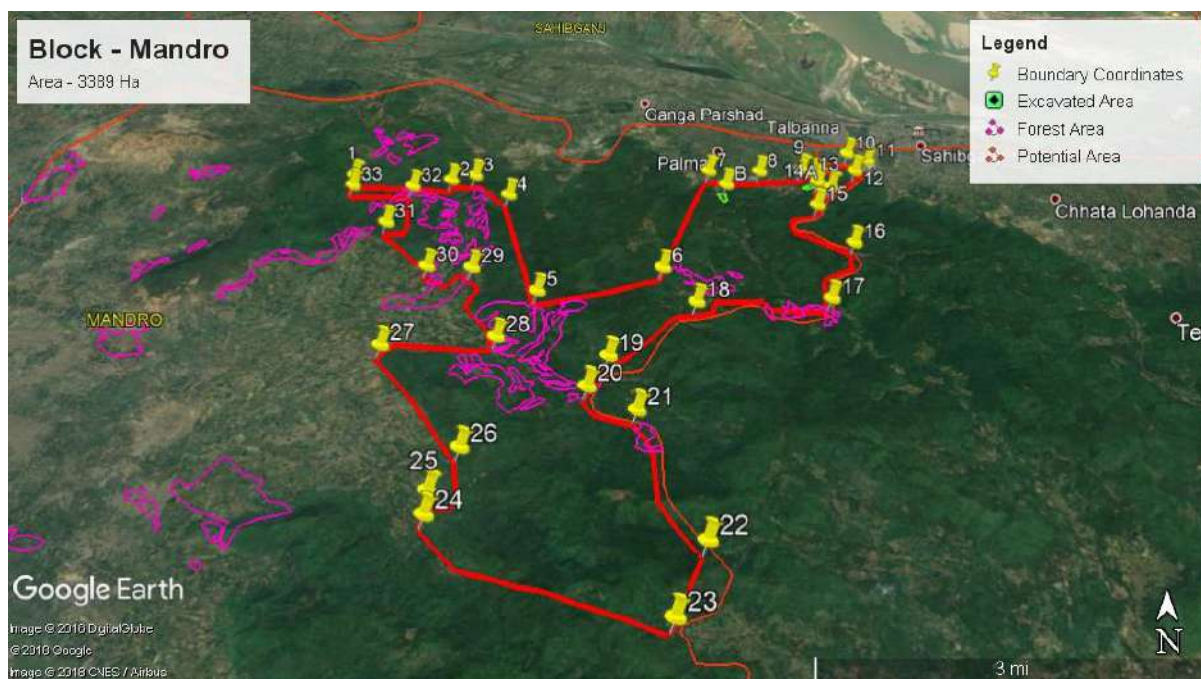


Image showing the Potential Area (Block – C, Mineral - Basalt) As Per KML Data

SI No	Latitude	Longitude
1	25°13'31.37"N	87°32'7.15"E
2	25°13'31.16"N	87°33'12.25"E
3	25°13'35.66"N	87°33'27.78"E
4	25°13'12.48"N	87°33'52.55"E
5	25°11'48.86"N	87°34'15.77"E
6	25°12'3.94"N	87°35'31.52"E
7	25°13'40.09"N	87°36'6.87"E
8	25°13'41.71"N	87°36'41.68"E
9	25°13'43.60"N	87°37'10.86"E
10	25°14'1.27"N	87°37'45.49"E
11	25°13'52.06"N	87°37'57.59"E
12	25°13'37.36"N	87°37'45.75"E
13	25°13'19.43"N	87°37'26.35"E
14	25°13'24.48"N	87°37'18.32"E
15	25°12'50.02"N	87°37'33.97"E
16	25°12'25.84"N	87°37'31.89"E

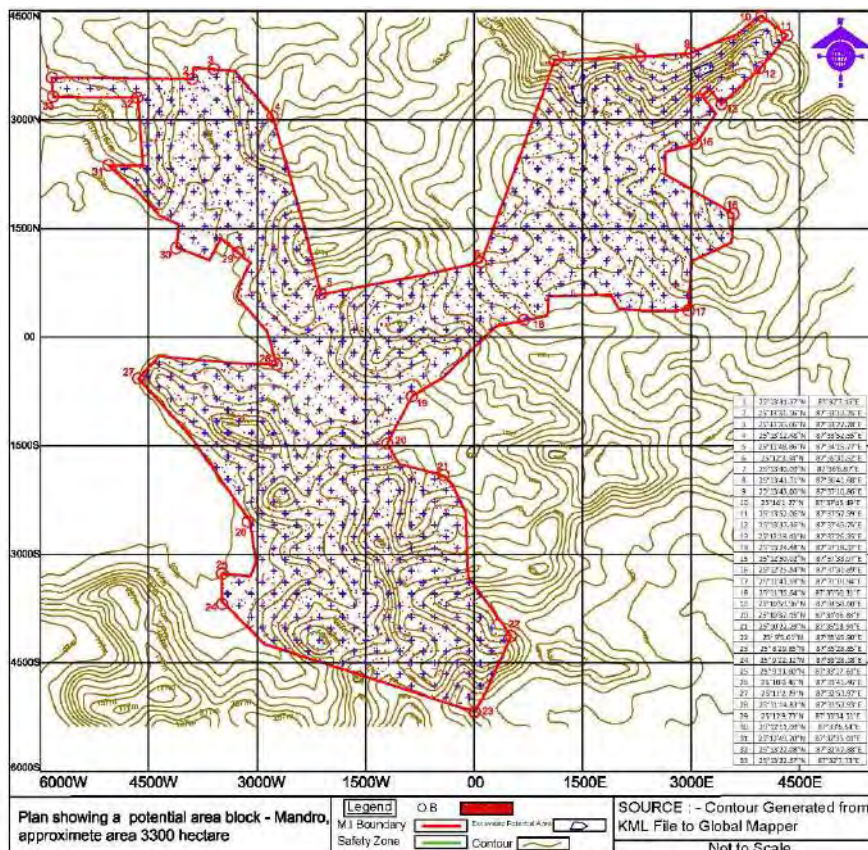
SI No	Latitude	Longitude
17	25°11'41.59"N	87°37'10.94"E
18	25°11'35.64"N	87°35'50.31"E
19	25°10'59.96"N	87°34'58.60"E
20	25°10'37.43"N	87°34'46.88"E
21	25°10'22.29"N	87°35'13.94"E
22	25° 9'5.61"N	87°35'45.90"E
23	25° 8'29.85"N	87°35'28.85"E
24	25° 9'22.12"N	87°33'28.18"E
25	25° 9'31.80"N	87°33'17.63"E
26	25°10'0.46"N	87°33'41.46"E
27	25°11'2.29"N	87°32'53.97"E
28	25°11'14.83"N	87°33'53.93"E
29	25°12'9.73"N	87°33'34.51"E
30	25°12'11.09"N	87°33'6.54"E
31	25°12'49.70"N	87°32'35.03"E
32	25°13'22.08"N	87°32'47.88"E
33	25°13'22.67"N	87°32'7.73"E

Central Coordinate of Excavated Area		
SI No	Latitude	Longitude
1	25°13'30.49"N	87°37'17.83"E
2	25°13'24.61"N	87°36'17.22"E

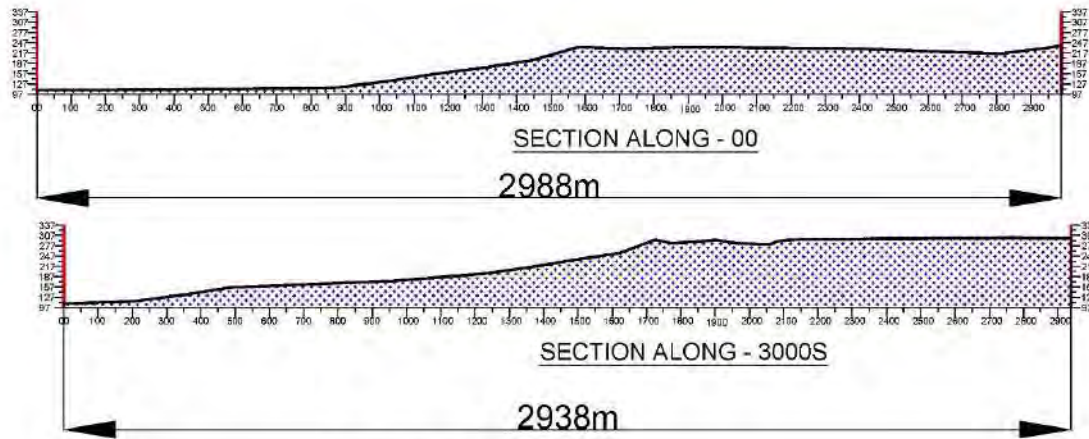


**List of villages falling under the potential area:**

Kanaipahar, Rosoi, Amjhor, Pokharia, Lalmatia, Khelatola, Gangti, Kotgandi, Simberitok, Baskobansijharna, Amdandi, Medo, Bara Bhiranda, Pacharaki, Karambi, Lalatok, Betonra, Sergarh, Polma, Chaldih, Pokhariapahar, Koreparapahar, Rohre, Medo, Tetria, Maheshpur, Chotrogoga, Amsari, Chuko, Heth Chara, Kalajhor, Maligoda, Dule, Bhomdai, Badem, Damdama, Jokani.



District Survey Report of Sahibganj, Jharkhand



Legend

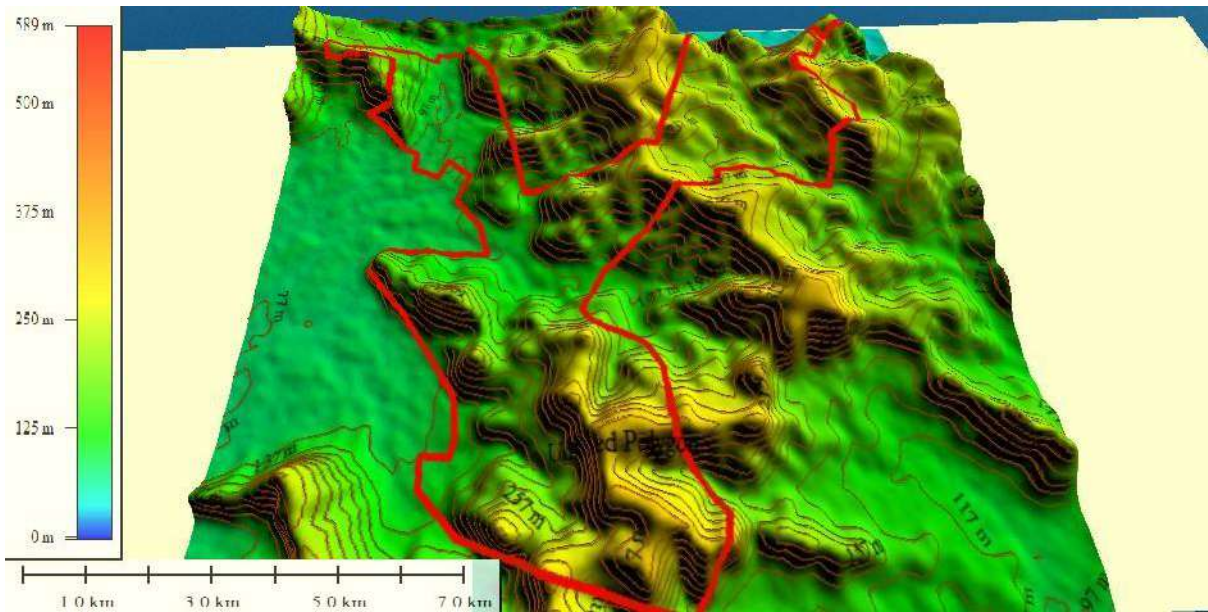


Image showing 3D Topographic view of the Potential Area

Volume of Potential Area - C, Block - Mandro, Area 3300 Hectare

Section Proved 237 TO 57	Cross sectional area of O.B in sqm	Total Cross Sectional area in sqm	Influence Length m	Total Volume of O.B in Cum (B)	Total Volume in Cum (A)	Total Volume of Stone Cum (A-B)	Recovery 60% in m cum	Million tons of
0.00	12006	241560.00	5700	68434200	1376892000.00	1308457800.00	1757.41218	4745.01
3000N	11836	371961.00	4500	53262000	1673824500.00	1620562500.00		
<b>Total</b>				<b>121696200</b>	<b>3050716500.00</b>	<b>2929020300.00</b>		

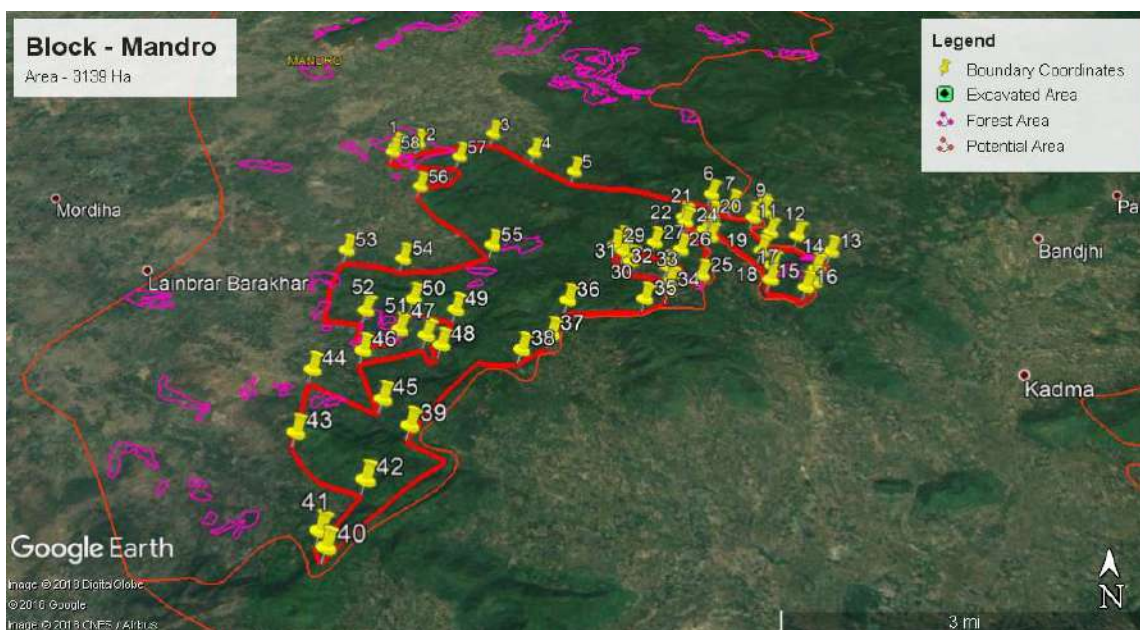
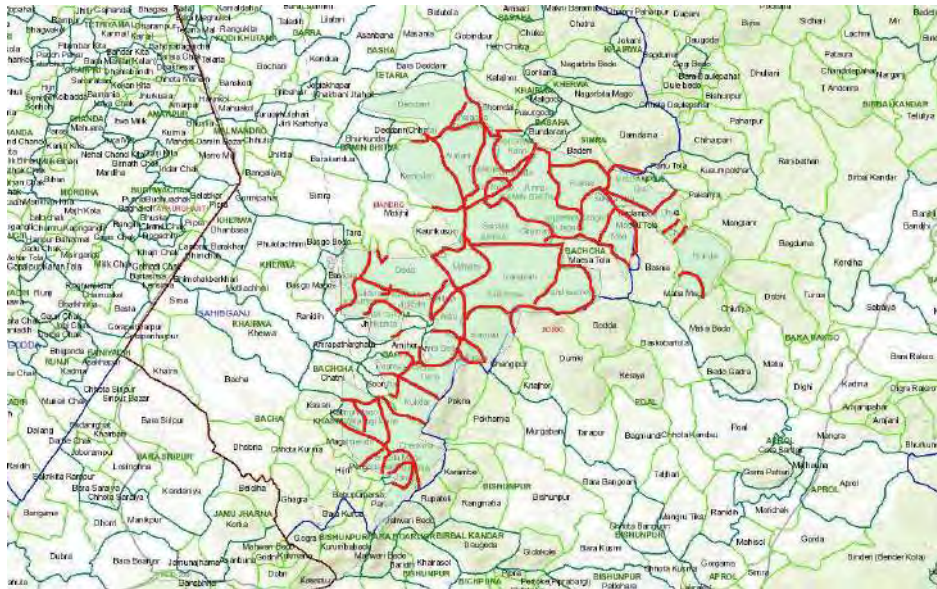


Image showing the Potential Area (Block – D, Mineral - Basalt) As Per KML Data

Sl No	Latitude	Longitude
1	25° 9'26.75"N	87°31'37.87"E
2	25° 9'29.76"N	87°31'54.58"E
3	25° 9'40.19"N	87°32'49.08"E
4	25° 9'18.60"N	87°33'20.84"E
5	25° 8'55.35"N	87°33'50.10"E
6	25° 8'27.73"N	87°35'24.81"E
7	25° 8'17.45"N	87°35'38.16"E
8	25° 8'15.82"N	87°35'57.21"E
9	25° 8'12.07"N	87°35'58.72"E
10	25° 8'2.83"N	87°35'50.22"E
11	25° 7'50.61"N	87°35'59.99"E
12	25° 7'48.28"N	87°36'17.78"E
13	25° 7'32.67"N	87°36'36.61"E
14	25° 7'16.37"N	87°36'23.70"E
15	25° 7'4.74"N	87°36'20.61"E
16	25° 7'0.65"N	87°36'14.73"E
17	25° 7'9.50"N	87°35'54.21"E
18	25° 7'21.68"N	87°35'56.98"E
19	25° 7'35.22"N	87°35'52.31"E
20	25° 8'2.54"N	87°35'25.06"E
21	25° 8'6.04"N	87°35'4.36"E
22	25° 7'55.81"N	87°35'11.14"E
23	25° 7'48.63"N	87°35'18.86"E
24	25° 7'46.97"N	87°35'20.13"E
25	25° 7'13.86"N	87°35'11.32"E
26	25° 7'35.82"N	87°34'59.64"E
27	25° 7'42.10"N	87°34'43.26"E
28	25° 7'42.79"N	87°34'21.20"E
29	25° 7'39.28"N	87°34'17.14"E

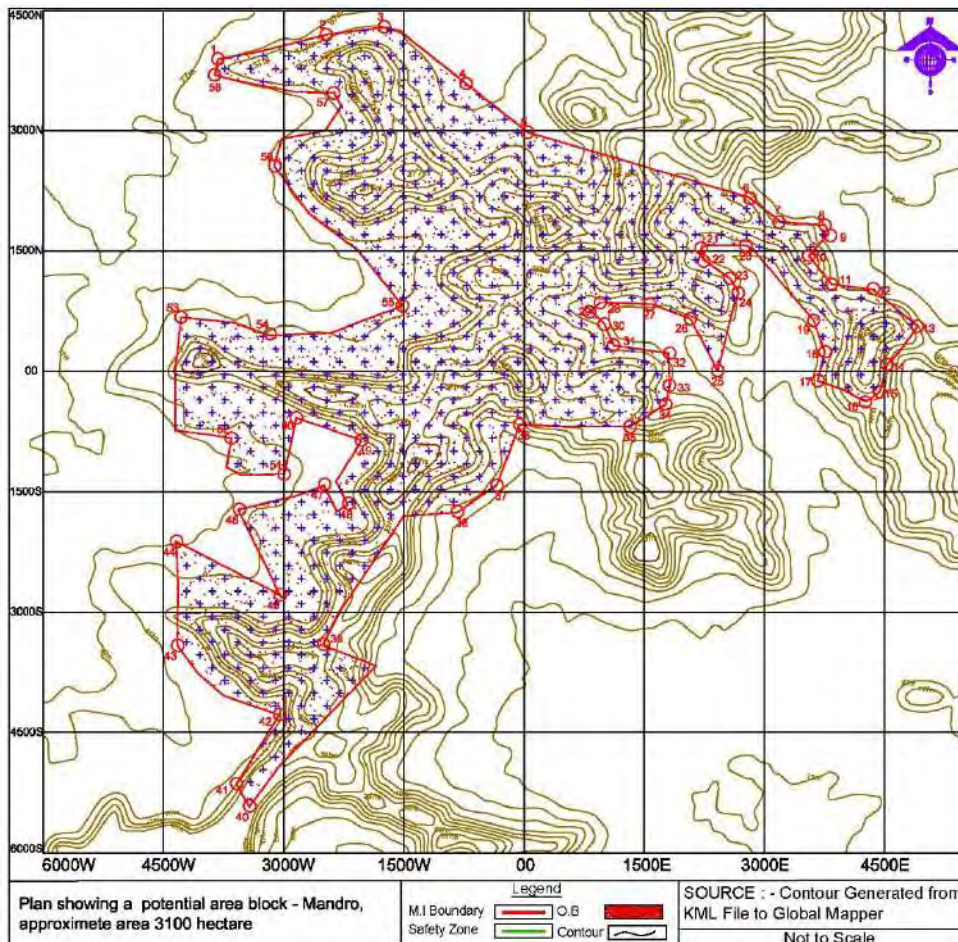
Sl No	Latitude	Longitude
30	25° 7'33.74"N	87°34'22.88"E
31	25° 7'24.65"N	87°34'26.91"E
32	25° 7'21.04"N	87°34'50.16"E
33	25° 7'7.05"N	87°34'50.65"E
34	25° 6'59.37"N	87°34'49.13"E
35	25° 6'49.90"N	87°34'34.00"E
36	25° 6'50.70"N	87°33'46.76"E
37	25° 6'25.04"N	87°33'37.07"E
38	25° 6'11.59"N	87°33'20.03"E
39	25° 5'16.77"N	87°32'22.74"E
40	25° 4'7.70"N	87°31'51.20"E
41	25° 4'17.51"N	87°31'45.82"E
42	25° 4'46.49"N	87°32'3.41"E
43	25° 5'16.38"N	87°31'20.40"E
44	25° 6'0.08"N	87°31'19.94"E
45	25° 6'1.37"N	87°31'40.28"E
46	25° 6'13.96"N	87°31'46.77"E
47	25° 6'24.65"N	87°32'22.81"E
48	25° 6'16.29"N	87°32'32.78"E
49	25° 6'43.37"N	25° 6'43.37"N
50	25° 6'46.12"N	87°32'27.69"E
51	25° 6'29.48"N	87°32'5.92"E
52	25° 6'40.25"N	87°31'46.34"E
53	25° 7'12.58"N	87°31'32.64"E
54	25° 7'28.75"N	87°32'0.04"E
55	25° 7'41.49"N	87°32'56.73"E
56	25° 8'40.55"N	87°32'1.97"E
57	25° 9'12.09"N	87°32'26.73"E
58	25° 9'19.91"N	87°31'36.89"E

## District Survey Report of Sahibganj, Jharkhand



### List of villages falling under the potential area:

Deodanr, Chalgona, Aurjanr, Komodari, Dudama, Kanri, Rakesi, Gutti, Chua, Mori, Bunda, Sahara, Kaurikusum, Dubigoda, Gilamari, Mandra, Garapani, Sormari, Doda, Baskola, Jhirikbhita, Amrabelo, Pagro, Kukdar, Chekola, Magalmendo, Soonjha, Tetria, Chekola, Katingi Mago, Magalmendo, Bhomdai, Badem, Partutola.



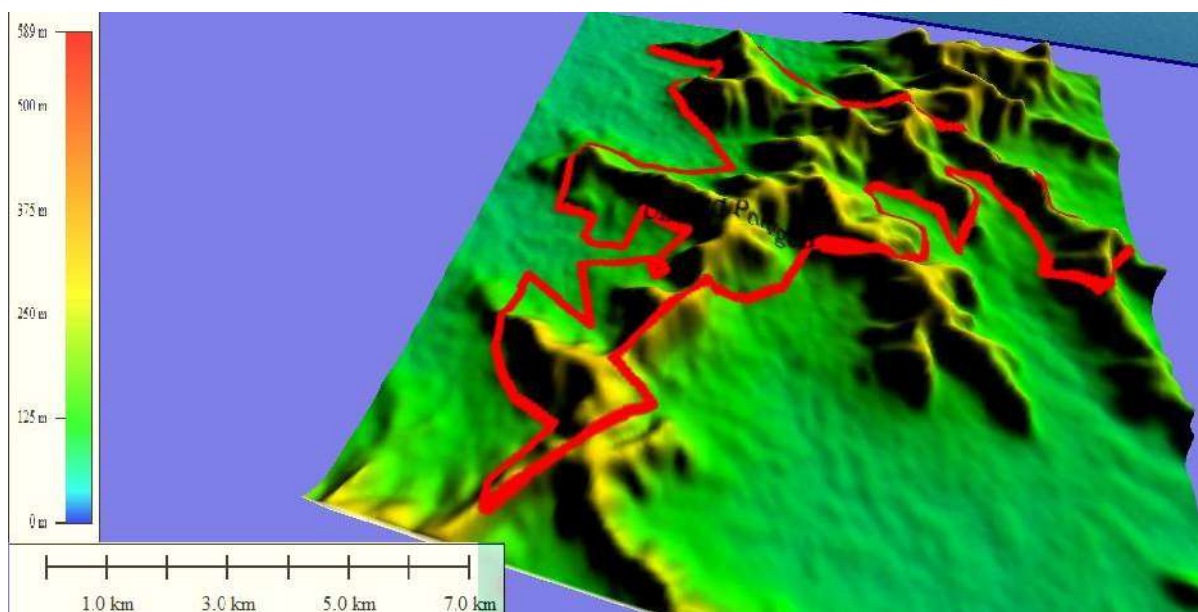
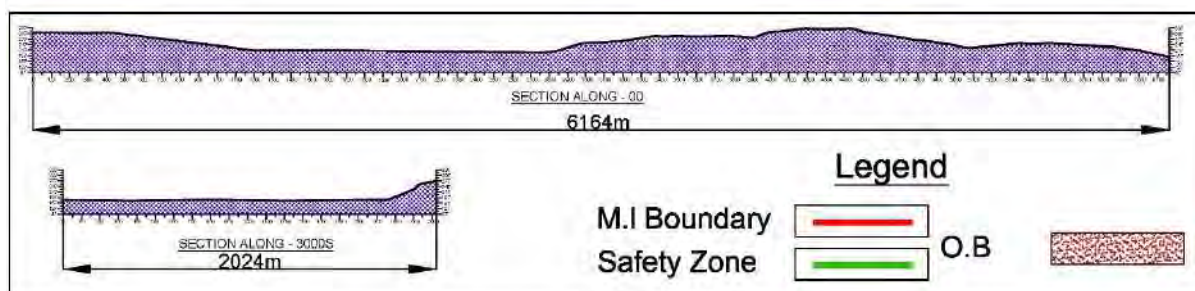


Image showing 3D Topographic view of the Potential Area

**Volume of Potential Area - D, Block - Mandro, Area 3100 Hectare**

Section Proved 297 TO 97	Cross sectional area of O.B in sqm	Total Cross Sectional area in sqm	Influence Length m	Total Volume of O.B in Cum situ (B)	Total Volume in Cum situ (A)	Total Volume of Stone Cum situ (A-B)	Recovery 60% in m cum situ	Million tons of Stone
0.00	24814	977600.00	4200	104218800	4105920000.00	4001701200.00	2885.83128	7791.74
3000S	8194	163582.00	5200	42608800	850626400.00	808017600.00		
<b>Total</b>				<b>146827600</b>	<b>4956546400.00</b>	<b>4809718800.00</b>		

Block - Pathna

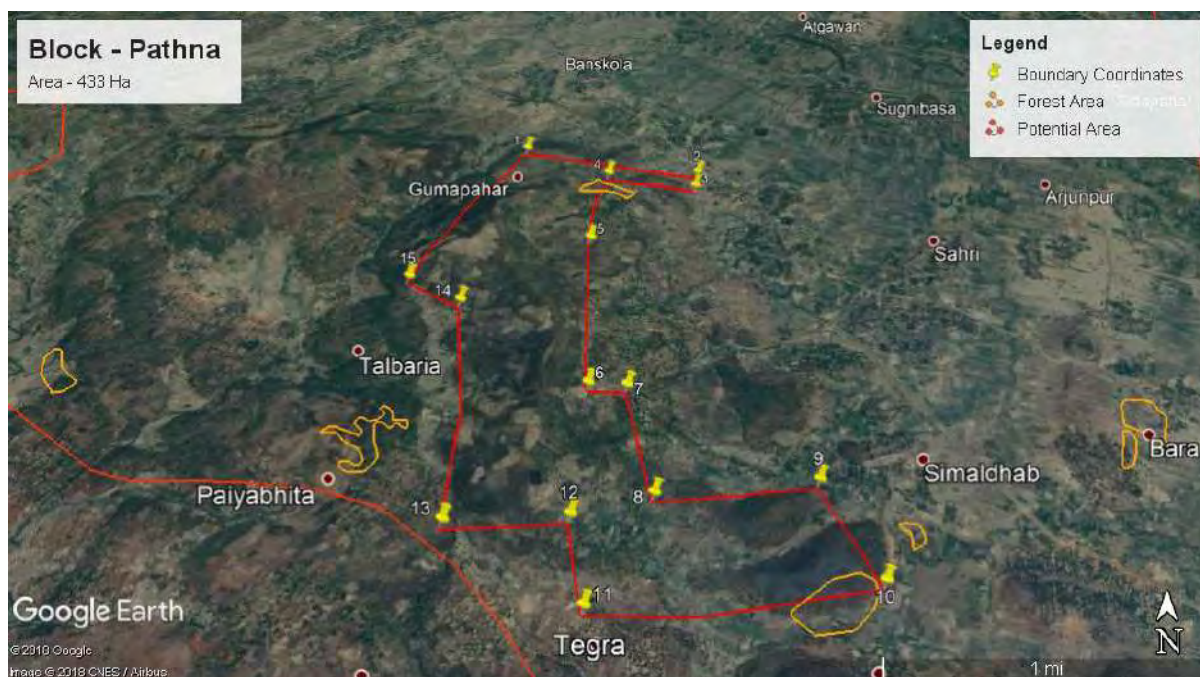
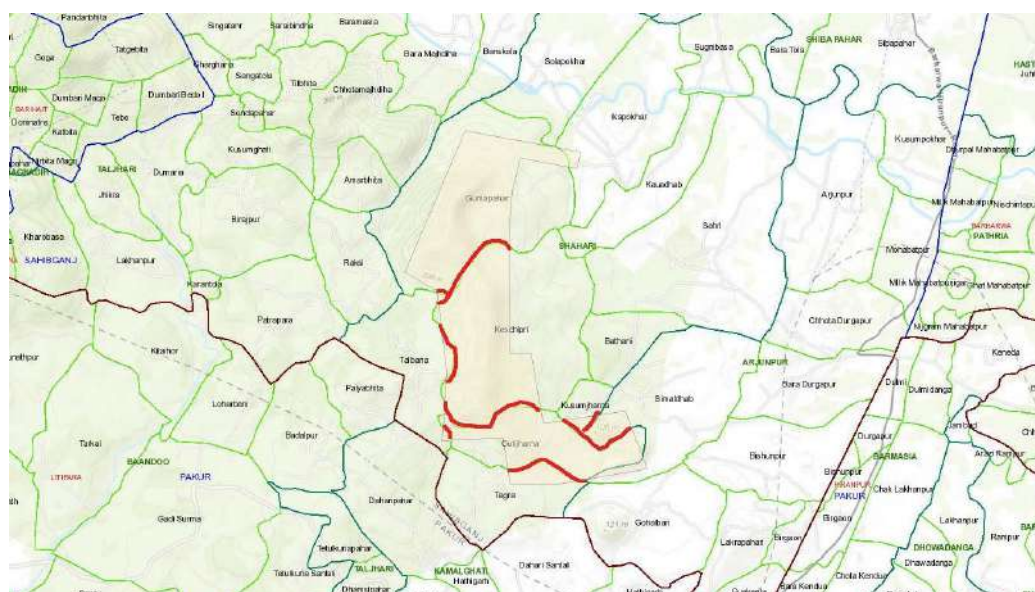


Image showing the Potential Area (Block – A, Mineral – Basalt & Granite Gneiss) As Per KML Data

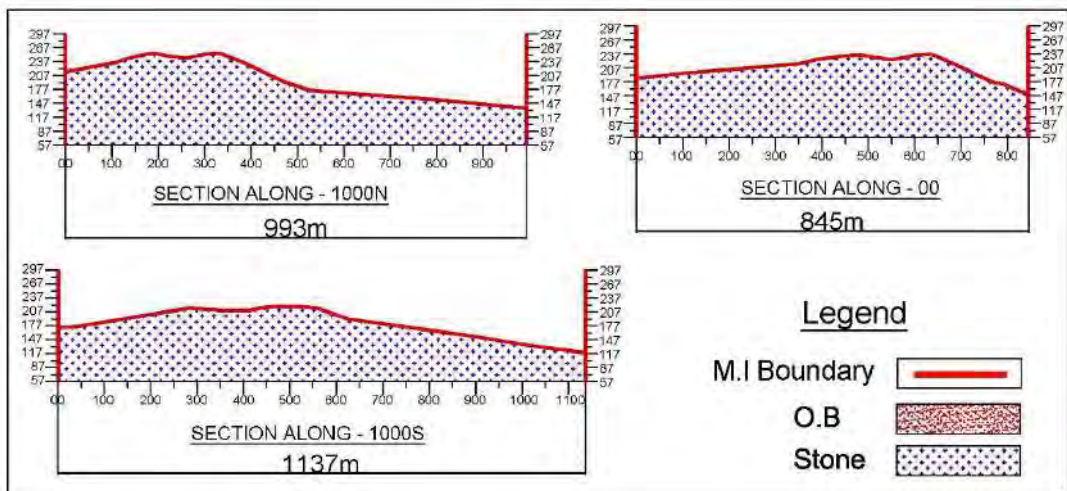
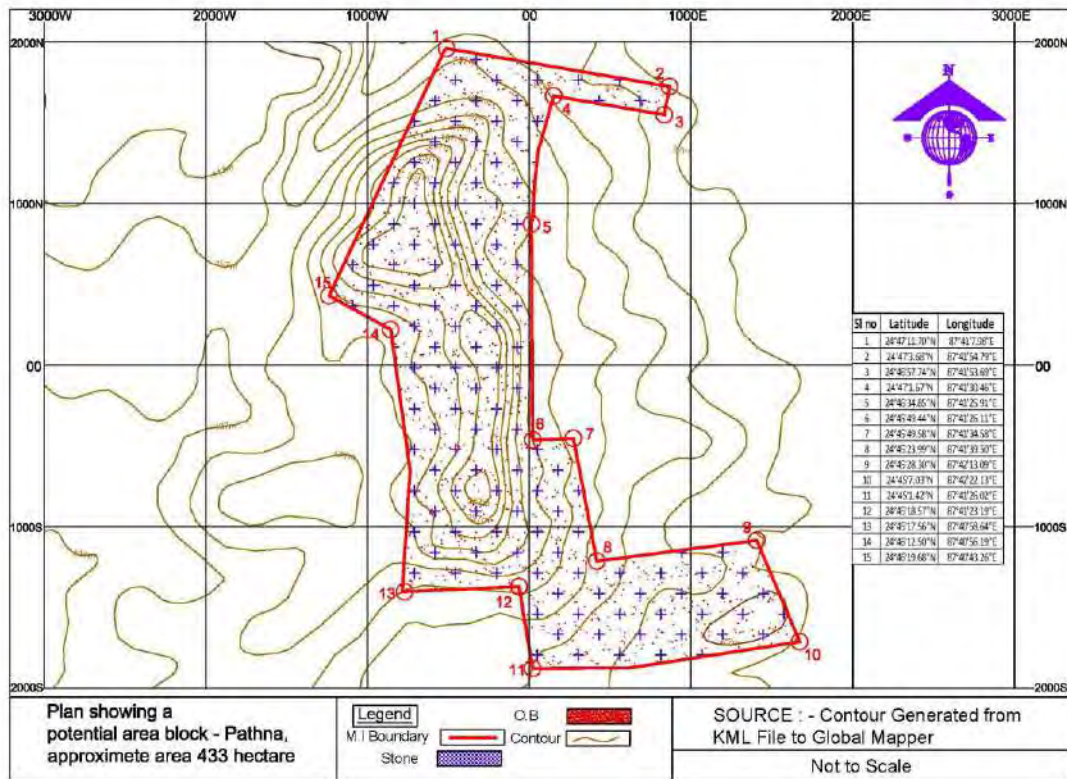
Sl no	Latitude	Longitude
1	24°47'11.70"N	87°41'7.98"E
2	24°47'3.68"N	87°41'54.79"E
3	24°46'57.74"N	87°41'53.69"E
4	24°47'1.67"N	87°41'30.46"E
5	24°46'34.85"N	87°41'25.91"E
6	24°45'49.44"N	87°41'26.11"E
7	24°45'49.58"N	87°41'34.58"E

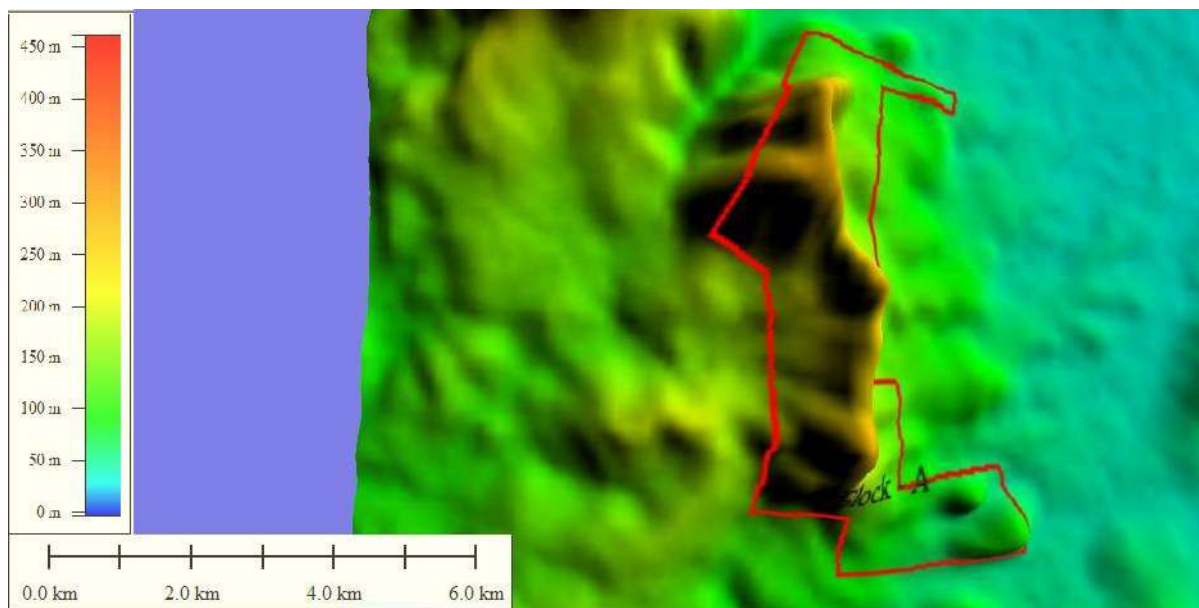
Sl no	Latitude	Longitude
8	24°45'23.99"N	87°41'39.50"E
9	24°45'28.30"N	87°42'13.09"E
10	24°45'7.03"N	87°42'22.13"E
11	24°45'1.42"N	87°41'26.02"E
12	24°45'18.57"N	87°41'23.19"E
13	24°45'17.56"N	87°40'58.64"E
14	24°46'12.50"N	87°40'56.19"E
15	24°46'19.68"N	87°40'43.26"E



**List of villages falling under the potential area:**

Gumapahar, Keschipri, Gutijharna, Talbaria, Ikapokhar.





**Image showing 3D Topographic view of the Potential Area**

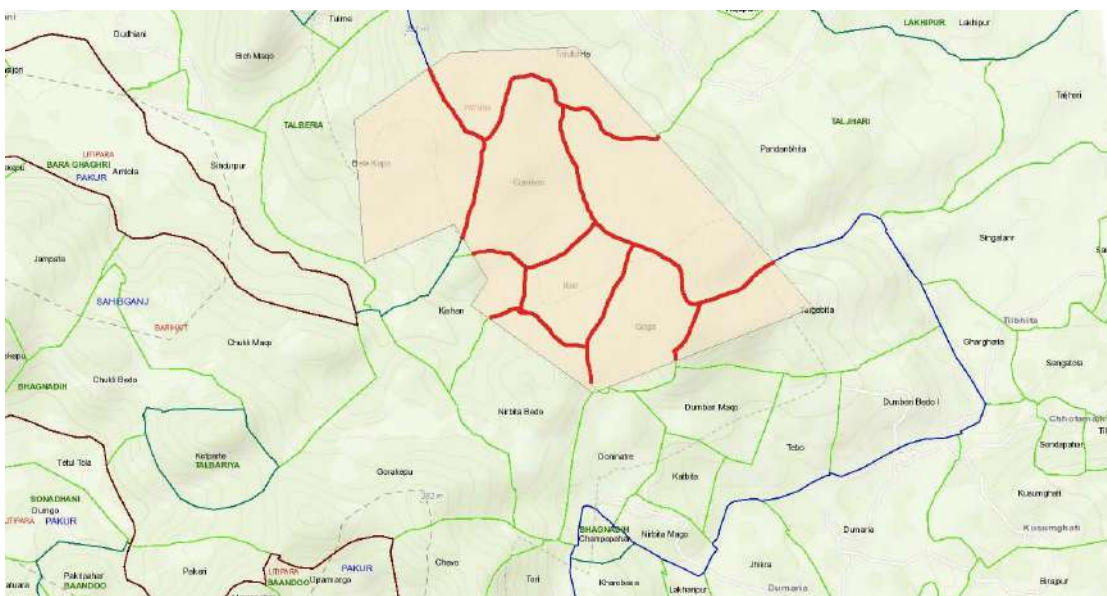
**Volume of Potential Area - A, Block - Pathna, Area 433 Hectare**

Section Proved 257 TO 57	Cross sectional area of O.B in sqm	Total Cross Sectional area in sqm	Influence Length m	Total Volume of O.B in Cum situ (B)	Total Volume in Cum situ (A)	Total Volume of Stone Cum situ (A-B)	Recovery 60% in m cum situ	Million tons of Stone
1000N	4066	136070.00	1500	6099000	204105000.00	198006000.00	321.57852	868.26
0.00	3468	125951.00	1000	3468000	125951000.00	122483000.00		
1000S	4601	139273.00	1600	7361600	222836800.00	215475200.00		
<b>Total</b>				<b>16928600</b>	<b>552892800.00</b>	<b>535964200.00</b>		



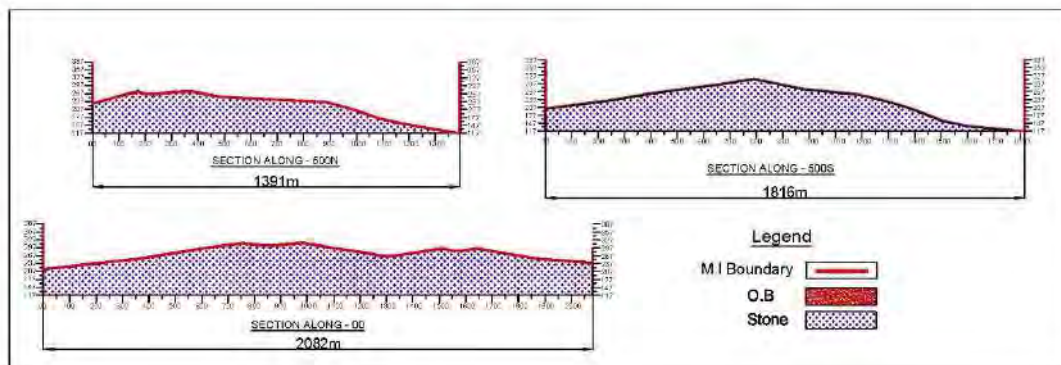
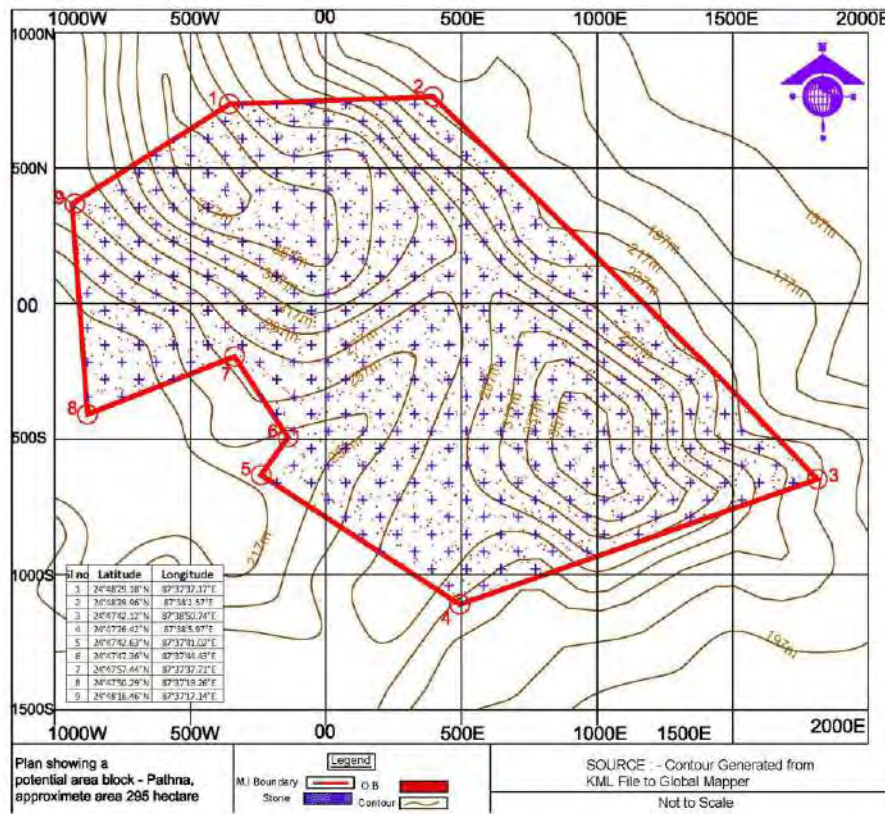
**Image showing the Potential Area (Block – B, Mineral - Basalt) As Per KML Data**

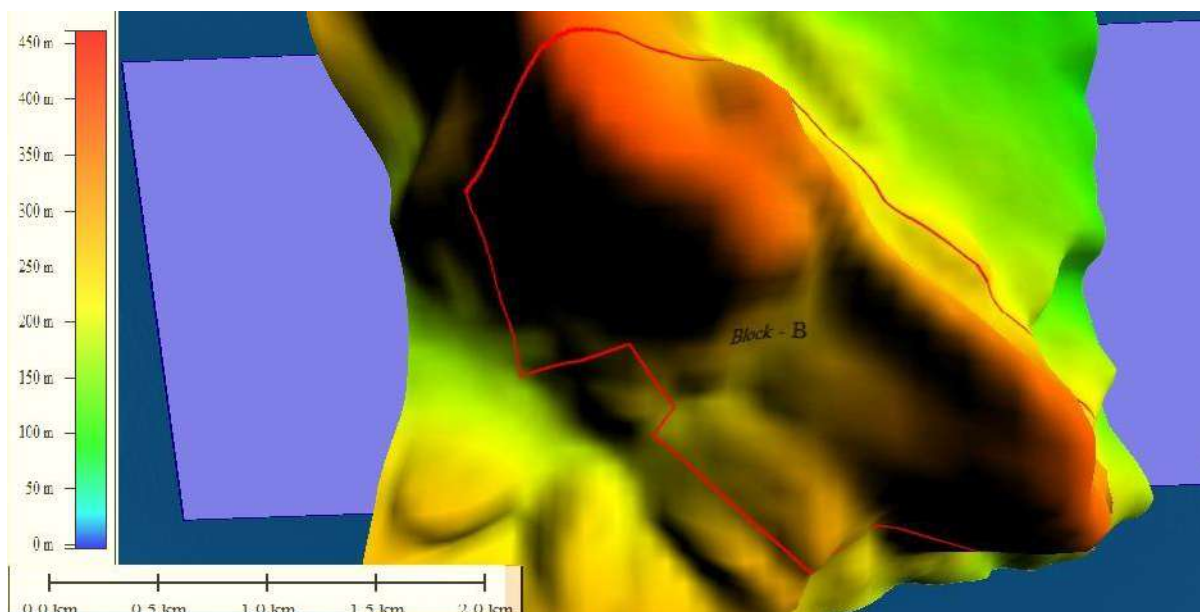
Sl no	Latitude	Longitude
1	24°48'29.18"N	87°37'37.17"E
2	24°48'29.96"N	87°38'2.57"E
3	24°47'42.12"N	87°38'50.74"E
4	24°47'26.42"N	87°38'5.97"E
5	24°47'42.63"N	87°37'41.02"E
6	24°47'47.36"N	87°37'44.43"E
7	24°47'57.44"N	87°37'37.71"E
8	24°47'50.29"N	87°37'19.26"E
9	24°48'16.46"N	87°37'17.14"E



**List of villages falling under the potential area:**

Tetulbhita, Belekapa, Gambari, Kari, Goga, Kishan, Narbita Bedo, Tatgebita, Pandanbhita, Nirbita.





**Image showing 3D Topographic view of the Potential Area**

**Volume of Potential Area - B, Block - Pathna, Area 295 Hectare**

Section Proved 357 TO 117	Cross sectional area of O.B in sqm	Total Cross Sectional area in sqm	Influence Length m	Total Volume of O.B in Cum situ (B)	Total Volume in Cum situ (A)	Total Volume of Stone Cum situ (A-B)	Recovery 60% in m cum situ	Million tons of Stone
500N	5620	144790.00	250	1405000	36197500.00	34792500.00	246.53826	665.65
0.00	8410	324335.00	500	4205000	162167500.00	157962500.00		
500S	7308	205619.00	1100	8038800	226180900.00	218142100.00		
<b>Total</b>				<b>13648800</b>	<b>424545900.00</b>	<b>410897100.00</b>		

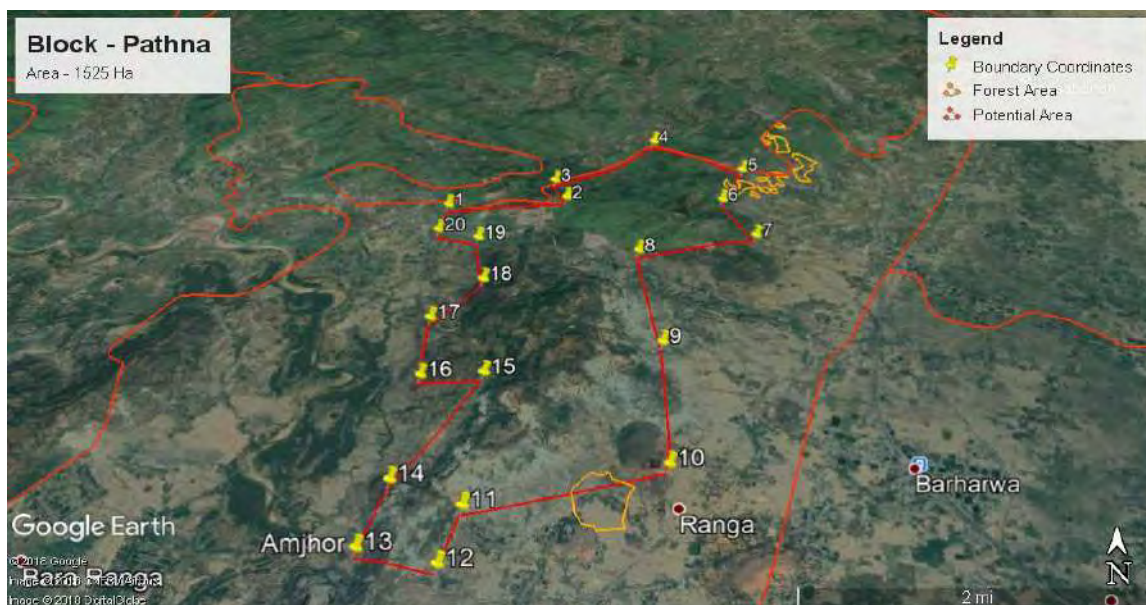
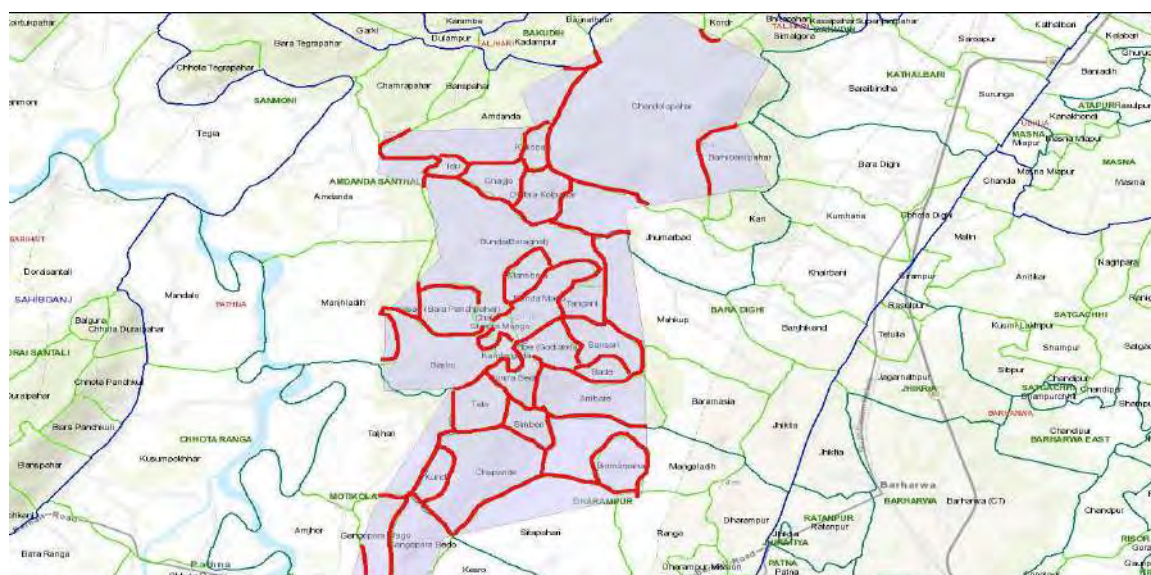


Image showing the Potential Area (Block – C, Mineral - Basalt) As Per KML Data

Sl no	Latitude	Longitude
1	24°53'50.85"N	87°43'24.86"E
2	24°53'52.79"N	87°44'20.05"E
3	24°54'6.47"N	87°44'14.45"E
4	24°54'40.04"N	87°45'3.50"E
5	24°54'17.63"N	87°45'45.35"E
6	24°53'54.54"N	87°45'33.09"E
7	24°53'29.98"N	87°45'45.68"E
8	24°53'20.41"N	87°44'52.36"E
9	24°52'27.05"N	87°44'59.83"E
10	24°51'29.09"N	87°44'58.72"E

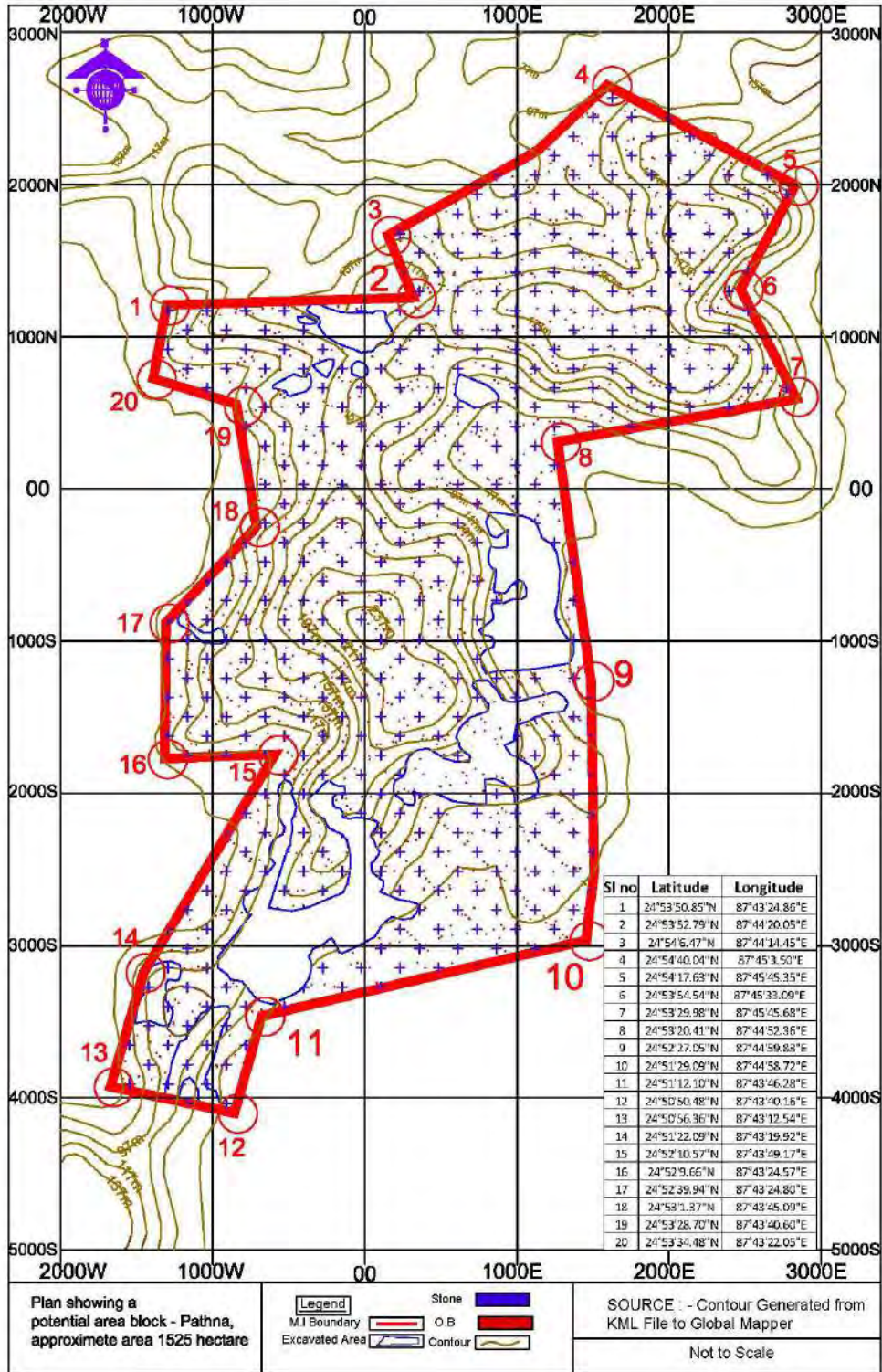
Sl no	Latitude	Longitude
11	24°51'12.10"N	87°43'46.28"E
12	24°50'50.48"N	87°43'40.16"E
13	24°50'56.36"N	87°43'12.54"E
14	24°51'22.09"N	87°43'19.92"E
15	24°52'10.57"N	87°43'49.17"E
16	24°52'9.66"N	87°43'24.57"E
17	24°52'39.94"N	87°43'24.80"E
18	24°53'1.37"N	87°43'45.09"E
19	24°53'28.70"N	87°43'40.60"E
20	24°53'34.48"N	87°43'22.05"E

Central Coordinate of Excavated Area			
Sl no	Latitude	Longitude	Area (Ha)
A	24°53'44.81"N	87°44'6.39"E	10

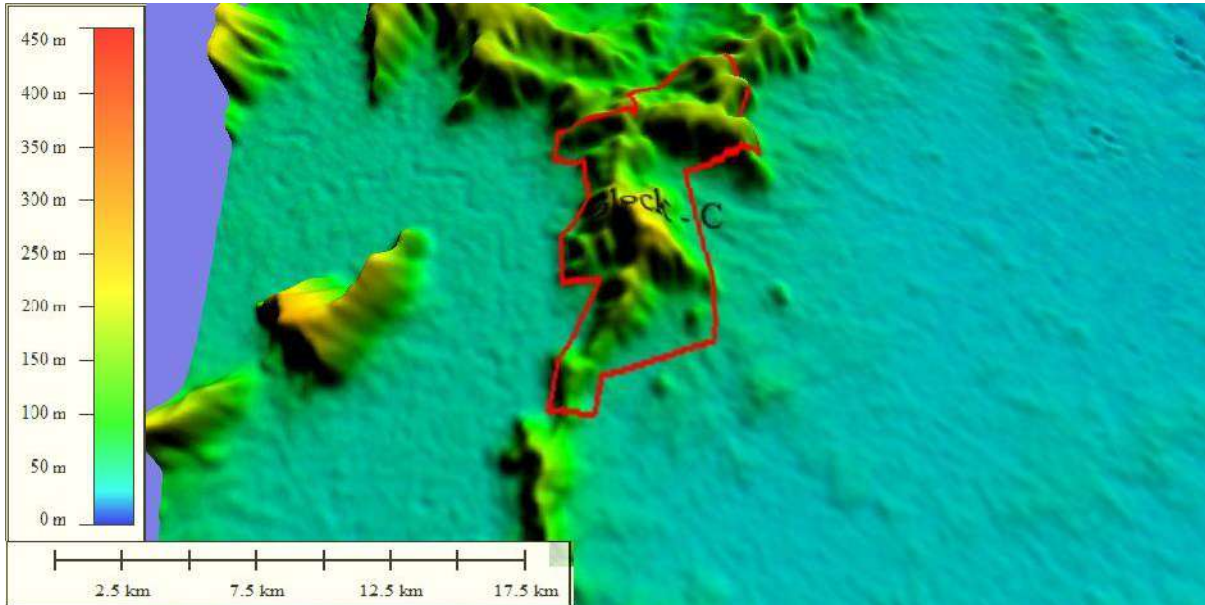
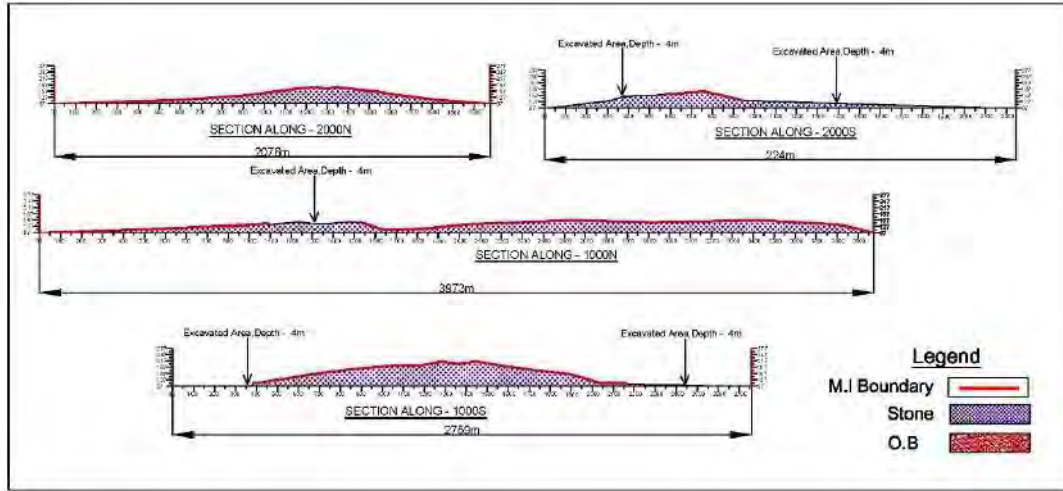


**List of villages falling under the potential area:**

Chandolapahar, Kalopahari, Idri, Chaigo, Dhibra Kalopahar, Bunda Baraghat, Barhibastipahar, Aamdanda, Baijinathpur, Kadampur, Jhumarbad, Tangani, Mansbera, Bunda Mago, Basko, Telo, Simbera, Ambare, Bade, Idpe, Kanderghoda, Manjhladih, Mahkup, Kund, Chapande, Sitapahari, Kesro, Taljhari, Gangopara Mago, Gangopara Bedo, Borna, Ranga.



## District Survey Report of Sahibganj, Jharkhand



**Image showing 3D Topographic view of the Potential Area**

### Volume of Potential Area - C, Block - Pathna, Area 1525 Hectare

Section Proved 237 TO 97	Cross sectional area of O.B in sqm	Total Cross Sectional area in sqm	Influence Length m	Total Volume of O.B in Cum situ (B)	Total Volume in Cum situ (A)	Total Volume of Stone Cum situ (A-B)	Recovery 60% in m cum situ	Million tons of Stone
1000N	13936	137596.00	600	8361600	82557600.00	74196000.00	303.16254	818.54
2000N	8008	62589.00	1000	8008000	62589000.00	54581000.00		
1000S	7169	125918.00	2000	14338000	251836000.00	237498000.00		
2000S	1472	61905.00	2300	3385600	142381500.00	138995900.00		
<b>Total</b>				<b>34093200</b>	<b>539364100.00</b>	<b>505270900.00</b>		

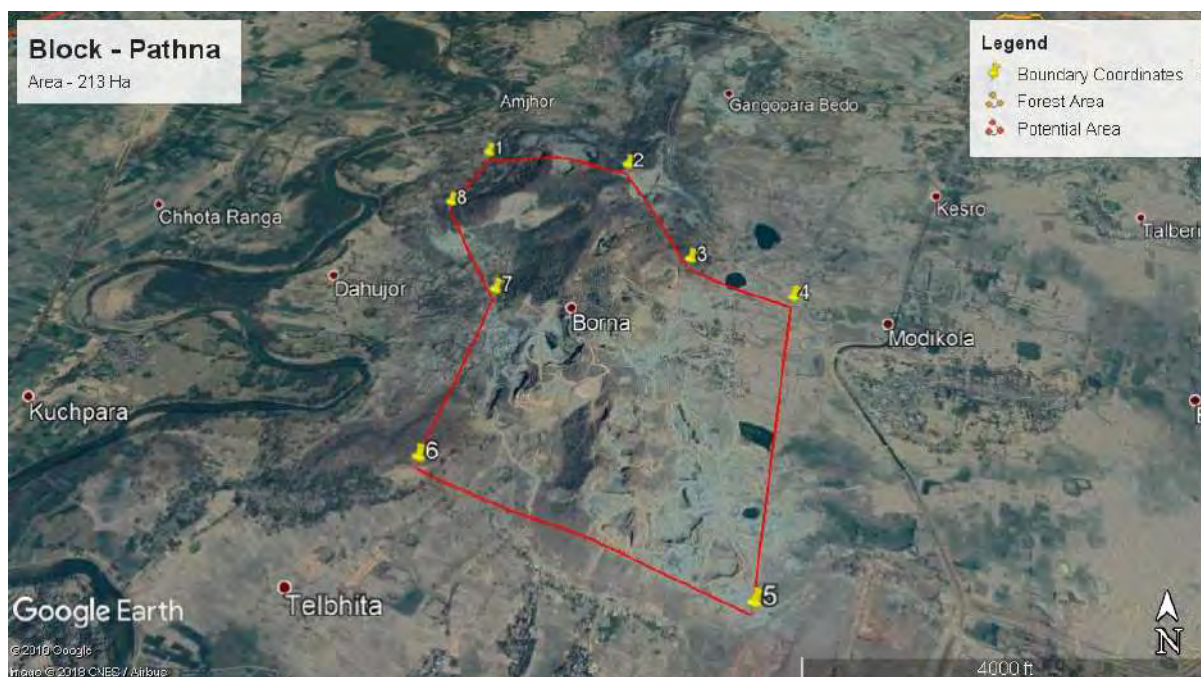


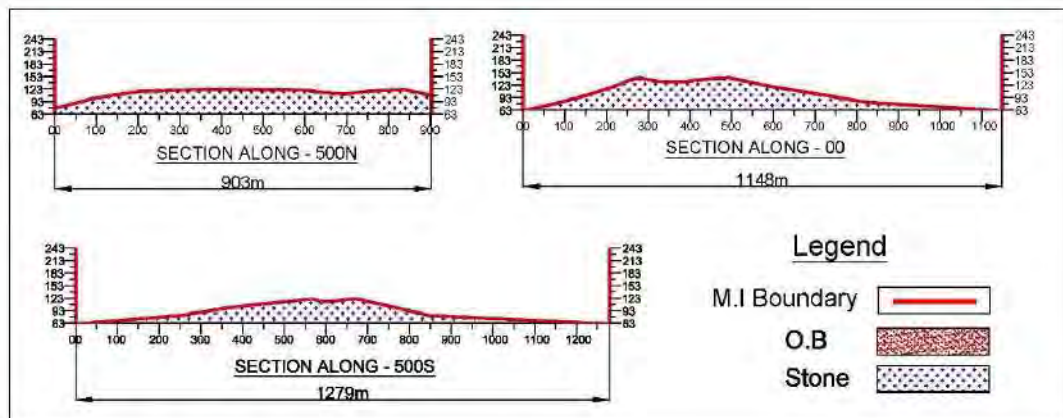
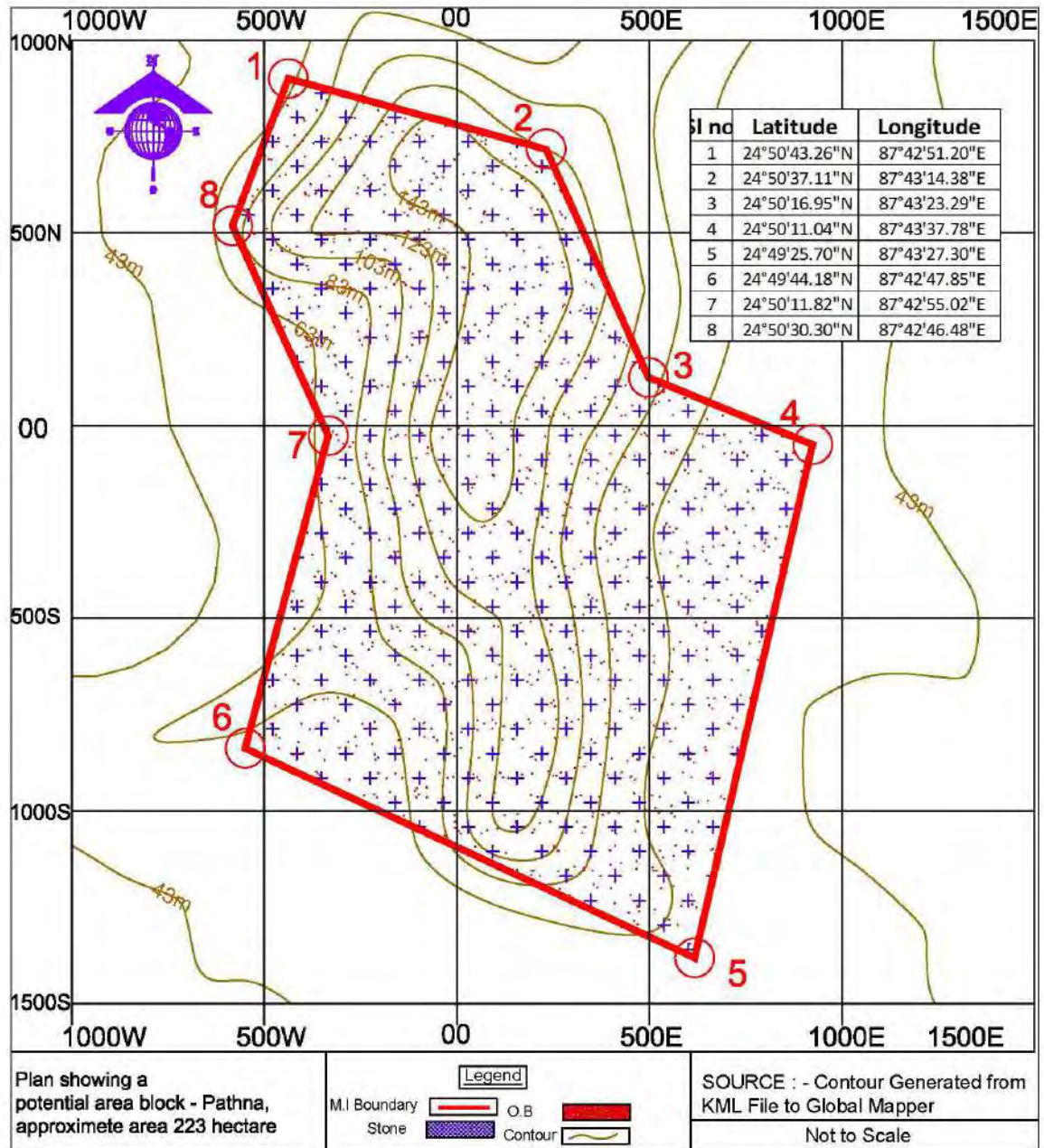
Image showing the Potential Area (Block – D, Mineral - Basalt) As Per KML Data

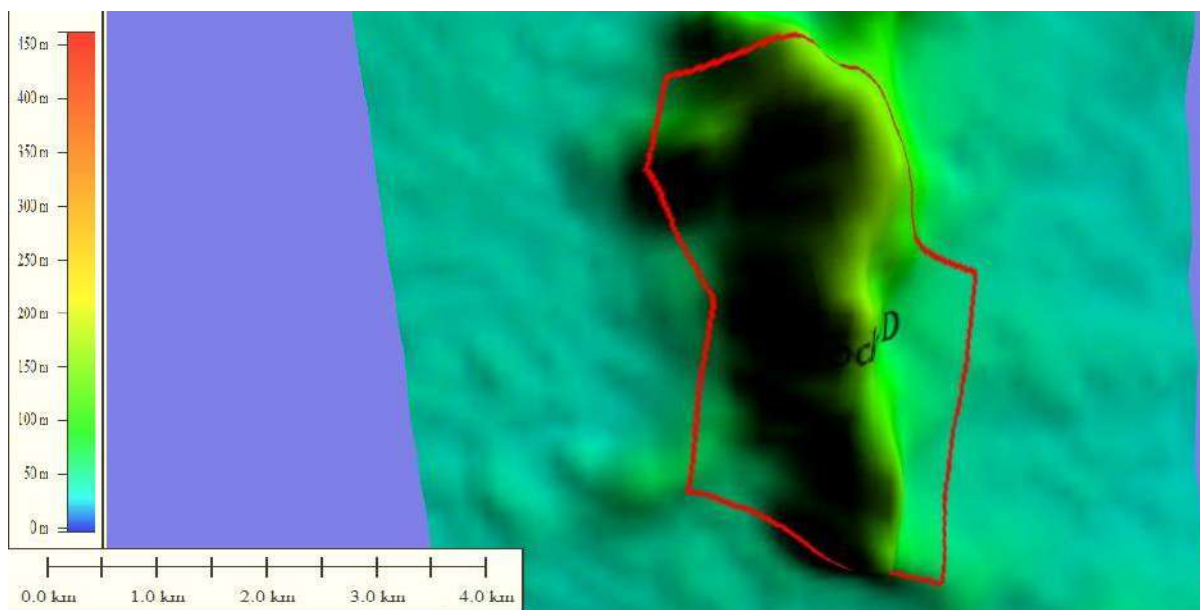
Sl no	Latitude	Longitude
1	24°50'43.26"N	87°42'51.20"E
2	24°50'37.11"N	87°43'14.38"E
3	24°50'16.95"N	87°43'23.29"E
4	24°50'11.04"N	87°43'37.78"E
5	24°49'25.70"N	87°43'27.30"E
6	24°49'44.18"N	87°42'47.85"E
7	24°50'11.82"N	87°42'55.02"E
8	24°50'30.30"N	87°42'46.48"E



**List of villages falling under the potential area:**

Borna, Modikola, Telbhita, Kendua, Dahujor





**Image showing 3D Topographic view of the Potential Area**

**Volume of Potential Area - D, Block - Pathna, Area 213 Hectare**

Section Proved 143 TO 63	Cross sectional area of O.B in sqm	Total Cross Sectional area in sqm	Influence Length m	Total Volume of O.B in Cum situ (B)	Total Volume in Cum situ (A)	Total Volume of Stone Cum situ (A-B)	Recovery 60% in m cum situ	Million tons of Stone
500N	3639	44631.00	390	1419210	17406090.00	15986880.00	38.950968	105.17
0.00	4510	41161.00	500	2255000	20580500.00	18325500.00		
500S	4883	28426.00	1300	6347900	36953800.00	30605900.00		
<b>Total</b>				<b>10022110</b>	<b>74940390.00</b>	<b>64918280.00</b>		

Block - Barharwa

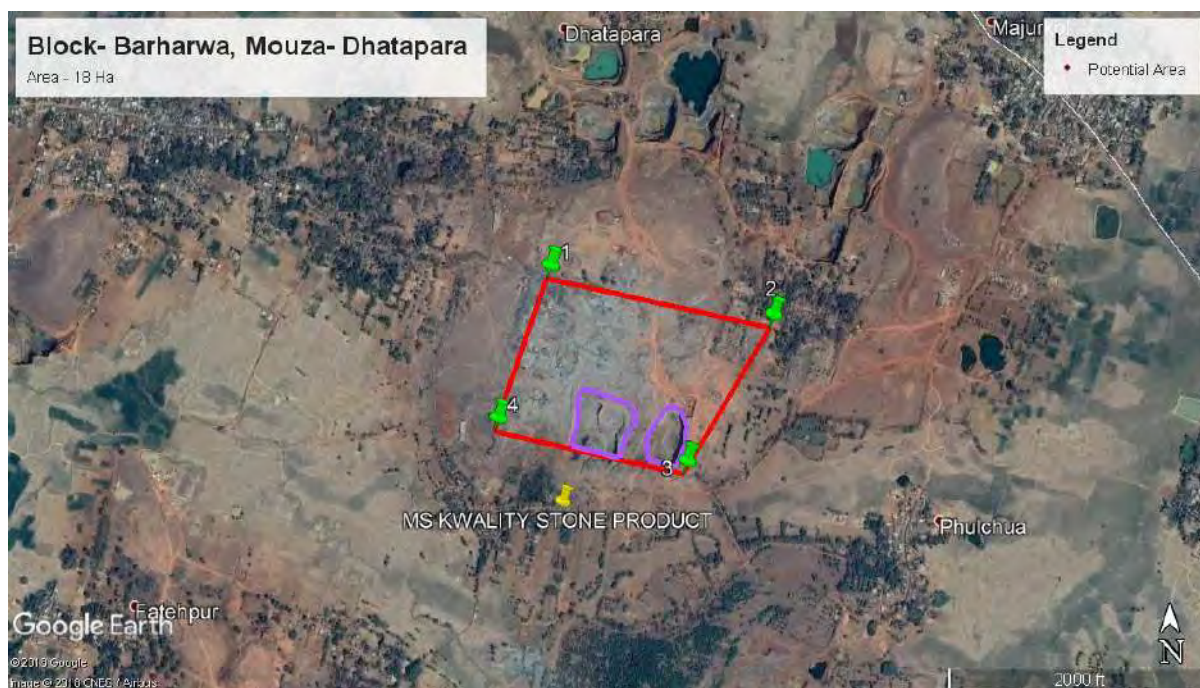


Image showing the Potential Area (Block – A, Mineral – Basalt & Granite Gneiss) As Per KML Data

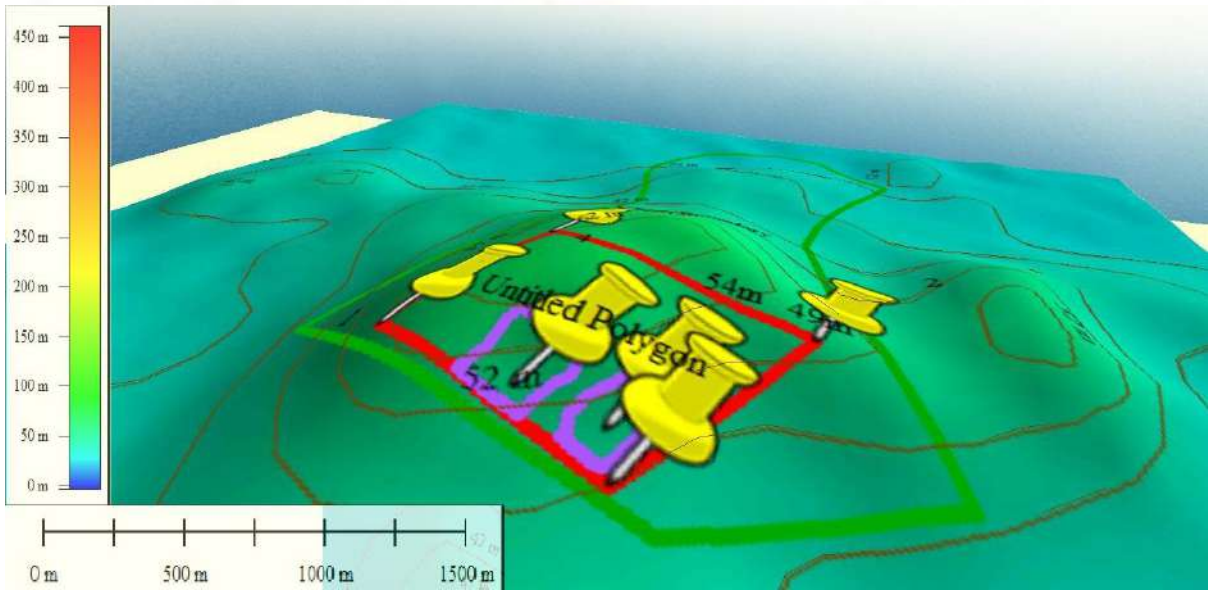
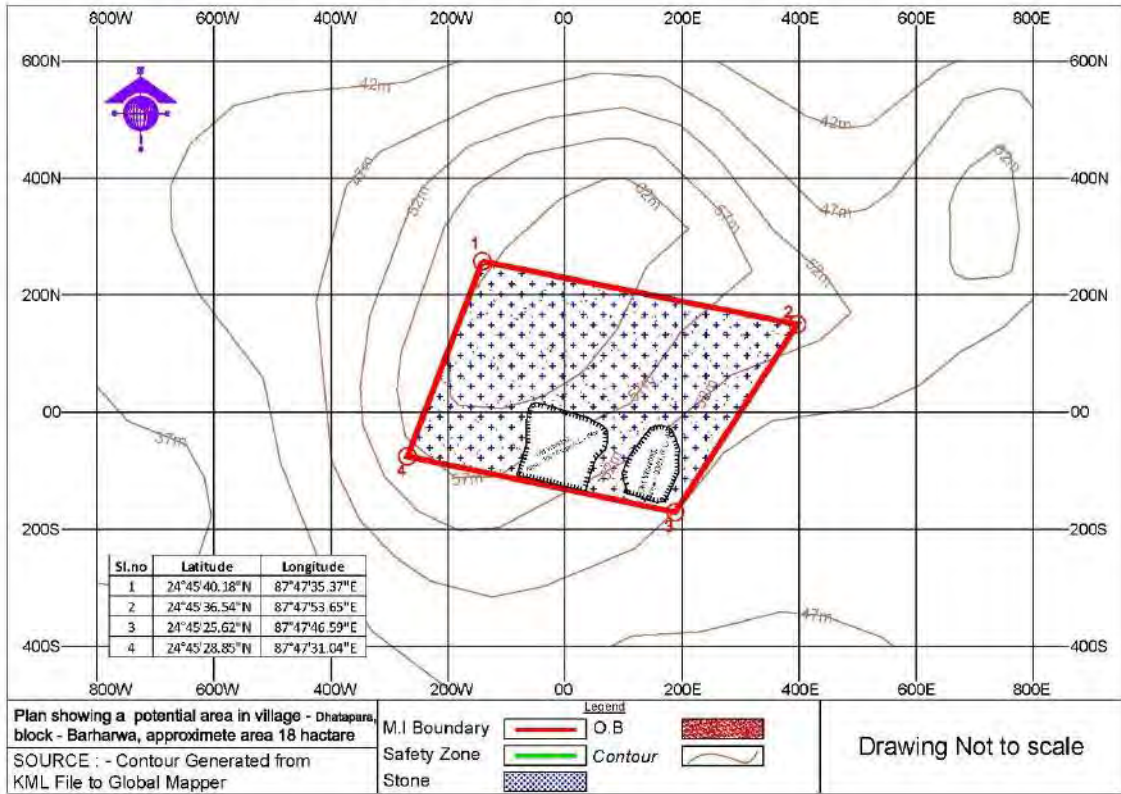
Sl.no	Latitude	Longitude
1	24°45'40.18"N	87°47'35.37"E
2	24°45'36.54"N	87°47'53.65"E
3	24°45'25.62"N	87°47'46.59"E
4	24°45'28.85"N	87°47'31.04"E

Details of Excavated Area within this potential area			
Sl. No.	Latitude	Longitude	Area (Ha)
1	24°45'28.05"N	87°47'40.26"E	1.61
2	24°45'27.86"N	87°47'45.32"E	0.93



Village – Dhatapara, Panchayat - Majurkol

## District Survey Report of Sahibganj, Jharkhand



**Image showing 3D Topographic view of the Potential Area**

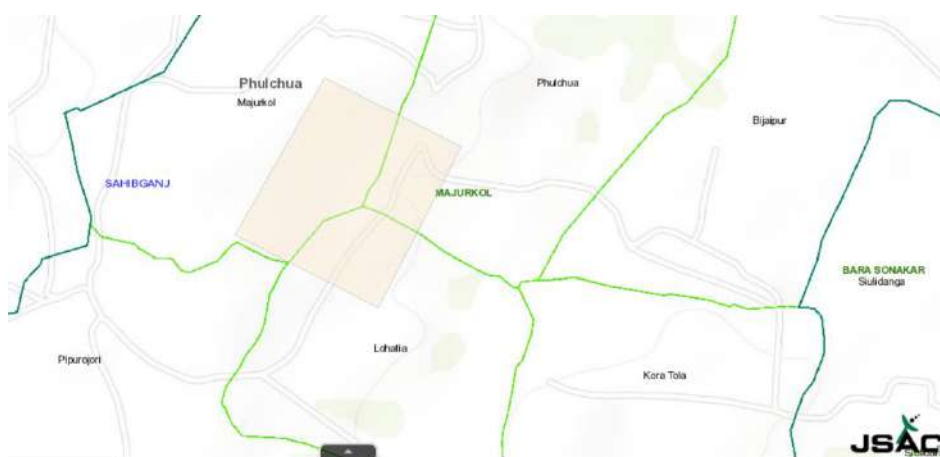
Block - Barharwa, Vill - Dhatapara, Area - 18 Ha Volume in cum

Area in Ha	Length in M	Width in M	Min R.L in M	Max. R.L in M	Avg. Height in M	Total Volume in Situ in Million cum	Total Volume of O.B in Cum at depth upto 4m	Volume of Stone in m cum	Recovery Factor 60% in m cum	Million tons of Stone
18	370	487	47	62	15	2.70285	0.72076	1.98209	1.189254	3.2109858



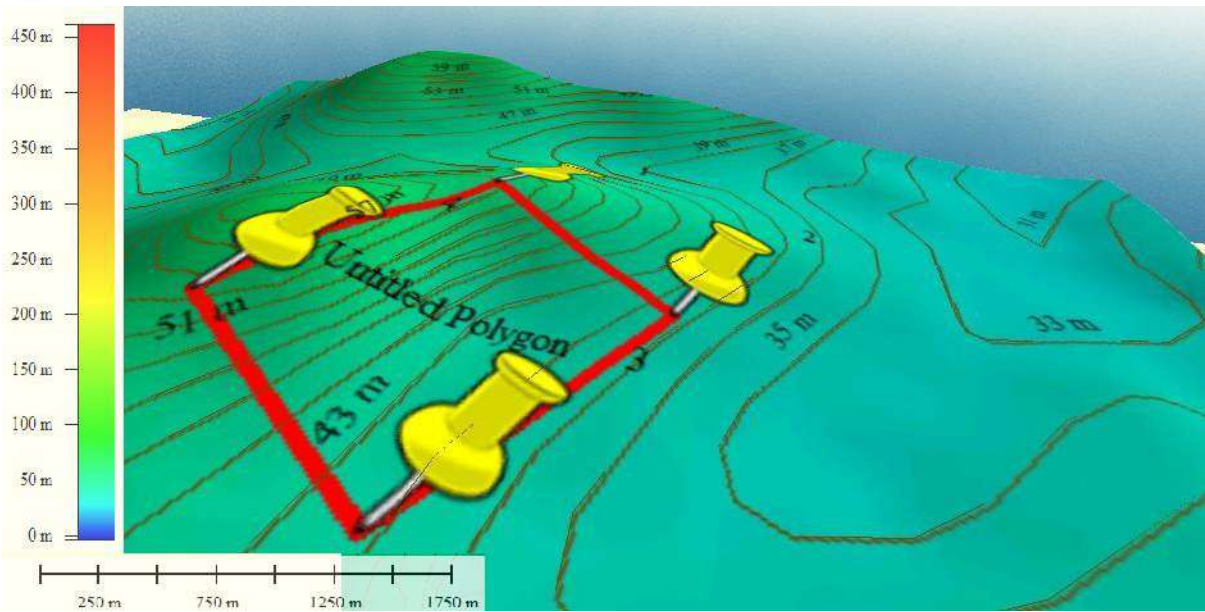
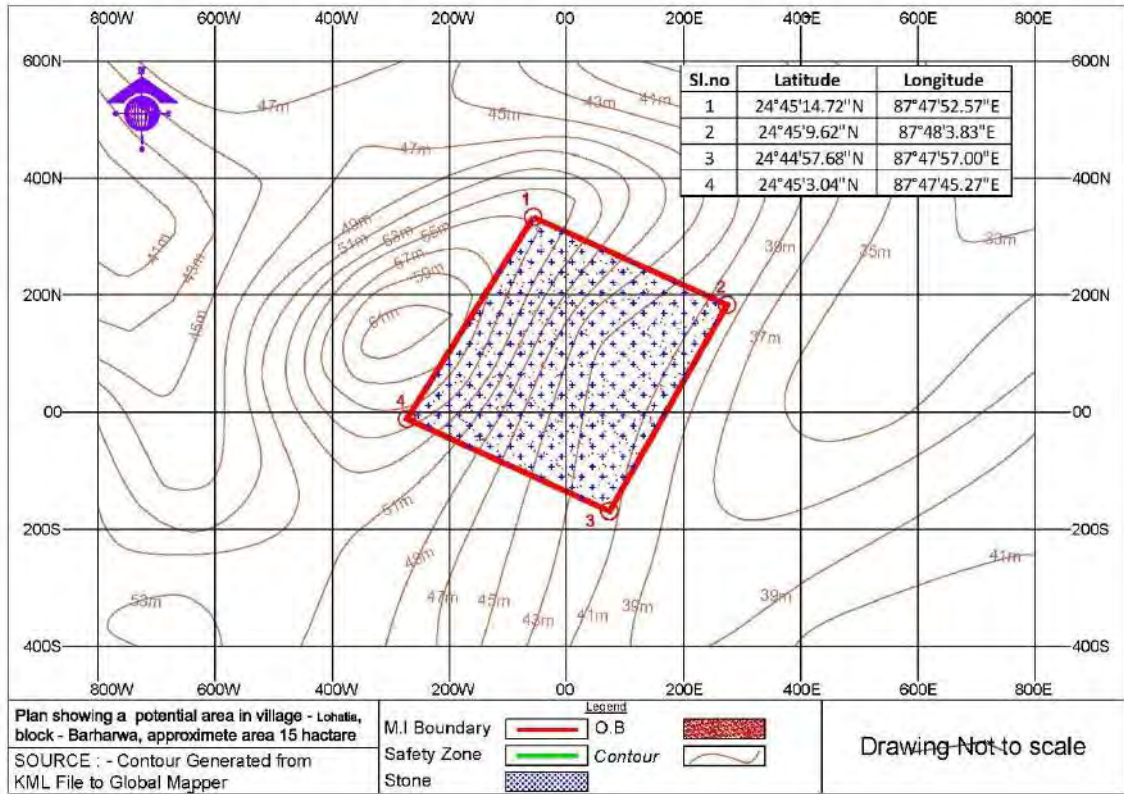
Image showing the Potential Area (Block – B, Mineral – Basalt & Granite Gneiss) As Per KML Data

Sl.no	Latitude	Longitude
1	24°45'14.72"N	87°47'52.57"E
2	24°45'9.62"N	87°48'3.83"E
3	24°44'57.68"N	87°47'57.00"E
4	24°45'3.04"N	87°47'45.27"E



Village – Lohatia, Panchayat - Majurkol

## District Survey Report of Sahibganj, Jharkhand



**Image showing 3D Topographic view of the Potential Area**

Block - Barharwa, Vill - Lohatia, Area - 15 Ha Volume in cum

Area in Ha	Length in M	Width in M	Min R.L in M	Max. R.L in M	Depth in m av. R.L 57 to 37	Total Volume in Situ in Million cum	Total Volume of O.B in Cum at depth upto 4m	Volume of Stone in m cum	Recovery Factor 60% in m cum	Million tons of Stone
15	416	361	41	57	20	3.00352	0.600704	2.402816	1.4416896	3.89256192

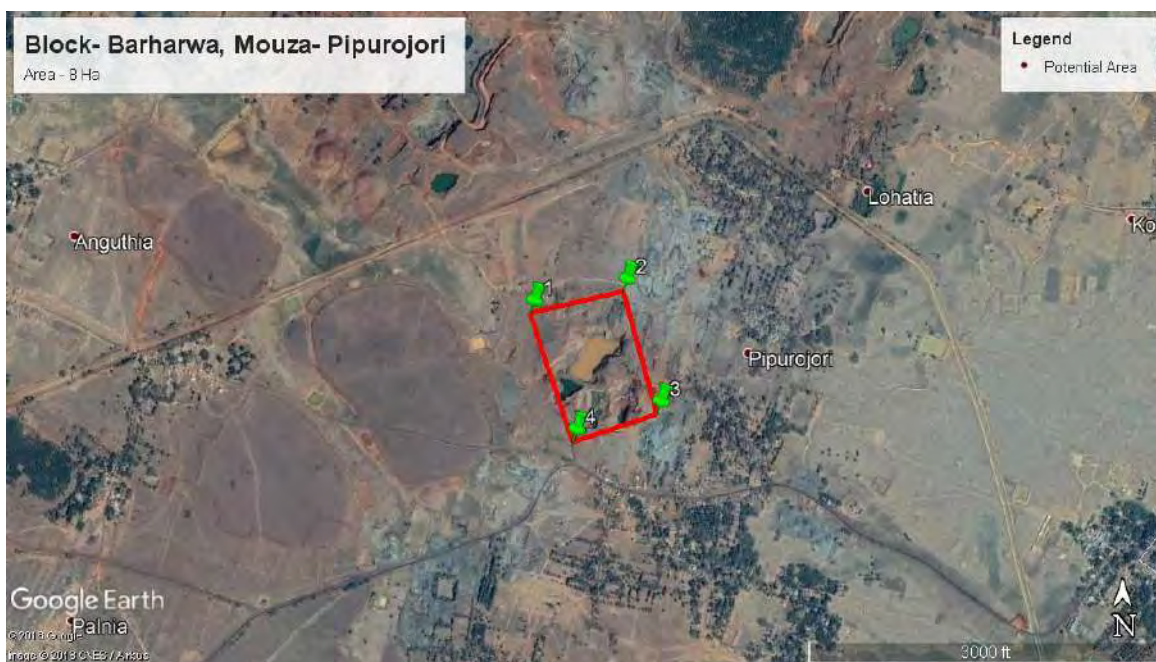


Image showing the Potential Area (Block – C, Mineral – Basalt & Granite Gneiss) As Per KML Data

Sl.no	Latitude	Longitude
1	24°44'42.30"N	87°47'21.24"E
2	24°44'44.10"N	87°47'29.74"E
3	24°44'33.89"N	87°47'32.84"E
4	24°44'31.57"N	87°47'25.12"E



Village – Pipurjori, Panchayat - Majurkol

Block - Barharwa, Vill - Pipurojori, Area - 8 Ha Volume in cum

Area in Ha	Length in M	Width in M	Min R.L in M	Max. R.L in M	Depth in m av. R.L 53 to 33	Total Volume in Situ in Million cum	Total Volume of O.B in Cum at depth upto 4m	Volume of Stone in m cum	Recovery Factor 60% in m cum	Million tons of Stone
8	334	240	51	55	20	1.6032	0.32064	1.28256	0.769536	2.0777472

Block - Rajmahal

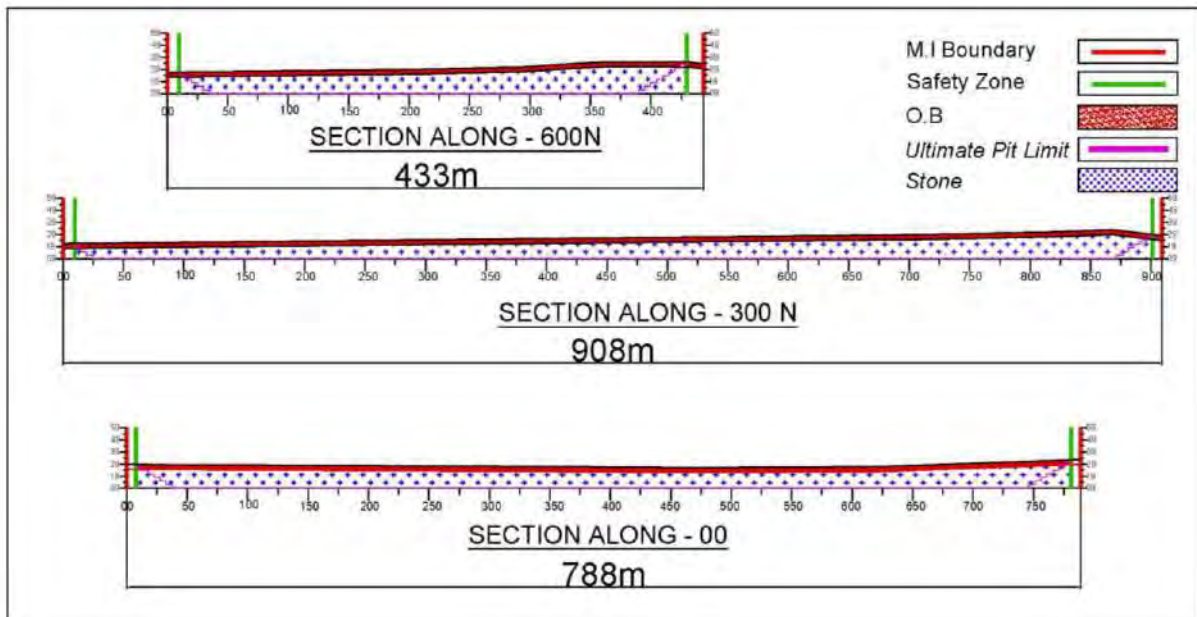
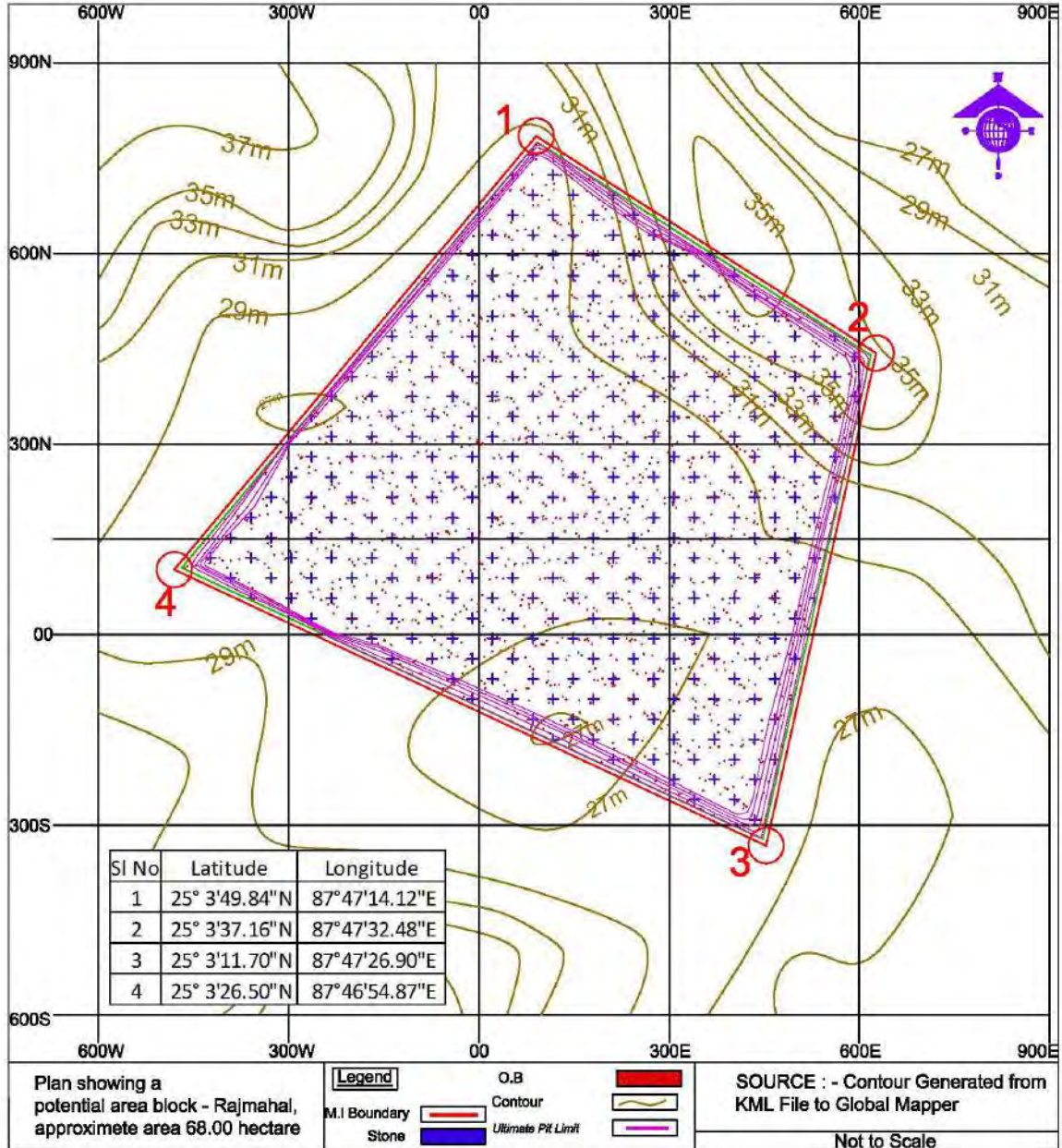


Image showing the Potential Area (Block – A, Mineral – China Clay) As Per KML Data

Sl No	Latitude	Longitude
1	25° 3'49.84"N	87°47'14.12"E
2	25° 3'37.16"N	87°47'32.48"E
3	25° 3'11.70"N	87°47'26.90"E
4	25° 3'26.50"N	87°46'54.87"E



Villages under this potential area : Raibazar, Mahasingpur, Mundomala, Kasba



**District Survey Report of Sahibganj, Jharkhand**

		<i>Total Volum In cum</i>				<i>Volum Of ROM In Cum</i>			
<b>Section Proved 29 TO 09</b>	<b>Cross sectional area of O.B in sqm</b>	<b>Sectional area sqm</b>	<b>Inffuence Length m</b>	<b>Total Volume of O.B in Cum (B)</b>	<b>Total Volume Cum</b>	<b>Sectional area sqm</b>	<b>Inffuence Length m</b>	<b>Total Volume Cum</b>	<b>ROM Blocked In Benches and safety zone Cum</b>
600N	1775	7692	295	523625	2269140	8177.00	295	2412215.00	143075.00
300N	3636	12066	300	1090800	3619800	15026.00	300	4507800.00	888000.00
0.00	3156.00	11685	400	1262400	4674000	13777.00	400	5510800.00	836800.00
				<b>2876825</b>	<b>8293800</b>			<b>10018600.00</b>	<b>1867875.00</b>

**SUMMARY OF TOTAL RESOURCE**

<b>working area details</b>	<b>R.L in m</b>	<b>Vol of total O.B</b>	<b>Volume of stone</b>	<b>Recovery 60% of A</b>		
		<b>cum</b>	<b>Cum</b>	<b>Cum</b>	<b>MT=B ×2.7</b>	<b>Million tons</b>
			<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
<b>from surface up to 20m depth</b>	29 to 09	0	10018600.00	6011160.00	16230132.00	16.230
<b>Total</b>		<b>1</b>	<b>10018600.00</b>	<b>6011160.00</b>	<b>16230132.00</b>	<b>16.230</b>

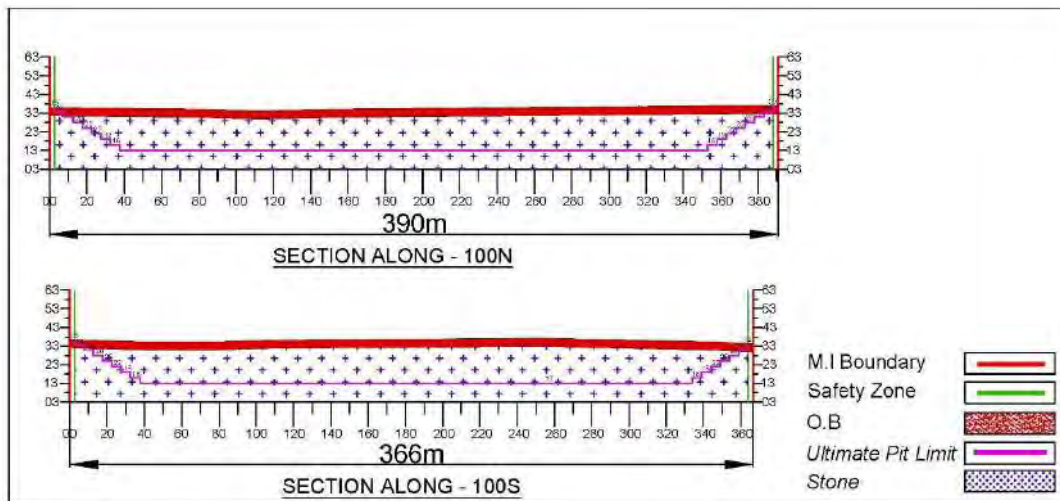
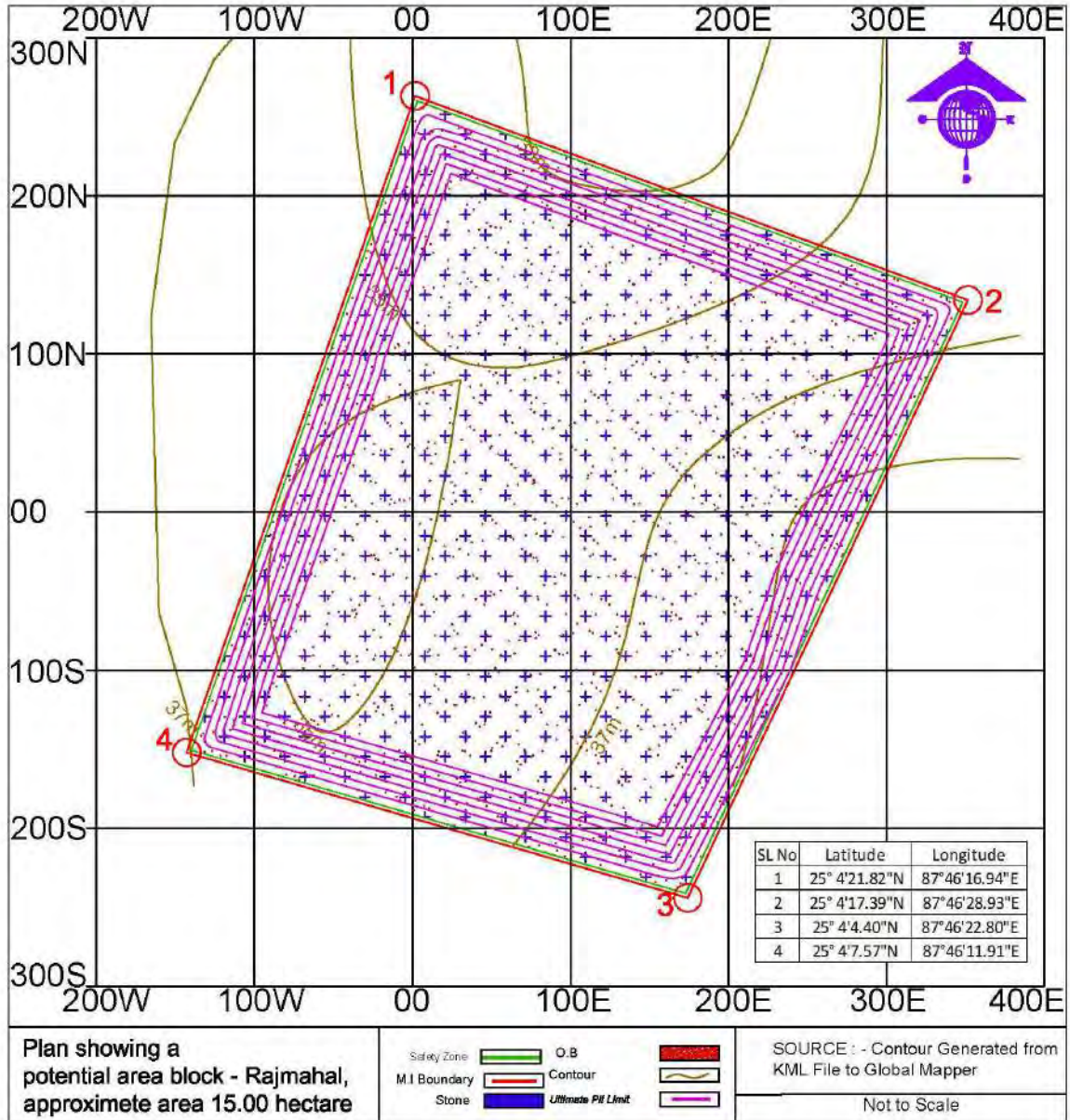


**Image showing the Potential Area (Block – B, Mineral – China Clay) As Per KML Data**

SL No	Latitude	Longitude
1	25° 4'21.82"N	87°46'16.94"E
2	25° 4'17.39"N	87°46'28.93"E
3	25° 4'4.40"N	87°46'22.80"E
4	25° 4'7.57"N	87°46'11.91"E



Village – Kasba



District Survey Report of Sahibganj, Jharkhand

Total Volum In cum					Volum Of ROM In Cum				
Section Proved 33 TO 13	Cross sectional area of O.B in sqm	Sectional area sqm	Inffuence Length m	Total Volume of O.B in Cum (B)	Total Volume Cum	Sectional area sqm	Inffuence Length m	Total Volume Cum	ROM Blocked In Benches and safety zone Cum
100N	1562	7255	156	243672	1131780	7859.00	156	1226004.00	94224.00
100S	1466.00	6940	294	431004	2040360	7557.00	294	2221758.00	181398.00
				<b>674676</b>	<b>3172140</b>			<b>3447762.00</b>	<b>275622.00</b>

SUMMRUCTONY OF TOTAL PROD

working area details	R.L in m	Vol of total O.B	Volume of stone	Recovery 60% of A		
		cum	Cum	Cum	MT=B ×2.7	Million tons
			A	B	C	D
from surface up to 20m depth	33 to 13	0	3447762.00	2068657.20	5585374.44	5.585
<b>Total</b>		<b>0</b>	<b>3447762.00</b>	<b>2068657.20</b>	<b>5585374.44</b>	<b>5.585</b>

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## 15. QUALITY/GRADE OF MINERAL AVAILABLE IN THE DISTRICT

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### **Rocks and Minerals found in Sahibganj District:-**

#### ➤ **GRANITE GNEISS / MIGMATITE**

**Granite gneiss** is a rock consisting of an orthogneiss or paragneiss having the composition of a granite. Gneiss is an old German word meaning bright or sparkling. It is a high grade metamorphic rock, meaning that it has been subjected to higher temperatures and pressures than schist. It is formed by the metamorphosis of granite, or sedimentary rock. Gneiss displays distinct foliation, representing alternating layers composed of different minerals. However, unlike slate and schist, gneiss does not preferentially break along planes of foliation because less than 50% of the minerals formed during the metamorphism are aligned in thin layers. Because of the coarseness of the foliation, the layers are often sub-parallel, i.e. they do not have a constant thickness, and discontinuous.

**Mineralogy** The granite gneiss includes several varieties: banded gneiss, schistose granite, porphyroblastic gneissose granite and granodiorite. Grain size -medium to coarse grained; can see crystals with the naked eye. Hardness -hard. The granite gneiss is full of mafic enclaves at places. The gneiss is composed of quartz, microcline, plagioclase (An<sub>20</sub>-An<sub>44</sub>), biotite, hornblende and other accessory minerals, but lacks in muscovite. Felsic minerals such as feldspar ( orthoclase, plagioclase) and quartz generally form the light coloured bands; mafic minerals such as biotite, pyroxene ( augite) and amphibole ( hornblende) generally form the dark coloured bands.

**Texture** - foliated, foliation on a scale of cm or more.

**Colour** - variable - generally alternating lighter and darker sub-parallel discontinuous bands garnet porphyroblasts common.

**Occurrence**- The granite gneiss complex is a composite mass consisting mainly of granite gneiss, migmatites and massive granite with enclaves of para and orthometamorphics, dykes of dolerite and innumerable veins of pegmatite; aplite and quartz. Because of repeated folding, highgrade regional metamorphism and profuse granitic activities, the elucidation of the stratigraphic succession in the area poses a great problem.

**MIGMATITE** - The magmatic rocks are exposed in several parts, both as an 'in situ' migmatites and as an injection migmatites. There are innumerable enclaves of mica-schist and hornblende schist of varying size in the granitic rocks. Biotite rich schlierens show considerable amount of contortion and flowage. Thin leucocratic, granites are commonly seen to form 'lit-per-lit' veins in the enclaves. Sometimes, the leucocratic granites and the metamorphic country rocks are intermingled in layer in fine scale so that the resulting rock is a banded gneiss or a banded augen gneiss. The minerals in the schlierens or melanosocnes are recrystallised and show schistose structure

with marked variation in the proportion of mafics. The leucosomes generally show crude hypidiomorphic texture with subhedral laths of microcline, and plagioclase (albite-orthoclase), anhedral grains of quartz and some thin flakes of biotite with minor amounts of apatite, sphene, epidote and opaque ores. Perthites (microcline - micro perthite) and myrmekites are quite common. Potash feldspar rimmed with albite and occurring within potash feldspars is also noted. Some potash feldspar plates show sieve structure with quartz inclusions. Muscovite is generally absent but whenever present, is seen gradually being replaced by orthoclase from the borders and along the cleavage planes.

**Geographical Location of Granitic Rocks in Sahibganj District** – In Sahibganj district Granitic rocks are found in **Sahibganj block (25°16'N : 87°36'E)**.

➤ **Rajmahal Trap- Basalt (Rajmahal Formation)**

By definition, basalt is dark coloured aphanitic (fine-grained) igneous rock with generally 45-53% silica (SiO<sub>2</sub>) and less than 10% feldspathoid by volume, and where at least 65% of the rock is feldspar in the form of plagioclase. This is as per definition of the International Union of Geological Sciences (IUGS) classification scheme. It most commonly forms as an extrusive rock, such as a lava flow, but can also form in small intrusive bodies, such as an igneous dyke or a thin sill.

**Mineralogy** - Essential minerals are augite, calcic plagioclase and iron oxide. Usually Olivine is also present. Labradorite feldspar is the chief constituent of the groundmass where as more calcic plagioclase (bytownite or anorthite) may occur as phenocrysts.

**Geological formation-** The Rajmahal Formation exposed in the Rajmahal area is represented by 450 to 550m thick predominantly basaltic lava flows (4-15 individual flows) intercalated with fresh-water sedimentary beds. This formation is well developed in the Rajmahal hills of Jharkhand, Bihar and West Bengal. It is made up of extensive lavaflows of Basic composition, called the Rajmahal Traps. The hills extend in N-S direction for about 125 km from near the River Ganga at Sahibganj to 24°N latitude. The basalts are intercalated with clay stone, siltstone, some of which are silicified and porcellanoid. The cumulative thickness of these intertrappean beds is about merely 40 m.

The Rajmahal formation can be divided into four units: lower lava flows with intercalated unfossiliferous sedimentary beds from the lowermost unit. The second unit comprises five to six lava flows with four to five sedimentary beds composed of tuff, claystone, siltstone, etc. The fourth unit comprises series of basalt flows with or without sedimentary beds. The radiometric dating of the Rajmahal traps has shown that they are of Albian age.

**Geographical Location of Rajmahal Trap -Basalt in Sahibganj District-** In Sahibganj district Rajmahal Trap- Basalt are found in Mandro, Borio, Barhait, Pathna, Taljhari Blocks.

➤ **Sandstone & Shale:-**

**Sandstone** is a clastic sedimentary rock composed mainly of sand-sized (0.0625 to 2 mm) mineral particles or rock fragments. It is clastic in origin (as opposed to either organic, like chalk and coal, or chemical, like gypsum and jasper). They are formed from cemented grains that may either be fragments of a pre-existing rock or be monomineralic crystals. The cements binding these grains together are typically calcite, clays, and silica. Grain sizes in sands are defined (in geology) within the range of 0.0625 mm to 2 mm (0.002–0.079 inches). Clays and sediments with smaller grain sizes not visible with the naked eye, including siltstones and shales, are typically called argillaceous sediments; rocks with larger grain sizes, including breccias and conglomerates, are termed rudaceous sediments.

**Mineralogy:-** The chemical compounds like silicon dioxide or silica, calcium carbonate, and iron dioxide act as natural cementing agents to hold together the sand in the form of a rock that we know by the name of sandstone. Chemically, sandstone is an absolutely impervious and monomineralic rock that is primarily composed of quartz.

**Shale** is a fine-grained, clastic sedimentary rock composed of mud that is a mix of flakes of clay minerals and tiny fragments (silt-sized particles) of other minerals, especially quartz and calcite. Shale is characterized by breaks along thin laminae or parallel layering or bedding less than one centimeter in thickness, called fissility. It is the most common sedimentary rock.

**Geographical Location of Sandstone and Shale in Sahibganj District-** In Sahibganj district Sandstone and Shale are found in **Barhait Block(24°52'N : 87°30'E)**.

➤ **Quartz:-**

**Quartz** is a mineral composed of silicon and oxygen atoms in a continuous framework of SiO<sub>4</sub> silicon–oxygen tetrahedra, with each oxygen being shared between two tetrahedra, giving an overall chemical formula of SiO<sub>2</sub>. Quartz is the second most abundant mineral in Earth's continental crust, behind feldspar

**Occurrence-** Quartz is a defining constituent of granite and other felsic igneous rocks. It is very common in sedimentary rocks such as sandstone and shale. It is a common constituent of schist, gneiss, quartzite and other metamorphic rocks.

While the majority of quartz crystallizes from molten magma, much quartz also chemically precipitates from hot hydrothermal veins as gangue, sometimes with ore minerals like gold, silver and copper. Large crystals of quartz are found in magmatic pegmatites. Well-formed crystals may reach several meters in length and weigh hundreds of kilograms.

**Geographical Location of Quartz in Sahibganj District-** It is common constituent of schist, gneiss, quartzite, sandstone, shale. It is found in almost every block of Sahibganj District.

➤ **Bentonite:-**

**Bentonite** is an absorbent aluminium phyllosilicate clay consisting mostly of montmorillonite.

The different types of bentonite are each named after the respective dominant element, such as potassium (K), sodium (Na), calcium (Ca), and aluminium (Al).

**Occurrence-** Bentonite usually forms from weathering of volcanic ash, most often in the presence of water. However, the term bentonite, as well as a similar clay called tonstein, has been used to describe clay beds of uncertain origin. For industrial purposes, two main classes of bentonite exist: sodium and calcium bentonite. In stratigraphy and tephrochronology, completely devitrified (weathered volcanic glass) ash-fall beds are commonly referred to as K-bentonites when the dominant clay species is illite. In addition to montmorillonite and illite another common clay species that is sometimes dominant is kaolinite. Kaolinite-dominated clays are commonly referred to as tonsteins and are typically associated with coal.

**Chemical Composition-** Chemically, montmorillonite is described as a hydrous aluminum silicate containing small amounts of alkali and alkaline earth metals. Structurally, montmorillonite is made of two basic building blocks, the aluminum octahedral sheet and the silica tetrahedral sheet.

**Geographical Location of Bentonite in Sahibganj District:-** It is found in Taljhari Block in Ranga, Pokharia and Manoharpur village.

➤ **Flint**

Flint is a hard, sedimentary cryptocrystalline form of the mineral quartz, categorized as a variety of chert. It occurs chiefly as nodules and masses in sedimentary rocks, such as chalks and limestones. Inside the nodule, flint is usually dark grey, black, green, white or brown in colour, and often has a glassy or waxy appearance. A thin layer on the outside of the nodules is usually different in colour, typically white and rough in texture. From a petrological point of view, "flint" refers specifically to the form of chert which occurs in chalk or marly limestone. Similarly, "common chert" (sometimes referred to simply as "chert") occurs in limestone. The uniform fine grain, brittleness, and conchoidal fracture made it relatively easy to shape arrowheads by flaking off chips, and the edges produced were quite sharp.

### **Occurrence-**

The exact mode of formation of flint is not yet clear, but it is thought that it occurs as a result of chemical changes in compressed sedimentary rock formations, during the process of diagenesis. Chert and flint provided the main source of tools and weapons for Stone Age man.

**Geographical Location of Flint in Sahibganj District:-** It is found in Khorbanni, Bisunpur village in Rajmahal Block, Dudhkol village in Taljhari Block.

### ➤ **China clay**

Rocks that are rich in kaolinite are known as kaolin or china clay. Kaolinite is a clay mineral, part of the group of industrial minerals, with the chemical composition  $Al_2Si_2O_5(OH)_4$ . It is a layered silicate mineral, with one tetrahedral sheet of silica ( $SiO_4$ ) linked through oxygen atoms to one octahedral sheet of alumina ( $AlO_6$ ) octahedral.

Owing to their following features, these clays are widely demanded and appreciated :

- Good plasticity
- Ability to withstand high temperature
- Accurate composition
- Longer shelf life

### **Occurrence-**

China clay occurs in abundance in soils that have formed from the chemical weathering of rocks in hot, moist climates—for example in tropical rainforest areas. Comparing soils along a gradient towards progressively cooler or drier climates, the proportion of kaolinite decreases, while the proportion of other clay minerals such as illite (in cooler climates) or smectite (in drier climates) increases. Such climatically-related differences in clay mineral content are often used to infer changes in climates in the geological past, where ancient soils have been buried and preserved.

### **Composition-**

In its natural state China clay is a white, soft powder consisting principally of the mineral kaolinite, which, under the electron microscope, is seen to consist of roughly hexagonal, platy crystals ranging in size from about 0.1 micrometre to 10 micrometres or even larger. These crystals may take vermicular and book like forms, and occasionally macroscopic forms approaching millimetre size are found. Kaolin as found in nature usually contains varying amounts of other minerals such as muscovite, quartz, feldspar, and anatase. In addition, crude kaolin is frequently stained yellow by iron hydroxide pigments. It is often necessary to bleach the clay chemically to remove the iron pigment and to wash it with water to remove the other minerals in order to prepare kaolin for commercial use.

**Geographical Location of China clay in Sahibganj District:-** It is found in Rajmahal block.

## ➤ Coal

**Geographical Location of Coal in Sahibganj District:-** In Sahibganj district it is found Barhait block (24° 45':87°30' & 24°60':87°30')

Coal is a combustible black or brownish-black sedimentary rock usually occurring in rock strata in layers or veins called coal beds or coal seams. The harder forms, such as anthracite coal, can be regarded as metamorphic rock because of later exposure to elevated temperature and pressure. Coal is composed primarily of carbon, along with variable quantities of other elements, chiefly hydrogen, sulfur, oxygen, and nitrogen. Coal is a fossil fuel that forms when dead plant matter is converted into peat, which in turn is converted into lignite, then sub-bituminous coal, after that bituminous coal, and lastly anthracite. This involves biological and geological processes. The geological processes take place over millions of years.

Throughout human history, coal has been used as an energy resource, primarily burned for the production of electricity and heat, and is also used for industrial purposes, such as refining metals. Coal is the largest source of energy for the generation of electricity worldwide, as well as one of the largest worldwide anthropogenic sources of carbon dioxide releases. The extraction of coal, its use in energy production and its byproducts are all associated with environmental and health effects including climate change.

### **Formation-**

At various times in the geologic past, the Earth had dense forests in low-lying wetland areas. Due to natural processes such as flooding, these forests were buried underneath soil. As more and more soil deposited over them, they were compressed. The temperature also rose as they sank deeper and deeper. As the process continued the plant matter was protected from biodegradation and oxidation, usually by mud or acidic water. This trapped the carbon in immense peat bogs that were eventually covered and deeply buried by sediments. Under high pressure and high temperature, dead vegetation was slowly converted to coal. As coal contains mainly carbon, the conversion of dead vegetation into coal is called carbonization.

The wide, shallow seas of the Carboniferous Period provided ideal conditions for coal formation, although coal is known from most geological periods. The exception is the coal gap in the Permian–Triassic extinction event, where coal is rare. Coal is known from Precambrian strata, which predate land plants—this coal is presumed to have originated from residues of algae.

### **Ranks-**

As geological processes apply pressure to dead biotic material over time, under suitable conditions, its metamorphic grade increases successively into:

- Peat, considered to be a precursor of coal, which has industrial importance as a fuel in some regions. In its dehydrated form, peat is a highly effective absorbent for fuel and oil spills on land and water, and also used as a conditioner for soil to make it more able to retain and slowly release water.
- Lignite, or brown coal, the lowest rank of coal, used almost exclusively as fuel for electric power generation
  - Jet, a compact form of lignite, sometimes polished; used as an ornamental stone since the Upper Palaeolithic

- Sub-bituminous coal, whose properties range between those of lignite and those of bituminous coal (It is used primarily as fuel for steam-electric power generation and is also an important source of light aromatic hydrocarbons for the chemical synthesis industry.)
- Bituminous coal, a dense sedimentary rock, usually black, but sometimes dark brown, often with well-defined bands of bright and dull material (It is used primarily as fuel in steam-electric power generation, with substantial quantities used for heat and power applications in manufacturing and to make coke.)
- Steam coal, a grade between bituminous coal and anthracite (It was once widely used as a fuel for steam locomotives.
- Anthracite, the highest rank of coal (It is a harder, glossy black coal used primarily for residential and commercial space heating; it may be divided further into metamorphically altered bituminous coal and "petrified oil", as from the deposits in Pennsylvania.)
- Graphite (It is one of the more difficult coals to ignite and not commonly used as fuel; it is most used in pencils, or powdered for lubrication.)

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## 16. USE OF MINERAL

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### ➤ GRANITE GNEISS / MIGMATITE

#### Uses of granitic rocks-

- **Building Stone:-** Granitic rocks have been extensively used as a dimension stone and as flooring tiles in public and commercial buildings and monuments.
- **Sub base and base material in road and highway construction:-** Crushed stone is the most basic use of granite. Crushed granite is used as a sub base and base material in road and highway construction. It is used as crushed stone media in sewage system drain fields and as a base material for foundations and construction slabs. Crushed granite in attractive colors is used as a landscape stone and in planters. It also makes great railroad ballast, and in larger sizes it makes good riprap.
- **Engineering:-** Engineers have traditionally used polished granite surface plates to establish a plane of reference, since they are relatively impervious and inflexible. Sandblasted concrete with a heavy aggregate content has an appearance similar to rough granite, and is often used as a substitute when use of real granite is impractical. Granite block is usually processed into slabs, which can be cut and shaped by a cutting center. Granite tables are used extensively as bases for optical instruments because of granite's rigidity, high dimensional stability, and excellent vibration characteristics.
- **Granite Paving Stone:-** Granite paving stones or "pavers" can make a colorful and interesting way of paving a driveway or patio. The beauty of natural stone combined with expert craftsmanship and design can produce a unique and lasting result. In the past granite blocks were often used to pave city streets.

### ➤ Rajmahal Trap- Basalt (Rajmahal Formation)

#### Uses of Basalt-

- Basalt is used for a wide variety of purposes. It is most commonly crushed for use as an aggregate in construction projects. Crushed basalt is used for road base, concrete aggregate, asphalt pavement aggregate, railroad ballast, filter stone in drain fields, and may other purposes.
- Basalt is also cut into dimension stone. Thin slabs of basalt are cut and sometimes polished for use as floor tiles, building veneer, monuments, and other stone objects.

### ➤ Sandstone

#### Uses:-

- It has also been used for artistic purposes to create ornamental fountains and statues.
- Some sandstones are resistant to weathering, yet are easy to work. This makes sandstone a common building and paving material including in asphalt concrete.

### ➤ Shale

#### Uses-

- Shale is relatively fragile, as far as rock fragility goes, so it is rarely used for building materials or industrial uses in its raw form. When properly processed, it can be used as an additive in cement and art clay products.
- Shale uses in construction industry include Cement manufacture, Construction aggregate, For road aggregate, Making natural cement, Raw material for the manufacture of mortar.

### ➤ Quartz

Uses- Quartz is an important mineral with numerous uses.

- **Glass Making-** Geological processes have occasionally deposited *sand* that are composed of almost 100% quartz grains. These deposits have been identified and produced as sources of high purity silica sand. These sands are used in the glassmaking industry. Quartz sand is used in the production of container glass, flat plate glass, specialty glass and fibreglass
- **Abrasive-** The high hardness of quartz, seven on the Mohs Scale, makes it harder than most other natural substances. As such it is an excellent abrasive material. Quartz sands and finely ground silica sand are used for sand blasting, scouring cleansers, grinding media, and grit for sanding and sawing.
- **Foundry Sand-** Quartz is very resistant to both chemicals and heat. It is therefore often used as a foundry sand. With a melting temperature higher than most metals it can be used for the molds and cores of common foundry work.

Refractory brick are often made of quartz sand because of its high heat resistance. Quartz sand is also used as a flux in the smelting of metals.

- **Petroleum Industry-** Quartz sand has a high resistance to being crushed. In the petroleum industry *sand slurries* are forced down oil and gas wells under very high pressures in a process known as *hydraulic fracturing*. This high pressure fractures the reservoir rocks and the sandy slurry injects into the fractures. The durable sand grains hold the fractures open after the pressure is released. These open fractures facilitate the flow of natural gas into the well bore.
- **Many Other Quartz Sand Uses-** Quartz sand is used as a filler in the manufacture of rubber, paint and putty. Screened and washed, carefully sized quartz grains are used as filter media and roofing granules. Quartz sands are used for traction in the railroad and mining industries. These sands are also used in recreation on golf courses, volleyball courts, baseball fields, children's sand boxes and beaches.

## ➤ Flint

### Uses-

- **Tools or cutting edges**

Flint was used in the manufacture of tools during the Stone Age as it splits into thin, sharp splinters called flakes or blades (depending on the shape) when struck by another hard object (such as a hammerstone made of another material). This process is referred to as knapping.

- **Flintlocks**

A piece of flint held in the jaws of a spring-loaded hammer, when released by a trigger, strikes a hinged piece of steel ("frizzen") at an angle, creating a shower of sparks and exposing a charge of priming powder. The sparks ignite the priming powder and that flame, in turn, ignites the main charge

- **As a building material**

Flint, knapped or unknapped, has been used from antiquity up to the present day as a material for building stone walls, using lime mortar, and often combined with other available stone or brick rubble.

- **Ceramics**

Flint pebbles are used as the media in ball mills to grind glazes and other raw materials for the ceramics industry. The pebbles are hand-selected based on colour; those having a tint of red, indicating high iron content, are discarded. The remaining blue-grey stones have a low content of chromophoric oxides and so are less deleterious to the colour of the ceramic composition after firing.

- **Jewellery**

Flint bracelets were known in Ancient Egypt, and several examples have been found. Striped flint is today in use as a gemstone as well.

- **Fragmentation**

While flint may be used in fire-lighting, it should not be exposed to excessive heat, as from a fire. Due to uneven expansion, flint may fracture, sometimes violently, during heating. This tendency to fracture is enhanced by the fact that most samples of flint contain impurities that may expand to a greater or lesser degree than the surrounding stone. This makes the material more homogeneous and thus more "knappable" and produces tools with a cleaner, sharper cutting edge.

➤ **China clay**

**Uses-**

- **Kaolin**, also called **china clay**, soft white clay that is an essential ingredient in the manufacture of china and porcelain and is widely used in the making of paper, rubber, paint, and many other products.
- When kaolin is mixed with water in the range of 20 to 35 percent, it becomes plastic (i.e., it can be molded under pressure), and the shape is retained after the pressure is removed. With larger percentages of water, the kaolin forms a slurry, or watery suspension.

➤ **Bentonite**

**Uses-**

- **Bentonite** is a type of absorbent clay that is usually refined from volcanic ash. Its high absorbency makes it a useful substance in industrial applications, in products like kitty litter and even in natural medicine.
- Bentonite also used as "Multani Mitti" has great scope of export to other parts of the other state of Jharkhand.

➤ **Coal**

Different types of coal have different uses.

- Steam coal - also known as thermal coal - is mainly used in power generation.
- Coking coal - also known as metallurgical coal - is mainly used in steel production.

Other important users of coal include alumina refineries, paper manufacturers, and the chemical and pharmaceutical industries. Several chemical products can be produced from the by-products of coal. Refined coal tar is used in the manufacture of chemicals, such as creosote oil, naphthalene, phenol, and benzene. Ammonia gas recovered from coke ovens is used to manufacture ammonia salts, nitric acid and agricultural fertilisers. Thousands of different products have coal or coal by-products as components: soap, aspirins, solvents, dyes, plastics and fibres, such as rayon and nylon.

Coal is also an essential ingredient in the production of specialist products:

- Activated carbon - used in filters for water and air purification and in kidney dialysis machines.
- Carbon fibre - an extremely strong but light weight reinforcement material used in construction, mountain bikes and tennis rackets.
- Silicon metal - used to produce silicones and silanes, which are in turn used to make lubricants, water repellents, resins, cosmetics, hair shampoos and toothpastes.

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***17. DEMAND AND SUPPLY OF THE MINERAL IN THE LAST THREE YEARS***

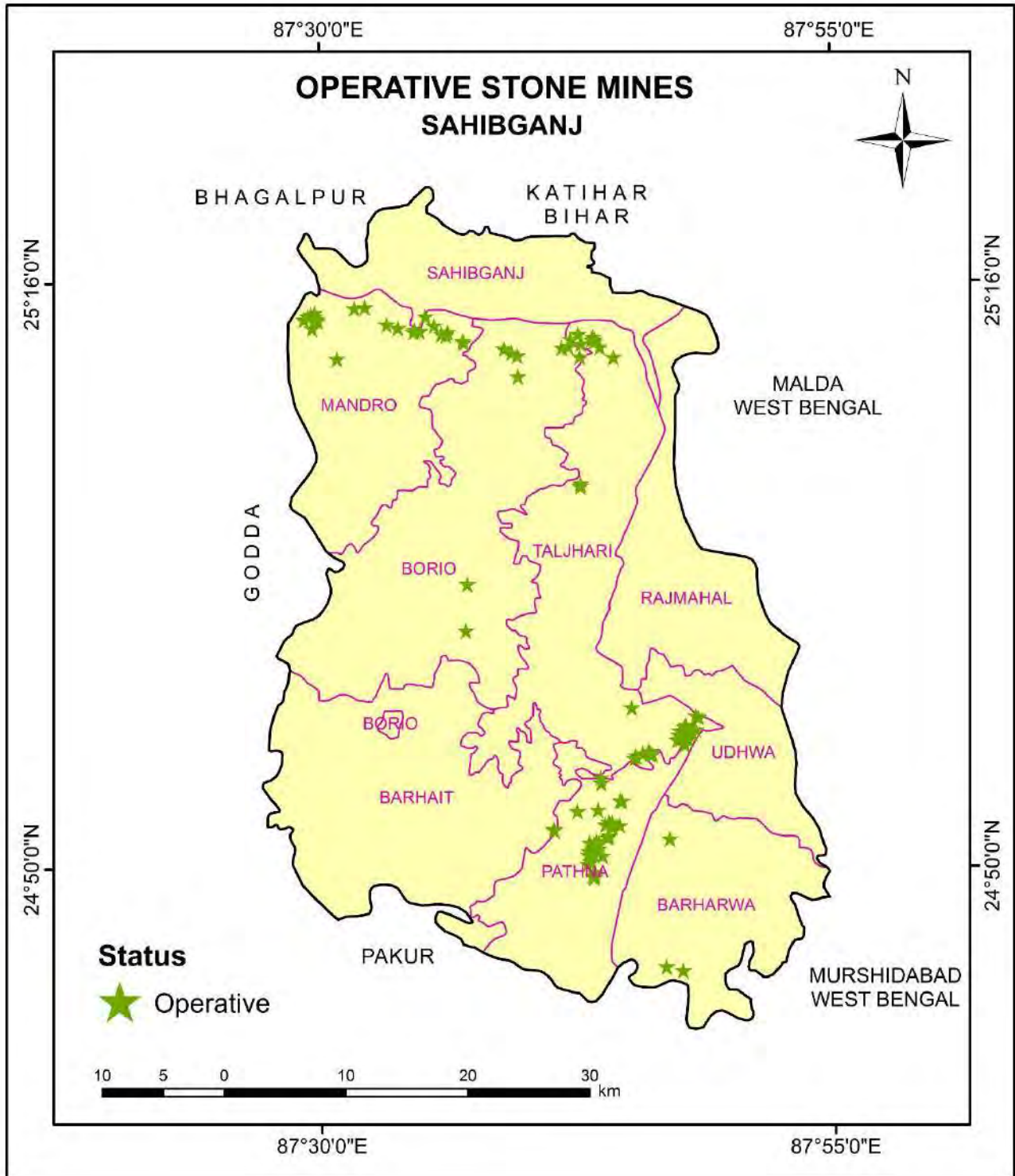
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As such there are huge infrastructural activities such as road, building, railways are coming up by Govt. of India & PSUs under “Make In India” programme.

The Granite Gneiss, Basalt are the main raw minerals for the above activities and considering the last three years’ actual production of Sahibganj with respect to the requirement of the state has a huge gap.

It is proposed to start the stone production from larger block/area to atleast double the production of the district which will enhance the revenue of the district and also support the livelihood of the local people.

18. MAP OF EXISTING MINING LEASES IN THE DISTRICT



**19. DETAILS OF THE AREA OF WHERE THERE IS A CLUSTER OF MINING LEASE  
VIZ. NUMBER OF MINING LEASES, LOCATION (LATITUDE AND LONGITUDE)**

Currently there is no such cluster of mining lease. However, it is proposed to consider the cluster of mining lease while planning for new lease area in coming years.

**20. DETAILS OF ECO-SENSITIVE AREA, IF ANY, IN THE DISTRICT**

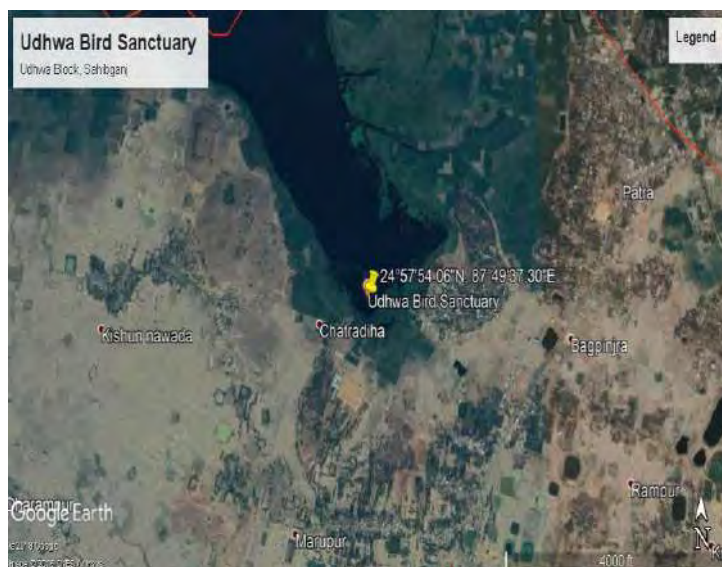
**Moti Jharna Waterfall, Shivgadi Temple, Udhwa Bird Sanctuary and National Fossil Park** have been identified as some of the important historical monuments in the district and it is suggested that a minimum distance as per DEIAA guideline to be declared as No Mining Zone.



Moti Jharna in Taljhari Block (Latitude: 25 12' 51.51\"N, Longitude: 87 44' 26.45\"E)



Shivgadi Temple in Taljhari Block (Latitude: 24 55' 34.70\"N, 87 38' 53.97\"E)



Udhwa Bird Sanctuary (Latitude: 24 57' 54.06\"/>



National Fossil Park, Ghughwa Forest, Sahibganj

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## 21. IMPACT OF MINING ON ENVIRONMENT

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Impact on Environment due to mining activities varies based on the quantum of production rate proposed. The different activities involved before & during mining are narrated below, which helps to assess the impact on environment.

- **Exploration:**

A mining project can only commence with knowledge of the extent and value of the mineral ore deposit. Information about the location and value of the mineral ore deposit is obtained during the exploration phase. This phase includes surveys, field studies, and drilling test boreholes and other exploratory excavations.

The exploratory phase may involve clearing of wide areas of vegetation (typically in lines), to allow the entry of heavy vehicles mounted with drilling rigs. Many countries require a separate EIA for the exploratory phase of a mining project because the impacts of this phase can be profound and because further phases of mining may not ensue if exploration fails to find sufficient quantities of high-grade mineral ore deposits of economical values.

- **Development**

If the mineral ore exploration phase proves that there is a large enough mineral ore deposit, of sufficient grade, then the project proponent may begin to plan for the development of the mine. This phase of the mining project has several distinct components.

- **Site preparation**

If a mine site is located in a remote, undeveloped area, the project proponent may need to begin by clearing land for the construction of staging areas that would house project personnel and equipment. Even before any land is mined, activities associated with site preparation and clearing can have significant environmental impacts, especially if they are within or adjacent to ecologically sensitive areas. The EIA must assess, separately, the impacts associated with site preparation and clearing.

- **Active mining**

Once a mining company has constructed access roads and prepared staging areas that would house project personnel and equipment, mining may commence. All types of active mining share a common aspect, i.e. the extraction and concentration (or beneficiation) of a metal from the earth. Proposed mining projects differ considerably in the proposed method for extracting and concentrating the metallic ore. In almost every case, metallic

ores are buried under a layer of ordinary soil or rock (called 'overburden' or 'waste rock') that must be moved or excavated to allow access to the ore deposit. The first way in which proposed mining projects differ is the proposed method of moving or excavating the overburden. What follows are brief descriptions of the most common methods.

- **Open-pit mining**

Open-pit mining is a type of strip mining in which the ore deposit extends very deep in the ground, necessitating the removal of layer upon layer of overburden and ore.

In many cases, logging of trees and clear-cutting or burning of vegetation above the ore deposit may precede removal of the overburden. The use of heavy machinery, usually bulldozers and dump trucks, is the most common means of removing overburden. Open-pit mining often involves the removal of natively vegetated areas, and is therefore among the most environmentally-destructive types of mining, especially within tropical forests.

- **Underground mining**

In underground mining, a minimal amount of overburden is removed to gain access to the ore deposit. Access to this ore deposit is gained by tunnels or shafts. Tunnels or shafts lead to a more horizontal network of underground tunnels that directly access the ore. In an underground mining method called 'stopping' or 'block caving,' sections or blocks of rock are removed in vertical strips that leave a connected underground cavity that is usually filled with cemented aggregate and waste rock.

Although underground mining is a less environmentally-destructive means of gaining access to an ore deposit, it is often costlier and entails greater safety risks than strip mining, including open-pit mining. While most large-scale mining projects involve open-pit mining, many large underground mines are in operation around the world.

- **Disposal of overburden and waste rock**

In almost every project, metallic ores are buried under a layer of ordinary soil or rock (called 'overburden' or 'waste rock') that must be moved or excavated to allow access to the metallic ore deposit. For most mining projects, the quantity of overburden generated by mining is enormous. The ratio of the quantity of overburden to the quantity of mineral ore (called the 'strip ratio')

is usually greater than one, and can be much higher. For example, if a proposed mining project involves the extraction of 100 million metric tons of mineral ore, then the proposed mining project could generate more than one billion metric tons of overburden and waste rock.

These high-volume wastes, sometimes containing significant levels of toxic

substances, are usually deposited on-site, either in piles on the surface or as backfill in open pits, or within underground mines. Therefore, the EIA for a proposed mining project must carefully assess the management options and associated impacts of overburden disposal.

- **Human displacement and resettlement**

According to the International Institute for Environment and Development:

The displacement of settled communities is a significant cause of resentment and conflict associated with large-scale mineral development. Entire communities may be uprooted and forced to shift elsewhere, often into purpose-built settlements not necessarily of their own choosing. Besides losing their homes, communities may also lose their land, and thus their livelihoods. Community institutions and power relations may also be disrupted. Displaced communities are often settled in areas without adequate resources or are left near the mine, where they may bear the brunt of pollution and contamination. Forced resettlement can be particularly disastrous for indigenous communities who have strong cultural and spiritual ties to the lands of their ancestors and who may find it difficult to survive when these are broken.

## **ENVIRONMENTAL AND SOCIAL IMPACTS OF MINING**

The most important environmental impact of mining projects are:-

- **Acid mine drainage and contaminant leaching**

Acid mine drainage is considered one of mining most serious threats to water resources. A mine with acid mine drainage has the potential for long-term devastating impacts on rivers, streams and aquatic life.

### **HARM TO FISH & OTHER AQUATIC LIFE:**

If mine waste is acid-generating, the impacts to fish, animals and plants can be severe. Many streams impacted by acid mine drainage have a pH value of 4 or lower – similar to battery acid. Plants, animals, and fish are unlikely to survive in streams such as this.

#### ***PERPETUAL POLLUTION:***

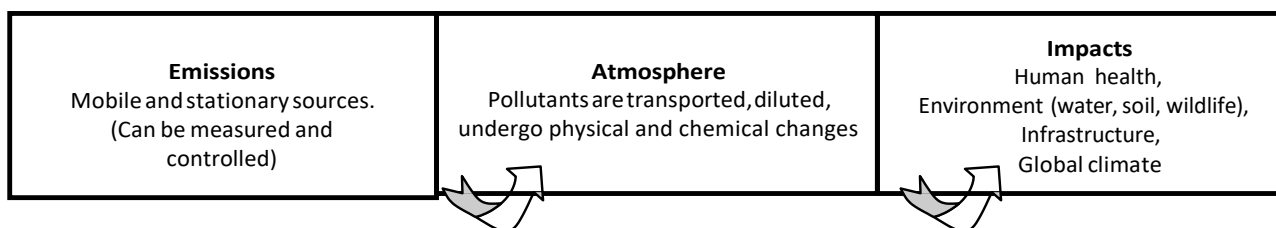
Acid mine drainage is particularly harmful because it can continue indefinitely causing damage long after mining has ended. Due to the severity of water quality impacts from acid mine drainage, many hardrock mines across the west require water treatment in perpetuity. Even with existing technology, acid mine drainage is virtually impossible to stop once the reactions begin.

To permit an acid generating mine means that future generations will take responsibility for a mine that must be managed for possibly hundreds of years.”

### **Impacts of mining projects on air quality:-**

The largest sources of air pollution in mining operations are:

Particulate matter transported by the wind as a result of excavations, blasting, transportation of materials, wind erosion (more frequent in open-pit mining), fugitive dust from tailings facilities, stockpiles, waste dumps, and haul roads. Exhaust emissions from mobile sources (cars, trucks, heavy equipment) raise these particulate levels; and gas emissions from the combustion of fuels in stationary and mobile sources, explosions, and mineral processing. Once pollutants enter the atmosphere, they undergo physical and chemical changes before reaching a receptor. These pollutants can cause serious effects to people's health and to the environment.



Large-scale mining has the potential to contribute significantly to air pollution, especially in the operation phase. All activities during ore extraction, processing, handling, and transport depend on equipment, generators, processes and materials that generate hazardous air pollutants such as particulate matter, heavy metals, carbon monoxide, sulfur dioxide, and nitrogen oxides.

### **Transportation sources**

Transportation sources of air pollutants include heavy vehicles used in excavation operations, cars that transport personnel at the mining site, and trucks that transport mining materials. The level of polluting emissions from these sources depends on the fuel and conditions of the equipment. Even though individual emissions can be relatively small, collectively these emissions can be of real concern. In addition, mobile sources are a major source of particulate matter, carbon monoxide, and volatile organic compounds that contribute significantly to the formation of ground-level ozone.

### **Stationary sources**

The main gaseous emissions are from combustion of fuels in power generation installations, and drying, roasting, and smelting operations. Many producers of precious metals smelt metal on-site, prior to shipping to off-site refineries. Typically, gold and silver is produced in melting/fluxing furnaces that may produce elevated levels of airborne mercury, arsenic, sulfur dioxide, and other metals.

### **Fugitive emissions**

Common sources of fugitive emissions include: storage and handling of materials; mine processing; fugitive dust, blasting, construction activities, and roadways associated with

mining activities; leach pads, and tailing piles and ponds; and waste rock piles. Sources and characteristics of fugitive emissions dust in mining operations vary in each case, as do their impacts. Impacts are difficult to predict and calculate but should be considered since they could be a significant source of hazardous air pollutants.

### **Noise and vibration**

Noise pollution associated with mining may include noise from vehicle engines, loading and unloading of rock into steel dumpers, chutes, power generation, and other sources. Cumulative impacts of shoveling, ripping, drilling, blasting, transport, crushing, grinding, and stock-piling can significantly affect wildlife and nearby residents.

Vibrations are associated with many types of equipment used in mining operations, but blasting is considered the major source. Vibration has affected the stability of infrastructures, buildings, and homes of people living near large-scale open-pit mining operations. According to a study commissioned by the European Union in 2000: "Shocks and vibrations as a result of blasting in connection with mining can lead to noise, dust and collapse of structures in surrounding inhabited areas. The animal life, on which the local population may depend, might also be disturbed."

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## **22. REMEDIAL MEASURES TO MITIGATE THE IMPACT OF MINING ON THE ENVIRONMENT**

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Following are the remedial measures to mitigate the impact of mining :

1. Water sprinkeling on haul road, loading and unloading points.
2. Plantation along the safety zone and dump area.
3. Providing dust masks to workers.
4. Regular monitoring of ambient air quality.
5. Provision of air conditioned cabin of Excavators and Dumpers.
6. Regular and proper maintainance of working equipments.
7. Periodic medical examination of the workers and organise medical camp in the area.
8. Use Milli Second Delay Detonator in blasting operation.
9. Pvision of ear plug to the workers.
10. Regular training program to the mines workers and operators.

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## 23. RECLAMATION OF MINED OUT AREA

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### Necessity of Reclamation & Rehabilitation:

- Exponential growth in mineral production since 1980.
- Mining activities causes physical, chemical, biological and socio-economic changes in the area.
- Surface mining activities disturb the original land profile.
- In India, mineral production comes mostly from opencast mines & hence Land degradation problems is of serious concern.
- An intricate, in-depth and site-specified techniques involving integrated approach is necessary.

Reclamation has three vital roles:

- Reclamation** – Reclamation means return the mined-out land with useful life. It implies restoring the land to a form and productivity that is useful and inconformity with a prior land use. Reclamation always may not be a single-phase operation.
- Rehabilitation** – Rehabilitation is to bring back the degraded land to a normal stage by a special treatment. It is a process of taking some mitigation measures for disturbed environmental condition created through mining activities.
- Restoration** – Restoration is the process of returning the mined out land being fit to an acceptable environmental condition. However, the general acceptable meaning of the term is bringing the disturbed land to its original form. Restoration is often used to indicate that biological properties of soil are put back to what they were. This is a rare phenomenon.

When active mining ceases, mine facilities and the site are reclaimed and closed. The goal of mine site reclamation and closure should always be to return the site to a condition that most resembles the pre-mining condition. Mines that are notorious for their immense impact on the environment often made impacts only during the closure phase, when active mining operations ceased. These impacts can persist for decades and even centuries.

Mine reclamation and closure plans must describe in sufficient detail how the mining company will restore the site to a condition that most resembles pre-mining environmental quality; how it will prevent – in perpetuity – the release of toxic contaminants from various mine facilities (such as abandoned open pits and tailings impoundments); and how funds will be set aside to insure that the costs of reclamation and closure will be paid for.

### Proposed future land use after reclamation:

- Forestry, b. Recreation, c. Water Reservoir, d. Crop Land, e. Residential/Commercial, f. Fish & wildlife Habitat, g. Undeveloped Land, h. Grazing/Pasture Land

Statutory requirement:

As per the Mineral Conservation Development Rule, 2017, the following rules must be bare in mind by the mine owner/agent/manager, which is a part of reclamation activities –

Rule 22, Mine Closure Plan

Rule 23, Submission of Progressive Mine Closure Plan

Rule 24, Submission of Final Mine Closure Plan

Rule 26, Responsibility of holder of mining lease

Rule 27, Financial Assurance

Rule 35, Sustainable Mining

## 24. RISK ASSESSMENT AND DISASTER MANAGEMENT PLAN

### 24.1 Vulnerability of the State

Almost all the 24 districts are affected by different kind of Disaster. There is great need to strengthen the capacity of State, District, Block and newly formed Panchayat level of departments, institutions and functionaries to respond to the Disaster at their own level in participation of community. Jharkhand is vulnerable to following kind of Hazards:-

- Drought,
- Mining Accidents,
- Chemical and Industrial Hazards,
- Lightning,
- Bird Flu,
- Flood,
- Earthquake,
- Fire / Forest Fire,
- Elephant Attacks,
- Climate Change, Biodiversity loss,
- Naxalism/Landmine Blasts etc.

Major Hazards affected districts SI No	Name of Hazards	No. of districts affected	Name of the district
1.	Drought	All the 24 Districts (2010)	All districts affected
2.	Flood	01	(Sahibgunj)
3.	Flash Flood	03	(Jamshedpur, Saraikela , Ranchi)
4.	Forest Fire	09	(Garhwa, Palamau, Latehar, Chatra, Hazaribagh, E. & W. Singhbhum, Simdega, Gumla)
5.	Lightening	09	(Palamau, Chatra, Latehar, Koderma, Ranchi, Giridih, 9 Hazaribagh, Lohardagga, Dumka)
6.	Mining Hazards	09	Latehar, Ramgarh, Dhanbad, Lohardagga, Giridih E & W Singhbhum & Koderma
7.	Earthquake Hazard – Zone –IV	02 Districts	(Godda & Sahibgunj - Partially)

	Zone –III	15 Districts	(Godda , Sahibgunj, Garhwa, Palamau, Chatra, Hazaribagh, Koderma, Giridih, Bokaro, Dhanbad, Deoghar, Dumka, Godda, Pakur, Jamtara)
	Zone – II	7 Districts	(Lohardagga, Ranchi, Ramgarh, Khunti, Gumla, E. & W. Singhbhum)

## 24.2 Mine disaster

Thousands of miners die each year around the globe due to mining accidents, especially from underground coal mining, although hard rock mining is not immune from accidents. A number of coal mines in the state are affected by fires leading to steady destruction of precious energy resource. The reason for mine fires presumably involves the phenomenon of spontaneous heating through two interrelated processes viz., the oxygen coal interaction or oxidative process and the thermal process. It is estimated that about 10% of total national coal resources are in the fire-affected areas. Although underground mining has considerably less impact than opencast mining on land, it causes enough damage through subsidence as observed in Jharia and Raniganj coalfields. Apart from this, leaks of poisonous gases such as hydrogen sulphide or explosive natural gases, especially firedamp or methane, dust explosions, collapsing of mine stopes, mining-induced seismicity, flooding, or general mechanical errors from improperly used or malfunctioning mining equipments and improper explosives underground can also cause to catastrophe.

The Chasnala mining disaster happened on 27 December 1975 in a coal mine near Dhanbad caused by an explosion in the mine followed by flooding which killed 372 miners.

The Dhanbad coal mine disaster occurred on May 28, 1965, in a coal mine near Dhanbad. On the fateful day, there was an explosion in Ghori Dhori colliery near Dhanbad, which led to fire in the mines which killed 375 miners.

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## **25. DETAILS OF THE OCCUPATIONAL HEALTH ISSUE IN THE DISTRICT**

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Since all the stone mines excavating below six metres from the supergessent ground, it attracts Mines Act 1952. As such there is no previous record in this regard available in the department, however it is proposed as per *Section 9A of Mines Act 1952*, it is the responsibility of the owner/agent/manager of the mine to provide occupational health survey facilities to the employees. In line with above *rule 29B of Mines Rules 1955*, it speaks about the initial and periodical medical examinations of the employees employed in the mine.

For initial medical examination, every person seeking employment in the mine and person has already undergone within the preceeding 5 years, a medical examination under these rules is to be carried out.

According to MSME Report 2011, there are 10 numbers of Allopathic Hospitals, 27 nos Community Health Centers, 58 Dispensaries, 2 Sub health centers and 1 Private Hospital, and it is proposed to carryout the above-mentioned activities with the guidance of these available facilities in the district.

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## **26. PLANTATION AND GREEN BELT DEVELOPMENT IN RESPECT OF LEASE ALREADY GRANTED IN THE DISTRICT**

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It is proposed to have a detailed record of plantation to be kept by the respective owner/agent/manager of the mine every year, which has been planted in the safety zone area and transport rout, which is statutorily required.

As per the norms of the forest department, the plantation has to be carried out at the rate of 2500 local plants per hectare and along the road side, at an interval of 5 metres in the zig-zag manner in both sides.

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## **27. Other Information**

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Jharkhand Minor Minerals (Auction) Rules, 2017 and Jharkhand Minor Minerals (Evidence & Mineral Contents) Rules, 2018 in Annexure I & II has been attached for ready reference.

## Conclusion

1. 27 numbers of new potential areas have been identified having total reserve of **77764.27** Million Ton in Sahibganj district on the basis of geological study carried out during field observation. All the parameters and the statutory clearances required for mining should be verified by consulting with concerned authorities before opting for E.C.
2. Since it is an interim report, to meet the requirement of minerals in the present scenario, it is proposed to identify such potential areas at certain interval and get the data bank of DSR to be updated.

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# Annexure I

झारखण्ड गजट (साधारण), बुधवार, 6 सितम्बर, 2017

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## Department of Industries, Mines and Geology.

### NOTIFICATION

16 AUGUST, 2017

**No.05/kha.Ni.-JMM(Auction)Rules-02/2017-2302--** In exercise of the powers conferred by section 15 of the Mines and Minerals (Regulation and Development) Act, 1957 (67 of 1957), the Governor of Jharkhand exercises power to notify following rules :-

### CHAPTER I

### PRELIMINARY

- 1. Short title and commencement.-** (1) These rules may be called the Jharkhand Minor Mineral (Auction) Rules, 2017.  
(2) They shall come into force on the date of their publication in the Official Gazette.
- 2. Definitions.-** (1) In these rules, unless the context otherwise requires,-
  - a) "Act" means the Mines and Minerals (Development and Regulation) Act, 1957 (67 of 1957);
  - b) "Composite Licence" means prospecting licence-cum-mining lease granted under rule 18;
  - c) "Mine Development and Production Agreement" means the agreement referred to in sub-rule (4) of rule 10 or sub-rule (8) of rule 18;
  - d) "Preferred bidder" means the bidder referred to in sub-clause (iii) of clause (b) of sub-rule (4) of rule 9;
  - e) "Qualified bidders" means the bidder referred to in sub-clause (iv) of clause (a) of sub-rule (4) of rule 9;
  - f) "Reserve Price" means the minimum percentage of value of mineral despatched as referred to in sub-rule (1) of rule 8;
  - g) "State Government" means Government of Jharkhand.
  - h) "Section" means section of the Act;
  - i) "Schedule" means a Schedule appended to these rules;
  - j) "Successful bidder" means the bidder as referred to in sub-rule (3) of rule 10 or sub-rule (2) of rule 18;
  - k) "Technically Qualified Bidders" means the bidder as referred to in sub-clause (ii) of clause (a) of sub-rule (4) of rule 9;

- l) "Tender Document" means the tender document issued by the Director, Mines / Deputy Commissioner for conduct of an auction referred to in sub-rule (2) of rule 9;
- m) "Upfront Payment" means the payment referred to in sub-rule (1) of rule 11;
- n) "Value of estimated resources" means an amount equal to the product of,-
- i) the estimated quantity of mineral resources for which the mineral block is being auctioned, expressed in metric tonne/cft; and
  - ii) the average price per metric tonne of such mineral as published by Indian Bureau of Mine for Jharkhand State for a period of twelve months immediately preceding the month of computation of the Value of Estimated Resources or the price notified by the Director, Mines; on the basis of the norm followed by Indian Bureau of Mines.

"Value of mineral despatched" shall have the meaning specified in sub-rule (2) of rule 8.

- o) "Director, Mines" means appointed as Director, Mines by the State Government.
- p) "Director, Geology" means appointed as Director, Geology by the State Government.
- q) "Deputy Commissioner" means appointed as Deputy Commissioner of respective District

(2) The words and expressions used in these rules but not defined herein shall have the same meaning as assigned to them in the Act or rules made there under.

**3. Application-** These rules shall apply to all minor minerals except Soil, Brick Earth, Morrums, Reh Soil, clay for making Raniganj tiles and Stone (Boulder, Bajri, Single, Stone Brick, Stone Dust) over an area of less than five hectare of Raiyati land (private land).

**4. Grant of concession- (1)** Where mineral contents of an area has been established and demarcated by the Director Geology, Mining Lease shall be granted in the manner specified under the provisions of JMMC Rules, 2004 as amended from time to time.

(2) A Composite Licence with respect to an area where the mineral content of an area have not been fully established but mineral block has been prepared by Director of Geology for grant of composite Licence, shall be granted in the manner specified under the provision of JMMC Rules, 2004 as amended from time to time.

**CHAPTER II**  
**GRANT OF MINING LEASE**

- 5. Prerequisites for auction of Mining Lease-** (1) The Director, Mines /Deputy Commissioner may initiate an auction process for grant of a mining lease with respect to an area within the District if the mineral contents in such area has been established by Director, Geology.
- (2) The Director, Mines /Deputy Commissioner shall, prior to issuance of the notice inviting tender with respect to mineral auction, identify and demarcate the area where a mining lease is proposed to be granted through auction and the area so demarcated shall be classified into forests land, land owned by the State Government and land not owned by the State Government.
- (3) The extent of area so demarcated shall include area required for all the activities falling under the definition of 'mine' as defined in clause (j) of sub-section (1) of section 2 of the Mines Act.
- 6. Eligibility for Mining Lease.-** (1) For the purpose of participating in the auction of mining lease, an applicant shall meet the requirements as specified in section 5 of MMDR Act and the terms and conditions of eligibility as specified in Schedule-I.
- (2) The Director, Mines /Deputy Commissioner may having regard to article 244 and the Fifth Schedule to the Constitution, the provisions of the Panchayats (Extension to the Scheduled Areas) Act, 1996 (40 of 1996); and the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (2 of 2007), make such amendments to Schedule I as it may deem necessary.
- (3) The eligibility for participating in the auction shall be determined as per the terms and conditions of eligibility for participating in the

auction and the Successful Bidder shall be decided solely on the basis of financial bids submitted by the eligible bidders.

- 7. Electronic Auction-** (1) An auction shall be conducted only through an online electronic auction platform.
- (2) The Director, Mines /Deputy Commissioner may utilise any online electronic auction platform which meets the minimum technical and security requirements as specified in the Guidelines for compliance to Quality requirements of e-Procurement Systems issued by the Standardisation Testing and Quality Certification Directorate, Department of Information Technology, Ministry of Communications and Information Technology, Government of India.
- 8. Bidding parameters-** (1) The Director, Mines / Deputy Commissioner shall specify in the tender document the minimum percentage of the value of mineral despatched, which shall be known as the "reserve price".
- (2) The value of mineral despatched shall be an amount equal to the product of,-
- (i) mineral despatched in a month; and
  - (ii) sale price of the mineral (Grade-wise and State-wise) as published by Indian Bureau of Mines for such month of despatch or the price notified by the Director, Mines.
- (3) The bidders shall quote, as per the bidding parameter, for the purpose of payment to the State Government, a percentage of value of mineral despatched equal to or above the reserve price and the successful bidder shall pay to the Director, Mines /Deputy Commissioner an amount equal to the product of,-
- (i) percentage so quoted; and
  - (ii) value of mineral despatched.
- (4) Where an area is being auctioned for more than one mineral, the percentage of value of mineral despatched as quoted by the successful bidder under sub-rule (3) shall be applicable for the

purpose of payment to the Director, Mines /Deputy Commissioner in respect of each such mineral.

- (5) If subsequent to grant of a mining lease, one or more new minerals are discovered, the percentage of value of mineral despatched as quoted by the successful bidder under sub-rule (3) shall be applicable for the purpose of payment to the Director, Mines /Deputy Commissioner in respect of each such mineral.

**9. Bidding Process.-** (1) Subject to the provisions of rule 5, the Director, Mines/Deputy Commissioner shall issue a notice inviting tender, at least in three daily News Paper and on the State Government Website to commence the auction process and such notice shall contain brief particulars regarding the area under auction, including.-

- (a) particulars of the area identified and demarcated shall be divided into forest land, land owned by the State Government, and land not owned by the State Government
- (b) estimated mineral resources and brief particulars regarding evidence of mineral contents with respect to all minerals in the area as provided by Director, Geology.

(2) The tender document issued by the Director, Mines /Deputy Commissioner shall contain.-

- (a) geological report prepared by the Director, Geology specifying particulars and estimated quantities of all minerals discovered in the area; and

- (b) revenue survey details of the area identified and demarcated shall be divided into forest land, land owned by the State Government, and land not owned by the State Government

(3) The bidders shall be provided a fixed period, as notified by the Director, Mines /Deputy Commissioner to study the tender document and such reports and the bidding process shall commence only on expiry of such period.

- (4) The auction shall be an ascending forward online electronic auction and shall comprise of the following rounds, namely:-
- (a) First Round of Auction to be held in the following manner, namely:-
- (i) the bidders shall submit-
- (A) a technical bid comprising amongst others, documentary evidence to confirm eligibility as per the provisions of the Act and the rules made thereunder to participate in the auction, bid security and such other documents and payments as may be specified in the tender document; and
- (B) an initial price offer which shall be a percentage of value of mineral despatched;
- (ii) only those bidders who are found to be eligible in accordance with the terms and conditions of eligibility specified in rule 6 and whose initial price offer is equal to or greater than the reserve price, referred to as "technically qualified bidders", shall be considered for the second round of electronic auction;
- (iii) The Highest initial price offer amongst the technically qualified bidders shall be the floor price of the second round of online electronic auction.
- (iv) the technically qualified bidders shall be ranked on the basis of the descending initial price offer submitted by them and the technically qualified bidders holding the first fifty percent of the ranks (with any fraction rounded off to higher integer) or the top five technically qualified bidders, whichever is higher, shall qualify as qualified bidders for participating in the second round of electronic auction:

Provided that where the total number of technically qualified bidders is less than three, then no technically qualified bidder shall be considered to be qualified bidder and the auction process shall be annulled:

Provided further that the Director, Mines /Deputy Commissioner may, in its discretion, decide not to annul the auction process if even in the third or subsequent attempt the total number of technically qualified bidders continues to be less than three and the Director, Mines/Deputy Commissioner may, in such case, decide to consider the technically qualified bidders as qualified bidders so as to continue with the bidding process:

Provided also that if the number of technically qualified bidders is between three and five, then all the technically qualified bidders shall be considered as qualified bidders:

Provided also that in the event of identical initial price offers being submitted by two or more technically qualified bidders, all such technically qualified bidders shall be assigned the same rank for the purposes of determination of qualified bidders and in such case, the aforementioned fifty percent shall stand enhanced to fifty percent plus the number of technically qualified bidders, whose initial price offers are identical less the number of such identical initial price offers

**Illustration;**

In the event there are a total of ten technically qualified bidders, and each technically qualified bidder submits different initial price offer, then the technically qualified bidders holding the first fifty percent of ranks shall be considered to be qualified bidders. If three such technically

qualified bidders submit the same initial price offer and are ranked in first fifty percent of the total number of ranks, then, all the three technically qualified bidders shall be considered to be qualified bidders and the total number of qualified bidders shall stand increased by two.

(b) Second Round of Auction to be held in the following manner, namely:-

(i) the qualified bidders may submit their final price offer which shall be a percentage of value of mineral despatched and greater than the floor price:

Provided that the final price offer may be revised till the conclusion of the auction as per the technical specifications of the auction platform;

(ii) The auction process shall be annulled if none of the qualified bidders submits a final price offer on the online electronic auction platform;

(iii) the qualified bidder who submits the highest final price offer shall be declared as the "preferred bidder" immediately on conclusion of the auction.

**10. Grant of Mining Lease-** (1) The preferred bidder shall submit the first installment being ten percent of the upfront payment as per rule 11.

(2) Upon receipt of the first instalment of the upfront payment, the Director, Mines / Deputy Commissioner shall issue a letter of intent to the preferred bidder.

(3) The preferred bidder shall be considered to be the "successful bidder" upon,-

(a) continuing to be in compliance with all the terms and conditions of eligibility;

(b) payment of the second instalment being ten per cent. of the upfront payment;

- (c) furnishing performance security as specified in rule 12;
- (d) satisfying the conditions with respect to Mining Plan specified in Jharkhand Minor Mineral Concession Rules, 2004 as amended from time to time
- (e) satisfying such other conditions as may be specified by the Director, Mines /Deputy Commissioner with the prior approval of the State Government.
- (4) The successful bidder shall sign the Mine Development and Production Agreement with the Deputy Commissioner upon obtaining all consents, approvals, permits, no-objections and the like as may be required under applicable laws for commencement of mining operations.
- (5) The successful bidder shall pay the third installment being eighty percent of the upfront payment subsequent to execution of the Mine Development and Production Agreement and upon such payment the Deputy Commissioner shall grant a mining lease to the successful bidder.
- (6) The Mining Lease Deed shall be executed by the Deputy Commissioner within thirty days of the date of completion of the conditions specified in sub-rule (5) and shall be subject to the provisions of the Act and the rules made thereunder.
- (7) The mining lease shall be for minerals found in the area pursuant to exploration/reserve estimated prior to the auction:
- Provided that where, subsequent to the auction, any new mineral is discovered, then the holder of mining lease shall follow the provisions of the Jharkhand Minor Mineral Concession Rules, 2004 as amended from time to time for inclusion of such new mineral in the Mining Lease Deed.
- (8) Where, prior to the auction or subsequent to the auction, presence of minor mineral is established or discovered, such minor minerals shall

be dealt in accordance with such rules made/to be made by the State Government under section 15.

- (9) The date on which a duly executed Mining Lease Deed is registered shall be the date of commencement of the mining lease.

**11. Upfront payment for mining lease-** (1) An amount equal to 0.50% of the value of estimated resources shall be the upfront payment.

- (2) The upfront payment shall be payable to the Director, Mines/Deputy Commissioner in three installments of ten percent; ten percent; and eighty percent as specified in the tender document and shall be adjusted in full against the amount paid under sub-rule (3) of rule 8 of these rules within the first five years of commencement of production of mineral as specified in the tender document.

**12. Performance security for mining lease.—**(1) The successful bidder shall provide a performance security of an amount of 0.50% of the value of estimated resources and the performance security shall be adjusted every five years so that it continues to correspond to 0.50% of the reassessed value of estimated resources.

- (2) The performance security provided through bank guarantee in the format as specified in Schedule II or through security deposit, may be invoked as per the provisions of -
- (i) the Mine Development and Production Agreement and
  - (ii) the Mining Lease Deed.

**13. Payments under mining lease—** (1) The lessee shall pay royalties and dead rent to the State Government as specified in the Act and the rules made thereunder.

- (2) The lessee shall pay the applicable amount quoted under rule 8 to the State Government on a monthly basis.
- (3) The lessee shall contribute such amounts as may be required under the Act/Rule made thereunder to -
- (a) the designated account of the District Mineral Foundation.

(4) The lessee shall also pay such other amounts as may be required under any law for the time being in force to the concerned authorities.

**14. Payment of Interest—**The State Government shall charge simple interest at the rate of twenty four percent per annum on any payment due to State Government under these rules the payment of which is delayed beyond sixty days from the due date thereof.

**15. Time Period—**The time period for compliance of rules 10 to 14 of these rules shall be as specified in the tender document.

### CHAPTER III

#### GRANT OF COMPOSITE LICENCE

**16. Prerequisites for auction of Composite Licence—**

(1) The Director, Mines/Deputy Commissioner may initiate an auction process for grant of a Composite Licence with respect to an area within the State in accordance with the provisions of these rules and this Chapter for the mineral block prepared by the Director, Geology for grant of a Composite Licence.

(2) The Director, Mines /Deputy Commissioner shall, prior to issuance of the notice inviting tender with respect to auction, identify and demarcate the area where a Composite Licence is proposed to be granted through auction and the area so demarcated shall be classified into forests land, land owned by the State Government, and land not owned by State Government.

**17. Auction for Composite Licence—**(1) The auction process as specified in rules 6 to 9 shall be applicable for conduct of auction for grant of a Composite Licence subject to the following, namely:—

(a) the State Government shall not make any reservation on the basis of end use;

(b) the Director, Mines /Deputy Commissioner shall subject to compliance of rule 16, issue a notice inviting tender, including on

- their website, to commence the auction process and such notice shall contain brief particulars regarding the area under auction, including,-
- (i) particulars of the area identified and demarcated shall be divided into forest land, land owned by the State Government, and land not owned by the State Government
  - (ii) estimated mineral resources with respect to all minerals discovered in the area as prepared by Director, Geology.
- (c) the tender document issued by the Director, Mines, shall contain,—
- (i) geological report specifying particulars and estimated quantities of all minerals discovered in the area as prepared by Director, Geology; and
  - (ii) revenue survey details of the area identified, demarcated shall be divided into forest land, land owned by the State Government, and land not owned by the State Government.
- (d) the bidders shall be provided a fixed period, as prescribed by the Director, Mines/Deputy Commissioner to study the Tender Document and such reports and the bidding process shall commence only on expiry of such period.

**18. Grant of Composite Licence.—** (1) Upon completion of the auction process, the preferred bidder shall submit a performance security in the manner specified in sub-rule (1) of rule 19 and upon receipt of such performance security, the Director, Mines /Deputy Commissioner shall issue a letter of intent to the preferred bidder.

- (2) On receipt of the letter of intent the preferred bidder shall be considered to be the successful bidder upon fulfilment of the following conditions, namely:—
- (a) compliance with all the terms and conditions of eligibility;
  - (b) obtaining all consents, approvals, permits, no-objections and the like as may be required under applicable laws for commencement of prospecting operations; and

- (c) submitting the Scheme of prospecting.
- (3) Upon fulfilment of the conditions specified in sub-rule (2), the Director, Mines /Deputy Commissioner shall grant a Composite Licence to the successful bidder and such Composite Licence shall be subject to the provisions of the Act and the rules made thereunder, as applicable to a prospecting licence and mining lease.
- (4) The minimum area for grant of a Composite Licence shall not be less than the minimum area for which a mining lease may be granted in accordance with the provisions of the Jharkhand Minor Mineral Concession Rules, 2004 as amended from time to time and the maximum area shall be in accordance with section 6 as applicable to a prospecting licence.
- (5) The holder of a Composite Licence shall conduct geological exploration of the area under the Composite Licence so as to ascertain evidence of mineral contents and shall submit periodic reports in accordance with the Act and rules made thereunder, as applicable to a prospecting licence and all reports, studies and other documentation related to the geological exploration of the area under the Composite Licence shall be submitted to the Director, Mines/Deputy Commissioner.
- (6) If a holder of a Composite Licence,—
- (a) fails to complete prospecting operations or fails to establish the existence of mineral contents in accordance with the guidelines issued by the Director, Geology such holder shall not be eligible to receive a mining lease and the Composite Licence shall be terminated;
- (b) completes prospecting operations in accordance with the guidelines issued by the Director, Geology resulting in determination of evidence of mineral contents, such holder shall make an application to the Director, Mines/Deputy

Commissioner for grant of a mining lease accompanied with the first installment, being ten percent of the upfront payment:

Provided that the mining lease shall be granted only with respect to the area for which evidence of mineral contents has been found and shall not be for an area larger than the maximum area for which a mining lease may be granted under the Act:

Provided further that any excess area shall be deemed to be surrendered by the holder of Composite Licence after completing its reclamation.

- (7) Upon receipt of the duly completed mining lease application and the first installment of the upfront payment as specified in clause (b) of sub-rule (6), the Director, Mines /Deputy Commissioner shall issue a letter of intent for mining lease.
- (8) A Mine Development and Production Agreement shall be executed between the Director, Mines /Deputy Commissioner and the holder of Composite Licence if the holder of a Composite Licence—
- (a) continues to comply with the terms and conditions of eligibility;
  - (b) pays the second instalment being ten percent of the upfront payment;
  - (c) furnishes the enhanced performance security as specified in sub-rule (2) of rule 19;
  - (d) satisfying the conditions with respect to Mining Plan specified in Jharkhand Minor Mineral Concession Rules, 2004 as amended from time to time;
  - (e) obtains all consents, approvals, permits, no-objections and the like as may be required under applicable laws for commencement of mining operations; and
  - (f) satisfies such other conditions as may be specified by the Director, Mines with the prior approval of the State Government.

- (9) The holder of the Composite Licence shall pay the third instalment being eighty percent of the upfront payment, subsequent to execution of the Mine Development and Production Agreement and upon such payment, the State Government shall execute a Mining Lease Deed with the holder of the Composite Licence within thirty days of the date of completion of all the conditions specified in sub-rule (8).
- (10) The mining lease shall be subject to the provisions of the Act and the rules made thereunder.
- (11) The mining lease shall be for minerals found in the area pursuant to exploration prior to the auction:  
Provided that where subsequent to the auction, any new mineral is discovered, then the holder of the mining lease shall follow the provisions of the Jharkhand Minor Mineral Concession Rules, 2004 as amended from time to time for inclusion of such new mineral in the Mining Lease Deed.
- (12) The date on which a duly executed Mining Lease Deed is registered shall be the date of commencement of the mining lease.

- 19. Performance Security for Composite Licence—** (1) An amount of 0.25% of the value of estimated resources shall be payable by the preferred bidder as performance security prior to the issuance of the Composite Licence.
- (2) The amount of performance security shall be revised, prior to the issuance of the mining lease, to an amount of 0.50% of the value of estimated resources.
- (3) The performance security provided under sub-rule (2) shall be adjusted every five years so that it continues to correspond to 0.50% of the reassessed value of estimated resources.
- (4) The performance security may be invoked as per provisions of,-
- (i) the Mine Development and Production Agreement and
  - (ii) the Mining Lease Deed.

**CHAPTER IV**  
**MISCELLANEOUS**

**20. Power to rectify apparent mistakes**—Any clerical or arithmetical mistake in any order passed by the Director, Mines /Deputy Commissioner or any authority or officer under these rules and any error arising therein due to accidental slip or omission, may be corrected by the Director, Mines /Deputy Commissioner the concerned authority or officer, as the case may be:

Provided that no rectification order prejudicial to any person shall be passed unless such person has been given a reasonable opportunity of being heard.

**21. Exploration Obligation**—The holder of a Composite Licence shall complete detailed exploration and prepare a detailed feasibility study report confirming to the Guidelines issued by the Director, Geology over the entire area under the mining lease, within a period of Three years from the date of commencement of such mining lease.

By order of Governor of Jharkhand

**Sunil Kumar Barnwal,**  
Secretary of Government.

**SCHEDULE I****Terms and conditions of eligibility****[See rules 6(1) and 6(2)]**

1. The following net worth requirements shall be applicable for an auction of mining lease depending on the Value of Estimated Resources,—
  - (a) If the Value of Estimated Resources is more than Rupees 10 (Ten) Crores, the applicant, including an individual, shall have a net worth more than 4% of Value of Estimated Resources.
  - (b) If the Value of Estimated Resources is less than or equal to Rupees 10 (Ten) Crores, the applicant, not being an individual, shall have a net worth more than 2% of Value of Estimated Resources.
  - (c) If the Value of Estimated Resources is less than or equal to Rupees 10 (Ten) Crores, the applicant, being an individual, shall have a minimum net worth of 1% of the Value of Estimated Resources.
2. In case of auction of Composite Licence, the applicant must have a net worth of more than 1% of the Value of Estimated Resources.

**Explanation:**

- (1) In case an applicant is a subsidiary of another company incorporated in India, the net worth of such holding company may also be considered:  
Provided that, in such case, the applicant must continue to be a subsidiary of such holding company until such time the applicant meets the aforementioned net worth threshold.
- (2) In case of a Company, the Net worth shall be the sum of paid up share capital and the free Reserves as per the audited Balance Sheet of the immediately preceding financial year.
- (3) In case of an individual, the Net worth shall be the closing cash balance on the last date for submission of application, and such amount may include amount in Savings Bank accounts in Scheduled Bank/ Post Office, free and un-encumbered Fixed Deposits in Scheduled Banks, Post Office, Listed Companies/Government Organisation/Public Sector Undertaking of State and Central Government, Kisan Vikas Patra, National Saving certificate, Bonds, Shares of Listed Companies, Listed Mutual Funds, Unit Linked Insurance Plan, Public Provident Fund, Surrender Value of Life Insurance policies in the name of Applicant.

By order of Governor of Jharkhand

**Sunil Kumar Barnwal,**  
Secretary of Government.

**SCHEDULE II****Format of Performance Security****[See rules 12(2)]****[Reference number of the bank] [date]****To****The Director, Mines/ Deputy Commissioner****[address]****WHEREAS**

- A. [Name of the Successful Bidder] incorporated in India under the Companies Act, [1956/2013] with corporate identity number [CIN of the Successful Bidder], whose registered office is at [address of registered office], India and principal place of business is at [address of principal place of business, if different from registered office] (the "Successful Bidder") is required to provide an unconditional and irrevocable bank guarantee for an amount equal to INR [figures] (Indian Rupees [words]) as a performance security valid until [date of expiry of performance bank guarantee] ("Expiry Date").
- B. The Performance Security is required to be provided to The Director, Mines/ Deputy Commissioner of [Name of District], for discharge of certain obligations under the Tender Document dated, [date] with respect to auction of [particulars of auction] and the Mine Development and Production Agreement to be executed between the Director, Mines /Deputy Commissioner and the Successful Bidder (collectively the "Agreement").
- C. We, [name of the bank] (the "Bank") at the request of the Successful Bidder do hereby undertake to pay to the Director, Mines/ Deputy Commissioner an amount not exceeding INR [figures] (Indian Rupees [words]) ("Guarantee Amount") to secure the obligations of the Successful Bidder under the Agreement on demand from the Director, Mines /Deputy Commissioner on the terms and conditions herein contained herein.

**NOW THEREFORE,** the Bank hereby issues in favour of the Director, Mines /Deputy Commissioner this irrevocable and unconditional payment bank guarantee (the "Guarantee") on behalf of the Successful Bidder in the Guarantee Amount:

1. The Bank for the purpose hereof unconditionally and irrevocably undertakes to pay to the Director, Mines /Deputy Commissioner without any demur, reservation, caveat, protest or recourse, immediately on receipt of first written demand from the Director, Mines /Deputy Commissioner, a sum or sums (by way of one or more claims) not exceeding the Guarantee Amount in the aggregate without the Director, Mines /Deputy Commissioner needing to prove or to show to the Bank grounds or reasons for such demand for the sum specified therein and notwithstanding any dispute or difference between the Director, Mines /Deputy Commissioner and Successful Bidder on any matter whatsoever. The Bank undertakes to pay to the Director, Mines /Deputy Commissioner any money so demanded notwithstanding any dispute or disputes raised by the Successful Bidder in any suit or proceeding pending before any court or tribunal relating thereto the Bank's liability under this present being absolute and unequivocal.
2. The Bank acknowledges that any such demand by the Director, Mines /Deputy Commissioner of the amounts payable by the Bank to the State shall be final, binding and conclusive evidence in respect of the amounts payable by Successful Bidder to the Director, Mines /Deputy Commissioner under the Agreement.
3. The Bank hereby waives the necessity for the Director, Mines /Deputy Commissioner from demanding the aforesaid amount or any part thereof from the Successful Bidder and also waives any right that the Bank may have of first requiring the Director, Mines/Deputy Commissioner to pursue its legal remedies against the Successful Bidder, before

presenting any written demand to the Bank for payment under this Guarantee.

4. The Bank further unconditionally agrees with the Director, Mines /Deputy Commissioner that the Director, Mines /Deputy Commissioner shall be at liberty, without the Bank's consent and without affecting in any manner the Bank's obligation under this Guarantee, from time to time to:
  - (i) vary and/or modify and of the terms and conditions of the Agreement;
  - (ii) extend and / or postpone the time for performance of the obligations of the Successful Bidder under the Agreement, or
  - (iii) forbear or enforce any of the rights exercisable by the Director, Mines /Deputy Commissioner against the Successful Bidder under the terms and conditions of the Agreement. and the Bank shall not be relieved from its liability by reason of any such act or omission on the part of the State or any indulgence by the Director, Mines /Deputy Commissioner to the Successful Bidder or other thing whatsoever which under the law relating to sureties would, but for this provision, have the effect of relieving the Bank of its obligations under this Guarantee.
5. Any payment made hereunder shall be made free and clear of and without deduction for, or on account of, any present or future taxes, levies, imposts, duties, charges, fees, commissions, deductions or withholdings of any nature whatsoever.
6. The Bank agrees that Director, Mines /Deputy Commissioner at its option shall be entitled to enforce this Guarantee against the Bank, as a principal debtor in the first instance without proceeding at the first instance against the Successful Bidder.
7. The Bank further agree that the guarantee herein contained shall remain in full force and effect during the period that specified in the Agreement and that it shall continue to be enforceable till all the obligations of the Successful Bidder under or by virtue of the said Agreement with respect

to the Performance Security have been fully paid and its claims satisfied or discharged or till the Director, Mines /Deputy Commissioner certifies that the terms and conditions of the Agreement with respect to the Performance Security have been fully and properly carried out by the Successful Bidder and accordingly discharges this guarantee. Notwithstanding anything contained herein, unless a demand or claim under this guarantee is made on the Bank in writing on or before the Expiry Date the Bank shall be discharged from all liability under this guarantee thereafter.

8. The payment so made by the Bank under this Guarantee shall be a valid discharge of Bank's liability for payment thereunder and the Director, Mines /Deputy Commissioner shall have no claim against the Bank for making such payment.
9. This Guarantee is subject to the laws of India. Any suit, action, or other proceedings arising out of this Guarantee or the subject matter hereof shall be subject to the exclusive jurisdiction of courts at Ranchi.
10. The Bank has the power to issue this Guarantee in favour of the Director, Mines /Deputy Commissioner. This guarantee will not be discharged due to the change in the constitution of the Bank.
11. The Bank undertakes not to revoke this Guarantee during its currency except with the previous consent of the Director, Mines /Deputy Commissioner in writing.
12. The Director, Mines/Deputy Commissioner may, with prior intimation to the Bank, assign the right under this Guarantee to any other departments, ministries or any governmental agencies, which may act in the name of the Director, Mines /Deputy Commissioner. Save as provided in this Clause 12, this Guarantee shall not be assignable or transferable.
13. Notwithstanding anything contained herein,

a. the liability of the bank under this bank guarantee shall not exceed the Guarantee Amount.

b. This bank guarantee shall be valid up to the Expiry Date.

14. The Bank is liable to pay the guaranteed amount or any part thereof under this bank guarantee only and only if the Director, Mines /Deputy Commissioner serves upon the Bank a written claim or demand on or before the Expiry Date. Dated the [day] day of [month] [year] for the Bank. In witness whereof the Bank, through its authorized officer, has set its hand and stamp.

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Name and Designation)

\_\_\_\_\_  
(Bank Stamp)

By order of Governor of Jharkhand

**Sunil Kumar Barnwal,**  
Secretary of Government.

अधीक्षक, झारखण्ड राजकीय मुद्रणालय, राँची द्वारा प्रकाशित एवं मुद्रित,  
झारखण्ड गजट (साधारण) 24--200 ।

# Annexure II

GOVERNMENT OF JHARKHAND  
DEPARTMENT OF INDUSTRY, MINES & GEOLOGY  
MINES & GEOLOGY DIVISION

Notification

No. 547..

Dated: 22/02/2018

In exercise of the powers conferred by section 15 of the Mines and Minerals (Development and Regulation) Act, 1957 (67 of 1957) and in the light of Jharkhand Minor Mineral (Auction) Rules, 2017, the Government of Jharkhand hereby makes the following rules, namely:-

**1. Short title and commencement:**

- 1) These rules may be called the Jharkhand Minor Minerals (Evidence of Mineral Contents) Rules, 2018.
- 2) It shall come into force on the date of its publication in the Official Gazette.

**2. Application:** These rules shall extend to the whole State of Jharkhand and shall apply to minor minerals as specified in clause (e) of section 3\* of Mines and Minerals (Development and Regulation) Act, 1957 (67 of 1957) (Schedule-II).

**3. Definitions and interpretation:**

In these rules, unless the context otherwise requires, -

- a. "Act" means the Mines and Minerals (Development and Regulation) Act, 1957 (67 of 1957);
- b. "Evidence of mineral contents" means the existence of mineral contents established by the process of geological exploration according to the norms fixed in Schedule-I of these Rules.
- c. "Threshold value of minerals" means the limits prescribed by the Indian Bureau of Mines or Government of Jharkhand from time to time based on the beneficiability and marketability of a mineral for a given region and for given time, below which the material obtained after mining can be discarded as waste;
- d. "Schedule" means the Schedule annexed to these rules;
- e. The expressions General Exploration (C2) & Detailed Exploration (C1), Feasibility Study (FS) used in these rules shall have the meanings assigned to them in Part-I of the Schedule-I.
- f. All other words and expressions used in these rules, but not defined, shall have the same meaning as assigned to them in the Act or the rules made there under.

*\*minor minerals" means building stones, gravel, ordinary clay, ordinary sand other than sand used for prescribed purposes, and any other mineral which the Central Government may, by notification in the Official Gazette, declare to be a minor mineral.*

#### **4. Preparation of mineral blocks:-**

A mineral block may be defined as an area where there is evidence to show the existence of mineral contents in accordance with the parameters prescribed in Schedule-I. The Government may grant a mining lease/ composite license through Electronic Auction, in the manner specified in Jharkhand Minor Mineral (Auction) Rules, 2017. Mineral Blocks should be prepared in defined geometrical shapes as far as possible.

#### **5. Existence of mineral contents for grant of composite license**

(1) An area may be notified for auction to grant a composite license under chapter III of Jharkhand Minor Mineral (Auction) Rules, 2017 if, in respect of such area:-

- a) General Exploration (C2) has been completed to establish Inferred Mineral Resource.
- b) A geological report has been prepared conforming to Part-III A of the schedule.

#### **6. Existence of mineral contents for grant of mining lease**

An area shall be considered for grant a mining lease under Chapter II of Jharkhand Minor Mineral (Auction) Rules, 2017 if, in respect of such area:-

- a) Detailed Exploration (C1) has been completed to establish Indicated/ Measured Mineral Resource.
- b) A geological report has been prepared conforming to Part-III A of Schedule-I.

#### **7. Relaxation**

Depending upon the local geological setup, mode of occurrence and nature of mineralization, the Government (State Cabinet) may relax the exploration norms as specified in Part III of Schedule-I, in whole or in part for any mineral or any area.

**SCHEDULE I**  
**EVIDENCE OF MINERAL CONTENTS**

Existence of mineral content will have to be established in an area for the purpose of auction of Mineral Block by carrying out exploration as per the suggested geological parameters and exploration norms given in Part-I, II and III of Schedule-I.

**Part – I**

**Definitions**

1. The exploration for any minor mineral deposit involves two stages namely, General Exploration (C2) and Detailed Exploration (C1). These stages of exploration lead to resource categories namely Inferred Mineral Resource and Indicated/ Measured Mineral Resource respectively reflecting the degree of geological assurance.
2. **General Exploration (C2)** involves the initial delineation of an identified deposit. Methods used include surface mapping, pitting/ trenching/ drilling, followed by sampling for evaluation of mineral quantity and quality (including mineralogical tests on laboratory scale if required), and limited interpolation based on indirect methods of investigation. The objective is to establish the main geological features of a deposit, giving a reasonable indication of continuity and providing an initial estimate of size, shape, structure and grade.
3. **Detailed Exploration (C1)** involves the detailed three-dimensional delineation of a known deposit achieved through sampling, such as from outcrops, pits, trenches, boreholes, shafts and tunnels etc. Sampling grids are closely spaced such that size, shape, structure, grade and other relevant characteristics of the deposit are established with a high degree of accuracy. Processing tests involving bulk sampling may be required.
4. **Mineral Resource** is a concentration or occurrence of solid material of economic interest in or on the earth's crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling. Mineral Resources are subdivided, in order of increasing geological confidence into Reconnaissance, Inferred, Indicated and Measured resource categories which are defined as follows:-
  - (a) **Inferred Mineral Resource** is that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling achieved through a stage of preliminary exploration. An Inferred Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and shall not be converted to a Mineral Reserve. The majority of Inferred Mineral

Resources' could be upgraded to Indicated Mineral Resources with continued exploration.

- (b) **Indicated Mineral Resource** is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation. An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Mineral Reserve.
- (c) **Measured Mineral Resource** is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit. Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade or quality continuity between points of observation. A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proved Mineral Reserve or to a Probable Mineral Reserve.
5. **A Feasibility Study (FS)** is a detailed comprehensive economic study of the selected development option for a mineral project that includes appropriately detailed assessments of applicable Modifying Factors together with any other relevant operational factors and detailed financial analysis that are necessary to demonstrate at the time of reporting that extraction is reasonably justified (economically mineable).
6. **Feasibility Mineral Resource:** A Feasibility Mineral Resource is that part of Indicated/ Measured Mineral Resource which is not economically mineable as, defined by studies at feasibility level. This material is identified as being possibly economically viable subject to changes in technological, economic, and environmental and/ or other relevant conditions.
7. **Mineral Reserve** is the economically mineable part of a Measured and Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at Feasibility level as appropriate that include application of Modifying Factors which are factors those are taken into consideration while conducting a Pre-feasibility or feasibility study so as to convert Mineral Resources to Mineral Reserves. These include, but are not

restricted to, mining, processing, end use, cut-off grade, threshold value, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors. Mineral reserve may further be categorized as:-

- (a) **Probable Mineral Reserve** is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource. The confidence in the Modifying Factors applying to a Probable Mineral Reserve is lower than that applying to a Proved Mineral Reserve.
- (b) **Proved Mineral Reserve** is the economically mineable part of a Measured Mineral Resource. A Proved Mineral Reserve implies a high degree of confidence in the Modifying Factors.

## Part-II

### Geological Parameters and Exploration Norms

1.	<b>Aerial reconnaissance:</b> Satellite imagery/ aerial photograph studies, as per necessity.
2.	<b>Topographic &amp; Geological survey (Mapping):</b> General Exploration stage: 1:50,000 to 1:4,000 scale and Detailed Exploration stage: larger than 1:4,000 to 1:1,000 scale as per type of mineral deposit. Geological mapping during general and detailed exploration to be carried out with the help of Total Station, Theodolite and other Electronic Survey Instruments. Exploration block to be geo-coordinated with the help of DGPS/ GPS.
3.	<b>Ground Geophysical and Geochemical survey:</b> Geophysical and geochemical survey using appropriate techniques, as may be necessary, for the style of mineralization as per requirement.
4.	<p><b>Technology:</b> Exploration and sampling using appropriate techniques from locations such as outcrops, trenches, pits, old workings and drill holes. The sampling locations are spaced suitably (in a grid pattern to the extent possible and may be modified depending on structural complexity) for establishing existence of mineralized body and its lateral and vertical continuity.</p> <p>The lateral extension to be considered for resource assessment shall depend on geological considerations supplemented by geological continuity by mapping or by other means and in any case shall not be more than 50% of the grid spacing of the probe points.</p> <p>Assessment based on selected information such as isolated assays, isolated drill holes, assays of panned concentrates etc. is not recommended.</p>
5.	<p><b>Sampling &amp; sub sampling:</b></p> <p>a. Random grab/ chip/ channel sampling from surface exposure/ escarpments/ nala cuttings/ pit/ channel etc.</p>

	<p>b. Systematic sampling from pits/ trenches/ outcrops/ workings etc. spaced closely enough to confirm geological and grade continuity for other stages of geological assessment.</p> <p>c. Geological logging and sampling of drill core/ chip samples at regular interval, preferably metre wise or less for the mineralized portions.</p> <p>d. The drill technique to be deployed shall depend on the rock type to be penetrated and with an aim to achieve maximum sample/ core recovery.</p> <p>e. The exploration samples including surface samples, drill core/ chip samples shall be preserved for future use.</p>
6.	<b>Assay data &amp; Laboratory tests:</b> Analysis of all samples generated for major radicals appropriate to the mineral under investigation.
7.	<b>Petrographic &amp; Mineragraphic studies:</b> Petrographic analysis of mineralized portions to ascertain the rock types and mineral assemblages including grain size, texture, gangue and its liberation characteristics etc. if considered necessary.
8.	<b>Bulk density study:</b> The bulk density must be measured by methods that adequately account for incipient void spaces (vugs, porosity etc.) in mineral/ ore body.
9.	<b>Bulk Sampling for Beneficiation studies:</b> Bulk sampling, if necessary, for testing processing technology.
10.	<b>Environmental setting:</b> Details about local infrastructure, host population, historical sites, forests, sanctuaries, national park and base line information on environmental setting of the area to be collected.
11.	<b>Any other relevant data:</b> Groundwater, geotechnical and rock characteristics etc. that may be relevant.

### Part-III

#### Exploration Norms (category-wise) for different types of Minor Mineral Deposits/ Mineralization

Category	Type of deposit & Principal Minerals	General Exploration (C-2)	Detailed Exploration (C-1)
A	<p><b>Building materials/ Road materials/ General stones</b></p> <p>Bedded Stratified and Tabular deposits of regular and irregular habit: Road Metal, Boulder, Murrum, Calcareous Sand, Diaspore, Laterite, Lime Kankar, Sand (others), Quartzite and Sand Stone (for making road metal), ordinary earth (used or filling or leveling purposes in construction or embankments, roads, railways, building) Brick-earth, Ordinary Earth, Soft &amp; Murrum, Felsite.</p>	<p>1. Geological Survey:</p> <p>i. Geological Mapping on 1:50,000 to 1:4,000 scale with boundary demarcation with GPS.</p> <p>ii. Broad assessment of lithology, structure, surface extension of mineral.</p> <p>iii. Recording of broad geomorphology, drainage, weather profile.</p> <p>2. Geochemical Survey: not necessary</p> <p>3. Ground geophysical survey: not necessary.</p> <p>4. Technology:</p> <p>i. Pitting/ Trenching: As per requirement to proof mineralization in the area.</p> <p>ii. Scout drilling: not</p>	<p>1. Geological Survey:</p> <p>iv. Mapping on 1:4,000 to 1:1,000 scale with boundary demarcation with GPS.</p> <p>v. Assessment of lithology, structure, surface extension of mineral.</p> <p>vi. Recording of geomorphology drainage, weather profile.</p> <p>2. Geochemical Survey: not necessary</p> <p>3. Geophysical survey: not necessary.</p> <p>4. Technology:</p> <p>i. Pitting/ trenching: 2 to 5 per sq km per prospect.</p> <p>ii. Drilling: not necessary.</p> <p>iii. Sampling: systematic, grab chip, pit &amp; trench sampling for geotechnical studies.</p> <p>iv. Geotechnical studies: measurement of compressive strength, tensile strength etc., if necessary.</p> <p>v. Bulk density/ specific gravity study.</p> <p>5. Petrographic and mineralogical</p>

	Shale, Slate, Shingle, Chalcedony pebbles used for ball mill purpose only, Lime shell, Kankar and Limestone used in kilns for manufacture of lime used as building materials, Gneissic & schistose rocks, Acid and Basic rock, Gabbro, Dolerite, Basalt, Norite etc. Phyllite, Quartzite, Sandstone, Slate, Boulder, Chalcedony Pebbles, Gravel, Ordinary Sand and Quartzite Pebbles, Trachyte, and Ordinary Clay.	<p>necessary.</p> <p>iii. Sampling: Regional and random grab/ chip sample for geotechnical, specific gravity studies as per necessity.</p> <p>iv. Bulk density/ specific gravity.</p> <p>5. Integration of all data and identification of blocks for further exploration.</p>	studies as per requirement.
<b>B</b>	<p><b>Industrial minerals</b></p> <p>(i) Bedded Stratified and Tabular deposits of regular and irregular habit:</p> <p>Ball Clay, Red Clay Lithomargic Clay, Pozzolanic Clay, Natural Clay, Diatomaceous Clay, Bentonite, Chalk, Dolomite, Fireclay, Fuller's Earth, Gypsum, Quartzite, Molding Sand, Silica sand, Barytes, Chinaclay, Kaolin, Reh Matti, Ochre, Calc-Tuffa</p>	<p>1. Geological Survey:</p> <p>i. Geological Mapping on 1: 50,000 to 1:4,000 scale with boundary demarcation with GPS.</p> <p>ii. Broad assessment of lithology, structure, surface extension of mineral.</p> <p>iii. Recording of broad geomorphology, drainage, weather profile.</p> <p>2. Geochemical Survey: not necessary</p> <p>3. Ground geophysical survey: not necessary.</p> <p>4. Technology:</p> <p>iv. Pitting/ Trenching: As per requirement to proof mineralization in the area.</p> <p>v. Scout drilling: not necessary.</p> <p>vi. Sampling: Regional and random grab/ chip sample for geotechnical, specific gravity studies as per necessity.</p> <p>vii. Bulk density/ specific gravity.</p> <p>5. Integration of all data and identification of blocks for further exploration.</p>	<p>1. Geological Survey:</p> <p>i. Mapping on 1:4,000 to 1:1,000 scale with boundary demarcation with GPS.</p> <p>ii. Assessment of lithology, structure, mineralization extent.</p> <p>2. Geochemical Survey: Not Necessary</p> <p>3. Geophysical survey: Not Necessary.</p> <p>4. Technology:</p> <p>i. Pitting/ Trenching: 2 to 5 per sq km or as per requirement.</p> <p>ii. Drilling: Core drilling on grid spacing of 400m or closer for deposits of regular habit and 200m or closer for irregular habit.</p> <p>iii. Sampling: systematic pit &amp; trench sampling. Core/ sludge sampling mineralization wise.</p> <p>iv. Chemical analysis of all samples.</p> <p>v. Bulk density/ specific gravity study.</p> <p>1. Petrographic and mineralogical studies as per requirement.</p>
	(ii) Lenticular bodies of all dimensions including Bodies occurring en echelon, silicified linear zones of composite veins, Lensea, pockets, stockworks; irregular shaped modest to small sized bodies	<p>1. Geological Survey:</p> <p>i. Geological Mapping on 1: 50,000 to 1:4,000 scale with boundary demarcation with GPS.</p> <p>ii. Broad assessment of lithology, structure, surface extension of mineral.</p> <p>iii. Recording of broad geomorphology, drainage, weather</p>	<p>1. Geological Survey:</p> <p>i. Mapping on 1:4,000 scale to 1:1,000 scale with boundary demarcation with GPS.</p> <p>ii. Assessment of lithology, structure, mineralization extent.</p> <p>2. Geochemical Survey: Not Necessary</p> <p>3. Geophysical survey: Not Necessary.</p> <p>4. Technology:</p> <p>i. Pitting/ Trenching: 2 to 5 per sq km or as per requirement.</p> <p>ii. Drilling: Core drilling on grid</p>

	<p><b>a. General Industrial Minerals</b>          Calcite, Clay (Others), Feldspar, Ochre, Quartz, Steatite or Tale or Soapstone, China Clay, Kaolin and White Clay.</p>	<p>profile.          2. Geochemical Survey: not necessary          3. Ground geophysical survey: not necessary.          4. Technology:          i. Pitting/ Trenching: As per requirement to proof mineralization in the area.          ii. Scout drilling: not necessary.          iii. Sampling: Regional and random grab/ chip sample for geotechnical, specific gravity studies as per necessity.          iv. Bulk density/ specific gravity.          5. Integration of all data and identification of blocks for further exploration.</p>	<p>spacing of 400m or closer for deposits of regular habit and 200m or closer for irregular habit.          iii. Sampling: systematic pit &amp; trench sampling. Core/ sludge sampling mineralization wise.          iv. Chemical analysis of all samples.          v. Bulk density/ specific gravity study.          5. Petrographic and mineralogical studies as per requirement.</p>
	<p><b>b. Precious &amp; Semi Precious Stones, Pegmatite, Ultra basic rocks and Mica</b>          Agate, Corundum, Diaspore (gem varieties), Dunit, Peridotite, Pyroxenite and Mica all varieties.</p>	<p>1. Geological Survey:          i. Geological Mapping on 1: 50,000 to 1:4,000 scale with boundary demarcation with GPS.          ii. Broad assessment of lithology, structure, surface extension of mineral.          iii. Recording of broad geomorphology, drainage, weather profile.          2. Geochemical Survey: not necessary          3. Ground geophysical survey: not necessary.          4. Technology:          i. Pitting/ Trenching: As per requirement to proof mineralization in the area.          ii. Scout drilling: not necessary.          iii. Sampling: Regional and random grab/ chip sample for geotechnical, specific gravity studies as per necessity.          iv. Bulk density/ specific gravity.          5. Integration of all data and identification of blocks for further exploration.</p>	<p>1. Geological Survey:          i. Mapping on 1:4,000 scale to 1:1,000 scale with boundary demarcation with GPS.          ii. Assessment of lithology, structure, mineralization extent.          2. Geochemical Survey: Not Necessary          3. Geophysical survey: Not Necessary.          4. Technology:          i. Pitting/Trenching: 2 to 5 per sq km or as per requirement.          ii. Drilling: Not required.          iii. Sampling: systematic pit &amp; trench sampling.          iv. Chemical analysis of all samples.          v. Bulk density/ specific gravity study.          5. Petrographic, Gem Testing and mineralogical studies as per requirement.</p>
<p><b>C</b></p>	<p><b>Dimension and Decorative Stones</b>          Granite (Granite means dolerites, granite gneisses, migmatites, gabbros, anorthosites, rhyolites, syenites, leptynites, charnockites and any other igneous and ortho-metamorphic rock</p>	<p>1. Geological Survey:          i. Geological Mapping on 1: 50,000 to 1:4,000 scale with boundary demarcation with GPS.          ii. Broad assessment of lithology, structure, surface extension of mineral.          iii. Recording of broad geomorphology,</p>	<p>1. Geological Survey:          i. Mapping on 1:4,000 to 1:1,000 scale with boundary demarcation with GPS.          ii. Assessment of lithology, structure, mineralization extent.          2. Geochemical Survey: Not Necessary          3. Geophysical survey: Not Necessary.          4. Technology:</p>

	types) Marble (marble means crystalline metamorphosed calcareous or dolomitic rocks and serpentine rock types) BHL, Fuschite Quartzite	drainage, weather profile. 2. Geochemical Survey: not necessary 3. Ground geophysical survey: not necessary. 4. Technology: i. Pitting Trenching: As per requirement to proof mineralization in the area. ii. Scout drilling: not necessary. iii. Sampling: Regional and random grab/ chip sample for geotechnical, specific gravity studies as per necessity. iv. Bulk density/ specific gravity. 5. Integration of all data and identification of blocks for further exploration.	i. Pitting/ Trenching: 2 to 5 per sq km or as per requirement. ii. Drilling: Not required. iii. Sampling: 2 to 3 grabs per prospect. iv. Geotechnical: Further refinement of blockability data, polishing index measurement, measurement of compressive strength, tensile strength etc. v. Bulk density/ specific gravity study. 5. Petrographic and mineralogical studies as per requirement.
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### Part-III A

#### Reporting of Minor Mineral Resources

A Geological Study Report for estimation and reporting of Minor Mineral Resources may be prepared integrating all data of exploration (sampling and testing generated through aerial, geophysical, geochemical, geological surveys and technological study) collected for assessing the resources as per the stage of exploration. The report may incorporate, among other things, the following contents:

Sl.	Contents	Explanation
1	Title & Ownership	<ul style="list-style-type: none"> <li>• Title of Report.</li> <li>• Details of period of prospecting/ mineral right if any.</li> <li>• Details of exploration agency, qualification, experience of associated technical persons engaged in exploration.</li> </ul>
2	Details of the area	<ul style="list-style-type: none"> <li>• Mauza/ Village, Post Office, Taluka, District, State.</li> <li>• Survey of India Toposheet/ OSM Sheet Number and Geo-coordinates of the area of all corner points.</li> <li>• Mineral(s) under investigation.</li> </ul>
3	Infrastructure & Environment	Local infrastructure, host population, historical sites, forests, sanctuaries, national park and environmental settings of the area.
4	Previous exploration	<ul style="list-style-type: none"> <li>• Details of previous exploration carried out by other agencies/ parties.</li> </ul>
5	Geology	<ul style="list-style-type: none"> <li>• Brief regional geology of the area outlining the broad geological, structural frame work.</li> <li>• Local Geology: Deposit/ mineralization type, geological</li> </ul>

		<p>setting and details of dip, strike, old workings, surface exposures etc. of the area under study also of adjoining nearby areas if the information is likely to have an impact on the area under study.</p> <ul style="list-style-type: none"> <li>• Geological map of appropriate scale with geo-coordinates showing major litho-logical units, structural features; extent of surface mineralization, location of boreholes, pits, trenches, old workings etc.</li> </ul>
6	Aerial/ ground geophysical/ geochemical Data	Details of aerial, geophysical & geochemical survey results taken up if any and their results (if carried out).
7	Technological investigation	Details of technological investigation (pitting/ trenching/ drilling etc.).
8	Type of Sampling	Grab, channel, random etc.
9	Drilling technique & drill sampling employed	<ul style="list-style-type: none"> <li>• Drill type and details like core diameter, collar R.L, azimuth, inclination, coordinates of bore holes etc.</li> <li>• Whether core and chip sample recoveries have been properly recorded and results assessed.</li> <li>• Measures taken to maximize sample recovery and ensure representative nature of the samples.</li> <li>• Whether a relationship exists between sample recovery and grade.</li> <li>• Logging: -Whether core and chip samples have been logged to a level of detail to support</li> <li>• Appropriate Mineral Resource estimation, mining studies.</li> </ul>
10	Grade and chemical analysis	Chemical analysis data for grade determination and procedures.
11	Bulk Density/ Specific Gravity	Whether assumed or determined.
13	Resource estimation techniques	<ul style="list-style-type: none"> <li>• Discussion on mineralization and techniques for resource estimation.</li> <li>• The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, maximum distance of extrapolation from data points.</li> </ul>

14	Geotechnical Studies For Dimensional stone report	<ul style="list-style-type: none"> <li>• Assessment of Blockability.</li> <li>• Polishing Index.</li> <li>• measurement of compressive strength, tensile strength etc.</li> </ul>
15	Annexure/ enclosures to the report	The report shall include all relevant data including maps, sections, logs, analysis reports, photographs etc. in support of the estimates made.
16	Any other information	Any other information as may be available or required by any authority as prescribed.

## SCHEDULE II MINOR MINERALS

### Categorization of Minor Minerals for conditions relating to grant of Mineral Concessions

<b>Category- A</b>	<p><b><u>Building materials/ Road materials/ General stones</u></b></p> <p><b>Bedded Stratified and Tabular deposits of regular and irregular habit:</b> Road Metal, Boulder, Murrum, Calcareous Sand, Diaspore, Laterite, Lime Kankar, Sand (others), Quartzite and Sand Stone (for making road metal), ordinary earth (used or filling or leveling purposes in construction or embankments, roads, railways, building) Brick-earth, Ordinary Earth, Soft &amp; Murrum, Felsite, Shale, Slate, Shingle, Chalcedony pebbles used for ball mill purpose only, Lime shell, Kankar and Limestone used in kilns for manufacture of lime used as building materials, Gneissic &amp; schistose rocks, Acid and Basic rock, Gabbro, Dolerite, Basalt, Norite etc. Phyllite, Quartzite, Sandstone, Slate, Boulder, Chalcedony Pebbles, Gravel, Ordinary Sand and Quartzite Pebbles, Trachyte, and Ordinary Clay.</p>
<b>Category- B</b>	<p><b><u>Industrial minerals</u></b></p> <p><b>(i) Bedded Stratified and Tabular deposits of regular and irregular habit:</b> Ball Clay, Red Clay Lithomargic Clay, Pozzolanic Clay, Natural Clay, Diatomaceous Clay, Bentonite, Chalk, Dolomite, Fireclay, Fuller's Earth, Gypsum, Quartzite, Molding Sand, Silica sand, Barytes, Chinaclay, Kaolin, Reh Matti, Ochre, Calc-Tuffa</p> <p><b>(ii) Lenticular bodies of all dimensions including Bodies occurring en echelon, silicified linear zones of composite veins. Lenses, pockets, stockworks; irregular shaped modest to small sized bodies</b></p> <p><b>a. <u>General Industrial Minerals</u></b> Calcite, Clay (Others), Feldspar, Ochre, Quartz, Steatite or Talc or Soapstone, China Clay, Kaolin and White Clay.</p>

	<p><b>b. Precious &amp; Semi Precious Stones, Pegmatite, Ultra basic rocks and Mica</b></p> <p>Agate, Corundum, Diaspore (gem varieties), Dunite, Peridotite, Pyroxenite and Mica all varieties.</p>
<b>Category- C</b>	<p><b><u>Dimension and Decorative Stones</u></b></p> <p>Granite (Granite means dolerites, granite gneisses, migmatites, gabbros, anorthosites, rhyolites, syenites, leptynites, charnockites and any other igneous and ortho-metamorphic rock types) Marble (marble means crystalline metamorphosed calcareous or dolomitic rocks and serpentine rock types) BHJ, Fuschite Quartzite</p>

S No.	Industry Name	Lat	Long	Industry Address	District	Block	Type of Industry	Khata No. & Plot No.	area in acre	Product Name & Capacity	Capacity (TPD)	Date of Expiry	Ref. No.	Occupier Email	Occupier Mobile No.	Occupier Name
1	Margaro Stone Mine	24.869944	87.654444	Mouza-Margaro, P.s.-Barhait, Dist.-Sahebganj	SAHEBG ANJ	BARHAIT	Mining and ore beneficiati on	Mauza Margaro, Plot No.106/P	5	Stone Boulders - 300 TPD	300	31-03-2022	JSPCB/RO /DMK/CT O-10134352/2021/65	sab@bali kai.net	9.97E+09	NAJNIN BIBI
2	M/S KWALITY STONE PRODUCT (STONE MINES)	24.75661	87.79357	Kotalpokhar	SAHEBG ANJ	BARHAR WA	Stone Mines	Mouza-Dhatapara & Fatehpur, Plot No.-426 - 433, 541, 627- 630	7.13	Stone Boulder-398 Tonnes/Day ( The daily production based on 300 working days)	398	14-10-2022	JSPCB/RO /DMK/CT O-7115586/2020/28	sangeeta.das1800@gmail.com	9955095743	SRI AMARJIT SINGH AMANDEP SINGH
3	M/S MD. JAHID ABBAS	24.75739	87.79481	MOUZA-DHATAPARA & FATEHPUR, KOTAL POKHAR	SAHEBG ANJ	BARHAR WA	Stone Mines	Mouza-Fatehpur, Plot no. - 434, 435, Dhatapara, Plot no. - 632 to 636, Khata no.- 25, 39, 40, 04, 04, 24, 42	8.12	Stone Boulder - 6000 Cft/Day	240	31-12-2022	JSPCB/RO /DMK/CT O-9227894/2021/13	ashok1896@yahoo.com		MD JAHID ABBAS

4	M/S S B STONE WORKS	24.733392	87.795353	MOUZA-PIPALJORI	SAHEBG A NJ	BARHAR WA	Stone Mines	Mauza- Pipaljori, Plot No.- 123, 124,129 to 144,160, 161, 163 to 176,	11.92	Stone boulders 770 TPD	770	31-03-2023	JSPCB/RO /DMK/CT O- 7568474/2 020/75	SBSTONE WORKS.S BG@GMA IL.COM	9771905270	SOMNAT H GHOSH
5	S. D. Enterprise (Stone Mines)	24.76611	87.74022	Dhatapara, Ps.-Kotalpokhar, Dist.-Sahibganj	SAHEBG A NJ	Barharwa	Stone Mines	Mauza- Dhatapara, Khata No.- 104, Plot No. 164, 165, 167 to 177	6	Stone Boulders - 193 TPD	193	30-09-2022	JSPCB/RO /DMK/CT O- 8836575/2 020/124	abc@gma il.com	7779980376	Sukdeo Ghosh
6	M/S Shree Guru Stone Works	24.75703	87.79334	At.- Fathepur Dhatapara	SAHEBG A NJ	BARHAR WA	Mining and ore beneficiat ion	Mauza â€œFatehpu r & Dhatapara, Plot No. 541/P, 621, 622, 623/P, 624/P, 625/P, 626/P & 631, Khata No. 14, 01, 62, 13, 78, 80 & 17,	10.57	Stone Boulder â€œ604 TPD.	604	30-06-2023	JSPCB/RO /DMK/CT O- 8162525/2 020/98	shreeguru stonewor ks65@gm ail.com	7250750550	Amarjit Singh

7	M/S R.B. STONE WORKS	24.75006	87.79742	MOUZA-MAYURK OLA, PLOT NO-786/P, 787/P, 788/P, 797/P, 798/P, MOUZA-LOHATIA, PLOT NO-67/P, 68/P, 69/P, 70/P, MOUZA-PIPALJORI, PLOT NO- 145, 146/P, 147, 148, 149, 150 OF AREA 11.25 ACRES,	SAHEBG A NJ	BARHAR WA	Stone Mines	Mouza.- MAYURK OLA, PLOT NO-786/P, 787/P,788/P, 797/P,798/P, MOUZA-LOHATIA, PLOT NO-67/P, 68/P,69/P, 70/P, MOUZA-PIPALJORI, PLOT NO-145, 146/P,147, 148, 149,150	11.25	Stone Boulders 568 TPD	568	31-03-2022	JSPCB/RO /DMK/CT O-7794094/2020/52	rbstoneworks.sahebganj@gmail.com	7003094365	RANJIT KUMAR TIWARI
8	M/s Abdul kadir Stone Mines	24.75048	87.7879	Fatehpur	SAHEBG A NJ	BARHAR WA	Mining and ore beneficiat ion	Mouza-Fatehpur, Plot no. 521/P	5	Stone Boulders - 302 TPD	302	31-03-2022	JSPCB/RO /DMK/CT O-10126453/2021/68	a.dokania1961@gmail.com	8340437059	Mr Abdul kadir
9	M/S MAA TARA STONE WORKS (STONE MINES)	25.2161	87.6631	MOUZA-GUDAITUNGI,PLOT NO-41/P,43 TO 47/P,KHATA NO-48	SAHEBG A NJ	Borio	Mining and ore beneficiat ion	Mauza-Gudaitungi , Khata No. 48, Plot No. 41/P, 43 to 47/P	5.35	Stone Boulders - 313.6 TPD (As per EC)	313.6	31-03-2023	JSPCB/RO /DMK/CT O-9818342/2021/52	brijmohan1971s@gmail.com	9939811680	BRIJ MOHAN SHARMA

10	M/S USMAN SHEIKH	24.76664	87.79786	DHATAPARA, PS.-BARHARWA, DISTT.-SAHIBGANJ	SAHEBGANJ	BARHARWA	Mining and ore beneficiation	Mauza - Dhatapara, Survey No.-108, Plot No.- 305, 306, 308 to 312, 316	4.54	Stone Boulders - 70 TPD	70	30-06-2022	JSPCB/RO/DMK/CTO-9496931/2021/9	a.dokania1961@gmail.com	9661867375	USMAN SHEIKH
11	M/S SHAH STONE	24.86428	87.69158	Bara Panchkuli	SAHEBGANJ	BARHARWA	Mining and ore beneficiation	Mauza - Bara Panchkuli, Plot No. 48/P, 49/P, 50/P & 62/P, Khata No.-59,	4.12	Stone Boulders - 75 TPD	75	30-06-2022	JSPCB/RO/DMK/CTO-9875794/2021/76	shahstone.bhw@gmail.com	9631461059	Md Moinul Haque
12	M/s Md. Iqbal (Stone Mines)	24.76343	87.7949	Dhatapara, Po.- Mayurkola, Dist.- Sahibganj	SAHEBGANJ	BARHARWA	Mining and ore beneficiation	Mauza-Dhatapara, Khata No. 104, Plot No . 344, 349, 350, 442, 444	6	Stone Boulders - 370 TPD as per EC	370	30-06-2023	JSPCB/RO/DMK/CTO-3429482/2018/208	a.dokania1961@gmail.com	9631521123	Md Iqbal
13	BANDANA STONE WORKS (STONE MINES)	25.19701	87.66161	LAHANDO MAKO	SAHEBGANJ	BORIO	Stone Mines	Mouza-Lohanda Mako, Plot no.- 03/P,08/P, 107/P,04/P, 05/P, Khata no.-20, 19, 16	6.72	Stone Boulder - 48 Tonnes/Day	48	30-06-2024	JSPCB/RO/DMK/CTO-5348065/2019/99	9572109278@GMAIL.COM	9572109278	MR RAKESH RANJAN

14	M/S SUNIL KUMAR SINGH	25.21396	87.65917	MOUZA- LOHAND A BEDO	SAHEBG ANJ	BORIO	Mining and ore beneficiat ion	Mauza- Lohanda Bedo, Khata No. 24, Plot No.- 26	3	Stone Boulders â€“156 TPD as per EC	156	30-09-2023	JSPCB/RO /DMK/CT O- 10573499/ 2021/137	maatarasto ne00 1@gmail.c om	7677165550	SUNIL KUMAR SINGH
15	M/S JINDAL STONE WORKS	25.21481	87.6565	MOUZA- LOHAND A BEDO	SAHEBG ANJ	BORIO	Stone Mines	Mouza.- LOHAND A BEDO, Plot no.- 05/P & 06/P,	4.999	Stone Boulder - 300 T/day	300	31-03-2023	JSPCB/RO /DMK/CT O- 9590792/2 021/18	jindalstone 001 @gmail.co m	9973761838	KANHAIY A KUMAR KHUDANI A
16	M/S SHAKTI STONE WORKS	25.21244	87.66114	MOUZA- LOHAND A BEDO	SAHEBG ANJ	BORIO	Mining and ore beneficiat ion	Mauza- Lohanda Bedo,Khat a No.- 21& 07, Plot No.-46/P & 50/P	10	Stone Boulders - 500 TPD	500	10-06-2025	JSPCB/RO /DMK/CT O- 7953293/2 020/63	shaktistone wor ks@yahoo. com	9386591091	SHAMBH U JAJODIA
17	M/S MIRAPA HAR STONE MINES	25.21828	87.69742	MOUZA- MIRAPAR A	SAHEBG ANJ	BORIO	Stone Mines	Mauza.- Mirapara, Khata No.- 04, 09 & 28,Plot No.- 98 P,100 P, 101 P,105 P & 106 P	9	Stone Boulders - 500 TPD	500	31-03-2022	JSPCB/RO /DMK/CT O- 7991979/2 020/51	mdrabbul7 86@ gmail.com	8271766762	MD RABBUL ANSARI AND AMARJEE T KUMAR SINGH
18	M/S SATYAN ATH SAH	25.041761	87.619547	MAUZA - BINDRIB A NDARKO L A, BORIO, SAHIBGA NJ	SAHEBG ANJ	BORIO	Mines	Mauza- Bindri Bandar Kola, Khat No.-11, Plot No. 719	4	Stone Boulders - 172 TPD	172	31-03-2023	JSPCB/RO /DMK/CT O- 2499898/2 018/125	rhtkmr715 @gm ail.com	7461837575	SATYAN ATH SAH

19	M/S KOHITUR STONE WORKS (STONE MINES)	25.21919	87.70261	MOUZA-MIRAPARA	SAHEBG ANJ	BORIO	Stone Mines	Mauza-Mirapara, Plot No 124/P, Khata No.-05 (as per EC)	3.5	Stone Boulders - 298.37 TPD	298.37	31-03-2022	JSPCB/RO /DMK/CT O-10344003/2021/98	kohitoorstone786@gmail.com	9934220368	MD IRSHAD ALI
20	M/s Usha Stone Works (Stone Mines)	25.19647	87.66089	Lohanda Mako, Ps-Borio, Dist.- Sahibganj	SAHEBG ANJ	BORIO	Stone crushers	Mouza-Lohanda Mako, Plot No.- 4P, 75P, 76, 91 Khata no. - 01, 19, 13, 04	9.11	Stone Boulder - 47 TPD	47	30-09-2024	JSPCB/RO /DMK/CT O-11118182/2021/216	ushastonestone786@gmail.com	8340134130	Mr Nikhil Kumar
21	Chaman Tulsyan	25.24083	87.58944	Plot No. 85,88(P),86; Khata No.: 45,52,09; P.S.: Jirwabadi (No. 13 Borio)	SAHEBG ANJ	MANDRO	Stone Mines	Mauza-Jokmari, (Gutti Bedda) Khata No.- 45, 09 & 52, plot No.- 85, 86 & 88/P	7.7	Stone Boulders - 306 TPD	306	30-09-2022	JSPCB/RO /DMK/CT O-8717831/2020/132	ctsindltd@hotmail.com	9234401608	Chaman Tulsyan
22	M/S RAMPHAL CHOUHARY	25.224289	87.578867	MOUZA-DEMBA PLOT No 223,224,225,226P,243 P AREA-10 ACRES	SAHEBG ANJ	MANDRO	Stone Mines	Mauza-Demba, Plot No 223, 224, 225, 226/P & 243/P, Khata No.- 23, 06, 32	10	Stone Boulders 778.08 TPD	778.08	31-12-2022	JSPCB/RO /DMK/CT O-6655780/2020/20	choudharyramphal001@gmail.com	6206041937	RAMPHAL CHOUDHARY

23	M/S B. B. A. STONE WORKS	25.21056	87.51422	TALMI UJDAHA	SAHEBGA NJ	MANDRO	Stone Mines	Mouza-Talmi Ujadha, Khata No.- 26, Plot No.- 15 P, 17 P, Khata No.- 19, Plot No.- 35 P, 204 P	9.24	Stone Boulder - 727 Tonne/Day	727	31-03-2022	JSPCB/RO /DMK/CT O- 10190158/2021/101	BINIT@GMAIL.COM	7250117352	BINIT KUMAR GUPTA
24	M/S MAA AMBA STONE WORKS	25.23203	87.57742	MOUZA-DEMBA	SAHEBGA NJ	MANDRO	Mines	Mouza.- Demba, Plot no.- 84 to 88, 91,92/P & 98/P, J.B. no.- 19,27, 18/K, 10,13	9.88	Stone Boulder - 516 TPD	516	31-03-2023	JSPCB/RO /DMK/CT O- 7119173/2020/49	ambastone001@gmail.com	8877668588	PAVITRA KUMAR YADAV
25	M/S NARAYAN STONE WORKS	25.248611	87.537111	DAMINBHITTA	SAHEBGA NJ	MANDRO	Stone Mines	Plot no.- 51, 52/P, 60/P, 61 to 68, & 75/P, Khata No.- 1, 16, 46, 62,	4.99	Stone Boulder - 250 TPD	250	31-03-2022	JSPCB/RO /DMK/CT O- 10075988/2021/66	ramsawaretiwa@yahoo.in	9810003126	BIMALA TRIPATHY

26	M/S AYACHI ENTERPRISES	25.22449	87.52403	GILAMARI, P S - MIRZACHOUKI, District- SAHEBGANJ	SAHEBGANJ	MANDRO	Mining and ore beneficiation	MauzaGilamari, Khata No.- 18, 49, 24, 21, 18 & 21, Plot No.- 208/P, 210/P, 214/P, 215/P, 216, 217.	6.5	Stone Boulders - 725 TPD	725	31-03-2022	JSPCB/RO /DMK/CTO- 1574069/2 017/146	ayachi123 @gmail.com	9693899894	RAVI KUMAR
27	M/S HILL TOUCH STONE WORKS (STONE MINES)	25.23403	87.52661	PAKARIYA	SAHEBGANJ	MANDRO	Stone Mines	Mauza- Pakariya, Plot No 128, 129/P, 132/P, 133/P & 134, Khata No.-43, 39, 25 & 29	7.5	Stone Boulders 777.60 TPD	777.6	30-09-2023	JSPCB/HO /RNC/CTO- 8940834/2 021/99	rbttiwari20 17@ gmail.com	7762099674	RAM VYAS TIWARI
28	M/S CHATUR ANAND PANDEY	25.23805	87.59101	MAUZA - JOKMARI, MAHADE OGANJ, SAHIBGA NJ	SAHEBGANJ	MANDRO	Mining and ore beneficiation	Mauza- Jokmari, Khata No.- 14, Plot No. 101/P & 147/P	4.78	Stone Boulders - 264.67 TPD	264.67	30-06-2023	JSPCB/RO /DMK/CTO- 3465693/2 018/218	pandeychatur nand@gmail.com	9155514859	CHATUR ANAND PANDEY

29	M/s Mahaveer Engicons Private Limited	25.22831	87.57383	Demba	SAHEBG A NJ	MANDRO	Mining and ore beneficiat ion	Mouza-Demba, Plot No.- 112/P, 113/P, 115/P, 116/P, 117/P, 118/P, 119, 121/P, 122, 123, 125/P, 127/P, 126/P	7.29	Stone Boulder - 1200 Tone/Day	1200	19-03-2025	JSPCB/RO /DMK/CT O- 8363157/2 020/122	jcplsbj@g mail.c om	7033694273	Raj Kumar Pandey
30	M/s Maa Vaishnavi Stone Works(M undali Stone Mines)	25.2419	87.49065	Mauza.- Mundli, P.o.- Mirzachow ki, Dist.- Sahebganj	SAHEBG A NJ	MANDRO	Mining and ore beneficiat ion	Mauza - Mundli, 55 & 56, Khata No.- 17,	5.5	Stone Boulders - 500 TPD	500	31-12-2024	JSPCB/RO /DMK/CT O- 11137301/ 2021/213	rajeshjash2 2@ gmail.com	9006448750	Rajesh Kumar Jaiswal
31	M/S MAA DURGA STONE WORKS	25.206911	87.577117	MOUZA- KULBHANGA,PLO T NO- 51,53,54,5 5,56,58,59 P,A REA- 11.62 ACRES	SAHEBG A NJ	MANDRO	Mining and ore beneficiat ion	Khata No. : 79,55,48,5 8,14, 62,84; Khesra No. : 51,53,54,5 5,56, 58 & 59P in Mauza: Kulbhanga; Place: Jirwabari OP; P.O.: Mahadevganj; District: Sahebganj	11.62	Stone Boulder of capacity 762.92 TPD	762.92	31-12-2022	JSPCB/RO /DMK/CT O- 12036293/ 2022/16	maadsw.sb g@g mail.com	8877668588	Bishnu Prasad Yadav

32	M/S MOHAM MAD SHEK FARSAD	25.234911	87.560914	MOUZA-DESH POKHARIA, PLOT NO-73P,77P,79P,83P,100, AREA-03.34 ACRES	SAHEBG A NJ	MANDRO	Mining and ore beneficiat ion	Mauza-Desh Pokharia, Khata No.-22, 02, 29, 27 & 28, Plot No. 73/P, 77/P, 79/P, 83/P & 100	3.34	Stone Boulders - 68 TPD	68	31-03-2022	JSPCB/RO /DMK/CT O-12451112/2022/35	mdfarasad786@gmail.com	7739143719	MOHAM MAD SHEK FARSAD
33	MUNDALI STONE MINE	25.243922	87.496117	Mauza - Mundali, PO+PS - Mirzachowki, Dist - Sahebganj	SAHEBG A NJ	MANDRO	Mining and ore beneficiat ion	Mouza-Mundali, Khata no. 07, Plot no. 51/P	4	Stone Boulder - 280 TPD	280	31-03-2024	JSPCB/RO /DMK/CT O-9805302/2021/74	mrinal.sbg@gmail.com	7717747234	Sri Manoj Kumar Sah
34	M/S SHIV SHAKTI ENTERPRISES	25.24314	87.52625	MOUZA-PAKARIYA, PLOT NO-254,255,256,258,259, 260,261,262P	SAHEBG A NJ	MANDRO	Mining and ore beneficiat ion	Mauza: Pakariya Khata No. : 13, 01, 25, 32, 16, 31, 45 Khesra No.: - 254 To 256, 258 To 260, 261, 262(P) P.O.: Choti Kodarjanna, District: Sahebganj.	11.7	Stone boulder of capacity à 312.62 TPD	312.62	31-12-2022	JSPCB/RO /DMK/CT O-12014637/2022/13	shivshaktienter.sbg@gmail.com	6207626634	ABHISHEK PRASAD

35	M/s. Bajrang Stone	25.25257	87.54122	Mirzachowki, Koderjana, Sahebganj	SAHEBG A NJ	MANDRO	Mining and ore beneficiat ion	Mauza-Chuwe, KhataNo. 12,17,02,Plot No. 88/P,71, 72,73	5.25	Stone Boulders - 443.45 TPD	443.45	30-06-2024	JSPCB/RO /DMK/CT O-5058378/2019/98	alok.baltu @gmail.com	9939636122	ALOK RANJAN
36	M/S PRATIK STONE WORKS	25.22706	87.51879	MOUZA-GILAMARI	SAHEBG A NJ	MANDRO	Mining and ore beneficiat ion	MauzaGilmari, Khata No.- 15, Plot No.- 154, 155	9.17	Stone Boulders - 822 TPD	822	30-06-2022	JSPCB/RO /DMK/CT O-1607007/2017/158	pratikstone 001 @gmail.com	9546170217	PINTU KUMAR PANDIT
37	Jai Maa Bhagwati Stone Works	25.24108	87.49019	Belbhadri, Po.- Mirzachowki, Dist.- Sahibganj	SAHEBG A NJ	MANDRO	Mining and ore beneficiat ion	Mauza-Belbhadri, Khata No.- 22, 23, 17, 26, 01 & 11, Plot No.- 170/P, 171/P, 172/P, 177, 178/P and 190/P,	5	Stone Boulders - 350 TPD	350	31-03-2023	JSPCB/RO /DMK/CT O-2569918/2018/146	rajeshjash2 @gmail.com	9934113899	Sri Hiralal Bhagat
38	M/S KHUSHI MINA STONE WORKS	25.204703	87.51	TALMI UJDAHA	SAHEBG A NJ	MANDRO	Stone Mines	Mauza "Talmi Ujdaha Plot no" 139(p), 140(p), 141,185(p), 145(p),184 (P), 144(P), Khata no "9, 21, 28 (as per EC)	5.86	Stone Boulder - 519.86 TPD (as per EC)	519.86	31-03-2023	JSPCB/RO /DMK/CT O-8158565/2020/76	maalaxmist one mzc@gmail.com	9546294290	RATAN KUMAR GUPTA

39	M/S Maa Jagdambe Stone Works (JAI MAA DURGE)	25.23689	87.58908	JOKMARI (GUTTIBERA)	SAHEBG A NJ	MANDRO	Stone Mines	MauzaJok mari (Gutti Bera), Khata No. 06 & 14, Plots No.147/P & 150	4.52	Stone Boulders - 270 TPD	270	30-06-2022	JSPCB/RO /DMK/CT O-1618954/2017/159	bipinsheikh pur a11@gmail .co m		BIPIN KUMAR
40	M/S Maa Basnawi Stone Works (Mundli Stone Mine)	25.24453	87.49617	Mundli, PO.- Mirzachow ki, Dist.- Sahibganj	SAHEBG A NJ	MANDRO	Stone Mines	Mouaza-Mundli, Plot No.- 50, 51 P, Khata No.- 07	4.76	Stone Boulders - 180 TPD	180	05-08-2023	JSPCB/RO /DMK/CT O-10843930/2021/165	rajeshjash2 2@gmail.com	9006448750	Sri Rajesh Kumar Jaiswal
41	M/S Sri Budhwa Paharia	25.243028	87.493097	At-Mundli, Post-Mirzachow ki, Dist-Sahebganj	SAHEBG A NJ	MANDRO	Mines	Mouza - Mundali, Plot No.- 09/P, Khata no. 09	2.99	Stone Boulder- 90 Tonnes/D ay	90	30-06-2024	JSPCB/RO /DMK/CT O-5123509/2019/94	Nandji008 @gm ail.com	9973980054	Sri Budhwa Paharia

42	MS YASHRAJ BLACK STONE WORKS (Stone Mines)	25.2308	87.58175	Demba, Po.- Mahadeoga nj, Ps.- Jirwabari, Dist.- Sahibganj	SAHEBG A NJ	MANDRO	Mining and ore beneficiat ion	Mouza- Demba, J.B.No.- 22 Plot No.- 34,43P,61 J.B No.12 Plot No.- 33P,J.B.No .- 21 Plot No.- 35,41 & 62 P,J.B.No.- 11 Plot No.- 42,J.B No.- 27 Plot No.60,J.B No.- 37 Plot No.-59 P,J.B No.- 19 Plot No.- 39 P	12.26	Stone Boulder - 1350 Tonne/Da y	1350	30-06-2023	JSPCB/RO /DMK/CT O- 2653182/2 018/167	yashraj.sbg @g mail.com	9431152033	BAJRANG I PRASAD YADAV
43	M/S KARAM BI STONE WORKS	25.2222	87.61768	KARAMB I,P no.- 13,16,17 19,25- 29,area 21.70 acres	SAHEBG A NJ	MANDRO	Stone Mines	Mauza - KARAMB I 13p, 16P, 17 to 19, 25P, 26P, 27 to 29P, Khata No.- 18, 24, 28, 17, 34, 13, 08, 22 & 25	21.7	Stone Boulders - 1667 TPD	1667	30-06-2022	JSPCB/HO /RNC/CTO 5455871/2 019/1384	karambisto ne@ gmail.com	9973680955	MD EHTESHA M

44	M/S MAA DURGE STONE WORKS	25.226847	87.520425	MOUZA- GELAMA RI	SAHEBG A NJ	MANDRO	Mining and ore beneficiat ion	Mauza- Gelamari, Plot No.167/P, Khata No. 33	7.5	Stone Boulders - 498 TPD	498	30-09-2022	JSPCB/RO /DMK/CT O- 1715254/2 017/195	prabhatksi ngh mzc14@g mail.c om	8541805448	CHHATU PRASAD MAHTO AND OTHERS
45	M/S RATAN BLACK STONE	25.2234	87.61668	KARAMB I	SAHEBG A NJ	MANDRO	Stone Mines	Mouza- Karambi, 26 P & Khata No.- 34	8	Stone Boulder - 610 TPD	610	30-06-2024	JSPCB/RO /DMK/CT O- 5239766/2 019/88	chandresw arpr asadsinhaa @g mail.com	9431152041	SRI CHANDE S WAR PRASAD SINHA
46	M/s Tarkeshw ar Jaiswal (Mundli Stone Mine)	25.24181	87.49639	Mauza- Mundali, P.o.- Mirzachow ki, Dist.- Sahebganj	SAHEBG A NJ	MANDRO	Mines	Mauza - Mundali, Plot no.- 57/P, Khata No.- 05	4	Stone Boulders - 2000 Cft./day	2000	31-12-2022	JSPCB/RO /DMK/CT O- 9267351/2 021/5	778187847 7@g mail.com	7781878477	Tarkeshw ar Jaiswal
47	M/S BLACK STONE WORKS	25.235806	87.554778	MOUZA- DESHPOK HARIA & AMJHOR	SAHEBG A NJ	MANDRO	Mines	63, 64/P, 65, 66, 67, 204/P, 205, 217, 208, 209, 218/P, 221/P, 222/P, 219, 220, Khata No.- 30, 29, 06, 08, 03, 33, 02, 26	18.80	Stone Boulder - 1000 T/day	1000	30-06-2022	JSPCB/RO /DMK/CT O- 1292501/2 017/62	blackstone work s001@gma il.co m	9973761838	VED PRAKASH KHUDANI A
48	M/S Sri Ram Stone Works (Stone Mines)	25.23433	87.52497	Pakaria, PO+PS- Mirzachow ki, Dist - Sahebganj	SAHEBG A NJ	MANDRO	Mining and ore beneficiat ion	Mauza- Pakaria, Plot No.55/P, 56/P, 127/P	6	Stone Boulders - 760 TPD	760	31-12-2022	JSPCB/RO /DMK/CT O- 2069643/2 018/11	tinkal1984 75@g mail.com	9939413889	Sri Tinkal Kumar Bhagat

49	CHUWA STONE MINE, M/S SANKAT MOCHAN STONE MINES	25.216542	87.573056	AT - CHUWA	SAHEBG A NJ	MANDRO	Stone Mines	Mauza- Chuwa, Plot No 19/P & 35/70 (P), Khata No.- 09 & 04	9	Stone Boulders â€“836 TPD	836	31-03-2025	JSPCB/RO /DMK/CT O- 8006515/2 020/44	rajeshjash2 2@ gmail.com	9006448750	RAJESH KUMAR JAISWAL
50	M/S MAA RAKSI STONE WORKS	25.240831	87.498617	BHUTAH A	SAHEBG A NJ	MANDRO	Stone Mines	Mauza- BHUTAH A, Khata No. â€“34 & 13; Plot Nos. â€“ 76 & 77	3.15	Stone Boulder of capacity â 251.66 TPD	251.66	31-12-2022	JSPCB/RO /DMK/CT O- 12302730/ 2022/25	tinkalmrj4 1@g mail.com	9973934896	TINKALK U MAR BHAGAT
51	M/S Maa Laxmi Stone Works (Stone Mines)	25.231183	87.577533	At.- Demba, Po.- Mahadeoga nj, Ps.- Jirwabari, Block - Mandro, Dist.- Sahibganj	SAHEBG A NJ	MANDRO	Mining and ore beneficiat ion	Mauza- Demba, J.B. No.- 27, 19, 16, 13, 20 and 07, Plot No.36 to 38, 89, 90, 92/P, 96/P & 97/P	11.5	Stone Boulders - 462 TPD	462	31-03-2022	JSPCB/RO /DMK/CT O- 9769686/2 021/86	vikashkum ar20 1875@gma il.co m	993133900	Sri Vikash Kumar
52	M/S RAM KRISHN A PATHAR UDYOG	25.235319	87.523472	MOUZA- PAKARIYA A	SAHEBG A NJ	MANDRO	Stone Mines	Mauza- Pakariya, Plot No 57, 58, 41, 42, 43, 40/P & 60, Khata No.- 27, 28, 38, 12, 45, & 25,	10	Stone Boulders - 842 TPD	842	30-09-2023	JSPCB/HO /RNC/CTO- 8120040/2 020/1240	ramkrishan patt herudyog@ gm ail.com	8340460344	RAJ NARAYA N CHAUDH A RY

53	M/S MINAKS HI STONE WORKS	25.23038	87.58336	MAUZA - DEMBA, MIRZACH OUKI, SAHIBGA NJ	SAHEBG A NJ	MANDRO	Mines	Mauza â€œDemba, Khata No.- 22, 37, 21, 30, 11 & 21, Plot No.57/P, 59, 62/P, 63 to 66	10	Stone Boulders - 820 TPD	820	30-06-2023	JSPCB/HO /RNC/CTO 5786362/2 019/1538	ap.sbg2017 @g mail.com	7319850725	ADITYA PRAKASH
54	M/S ADARSH GROUP	25.23494	87.59353	MOUZA- JOKMARI	SAHEBG A NJ	MANDRO	Stone Mines	Mauza- Jokmari, Plot No.- 309 P, 310 P, 312 P, 314 to 316 & 317 P, Khata No. 81, 64, 49, 06, 51, 27	7.5	Stone Boulder - 48.82 TPD	48.82	31-12-2023	JSPCB/RO /DMK/CT O- 10612777/ 2021/208	rajstone00 1@g mail.com	9155044905	MD ARIF ZAFAR AND OTHERS
55	M/S AYACHI ENTERP RI SES	25.22255	87.5228	GILAMAR I, P S - MIRZACH OUKI, District- SAHEBG ANJ	SAHEBG A NJ	MANDRO	Mining and ore beneficiat ion	Mauza- Gilamari , Khata No.- 18, 49, 24, 21, 18 & 21, Plot No.- 208/P, 210/P, 214/P, 215/P, 216, 217.	6.5	Stone Boulders - 725 TPD	725	31-03-2025	JSPCB/RO /DMK/CT O- 11886744/ 2022/47	ayachi123 @gm ail.com	9693899894	RAVI KUMAR

56	MS STAR INDIA INDUST RIES	25.238556	87.498306	Chhota Daminbhitt a	SAHEBG A NJ	MANDRO	Stone crushers	Mouza- Chhota Daminbhitt a, Plot no.- 33P, 34 to 36, 56P, 57P, 60P, Khata No.- 05, 07, 19, 20, 30 & 37,	12.01	Stone Boulders - 500 TPD	500	31-03-2022	JSPCB/RO /DMK/CT O- 5137628/2 019/65	ganeshston e00 1@gmail.co m	8809443513	RATAN KUMAR CHOUDH ARY
57	OM SAI STONE WORKS	25.22711	87.57522	MAJHIKO LA	SAHEBG A NJ	MANDRO	Stone crushers	Mouza- Demba, Plot no. 211/P,212/ P & 213/P, Khata no.- 32 & 33	7.5	Stone Boulders- 758.20 TPD	758.2	31-12-2024	JSPCB/RO /DMK/CT O- 7058225/2 020/69	omsaistone wor ks777@gm ail.c om	7970428408	RAHUL SINGH
58	M/S vaishnav stone works	25.249886	87.533103	Damin Bhitta,	SAHEBG A NJ	MANDRO	Stone crushers	Mauza- Damin Bhitta, 3,4,5,13P,1 7,20 ,21,22P,23 P,15 ,16,24P,19 P,14 ,6P,9P & Khata No.- 46,49,30,3 2,20, 15,25,62,1 7	10.73	Stone Boulders - 901 TPD	901	30-06-2022	JSPCB/RO /DMK/CT O- 2181340/2 018/61	AWADH @GMAI L.COM	7295915779	AWADH KISHORE SINGH

59	MS STAR INDIA MINING MINERALS	25.239778	87.498306	Bhutaha & Chhota Damin Bhita	SAHEBG ANJ	MANDRO	Stone crushers	Mouza- Bhutaha & Chhota Damin Bhita, Plot No.- 82 & 60/P, Khata No.- 34 & 37	12.01	Stone Boulder- 900 TPD	900	31-03-2022	JSPCB/RO /DMK/CT O- 5139351/2 019/79	ajay@gmail. com	9123171695	RAVI SHANKA R BARNWA L
60	M/s Ganga stone works	24.86669	87.73389	Telo	SAHEBG ANJ	PATHNA	Mines	Mouza- Telo, Plot no. 15/P, 16 to 21, 37 to 42, Khata No.- 01, 05, 07 & 12,	11.65	Stone Boulders - 830 TPD	830	30-09-2022	JSPCB/RO /DMK/CT O- 1864332/2 017/216	akcganga @gmail.com	9955582325	Sri Arun kumar Choudhar y
61	M/s Borna Stone Mine Project of Smt. Miru Soren	24.8425	87.719	Borna, Po. & Ps- Ranga, Dist.- Sahibganj	SAHEBG ANJ	PATHNA	Mining and ore beneficiat ion	Mouza- Borna, Plot no.- 93 to 97, 241	4.65	Stone Boulder - 223 TPD	223	30-06-2023	JSPCB/RO /DMK/CT O- 10747490/ 2022/36	vikasmurm u09 @gmail.co m	9955913533	Smt Miru Soren
62	M/S PAHARI A STONE WORKS( Stone Mines)	24.89969	87.72742	BANSPAH AR, P.S- RANGA,D IST- SAHIBGA NJ	SAHEBG ANJ	PATHNA	Mining and ore beneficiat ion	Mouza- Banspahar, Khata no.- 08, Plot no.- 27, Khata no.- 03, Plot no. 31	7.83	Stone Boulder - 600 Tonne/Da y	600	31-12-2022	JSPCB/RO /DMK/CT O- 9522147/2 021/6	haquematiu l@ yahoo.in	7631674758	MD MATIUL HAQUE

63	MD SAMIM ALAM (Mines)	24.85204	87.72438	MOUZA-GANGOPARA BEDO PS-RANGA DIST-SAHIBAGNJ	SAHEBG ANJ	PATHNA	Mining and ore beneficiat ion	Mauza-Gangopara Bedo, khata No.- 11 & 12, Plot No.- 44/P & 25/P	7	Stone Boulders - 155 TPD	155	30-06-2025	JSPCB/RO /DMK/CT O- 8071910/2020/82	samim123sbg@rediffmail.com	8294247772	MD SAMIM ALAM
64	M/S BHAGWAN STONE WORKS(STONE MINES)	24.89583	87.72778	BORNA,P.O-BISHANPUR, DIST-SAHIBGANJ	SAHEBG ANJ	PATHNA	Mines	Mouza - Borna, Plot no. - 87, 118/P, 90, 122-125, 121, 89/P, Khata no. - 02, 12, 13, 61 GM Land	7.17	Stone Boulder - 350 Tonnes Per Day	350	31-12-2022	JSPCB/RO /DMK/CT O- 1715976/2017/184	BHAGWANST ONEWORK@Y AHOO.COM	9939139617	SRI JAGANNATH BHAGAT
65	M/S MAA AMBIKA TRADERS	24.84906	87.72358	GANGOPARA BEDO	SAHEBG ANJ	PATHNA	Mining and ore beneficiat ion	Mauza-Gangopara, Plot No.- 63 to 66, 25/P & 57/P	11.34	Stone Boulders - 500 TPD	500	30-09-2022	JSPCB/HO /RNC/CTO- 11350384/2021/1406	balikaisa@gmail.com	9422321412	Subrata Paul
66	RAHUL KUMAR (STONE MINES)	24.82971	87.72224	BORNA PO-BISHANPUR	SAHEBG ANJ	PATHNA	Stone Mines	Mauza-Borna, Plot No.- 437/P, 438/P & 439/P, Khata No.- 70, 52, 37	4	Stone Boulders - 190 TPD	190	31-03-2022	JSPCB/RO /DMK/CT O- 1380693/2017/84	shiveshakti stone@gmail.com	7667422732	RAHUL KUMAR

67	M/S NEHA BLACK STONE WORKS (STONE MINES)	24.85263	87.72443	MOUZA-GANGOPARA BEDO PS-RANGA DIST-SAHIBAGANJ	SAHEBG ANJ	PATHNA	Mining and ore beneficiation	Mauza-Gangopara Bedo, Khata No.-09, 10 & 12, Plot No.- 11, 15, 16, 17, 24/P & 25/P	6	Stone Bolders - 160 TPD	160	30-06-2022	JSPCB/RO/DMK/CTO-8072539/2020/83	akhtaralam bht@gmail.com	9631357475	MD AKHTAR ALAM
68	M/s BHAGWAN STONE WORKS (Stone Mines)	24.842289	87.71705	Borna, Bishanpur, Dist.- Sahibganj	SAHEBG ANJ	PATHNA	Mines	Mouza-Borna, Plot no.- 91, 107 to 109 & 112 to 117	5.98	Stone Boulder - 700 Tonne/Day	700	30-09-2022	JSPCB/RO/DMK/CTO-2015632/2017/272	bhawesh.bbc@gmail.com	9939139617	Sri Bhagwan Bhagat
69	M/S K.P. & G. SONS	24.895114	87.724772	At-Amdanda Pahar	SAHEBG ANJ	PATHNA	Stone Mines	Mauza-Amdanda Pahar, J.B. No.- 06, 19, 19, 06, 50, Plot No.225/P, 239/P to 241/P and 244/P	7.84	Stone Boulders - 438 TPD	438	31-03-2023	JSPCB/RO/DMK/CTO-7792958/2020/34	tcpltd25@gmail.com	9593790654	RENU BOHRA
70	Om Stone Works	24.75103	87.79085	Borna	SAHEBG ANJ	Barharwa	Stone Mines	Mauza-Borna Plot No 441 & 443/P, J.B. No.-35 & 31	2.96	Stone Boulders - 216 TPD	216	06-07-2023	JSPCB/RO/DMK/CTO-6560085/2020/70	omprakasharyal20@gmail.com	8521053111	Om Prakash Arya
71	M/S Mojibur Rahman (Stone Mines)	24.832111	87.715528	Borna, PO.- Pathna, Dist.- Sahibganj	SAHEBG ANJ	PATHNA	Mining and ore beneficiation	Mouza-Borna, Plot no.- 405/P	2	Stone Boulder - 1000 Cft/Day	40	31-12-2022	JSPCB/RO/DMK/CTO-9599735/2021/50	moziburrahman27@gmail.com	9631521624	Mojibur Rahman

72	M/S SHIV SHAKTI STONE WORKS(Stone Mines)	24.82602	87.72128	MOUZA-BORNA PO-BISHANPUR DIST-SAHIBGANJ	SAHEBG ANJ	PATHNA	Mining and ore beneficiation	Mouza-Borna Pahar, Plot no.- 442/P, 466/P, Khata no.- 60 & 05	2.5	Stone Boulder - 25 Tonne/Day	25	01-03-2025	JSPCB/RO/DMK/CTO-8163434/2020/71	shiveshaktistone@gmail.com	7667422732	SRI SHANKAR KUMAR
73	M/S BHAGWAN STONE AND MINERALS	24.875	87.708333	BUNDABEDO BARAGHATI	SAHEBG ANJ	PATHNA	Mining and ore beneficiation	Mouza-BUNDABEDO BARAGHATI, Plot no.- 355 P to 360 P, Khata No.- 7, 43, 53	7	Stone boulders - 800 TPD	800	30-09-2022	JSPCB/HO/RNC/CTO-8003015/2020/913	bsmratanpur@gmail.com	9955369004	BHAGWAN BHAGAT
74	SHABNAM PERWEEN	24.841939	87.728528	BORNA	SAHEBG ANJ	PATHNA	Mining and ore beneficiation	Mauza-Borna, Plot No 63, 64/P, 65, 244, 246/P, 247 & 285/P, Khata No.- 15, 19, 50, 65	5.6	Stone Boulders - 140 Tonne/Day	140	31-12-2023	JSPCB/RO/DMK/CTO-10011876/2021/90	pshabnam606@gmail.com	8434960950	SHABNAM PERWEEN
75	M/s Singh stone works	24.88255	87.74304	Bundamak o	SAHEBG ANJ	PATHNA	Stone Mines	Mouza-Bundamak o, Plot no.- 13, Khata no.- 12	1.98	Stone Boulder - 120 Cum Per Day	169.51056	31-03-2022	JSPCB/RO/DMK/CTO-9848654/2021/87	a.dokania1961@gmail.com	9939139682	Sri Tapan Kumar Singh

76	KRISHNA KUMAR SAHA (OLD NAME-Ramesh Kr Dokania)	24.83553	87.71633	IDPE (GADAIBHITA)	SAHEBG ANJ	PATHNA	Mining and ore beneficiation	Mauza-Idpe (Gadaibhita), Plot Nos -37/P & 38, Khata No. 8 & 4	7.85	Stone Boulder - 1000 MT/Day	1000	31-03-2022	JSPCB/HO/RNC/CTO-9800590/2021/439	kksgroup.ary@gmail.com	9931348063	KRISHNA KUMAR SAHA
77	M/S SHIV SHAKTI STONE WORKS	24.82627	87.72143	BORNA	SAHEBG ANJ	PATHNA	Stone Mines	Mouza-Borna, Plot no.- 466/P, Khata no.- 60	2.5	Stone Boulder - 96 TPD	96	30-06-2022	JSPCB/RO/DMK/CTO-10591155/2021/149	shiveshaktistone@gmail.com	7667422732	Smt Nutan Kumari Sri Shankar Kumar
78	Sri Chadeshwar Prasad Sinha	24.915553	87.75705	Kordar	SAHEBG ANJ	Taljhari	Mines	Mouza-Kordar, Plot No.- 02, Khata No. 12	6.91	Stone Boulder - 535 TPD	535	31-12-2022	JSPCB/RO/DMK/CTO-1710190/2017/257	a.dokania1961@gmail.com	9308195071	Sri Chadeshwar Prasad Sinha
79	M/S Rajan Stone Works (Stone Mines)	24.840944	87.720417	Borna	SAHEBG ANJ	PATHNA	Stone Mines	Mouza-Borna, Plot no.- 52/P, 53,54,55,56,58, 60,61,57,59,24 9,250,251, 252	8.68	Stone Boulder - 5000 Cft/Day	125	30-06-2023	JSPCB/RO/DMK/CTO-10570708/2021/129	jaykumar294@gmail.com	8969155765	RAJAN KUMAR
80	Om Stone Works (Stone Mines)	24.827833	87.719528	Borna, Po.- Bishanpur, Dist.- Sahibganj	SAHEBG ANJ	PATHNA	Mines	Mauza-Borna, Plot No 440/P	2.66	Stone Boulders - 200 TPD	200	18-08-2023	JSPCB/RO/DMK/CTO-6560178/2020/86	8521053111@gmail.com	8521053111	Sri Om Prakash Arya
81	M/S S S Enterprise	24.8266	87.72317	Borna	SAHEBG ANJ	PATHNA	Mining and ore beneficiation	Mauza-Borna, Plot No 468/P & 469/P	4.1	Stone Boulders 131.22 MT/D	131.22	31-03-2023	JSPCB/RO/DMK/CTO-10123943/2021/115	ssenterprises.bhw@gmail.com	9771639999	Md Ashraful Haque

82	KRISHNA KUMAR SAHA	24.86444	87.74278	BORNA P.O- BISHANP UR	SAHEBG ANJ	PATHNA	Mines with Crusher	Mouza- Borna, Khata no. 25, 05, 36, 11 Plot no. - 214/P, 396, 397, 398, 399, 400 & 402/P	8.62	Stone Boulders - 450 TPD	450	31-12-2022	JSPCB/RO /DMK/CT O- 2102423/2 018/20	mr.kksaha @g mail.com	9955577806	KRISHNA KUMAR SAHA
83	KRISHNA KUMAR SAHA	24.85886	87.72847	CHAPAN DEY P.O- PATNA DIST- SAHIBGA NJ	SAHEBG ANJ	PATHNA	Mines with Crusher	Mauza- Borna, Khata No.- 47, 56 & 05, Plot No.-201/P, 202, 203, 216, 217/p, 218, 219/p	6.75	Stone Boulders 360 TPD	360	30-06-2022	JSPCB/RO /DMK/CT O- 1563733/2 017/143	kksgroup.q ry @gmail.co m	9931348063	KRISHNA KUMAR SAHA
84	M/S KEDIA STONE WORKS	24.854889	87.722222	MOUZA- GANGOP ARA MAKO	SAHEBG ANJ	PATHNA	Stone crushers	Mauza- Gangopara Mako, Plot No.- 13 & 14, Khata No.-12	3	Stone Boulders 100 TPD	100	31-03-2022	JSPCB/RO /DMK/CT O- 9859993/2 021/38	kediastone wo rks2018@g ma il.com	8969886985	PRANAV KEDIA

85	M/S OM STONE WORKS	24.75103	87.79085	MOUZA-PIPALJORI, PLOT NO-37 TO 42, 43/P, 44/P, 45, 46/P, 55 TO 60, 61/P, THANA KOTALPOKHAR, DIST SAHEBG ANJ	SAHEBG ANJ	Barharwa	Mining and ore beneficiation	Mauza Pipaljori, Plot No.- 37 to 42,43/P, 44/P,45,46/P, 55 to 60 & 61/P,	10.59	Stone Boulders 677 TPD.	677	31-03-2023	JSPCB/RO/DMK/CT O-10126621/2021/92	OMSTON EWORKS. SBG@GMAIL.COM	8.295E+09	GYAN PRAKASH SINGH
86	CTS Industries Limited	25.233089	87.494142	Chhota Damin Bhita, Mirzachauki, District: Sahebganj.	SAHEBG ANJ	Mandro	Stone Mines	Mouza-Chhota Damin Bhita, Khata No.-06, Plot No.- 18P, Khata No.-12, Plot No.- 23P, Khata no.-10, Plot No.- 24P	8.95	Stone Boulder - 330 Tonnes/Day	330	31-03-2022	JSPCB/RO/DMK/CT O-10217815/2021/100	ctsindltd@hotmail.com	9910555833	Ashok Kumar Tulsyan
87	M/s Maa Ambika Traders (Old M/S HANS STONE WORKS)	24.84219	87.719919	MOUZA-BORNA	SAHEBG ANJ	Pathna	Stone Mines	Mouza-Borna, J.B No.-26 Plot No.-69 P, J.B No.-64 Plot No.-67,70 P, J.B No.-19, Plot No.-64P, 68P	4.37	Stone Boulders-400 Tonnes /Day	400	31-03-2023	JSPCB/RO/DMK/CT O-11009771/2021/180	hansstoneworks@gmail.com	9934684920	SRI SUBRATA PAUL

88	M/S NATUR AL MINING & CONSTR UCTION PVT. LTD.	24.84865	87.724	MOUZA- GANGOP ARA	SAHEBG ANJ	Pathna	Stone Mines	Mauza- Gangopa ra, Khata No.- 07 & 11, Plot No. 25/P, 76 & 77/P. 80/P	8.75	Stone Boulders - 359 TPD	359	30-06-2023	JSPCB/RO /DMK/CT O- 11027929/ 2021/178	NAturalmi ning94 @gmail.co m	8797916392	PANKAJ SINGH
89	M/S MAA KALIKA STONE WORKS (STONE MINES)	24.86652	87.73647	MOUZA- AMBADE	SAHEBG ANJ	Pathna	Stone Mines	Mauza- Ambade , Khata No.- 16 & 24, Plot No.- 17/P, 18/P, 22, 31/P, 32/P & 35/P	11	Stone Boulders - 505 TPD as per EC	505	31-03-2022	JSPCB/RO /DMK/CT O- 10104540/ 2021/70	maakalika sstone6 6@gmail.c om	8002250942	JAIKANT KUMAR
90	M/s Baba Projects Pvt. Ltd	25.22789	87.60328	At- Pachrukhi, PS- Boriya, Distt- Sahibganj	SAHEBG ANJ	Mandro	Mining and ore beneficiat ion	Plot no.- 11 to 13, Mauza.- Pachrukhi	14.01	Stone Boulder - 1767 Tonnes /Day	1767	31-12-2024	JSPCB/RO /DMK/CT O- 11666027/ 2021/215	rajiv@b ppl .org	9771420999	Ram Lakhan
91	M/S KASHI BUILDE RS & SERVIC ES Pvt. Ltd.	25.239756	87.585083	JOKMARI (MAHAD EVGANJ)	SAHEBG ANJ	Mandro	Stone Mines	Mouza.- Jokmari, Khata No.: 15,33; Khesra No.: 55P, 52P	7	Stone Boulder â“ 325 TPD	325	31-12-2022	JSPCB/RO /DMK/CT O- 12195802/ 2022/20	kashibuide rsand servicespvt Ltd@g mail.com	7903078487	BIPIN KUMAR
92	CTS Industries Limited (10 acre Mines SBJ)	25.241761	87.586333	District - Sahebganj	SAHEBG ANJ	Mandro	Mines	Mouza- Jokmari, Plot no.- 56/P, 58/P, 70/P and Khata no.- 81 & 13	10	Stone Boulder - 460 TPD	460	30-06-2023	JSPCB/RO /DMK/CT O- 10219600/ 2021/136	ctsindLtd@ hotm ail.com	9910555633	Ashok Kumar Tulsyan

93	M/S VANSLA GRANIT E	24.93041	87.797	PATNIBO NA AND CHALPA HAR	SAHEBG ANJ	TALJHAR I	Mines	Mouza- Patnibona & Chalpahar Plot no.- 13,14,16,1 7, 18/P, Bandobasti No.- 13, 17, 18, 29	6.89	Stone Boulder 350 Tonne/Day	350	31-12-2022	JSPCB/RO /DMK/CT O- 1716591/2 017/209	bhwtanmay 1967@ gmail.com	8298062160	SMT BINA SINGH
94	M/S TRIDEV STONE WORKS	25.053083	87.702458	MAUZA - BEKCHU RI, JB NO - 0307, PLOT NO - 07 13P 14P 15P , TALJHAR I, ANCHAL - RAJMAH AL	SAHEBG ANJ	TALJHAR I	Stone Mines	Mauza - Bekchuri, J.B. No.-03 & 07, Plot No.- 07, 13/P, 14/P & 15/P	10.32	Stone Boulders - 958 TPD	958	30-06-2022	JSPCB/HO /RNC/CTO- 10228073/ 2021/1132	ujjwalverm a560@ gmail.com	9934248482	UJJWAL VERMA
95	M/S MAA GAYAT RI STONE WORKS	24.94519	87.805	MOUZA- MALITOK	SAHEBG ANJ	TALJHAR I	Stone Mines	Mouza- Malitok, Plot no.- 71, 72, 73, 77, 78, 79, 80, 81, 86, 87	5.21	Stone Boulder- 257 Tonne/Day	257	31-03-2023	JSPCB/RO /DMK/CT O- 10016972/ 2021/51	kumarbijay bhwa@g mail.com	9939524498	CHETKA R PRASAD SAHA
96	M/S R. P. SINGH STONE WORKS	24.951389	87.752831	BANSKO LA	SAHEBG ANJ	TALJHAR I	Stone Mines	Mouza- Banskola, Plot no.- 448/P, 450 to 453,	7.60	Stone Boulder - 215 TPD	215	06-09-2022	JSPCB/RO /DMK/CT O- 11929237/ 2022/22	RAJESHW ARSINGH 408@GM AIL.COM	8969652411	RAJESHW AR SINGH
97	M/S JHARKH AND STONE WORKS	25.030311	87.67045	LEBA	SAHEBG ANJ	Borio	Stone Mines	Mouza- LEBA, Plot No - 05P, Khata No - 04	7	Stone Boulder - 417 TPD	417	31-03-2023	JSPCB/RO /DMK/CT O- 12461036/ 2022/37	insha49357 5@gma il.com	7004501803	MD IRSHAD ALI

98	BARAPARTE STONE MINES	25.224747	87.704308	MAUZA BARAPARTE TALJHAR I SAHEBG ANJ	SAHEBG ANJ	TALJHAR I	Stone Mines	Mauza.- Bareparte, Khata No.- Nil, Plots No.14/P, 33/P & 34/P,	3	Stone Boulders - 77.98 TPD.	77.98	31-03-2022	JSPCB/RO /DMK/CT O- 9700114/2 021/25	arjunyadav shb@g mail.com	9006068518	BASUKIN ATH YADAV YOGESH YADAV
99	M/S HARILAL AJOY & CO.	24.93976	87.79774	PATNIBONA & CHOWKIPAHAR	SAHEBG ANJ	TALJHAR I	Mines	Mouza- Patnibona & Chowkipahar, Plot No. 19/P, 41, 42, 44/P, 47, 43/P, 45/P, 46/P, 92/P, 93, 94, 95/P, 110 Khata no.- 01, 05, 11, 16, 32	14.90	Stone Boulder- 1206 TPD	1206	30-09-2022	JSPCB/RO /DMK/CT O- 2013576/2 017/273	kamalchaw da02@r ediffmail.c om	9955923386	SRI KAMAL CHAWDA
100	MS/ HARILAL AJOY & CO.	24.92732	87.78967	AT+PO- BAKUDI	SAHEBG ANJ	TALJHAR I	Stone Mines	Mouza - Godi Tungi, Plot No.- 89,90,91,9 2 Khata no.- 89 to 92	5.48	Stone Boulder- 273 Tonnes/Da y	273	31-03-2022	JSPCB/RO /DMK/CT O- 9842954/2 021/27	kamalchaw da02@r ediffmail.c om	9955923386	SRI NEHAL KUMAR CHAWDA KAMAL CHAWDA AND OTHERS
101	M/S Patni Bona Stone Quarry	24.92856	87.79747	Patnibona	SAHEBG ANJ	TALJHAR I	Stone Mines	Mouza Patnibona, Plot no.- 22, 25, 34, 35, 36, 37 Khata No.- 45	10.01	Stone Boulder 700 Tonne/Day	700	31-12-2022	JSPCB/RO /DMK/CT O- 9227043/2 021/14	praveshlak hmani@ yahoo.com	9330252500	Sri Pravesh kumar Lakhmani

102	M/S SWASTIK MINERAL AGENCY	25.11546	87.71189	CHALPAHAR	SAHEBG ANJ	TALJHARI	Stone Mines	Mouza - Chalpahar, Plot no.- 3, 15/P, 16/P, 18/P, 25, 27, 31, 4, 23, 30, 5, 6, 21, 17, 20, 38, 24, 26, 28, 29, 39, 32	30.56	Stone Boulder - 2002 Tonne/Day	2002	31-03-2022	JSPCB/RO /DMK/CT O- 10917441/ 2021/160	bhwatanmay 1967@gmail.com	7903012586	SRI VIKRAM PRATAP
103	M/S VANSLAGRANITE	24.93171	87.79872	CHALPAHAR	SAHEBG ANJ	TALJHARI	Mining and ore beneficiation	Khata No.- 12, Plot No.- 55 & 56	1.5	Stone Boulders - 40 TPD and Stone Chips - 36 TPD	40	31-12-2023	JSPCB/HO /RNC/CTO- 11585434/ 2022/135	bhwatanmay 1967@gmail.com	7903012586	SMT BINA SINGH
104	M/S BOBBY STONE WORKS	24.935536	87.797356	MOUZA-GUDAITUNGI PS-TALJHARI DIST-SAHIBGANJ	SAHEBG ANJ	TALJHARI	Mining and ore beneficiation	Mauza-Gudaitungi, Khata No.- 04, Plot No 129/P	2.75	Stone Boulders - 95 TPD	95	30-06-2023	JSPCB/RO /DMK/CT O- 10182182/ 2021/114	BOBYSTONENWORK @GMAIL.COM	7870256159	MD AMINUL ISLAM
105	M/S R. P. SINGH STONE WORKS	24.951389	87.752831	BANSKOLA	SAHEBG ANJ	TALJHARI	Stone Mines	Mouza-Banskola, Plot no.- 448/P, 450 to 453,	7.60	Stone Boulder - 215 TPD	215	31-03-2022	JSPCB/RO /DMK/CT O- 4856916/2 019/35	RAJESHWARSINGH 408@GMAIL.COM	8969652411	RAJESHWAR SINGH
106	RAHUL METALS (Old Name - M/s Shree Shankar & Co.)	24.91681	87.76944	Bara Bana Para	SAHEBG ANJ	TALJHARI	Stone Mines	Mouza- Bara Bana Para, Plot No.- 27 Khata No.- 55	7.88	Stone Boulder- 8000 Cft/Day	320	12-03-2023	JSPCB/RO /DMK/CT O- 3827710/2 018/248	rahulmetals @yahoo.com	9937199022	GOPI SADHWANI

107	M/S JIAL DAS & CO.	24.93517	87.80475	MOUZA-PAKTURI, PLOT NO-49 TO 53, 86/P, 88, 89, AREA-33.44 ACRES	SAHEBG ANJ	TALJHAR I	Mines	Mouza-Pakturi, Plot no.- 49 to 53, 86P, 88, 89 Khata no.- Nil	33.44	Stone Boulder - 1421 TPD	1421	31-12-2023	JSPCB/HO/RNC/CTO-4197546/2019/8	jialdasco@gmail.com	9748998164	SUMIT S ADHWANI
108	M/S MADAN KANT	25.22827	87.7108	MOUZA-KIROKURIA	SAHEBG ANJ	TALJHAR I	Mines	Mouza-Kirokuria, Plot no.- 2P, 30P, 31P, Khata No.- 14, 04 & 15	6	Stone Boulders - 200 TPD	200	30-09-2024	JSPCB/RO/DMK/CTO-6181782/2019/134	madankant31@gmail.com	9939380082	SHRI MADAN KANT
109	M/S ABBAS & SONS (Stone Mines)	24.95153	87.7528	Dhamdhamia, Po.- Bara Durgapur, Dist.- Sahibganj	SAHEBG ANJ	TALJHAR I	Mines	Mouza-Dhamdhamia, Plot no. - 108, 109, 160/P	3.98	Stone Boulder - 130 Tonnes/Day	130	31-12-2023	JSPCB/RO/DMK/CTO-11034600/2021/184	mushtaque.tph@rediffmail.com	9771906611	MD ANIS ANSARI
110	M/S MADAN KANT	25.22261	87.71301	MAUZA - KIROKURIA, TALJHAR I, SAHIBGANJ	SAHEBG ANJ	TALJHAR I	Stone Mines	Mauza-Kirokuria, Khata No.- 14, Plot No. - 18/P, 19, 20, 21/P	4.90	Stone Boulders - 600 TPD	600	30-09-2023	JSPCB/RO/DMK/CTO-3700530/2018/240	madanksbg@gmail.com	6202331738	MADAN KANT
111	M/S MD. ALAM & BROTHERS (Stone Mines)	24.93693	87.79683	GUDAITUNGI P.O.- BAKUDIH DIST- SAHIBGANJ	SAHEBG ANJ	TALJHAR I	Mines	Plot no.- 82 (P), 83, 84 (P) 85, 86 (P) to 88 (P)	8.22	Stone Boulders - 401 Tonnes/Day	401	31-03-2023	JSPCB/RO/DMK/CTO-2103464/2018/19	md.alamandbrothers@gmail.com	9199990660	MAHATAB ALAM
112	M/S MOHAN & SANJAY STONE WORKS	25.22247	87.72367	MOUZA-GADWA	SAHEBG ANJ	TALJHAR I	Stone Mines	Mouza-Gadwa, Plot no. 60 to 62, Khata no.- 45	5.76	Stone Boulder - 470 TPD	470	30-06-2024	JSPCB/RO/DMK/CTO-10280213/2021/107	pranaykejriwal@gmail.com	8789849803	SANJAY KUMAR YADAV

113	M/S HARILA L AJOY & CO.	24.9368	87.79551	PATNIBONA	SAHEBG ANJ	TALJHARI	Mines	Mouza-Patnibona, Plot no.- 20, 21	1.4	Stone Boulder - 36 TPD	36	31-12-2022	JSPCB/RO/DMK/CTO-1841567/2017/213	kamalchawda02@rediffmail.com	9955923386	NEHAL KUMAR CHAWDA AND KAMAL CHAWDA
114	M/S JIAL DAS & CO	24.93206	87.8021	PAKTURI, P S - TALJHARI, District-SAHEBG ANJ	SAHEBG ANJ	TALJHARI	Mining and ore beneficiation	Mauza-Pakturi, Plot No . 39/P, 41/P & 44, Khata No.- Nil	3.51	Stone Boulders 112 TPD.	112	30-01-2023	JSPCB/RO/DMK/CTO-4605575/2019/161	jialdasco@gmail.com	9748998164	SUMIT S ADHWANI
115	ARJUN YADAV	25.224253	87.707303	MOUZA-KIROKURIA,P.O-SAKRIGALI GHAT,P.S-TALJHARI,DIST-SAHEBG ANJ	SAHEBG ANJ	TALJHARI	Stone Mines	Mouza.- Kirokuriya, Plot no.- 44/P, 45/P,	3	Stone Boulders - 123.28 TPD	123.28	31-03-2022	JSPCB/RO/DMK/CTO-9588938/2021/19	arjunyadavshb@gmail.com	9934746059	SRI ARJUN YADAV
116	M/s Akash Ali (Stone Mines)	24.94421	87.80699	Malitok	SAHEBG ANJ	TALJHARI	Mining and ore beneficiation	Mouza-Malitok, Plot no 140/P, 141, 144, 145, 149/P Khata no.- 41	4.41	Stone Boulder - 4500 Cft/Day	180	31-12-2022	JSPCB/RO/DMK/CTO-8912071/2021/24	bijaykumar9141@gmail.com	7992255824	Md Akash Ali
117	M/S SWASTIK MINERAL AGENCY	25.11746	87.71212	RORO	SAHEBG ANJ	TALJHARI	Stone Mines	Plot no.- 10,11/P, 18/P, Khata no.- 02	12	Stone Boulders - 1000 Tonne/Day	100	31-12-2025	JSPCB/HO/RNC/CTO-11585347/2022/201	bhwatanmay1967@gmail.com	8298062160	SHRI VIKRAM PRATAP

118	M/ S MAA SHITLA STONE WORKS	25.219856	87.728081	GADWA	SAHEBG ANJ	TALJHAR I	Stone Mines	Mouza- GADWA, Plot No. 48(P), 50(P), 52(P), 53(P), 54(P), Khata No.: 18, 40, 02, 36	7	Stone Boulder - 687 TPD	687	31-03-2023	JSPCB/RO /DMK/CT O- 12533091/ 2022/34	maashitlast onewor ks@gmail. com	8088653495	SANJAY KUMAR YADAV
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SI NO.	Industry Name	Latitude	Longitude	Block	Type of Industry	Khata No. & Plot No.	Area in acre	Stone Chips capacity (TPD)	Crusher Status	Date of Expiry	Ref. No.	Occupier Email	Occupier Mobile No.	Occupier Name
1	M/S Dada Bhai Stone Works	24.86499	87.69419	BARHA IT	Stone crushers	Mauza- Bara Panchkuli, Plot No.- 48/P, J.B. No.-17	1.33333333	432	Standalone	30-09-2022	JSPCB/HO/RNC/CTO-8203793/2020/1150	mdmzzaman.bhw@gmail.com	9546206502	MD MANIRUZ ZAMAN
2	M/s Maa Jagdamba Stone Works	24.835	87.64917	BARHA IT	Stone crushers	Mauza â€Makli, Plot No. 17/P , J.B. No.- 16	2	158.4	Standalone	31-03-2022	JSPCB/HO/RNC/CTO-8114092/2020/1951	j.lalsaha1964@gmail.com	9304878162	Jawahr Lal Saha
3	NATURAL MINING AND CONSTRUCTION PVT.LTD.(CR)	24.84788	87.726649	BARHA RWA	Stone crushers	Mauza - Gangopara Bedo, Khata No.- 11 & 02, Plot No.- 80 & 58	6.16	683	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-8098797/2020/1078	sab@balkai.net	9422321412	SURESH PRASAD
4	M/S CHAR TARA STONE	24.74593	87.79318	BARHA RWA	Stone crushers	Mauza-Pipaljori , Khata No.- 25, Plot No.- 73, 75, 7	1.14916667	18	Standalone	30-09-2022	JSPCB/HO/RNC/CTO-8983892/2021/510	mdsafikulislam211@rediffmail.com	7633838130	MD SAFIKUL ISLAM
5	M/S RAM RAHIM STONE WORKS	24.74657	87.79393	BARHA RWA	Stone crushers	Mauza â€Pipaljori , Plot No 209,210,211 Khata No.:211	1.95083333	18	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-9472699/2021/1313	ramrahimstoneworks@gmail.com	8210773829	DINANATH PRASAD BHAGAT
6	SAMSUL HAQUE(Stone Crusher)	24.75583	87.79253	BARHA RWA	Stone crushers	Mauza- Pipaljori, J.B. No.- 56, 69, Plot No.- 80 & 81	0.9375	36	Standalone	30-09-2022	JSPCB/HO/RNC/CTO-9580621/2021/416	samsulhaque8081@gmail.com	9708910310	SAMSUL HAQUE
7	M/S SHREE GURU STONE WORKS	24.74472	87.793323	BARHA RWA	Stone crushers	Mauza-Pipaljori, Khata No. 211, Plot No. 420 & 422	1	108	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-11226963/2021/1484	sangeeta.das1800@gmail.com	7250750550	AMARJIT SINGH
8	M/S T B S STONE WORKS	24.75083	87.79222	BARHA RWA	Stone crushers	Mauza - Pipaljori, Khat No.- 211, Plot No.- 111,112 & 114	2.4	54	Standalone	30-09-2022	JSPCB/HO/RNC/CTO-8966357/2021/359	somnathghosh0227@gmail.com	7004490397	SOMNATH GHOSH

9	M/S FIZA STONE WORKS	24.74583	87.79253	BARHA RWA	Stone crushers	Mauza â€Pipaljori, Plot No . 71, 72, 74 & 79, Khata No.- 36 & 56	3.25666667	180	Standalone	31-12-2023	JSPCB/HO/RNC/CTO-11280673/2021/1349	kushal.pkr@rediffmail.com	674901934	MD ZAMIL AKHTAR
10	M/S Nasiruddin Shekh ( STONE	24.76079	87.794513	BARHA RWA	Stone crushers	Mauza-Dhatapara Kotalpokhar, Khata No.- 19, Plot No .- 557	1.25	144	Standalone	30-09-2023	JSPCB/HO/RNC/CTO-11281250/2021/1473	abcd.pkr@rediffmail.com	834807192	Nasiruddiun Shekh
11	Satya Nath Sah (Stone Crusher)	25.031	87.615	BORIO	Stone crushers	Mauza â€ BindriBandark ola, Plot No. 713/P, J.B. No.- 54,	1	400	Standalone	31-03-2022	JSPCB/HO/RNC/CTO-7396200/2020/614	7677927081@gmail.com	7543816675	Sri Satya Nath Sah
12	M/S DURGA STONE WORKS	25.21693	87.66548	BORIO	Stone Crusher	Mauza-Adra, Plot No.- 349 to 361 & 399	1.62333333	32	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-4196064/2018/2107	durgastone001@gmail.com	9973761838	ADITYA KUMAR SINGH
13	M/S SOURABH STONE	25.21617	87.661684	BORIO	Stone crushers	Mauza- Adro, Plot No.- 431 to 434	1.06833333	16.4	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-8187516/2020/1466	saurabhstoneworks@yahoo.com		GANESH PRASAD TIWARY
14	M/S LALITA ENTERPRISE S	25.23761	87.56345	BORIO	Stone crushers	Mauza â€ Deshipokharia, Plot No. 54/P, Khata No.-32,	1.94	324	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-8024236/2020/1032	bijaykumarbogi@gmail.com	7781949409	KISHORE KAUSTAV
15	M/S S. S. STONE WORKS	25.21743	87.66474	BORIO	Stone crushers	Mauza - Chotta Lohanda, Plot no.- 397, J.B. No.-19	1.15	14.4	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-9626659/2021/680	pawanram99316@gmail.com	8002923729	TARUN SHANKAR GUPTA
16	M/s Usha Stone Works (Stone Crusher)	25.20053	87.6696	BORIO	Stone crushers	Mauza-Adro Mako, Khata No.-10 & 17, Plot No.-22/P, 23, 30/P, 34	2.37	120	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-6143857/2020/609	ushastoneworks2016@gmail.com	6201479037	Sri Nikhil Kumar
17	OLD NAME-SATYANNA TH SAH , NEW NAME M/S SAI MALTI	25.031	87.615	BORIO	Stone crushers	Mauza- Bindri Bandarkola, J.B. No.- 54, Plot No.- 713	1	39.6	Standalone	31-03-2023	JSPCB/HO/RNC/CTO-6820058/2020/612	satyanathsaha@yahoo.in	9771156687	SURESH SINGH
18	M/S JYOTI STONE WORKS	25.2	87.655	BORIO	Stone crushers	Mauza-Lohanda Bedo, Plot No.-33, 34, 35, Khata No.- 31, 14, 13	1.07916667	198	Standalone	30-09-2022	JSPCB/HO/RNC/CTO-10572917/2022/96	jagdishnarsaria@gmail.com	8210614954	JAGDISH PRASAD NARSARIA
19	M/S RAJ STONE WORKS	25.23132	87.67645	BORIO	Stone crushers	Mauza- Bara Lohanda, Plot No .- 382 & 386, J.B. No.- 42	1.845	80	Standalone	31-12-2023	JSPCB/HO/RNC/CTO-11581372/2022/25	rajstone001@gmail.com	9431194412	MD ARIF ZAFAR

20	M/S HARI RAMA CONSTRUCTIONS	25.04087	87.619006	BORIO	Stone Crusher	Mauza- Bindribandarko la, Plot No . 713/P, J.B. No.- 54	2	315	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-6705295/2020/465	hariramasbg@gmail.com	7258014200	RAMA KRISHNA
21	M/S MAA TARA STONE WORKS	25.2161	87.6631	BORIO	Stone crushers	Mauza- Chhota Lohanda, Khata No.- 19, Plot No.- 397, 406, 407, & 408	1.34833333	32	Standalone	31-03-2022	JSPCB/HO/RNC/CTO-8143802/2020/1252	maatarastone001@gmail.com	7677165550	SUNIL KUMAR SINGH
22	M/S JHARKHAND MINERALS	25.2219	87.69946	BORIO	Stone crushers	Mauza- Bare Parte, Khata No.-02, Plot No -28	1	79.2	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-6477352/2019/2220	mdrabbul786@gmail.com	8825399548	MD RABBUL ANSARI
23	M/S NINJA STONE	25.23266	87.5791	BORIO	Stone crushers	Plot No - 07, Khata No - 68	1.67416667	16	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-12207308/2022/134	sekhm405@gmail.com	8797312500	MOHMMA D FAKHRUDIN ALI AHMAD
24	M/S P. L. STONE WORKS	25.22703	87.6632	BORIO	Stone crushers	Mauza- Chotta Lohanda, Plot No.- 359 & 360	1	18	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-8172859/2020/1401	ramesh040173@gmail.com	8271326134	RAMESH KUMAR GUPTA
25	M/S JINDAL STONE WORKS	25.2183	87.660627	BORIO	Stone Crusher	Mauza- Bara Lohanda, Plot No.- 391 to 393 , Khata No.- 51	2.1375	380	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-7029915/2020/909	jindalstone001@gmail.com	9973761838	KANHAIY A KUMAR KHUDANI A
26	M/S RITIKA STONE WORKS	25.21302	87.66602	BORIO	Stone crushers	Mauza- Adro, Khata No.-44, Plot No.- 450 to 453	0.99833333	72	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-8174603/2020/1236	kundan0202@gmail.com	7903431716	SUSHIL KUMAR BHARTIY A
27	M/S KASHI VISHWANATH STONE WORKS	25.1955	87.6744	BORIO	Stone crushers	Khata No. - 30, Plot Nos. â€08 (P)	1.5	380	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-12205115/2022/200	pinkygoyalsbg@gmail.com	9162965499	ASHOK KUMAR YADAV
28	M/s Alok Stone	25.19371	87.6731	BORIO	Stone crushers	Mauza â€Tetaria, Plot No. 09, J.B. No.-10	3.17666667	2000	Standalone	05-02-2023	JSPCB/HO/RNC/CTO-10348544/2021/928	alok.baltu@gmail.com	9955999282	Sri Alok Ranjan

29	M/S JAI HANUMAN STONE WORKS	25.2216	87.65739	BORIO	Stone crushers	Mauza-Bara Lohanda, Khata No.- 48, Plot No.- 330 & 331	1.0425	43.2	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-8288327/2020/1269	jaihanumanstone001@gmail.com	8539095840	PHULCHAN PASWAN AND RAJKUMAR BHAGAT
30	M. L. STONE WORKS	25.21878	87.65986	BORIO	Stone crushers	Mauza- Bara - Lohanda, Plot No.- 354 & 356, Khata No.- 46	0.55416667	20	Standalone	31-03-2022	JSPCB/HO/RNC/CTO-7952759/2021/1414	sanjaykumar250970@gmail.com	700420303	sanjay kumar
31	M/S KANAK STONE	25.21846	87.663107	BORIO	Stone Crusher	Mauza-Chotta Lohanda, Plot No.- 373 to 376	2.44	40	Standalone	31-12-2023	JSPCB/HO/RNC/CTO-8857578/2020/1588	kanakstone001@gmail.com	9973761838	VED PRAKASH KHUDANI A
32	M/S SHIV SHANKAR STONE WORKS	25.21891	87.658955	BORIO	Stone Crusher	Mauza - Chota Lohanda, Plot No- 345, 344, Khata No- 345, 344	0.98833333	12	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-5861475/2019/2097	shivshankerstone works@yahoo.com	8292984377	ASHOK KUMAR MANDAL
33	M/S Noor Stone Works	25.23918	87.570296	MANDRO	Stone crushers	Mauza-Maricutti, Plot No . 30/P & 36/P, Khata No.- 11	3	252	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-8144380/2020/1217	badalsbg@gmail.com	8210303152	Md Sarfraz Uddin
34	M/S ANKIT STONE INDUSTRIES	25.229	87.5705	MANDRO	Stone crushers	Mauza â€ Mahadeobaran, Plot No.- 144, 145/P, 208, 193	1.25	96	Standalone	30-06-2024	JSPCB/HO/RNC/CTO-10161444/2021/681	ankitstoneindustries@yahoo.in	9934849023	ARJUN PRASAD JAISWAL
35	M/S SRI RAM STONE WORKS	25.24854	87.484096	MANDRO	Stone crushers	Mauza-Nimgachi, Plot No.- 659, Khata No.- 37	0.66666667	43.2	Standalone	31-12-2023	JSPCB/HO/RNC/CTO-9257797/2021/330	bijaykumarbogi@gmail.com		TINKAL KUMAR BHAGAT
36	M/S SAI ASHIRWAD STONE WORKS	25.2131	87.489472	MANDRO	Stone Crusher	Mauza - Mathadih, Khata No.- 07, Plot No.- 611	1.33333333	90	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-7983412/2020/1030	sanjayjaiswal160@yahoo.in	9771365167	SANJAY KUMAR JAISWAL
37	M/S Pratik Stone Works	25.24696	87.4828	MANDRO	Stone Crusher	Mauza-Belbhadri, Plot No.- 08, Khata No.- 05	0.35	180	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-8547247/2021/850	pintupandit99737@gmail.com	9973756315	Sri Pintu Kumar Pandit
38	M/S KUNDAN KUMAR	25.24576	87.49374	MANDRO	Stone crushers	Mauza-Mundli, Plot No.- 03/P, 11	1.33333333	120	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-5341122/2019/1638	kundan000011@gmail.com	9801398204	KUNDAN KUMAR

39	M/S Durga Stone Works	25.24745	87.483296	MANDRO	Stone crushers	Mauza - Belbhadri, Plot No.- 07, Khata No.- 11	0.43333333	43.2	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-8153120/2020/1205	9123171695@gmail.com	9199588305	Ravi Shankar Barnwal and Jai Shankar Barnwal
40	M/S Shanti Stone Works	25.24559	87.493427	MANDRO	Stone crushers	Mauza @Mundli, Plot No. - 03 & 04, Khata No.- 05 & 16,	0.66666667	108	Standalone	31-03-2023	JSPCB/HO/RNC/CTO-8031750/2020/992	9931541450@gmail.com	9006958245	Sri Abhishek Choudhary
41	M/S Aditi Stone Works	25.24632	87.49455	MANDRO	Stone crushers	Mauza-Mundli, J.B. No.-14, Plot No -21	0.41666667	119.2	Standalone	31-03-2022	JSPCB/HO/RNC/CTO-4545428/2019/542	ganeshbhagat300@gmail.com	9934868338	Sri Ganesh Prasad Bhagat
42	M/S DADA JEETU BUILDCON Pvt. Ltd.	25.23797	87.560178	MANDRO	Stone crushers	Mauza - Deshipokharia, J.B. No. 21 & 04, Plot No. 61/P & 62/P	2	540	Standalone	31-03-2024	JSPCB/HO/RNC/CTO-4996650/2019/830	dadajeetubuild@gmail.com	9896422928	Suresh Kumar
43	M/S JAI MATADI STONE WORKS	25.24984	87.492162	MANDRO	Stone crushers	Mauza-Nimgachi, Plot No.- 534 to 536, Khata No.- 25 & 26	0.9575	72	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-10471375/2021/1381	crushingstone9@gmail.com	8210344406	AMIT KUMAR JAISWAL
44	ALOK STONE	25.21408	87.58053	MANDRO	Stone crushers	Plot Nos. @25(P), 26(P) & 24(P); Khata No. - 02, 14,	1.22	1800	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-12165266/2022/98	25ALOKRANJAN@GMAIL.COM	9771408218	ALOK RANJAN
45	M/S TAMANNA STONE WORKS	25.236	87.5687	MANDRO	Stone crushers	MauzaMarikuti, Khata No.-11, Plot No 29 & 30	2	620	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-7030429/2020/994	.kanhaiyakhudaniya@gmail.com	9431139039	MD KARIMUD DIN
46	M/S Maa Vaishnavi Stone Works (Stone Crusher)	25.24734	87.499022	MANDRO	Stone crushers	Mauza @Mundli, Khata No. -12 & 19, Plot No -13 & 16/P	6.6	1440	Standalone	30-06-2024	JSPCB/HO/RNC/CTO-5300537/2019/1143	rajeshjash22@gmail.com	9006448750	Rajesh Kumar Jaiswal
47	M/S VANVASI KALYAN STONE	25.23821	87.572767	MANDRO	Stone crushers	Mauza @Marikuti, Plot No . 47/P & 48/P, Khata No.- 03 & 09	4.1075	720	Standalone	31-03-2023	JSPCB/HO/RNC/CTO-7858965/2020/1122	sabbirkhanm30@gmail.com	9415370549	REHANA KHATOON

48	M/S MAHAMAYA STONE WORKS	25.25592	87.50528	MANDRO	Stone crushers	Mauza-Teteria, Plot No.- 95 & 96	0.73833333	40	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-7259744/2020/1148	mahamayastoneworks@yahoo.in		MUNNA CHOUDHARY
49	Old Name-M/s A K Builders & New Name-M/s Maa Jagdambey	25.24624	87.58812	MANDRO	Stone crushers	Mauza â€œokmari (Guthi Beda), Plot No -69/P, Khata No. -34,	3.5	1260	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-10975793/2021/1066	1985amitjee@gmail.com	7004920877	Amit Kumar & Others
50	M/S MAA BAISNAVI STONE WORKS	25.24736	87.49624	MANDRO	Stone Crusher	Mauza -Mundli,Plot No - 24 (P), J.B. No.- 19	1	56	Standalone	30-06-2024	JSPCB/HO/RNC/CTO-5298742/2019/1150	rajeshjash22@gmail.com	9006448750	Rajesh Kumar Jaiswal
51	M/s Nath Stone Works	25.24298	87.48245	MANDRO	Stone crushers	Mauza - Belbhadri, Plot No.-44, J.B. No.- 21	1.2	32.4	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-8019220/2020/1356	nathstone@gmail.com	9931164428	Deepak Kumar Mahto
52	M/s Kashi Viswanath Stone Works	25.229	87.5705	MANDRO	Stone crushers	Mauza-Belbhadri, Khata No.- 24, Plot No.- 03, 04, 05, 06,	0.5	58	Standalone	31-12-2023	JSPCB/HO/RNC/CTO-8878516/2021/293	9934777492@gmail.com	9934777492	Sri Shrawan Kr Barnwal
53	Shree Hari Stone Works	25.24442	87.49198	MANDRO	Stone crushers	Mauza â€œMundli, Plot No. 04/P, Khata No.- 05,	1.6	360	Standalone	30-06-2024	JSPCB/HO/RNC/CTO-10143737/2021/748	mrinal.sbg@gmail.com	7717747234	Mrinal and Rajesh Kumar
54	M/S BALAJI STONE WORKS	25.24607	87.586558	MANDRO	Stone crushers	Mauza - Jokmari, J.B. No.-02/81, Plot No . 229/119	2.12	36	Standalone	30-06-2024	JSPCB/HO/RNC/CTO-10164294/2021/637	manojksbagg@gmail.com	9304277452	MANOJ KUMAR
55	M/S SRI SHYAM STONE WORKS	25.24349	87.48543	MANDRO	Stone crushers	Mauza - Marikuti, Plot No - 10,11,20,22to2 5,30 Khata No - 29,16,06,39,12, 11	6.04	72	Standalone	31-03-2023	JSPCB/HO/RNC/CTO-7041388/2020/916	RAMKR9973@gmail.com	9973761838	RAMESH KUMAR DOKANIYA
56	M/S JAI GURU STONE	25.241	87.475	MANDRO	Stone Crusher	Mauza - Bartalla, Khata No.- 23, Plot No.- 45	0.655	40	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-6201301/2019/1928	pramodkumar_jaiswal@yahoo.in		PRAMOD KUMAR JAISWAL
57	M/S ANANYA STONE WORKS	25.24607	87.497844	MANDRO	Stone Crusher	Mauza-Mundli, Plot No.- 24, J.B. No.- 19	0.66666667	18	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-8506410/2021/1343	laxman@gmail.com		LAXMAN KUMAR CHOWDHARY
58	M/S VANSHRAJ STONE WORKS	25.24392	87.478513	MANDRO	Stone crushers	Mauza- Belbhadri, Plot No.-53, Khata No.- 03 Old & 14 New	0.83	90	Standalone	30-06-2024	JSPCB/HO/RNC/CTO-10181615/2021/717	jaimaatarastoneworks@yahoo.in	9661066244	BIKASH KUMAR GUPTA
59	M/S RAJ STONE WORKS	25.25629	87.499513	MANDRO	Stone crushers	Mauza-Bartolla, Plot No.- 120/P, 124/P, 125/P, 127/P	1	43.2	Standalone	31-03-2023	JSPCB/HO/RNC/CTO-4517320/2021/1136	premprakashmzc@gmail.com	9934081881	PREM PRAKASH CHOUDHARY

60	M/S MAA GAYTRI STONE WORKS	25.25124	87.49348	MANDRO	Stone Crusher	Mauza- Mahadevbaran, Plot No.- 162, 163, 164, 133, 132/P, 134/P, Khata No.- 24	1.10833333	92	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-8207523/2020/1688	shambhukumarj@gmail.com	9931743353	Shambhu Kumar Jaiswal
61	GANPATIST ONEWORKS	25.251	87.495	MANDRO	Stone crushers	Mauza- Bartalla, Plot No.- 455	0.3025	18	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-9144978/2021/452	kamleshwarimandal@yahoo.in	9955137725	TARUNKA NTIGHOSH
62	M/s Maa Durga Stone Works	25.23696	87.571673	MANDRO	Stone crushers	Khata No. 8, 17, 27, 33, 36; Plot Nos. - 45P, 51P, 71P, 72, 73P, 74P, 75P & 76P	3.12	1000	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-11756418/2022/160	maadsw.sbg@gmail.com	8877668588	Bishnu Prasad Yadav
63	BPY INFRA BUILD PVT LTD	25.2391	87.58138	MANDRO	Stone crushers	Mauza - Jokmari, Khata No.-81, Plot No . 38/P	3	1011	Standalone	30-09-2022	JSPCB/HO/RNC/CTO-8487964/2021/1351	yashraj.sbg@gmail.com	9431152033	Bajrangi Prasad Yadav
64	M/S SUMIT STONE WORKS	25.24779	87.495008	MANDRO	Stone crushers	Mauza-Mundli, Plot No.-25/P, Khata No.- Nil	0.35	131.2	Standalone	30-09-2023	JSPCB/HO/RNC/CTO-10585871/2021/865	sumitstoneworks@yahoo.in		SUMIT KUMAR CHOUDHARY
65	M/S MAHADEO STONE WORKS	25.25061	87.49271	MANDRO	Stone crushers	Mauza- Mahadeobaran, Plot no.- 140, 141, Khata No.- 24	0.5	18	Standalone	31-03-2022	JSPCB/HO/RNC/CTO-9386949/2021/394	AJAY@GMAIL.COM	7050524533	PAWAN KUMAR CHOUDHARY
66	M/S SRI SRI RAM STONE WORKS	25.24501	87.481722	MANDRO	Stone crushers	Mauza- Belbhadri, Khata No.-15, Plot No.- 02	0.81666667	108	Standalone	31-03-2024	JSPCB/HO/RNC/CTO-10181479/2021/560	TINKAL@GMAIL.COM	9939913889	TINKAL KUMAR BHAGAT
67	M/S Subhadra Stone Works	25.2574	87.49951	MANDRO	Stone crushers	Mauza-Bartalla, Plot No.-152 & 153, Khata No.-40	1.35916667	36	Standalone	30-06-2024	JSPCB/HO/RNC/CTO-10359901/2021/679	9955446624@gmail.com	9955446624	Sri Ramesh Ranjan Choudhary
68	M/S BHARAT STONE WORKS	25.2558	87.49	MANDRO	Stone crushers	Mauza-Nimgach, Plot No.- 681, Khata No.- 23	0.39	84	Standalone	30-09-2022	JSPCB/HO/RNC/CTO-5867170/2019/1697	SKSINGHMZC1@GMAIL.COM	9123208884	SMT GAYATRI SUMAN SINHA
69	M/S Chandan Stone Works	25.24566	87.48165	MANDRO	Stone Crusher	Mauza-Nimgachi, Plot No.- 668, Khata No.- 18	0.80666667	92	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-10284102/2021/757	cgupta396@gmail.com	9939306618	Sri Chandan Kumar Gupta
70	M/S GUPTA INDUSTRIES	25.24733	87.4815	MANDRO	Stone crushers	Mauza-Nimgachi, Khata No.-04, Plot No.- 779	0.33333333	84	Standalone	31-03-2023	JSPCB/HO/RNC/CTO-10146068/2021/783	guptastoneworks@gmail.com		SUNIL KUMAR GUPTA

71	M/S Tarkeshwer jaiswal	25.24598	87.50131	MANDRO	Stone crushers	Mauza â€šhuthaha Plot No 09 , Khata No.- 26	2.28	540	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-6877063/2020/189	ritikjaiswal254@gmail.com	7781878477	TARKESHWER JAISWAL
72	M/S RATAN STONE WORKS	25.24851	87.483138	MANDRO	Stone crushers	Mauza - Nimghachi, Plot No - 673, Khata No-21	1.15916667	48	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-8062462/2020/1034	ratankumar@gmail.com	9955069697	RATAN KUMAR VISHWAKARMA
73	M/S SINGH DEEP STONE WORKS	25.24336	87.591483	MANDRO	Stone crushers	Mauza - Jokmari, J.B. No.-55 & 79, Plot No -79 & 78	6.66	100	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-5404612/2019/1169	appsbgg@gmail.com	8877435588	DEEPAK KUMAR SINGH
74	M/S Adarsh Stone Works	25.24734	87.499022	MANDRO	Stone Crusher	Mauza - Mundli, Khata No.- 13	0.33333333	18	Standalone	30-09-2023	JSPCB/HO/RNC/CTO-8813506/2021/1344	9939524453@gmail.com	9939524453	Sri Pankaj Kumar Choudhary
75	M/S MAA AMBA STONE	25.23691	87.574446	MANDRO	Stone crushers	Mauza - Marikuti, Khata No.- 36, Plot No.-51/P	1.3	370.08	Standalone	30-09-2024	JSPCB/HO/RNC/CTO-11366156/2021/1346	ambastone002@gmail.com	7004883983	PAVITRA KUMAR YADAV
76	M/S OM STONE WORKS	25.2386	87.5669	MANDRO	Stone crushers	Mauza-Neemgachi, J.B. No.- 01, Plot No.- 674	0.7	18	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-8535980/2020/1391	SHIVSSMZC@GMAIL.COM	9262942044	SHIV SHANKAR BARNWAL
77	M/S SRI SHYAM STONE WORKS	25.2518	87.5487	MANDRO	Stone crushers	Mauza - Marikuti , Khata No.- 02, 08, 11 & 39, Plot No.- 02, 03, 04, 26, 27, 28 & 30	5	1400	Standalone	31-03-2024	JSPCB/HO/RNC/CTO-9563127/2022/106	punitkhudania@gmail.com	7004933953	VED PRAKASH KHUDANI A
78	M/S SHIV STONE WORKS	25.24645	87.482858	MANDRO	Stone crushers	Mauza-Belbhadri, Khata No.- 24, Plot No.- 02 & 05	0.51666667	60	Standalone	30-09-2023	JSPCB/HO/RNC/CTO-8306409/2020/1326	shiv007@gmail.com	8825215315	SHAMBHU NATH MAHTO
79	M/S GUPTA STONE WORKS	25.247	87.482	MANDRO	Stone crushers	Mauza-Nimgachi, Plot No.- 776(P), Khata No.16	0.585	43.2	Standalone	31-03-2023	JSPCB/HO/RNC/CTO-7351327/2020/993	guptastoneworks_sbg@yahoo.in		SRI BIRBAL KUMAR GUPTA
80	M/s Maa Amba Stone Works	25.23736	87.574636	MANDRO	Stone crushers	Mauza - Marikuti, Plot No -52, 53 Khata No â€š24, 16	4.09	54	Standalone	31-03-2023	JSPCB/HO/RNC/CTO-8460131/2021/738	ambastone001@gmail.com	9939338038	Pavitra Kumar Yadav
81	M/s Jaiswal stone works	25.24873	87.49411	MANDRO	Stone Crusher	Mauza : Mahadeo Baran, Khata No. : 06, Plot No.-233/P	1.75	540	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-5356479/2019/1434	ritikjaiswal254@gmail.com	9931066634	Tarkeshwar Jaiswal
82	M/S SHYAM STONE WORKS	25.24349	87.485434	MANDRO	Stone crushers	Mauza-Belbhad ri, Khata No.- 02 & 16, Plot No. 31 & 32	1.09	200	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-5526837/2019/1500	sammyjaiswal42@gmail.com	8294651182	SACHIN KUMAR JAISWAL

83	M/S HIMALYA STONE	25.243	87.4861	MANDRO	Stone crushers	Mauza-Paharpur, Khata No.- 17, Plot No.- 05	3.9625	18	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-10787947/2021/1501	MDNIZAN@GMAIL.COM	9576892845	MD NIZAMUD DIN
84	CTS Industries Ltd(Mahadeoganj)	25.24567	87.59035	MANDRO	Stone crushers	Mauza-Jokmari, J.B. No.- 34 & 41, Plot No.- 69, 71, 72	10	1980	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-9639611/2021/460	ctsindltd@hotmail.com	9910555633	Sri Ashok Kumar Tulsyan
85	M/s Star Stone Works	25.23953	87.571221	MANDRO	Stone crushers	Mauza-Marikuti, Plot No.- 33 & 34, Khata No.- 33	2.05	80	Standalone	31-12-2023	JSPCB/HO/RNC/CTO-3611762/2018/2085	starstoneworks01@gmail.com	7542015175	Md Zafar
86	M/S Balaji Stone Works	25.24748	87.481289	MANDRO	Stone crushers	Mauza - Mundli, Khata No.-14, Plot No.-21	0.5	22	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-11111298/2021/1348	mrinal.sbg@gmail.com	7717747234	Mrinal
87	M/S RAJEEV RANJAN STONE WORKS	25.22	87.495	MANDRO	Stone Crusher	Mauza - Marikuti, J.B. No.-08, Plot No -45/P & 76/P	3.87166667	100	Standalone	31-03-2023	JSPCB/HO/RNC/CTO-10468319/2021/1365	rajeevsbg3@gmail.com	7991106784	RAJEEV RANJAN
88	Hindustan Stone Works	25.23719	87.486947	MANDRO	Stone crushers	Mauza-Paharpur, Khata No.-26, Plot No.- 04	0.66666667	18	Standalone	30-06-2024	JSPCB/HO/RNC/CTO-10609407/2021/1106	77725@gmail.com	9934807012	MD.YASIN
89	M/S JAI MATA DI STONE	25.21217	87.488656	MANDRO	Stone Crusher	Mauza-Mathadih, Khata No.- 51, Plot No.- 636	0.5275	72	Standalone	30-09-2023	JSPCB/HO/RNC/CTO-10805249/2021/1159	jaimatadi_stoneworks@yahoo.in		TINKAL KUMAR BHAGAT
90	JAI BAJARANG STONE	25.24404	87.482846	MANDRO	Stone Crusher	Mauza-Belbhadri, Plot No.- 49, 47	2.1625	18	Standalone	31-03-2023	JSPCB/HO/RNC/CTO-7828434/2020/1129	dharmapaharia20472706414@yahoo.in	9.191E+11	RAJIV JAISWAL
91	M/S S. S. BLACK STONE WORKS	25.23872	87.486833	MANDRO	Stone crushers	Mauza-Belbhadri, Khata No.- 10, 11, Plot No.- 198/P, 199/P,	3.5	198	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-7989682/2020/1064	SSBLACKMZC@GMAIL.COM	9801330584	SUNIL KUMAR GUPTA
92	M/S NARAYAN STONE WORKS	25.25634	87.502079	MANDRO	Stone crushers	Mauza-Bartalla, J.B. No.-16, 18, 23, Plot No.- 106 to 113	2.0675	540	Standalone	31-03-2023	JSPCB/HO/RNC/CTO-7825958/2020/1239	nilumzc@gmail.com	9955137558	BIMALA TRIPATHY
93	M/S JYOTI CREATORS PVT. LTD (STONE CRUSHER)	25.23778	87.5725	MANDRO	Stone crushers	Mauza- Marikuti ,Khata No.- 03, 28, 34, Plot No.- 37, 38, 208	5.42416667	1080	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-9178838/2021/208	jcplsbj@gmail.com	7033694273	Sri Kundan Kumar

94	M/S MAA SARASWATI STONE WORKS	25.24591	87.493385	MANDRO	Stone crushers	Mauza-Mundli, Khata No.- 16, Plot No.-03	0.5	60	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-8601142/2021/356	ashok1896@yahoo.com	9934550417	MUKESH KUMAR JAISWAL
95	M/S NOORANI & BROTHERS	25.25583	87.505	MANDRO	Stone crushers	Mauza-Tetaria, Khata No. -24, Plot No -237/P and 238/P	0.33	108	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-5653299/2019/1781	SHOHAIL15197@GMAIL.COM	6202957437	SHOHAIL NOORANI
96	M/S PUJA STONE WORKS	25.24999	87.491727	MANDRO	Stone crushers	Mauza- Mahadeobaran, Plot No.- 158 & 159	1.02916667	52	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-10495425/2021/1366	pujastoneworks20752700228@yahoo.in	8210344406	AMIT KUMAR JAISWAL
97	M/S D. D. S. STONE WORKS	25.23339	87.48379	MANDRO	Stone crushers	Mauza - Paharpur, Khata No.-08, Plot No.- 133 & 134	0.76666667	36	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-5477764/2019/1172	SHIVSHANKAR@GMAIL.COM	8292508227	SHIV SHANKAR GUPTA
98	Sonamtech Buildcon Private Limited	25.23812	87.56754	MANDRO	Stone crushers	Mouza - Marikuti, Plot No - 10,11, Khata No - J.B. No - 29	2.1	72	Standalone	31-12-2023	JSPCB/HO/RNC/CTO-11286542/2021/1483	sonamtechinfra@gmail.com	7903836339	SHEKH ASLAM
99	DILIP BUILDCON LIMITED UNIT 1 & 2	25.24016	87.59558	MANDRO	Stone crushers	Plot Nos. 77(P), 378, 369(P), 373; J.B. No. - 14, 45	2.5	3600	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-11725540/2022/159	bhanupratap@dilipbuildcon.co.in	6232000304	BHANU PRATAP SINGH
100	M/S B. B. S. STONE WORKS	25.23449	87.48448	MANDRO	Stone crushers	Mauza- Pahar, Khata No.-08, Plot No.- 136 & 137	1.07833333	36	Standalone	31-03-2022	JSPCB/HO/RNC/CTO-4647252/2019/587	PAKNAJ@GMAIL.COM	9939416415	PANKAJ KUMAR SAH
101	M/S NANCY STONE WORKS	25.21235	87.48829	MANDRO	Stone crushers	Mauza-Mathadih, Plot No.- 528	0.87083333	18	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-4698308/2019/588	9955456296@GMAIL.COM	9162438025	VIJAY KUMAR PANDIT
102	M/S ASCENT INFRABUILD LLP	25.23787	87.57615	MANDRO	Stone crushers	Mauza-Marikuti, Khata No. -27, Plot No -58 & 59	5.59666667	180	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-8937966/2021/270	pnkjkmr667@gmail.com	9777175757	PANKAJ KUMAR

103	M/S NOOR STONE WORKS	25.24293	87.477957	MANDRO	Stone crushers	Mauza-Nimgachi, Khata No. New 10, Old 16, Khesra No. New 921, 922 Old 781, 782	0.8775	316	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-6730726/2020/611	hindustanstoneworks@yahoo.in		MD DILDAR
104	M/S JAY MAA KALI STONE	25.24724	87.481562	MANDRO	Stone crushers	Mauza - Nimgachi, Plot No.- 678, 679 & 680	0.80416667	18	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-8155706/2020/1389	jaymaakali@gmail.com	9934785517	AJAY PRASAD
105	M/S Patliputra Enterprises Pvt Ltd	25.25349	87.54803	MANDRO	Stone crushers	Mauza-Chubey, Plot No - 5 & 6, Khata no,- 19	0.71416667	40	Standalone	30-09-2022	JSPCB/HO/RNC/CTO-6426855/2020/1033	binay010391@gmail.com	8987311777	Sri Viveka Kumar
106	M/S NOOR STONE WORKS	25.24259	87.477442	MANDRO	Stone crushers	Mauza-Nimgachi, Khata No.- 10, Plot No.- 921 & 922	0.66666667	18	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-6766883/2020/690	9955471076@gmail.com	9955471076	MD DILDAR
107	M/S AWADH KISHORE & SONS	25.23949	87.592649	MANDRO	Stone crushers	Mauza-Tetaria, Khata No.- 13, Plot No.- 93 & 94/P	0.43666667	40	Standalone	31-03-2022	JSPCB/HO/RNC/CTO-4880800/2019/796	AWADH@GMAIL.COM	7295915779	AWADH KISHORE SINGH
108	M/S Universal Enterprises	25.23716	87.488237	MANDRO	Stone crushers	Mauza â€œokmari Gutibera, Plot No. 147/P, Khata No.-	1.1	1600	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-8104948/2020/1218	universalerprises024@gmail.com	9334759145	Brajesh Pandey
109	M/S MAA BHAWANI STONE WORKS	25.24426	87.479803	MANDRO	Stone crushers	Mauza - Belbhadri, J.B. No.- 10, Plot No.- 199/P, 204	2	144	Standalone	30-06-2024	JSPCB/HO/RNC/CTO-10217266/2021/715	nikkimzc@gmail.com	9572284133	SMT NIKKI DEVI
110	M/S NEHA STONE WORKS	25.25075	87.494538	MANDRO	Stone crushers	Mauza - Bhelbhadri, Plot N0.- 55, Khata No.- 17	1.33333333	32.4	Standalone	31-03-2023	JSPCB/HO/RNC/CTO-10731395/2021/1498	322sudamamahto@gmail.com	9801372353	SUDAMA MAHTO
111	M/S PURNIMA STONE WORKS	25.225	87.60667	MANDRO	Stone crushers	Mauza - Mahadeobaran, Plot No - 233(P), Khata No -18	0.82166667	51.2	Standalone	30-06-2024	JSPCB/HO/RNC/CTO-5345100/2019/1151	rajeshjash22@gmail.com	9006448750	RAJESH KUMAR JAISWAL
112	KARAMBI STONE WORKS	25.2363	87.571063	MANDRO	Stone crushers	Mauza â€œPindhari, Plot No. 279, 280, 281, 312, 313 & 314	3.13	280	Standalone	31-12-2023	JSPCB/HO/RNC/CTO-9287805/2021/112	karambistone@gmail.com	7488194533	MD EHTESHAM
113	MAA SHEETLA STONE WORKS	25.241	87.487	MANDRO	Stone crushers	Mauza - Marikuti, Plot No. 44, 45/P, J.B. No. - 11, 08.	2.5	280	Standalone	30-09-2022	JSPCB/HO/RNC/CTO-5749106/2019/1826	yramlakshman@gmail.com	9934746059	RAMLAKS HMAN YADAV
114	M/S MAA LAXMI STONE WORKS	25.2442	87.47801	MANDRO	Stone crushers	Mauza-Belbhad ri, J.B. No. 17, Plot No. 205/P	2.09	108	Standalone	30-09-2022	JSPCB/HO/RNC/CTO-5867938/2019/1698	MAALAXMISTONEMZC@GMAIL.COM	9546294290	RATAN KUMAR GUPTA

115	HINDUSTAN STONE WORKS	25.25717	87.502575	MANDR O	Stone crushers	Mauza - Paharpur No.- 03, Plot No - 213, J.B. No.- 03	6.74	180	Standalone	30-06-2024	JSPCB/HO/RNC/CTO- 10609500/2021/1107	HINDUSTANST ONEWORKS@ YAHOO.IN	9934807012	MD YASIN
116	M/S AMBIKA STONE SUPPLY CO.	25.25666	87.504081	MANDR O	Stone crushers	Mauza-Bartalla, Plot No.- 141 to 147	3.14	36	Standalone	31-12-2022	JSPCB/HO/RNC/CTO- 10186715/2021/1367	TOONAHMAD7 86@GMAIL.CO M	9931167179	ASHOK KUMAR SINGH
117	M/S SHILA MINERALS	25.24558	87.498336	MANDR O	Stone Crusher	Mauza-Tetaria, Plot No.- 92, 93, 213, Khata No.-24	1.25	18	Standalone	30-09-2022	JSPCB/HO/RNC/CTO- 8129220/2020/1251	SHILA@GMAIL .COM	9931173973	MADAN SINGH
118	M/S MAA AMBE STONE WORKS	25.24598	87.50131	MANDR O	Stone crushers	Mauza-Mundli, Plot No.- 04, J.B.- 05	0.5	35.2	Standalone	30-06-2023	JSPCB/HO/RNC/CTO- 10482275/2021/1131	maaambeystonew orks@yahoo.in		SACHIN KUMAR CHOURAS HIYA
119	M/S MAA VAISHNAVI STONE WORKS	25.255	87.5328	MANDR O	Stone Crusher	Mauza- Mudli, Khata No.- 19, Plot No.- 24/P	3	360	Standalone	31-12-2024	JSPCB/HO/RNC/CTO- 6938401/2020/420	BANT9811@G MAIL.COM	7033840165	RAJIV KUMAR BHAGAT
120	M/S D & D S STONE WORKS	25.2348	87.484439	MANDR O	Stone crushers	Mauza Paharpur No.- 01, Plot No. 141/P, Khata No.- 04	1.06375	340	Standalone	31-03-2023	JSPCB/HO/RNC/CTO- 8070573/2020/1036	DEVAMZC@G MAIL.COM	9631727608	DEVA PRITAM SINGH
121	M/S MAA GAYATRI STONE WORKS	24.93976	87.81402	PATHN A	Stone crushers	Mauza - Madhopara, Plot no. 727 to 729, Khata No.- Nil	3.03939351	16	Standalone	31-03-2023	JSPCB/HO/RNC/CTO- 9941163/2021/767	kumarbijaybhw @gmail.com	9939524498	CHETAKA R PRASAD SAHA
122	M/S KEDIA STONE WORKS	24.86028	87.71417	PATHN A	Stone crushers	Plot No 45/P, Khata No.-12	1	180	Standalone	31-03-2024	JSPCB/HO/RNC/CTO- 11882866/2022/167	kedistonestoneworks 2018@gmail.com	8969886985	PRANAV KEDIA
123	MD SAMIM ALAM (CRUSHER)	24.84528	87.72361	PATHN A	Stone crushers	Plot No . 80/P, Khata No.- 11	1.25	140	Standalone	31-12-2023	JSPCB/HO/RNC/CTO- 10988198/2022/117	mdsamimalam25 8@gmail.com	8294247772	MD SAMIM ALAM

124	M/s CTS Industries Ltd (Mirzachowki)	25.23614	87.492029	PATHN A	Stone crushers	Mauza - Damramako Chotamdamin Bitha, Khata No.- 13, 04, Plot No.- 09 & 10	8.76	290	Standalone	30-09-2023	JSPCB/HO/RNC/CTO-9698017/2021/52	ctsindltd@hotmail.com	9334386910	Sri Ashok Kumar Tulsyan
125	M/S BHAGWAN STONE AND MINERALS	24.88162	87.746135	PATHN A	Stone crushers	Mauza - BUNDABAR AGHATI, Plot No.- 355/P to 359/P, Khata No.- 7 & 43	6	1000	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-7885927/2020/917	bsmratanpur@gmail.com	9955369004	BHAGWAN BHAGAT
126	S. S. Enterprises	24.82661	87.72317	PATHN A	Stone Crusher	468, 469, Bandobasti No.- 05	3	20	Standalone	31-12-2023	JSPCB/HO/RNC/CTO-11618533/2022/71	a.dokania1961@gmail.com	9973516387	Md Ashraful Haque
127	M/s Ganga stone works	24.86	87.737839	PATHN A	Stone crushers	Khata No.- 37, Plot No.- 119 & 120	3.38833333	400	Standalone	31-12-2023	JSPCB/HO/RNC/CTO-11316047/2022/116	akcganga@gmail.com	9955582325	Sri Arun Kumar Choudhary
128	M/s SINGH STONE WORKS	24.87665	87.74791	PATHN A	Stone crushers	Mauza - Mahakub, Plot No.- 54 & Khata No.- 26	0.84	270	Standalone	31-12-2023	JSPCB/HO/RNC/CTO-11318420/2021/1450	a.dokania1961@gmail.com	9939139682	Sri Tapan kumar Singh
129	M/S HARI LAL AJOY & CO.	24.92288	87.79836	TALHARI	Stone crushers	Mauza- Rakso Bandh, Survey No.- 4A(Q)	-	60	Standalone	31-12-2023	JSPCB/HO/RNC/CTO-11321228/2021/1451	kamalchawda02@rediffmail.com	8298079964	SRI NEHAL KUMAR CHAWDA
130	MAA AMBIKA TRADERS	24.86724	87.740223	PATHN A	Stone crushers	Mauza : Mangladih, Khata No.- 11, 23 & 09, Plot No.200, 201, 202	1.03	1440	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-5557332/2020/442	maaambikatraders02@gmail.com	7004788516	SUBRATA PAUL
131	M/s G G Stone works	24.84949	87.74783	PATHN A	Stone crushers	Mauza-Sitapahar, Khata No.- 26, 32, Plot No.- 7, 8 & 9	2.09	144	Standalone	30-09-2023	JSPCB/HO/RNC/CTO-8199389/2020/1062	akcganga@gmail.com	9955017597	Sri Sajjan kumar choudhury
132	M/S S. R. STONE WORKS	24.74704	87.793491	PATHN A	Stone crushers	Mauza-Piparjori, Plot No 197 to 202, 207 & 208, Khata No.-29 & 50	1.1475	270	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-6288117/2020/610	SHuvostone.pkr@rediffmail.com	9732567639	MD SOFIKUL ISLAM

133	M/S MD. ALAM & BROTHERS(Stone Crusher)	24.93926	87.81187	PATHN A	Stone crushers	Mauza - Madhopara, Khata No. Old16, New21, Plot No.- Old736, 737 & New-809	1.91	360.9	Standalone	31-03-2022	JSPCB/HO/RNC/CTO-7440479/2020/784	md.alamandbrothers@gmail.com	9199990660	MAHATA B ALAM
134	M/s Bindubasini stone works	24.8651	87.751927	PATHN A	Stone crushers	Mauza-Mangladih, Khata No.- 04, Plot No.-208 & 209	1.7775	72	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-10078249/2021/496	pradeepkumarkreja@gmail.com	9973770952	Sri Kailash kumar Madhyan
135	KRISHNA KUMAR SAHA (Stone Crusher)	24.8797	87.748565	PATHN A	Stone crushers	Mauza- Mahkup, Khata No.- 12, Plot No.- 100/P, 101, 102, 104	2	900	Standalone	31-12-2023	JSPCB/HO/RNC/CTO-8906922/2021/381	kksgroup.qry@gmail.com	7070022334	KRISHNA KUMAR SAHA
136	M/s MAA AMBIKA TRADERS	24.88438	87.770331	PATHN A	Stone crushers	Mauza-Khairbani, Khat No.- 27, Plot No.- 89 & 90	2.44	1440	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-8189318/2020/1419	maaambikatrades01@gmail.com	7001564395	SUBRATA PAUL
137	M/s SHABNAM PRAWEEEN	24.845	87.724435	PATHN A	Stone crushers	Mauza -Gango Para Bedo, Plot No.-80 P, J.B. No.- 11	4	126	Standalone	31-12-2023	JSPCB/HO/RNC/CTO-8948501/2021/766	pshabnam606@gmail.com	8434960950	SHABMAN PRAWEEEN
138	M/s KOHINUR STONE WORKS	24.87611	87.72472	PATHN A	Stone crushers	Mauza-Mahakub, Plot No.- 40/103, Khata No.- 27	1.36666667	200	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-8078172/2020/912	a.dokania1961@gmail.com	9279135596	MD Tajuddin and Akash Ali
139	M/s Bhagwan Stone Works	24.84621	87.71774	PATHN A	Stone crushers	Mauza âBorna, Plot No.-126, 127,130, 128/P,129/P, 133,134, 135, 136& 138, KhataNo.- 07, 12, 25,20 & 42.	5.26958333	900	Standalone	05-12-2022	JSPCB/HO/RNC/CTO-11144241/2022/27	bhawesh.bbc@gmail.com	9939139617	Bhagwan Bhagat
140	M/S Golden Stone Harvest pvt ltd	24.86034	87.72833	PATHN A	Stone crushers	8(P) 12(P) 13(P) 14(P), Khata No. - 28	3.3	36	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-11958754/2022/65	goldenstonehavpl2020@gmail.com	9955920050	RAKESH KUMAR
141	M/S Paharia Stone Works(Stone Crusher)	24.88055	87.747022	PATHN A	Stone crushers	Mauza- Mahkup, Khata No.-45 & 48 Plot No.- 33P,34,35,36, 37	0.14166667	450	Standalone	31-03-2023	JSPCB/HO/RNC/CTO-10220530/2022/29	haquematiul@yahoo.in	9973042590	Md Matiul Haque
142	ECO FRIENDLY INFRA TECHNOLOGY PVT LTD	25.23741	87.490904	RAJMA HAL	Stone crushers	Mauza-Belbhadri, JB No.- 17, Plot No. 214 (P)	1	1600	Standalone	31-03-2023	JSPCB/HO/RNC/CTO-9640195/2021/488	ecofriendly018@gmail.com	9910555833	SIDDHARTH TULSIYAN

143	M/S MAA TARA STONE WORKS	24.91221	87.78549	RAJMA HAL	Stone crushers	Mauza-Kathalbari, Plot No.- 108(old) 87(New), Khata No.- 06	0.975	20	Standalone	31-03-2024	JSPCB/HO/RNC/CTO-9703385/2021/682	brijmohan1971s@gmail.com	9939811680	BRIJ MOHAN SHARMA
144	M/S Balaji Production	24.75111	87.790148	SAHEB GANJ	Stone crushers	Mauza - Fathepur, Plot No - 516, 519, 529 & 535 Khata No - 100	15	36	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-10534480/2021/866	prasantaghosh003@gmail.com	9064366783	Prasanta Ghosh
145	M/S D R M ASSOCIATES PVT. LTD. (STONE CRUSHER)	24.86967	87.636167	SAHEB GANJ	Stone crushers	Mauza - Margaro, J.B. No.-17, Plot No 104	2.62166667	270	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-9303263/2021/512	drmassociates@rediffmail.com	9572884291	SHIVAYO GI BALIKAI
146	SUNIL KUMAR	24.88967	87.741855	SAHEB GANJ	Stone crushers	Mauza - Jhumrabandh, Plot No. 61 & 62 , JB NO. 32	4.19	1000	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-8083443/2020/1267	sunilstonebarharwa@gmail.com	9199836661	SUNIL KUMAR
147	Mahakal Stone Works	25.23822	87.565661	SAHEB GANJ	Stone crushers	Mauza- Desh Pokhariya, Plot no - 42,43,44 Khata No - 21, 06	2.87	72	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-11431346/2022/23	abhishekguptasbg@gmail.com	6201035039	Abhishek Kumar
148	M/S Nilkanth Stone Works	25.21924	87.660294	SAHEB GANJ	Stone crushers	Mauza- Bara - Lohanda, Khata No.- 34, Plot No.- 347, 348 & 346	1.66666667	40	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-8491000/2020/1287	devanshujajodia@yahoo.com	9903128357	Sri Devanshu Jajodia
149	VIKASH STONE WORKS (Stone Crusher)	25.23451	87.71919	TALJH ARI	Stone crushers	Mauza-Choti Bhagamari, Khata No.- 76, Plot No.- 853	1.31083333	32	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-9119918/2021/434	anilkumarsbg@yahoo.com	8674836077	ANIL KUMAR YADAV
150	MAA SHITLA STONE WORKS	25.23548	87.72118	TALJH ARI	Stone crushers	Mauza- Gudwa, Khata No.-47, Plot No 10/P	2	450	Standalone	30-06-2024	JSPCB/HO/RNC/CTO-5531890/2019/1296	maashetalastone@gmail.com	9661385597	SANJAY KUMAR YADAV
151	M/S VIDYARTHI STONE WORKS	25.2414	87.704486	TALJH ARI	Stone crushers	Mauza Hatigar, Plot No 290, 292 & 293 , J.B. No.- 20	1.66666667	432	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-6918314/2020/662	vidyarthestone001@gmail.com	8809760935	HARI PRIYA PANDEY
152	M/S BALRAM STONE	25.23603	87.721123	TALJH ARI	Stone crushers	Mauza-Ambadiha, Khata No.-12, Plot No -254	130.965736	72	Standalone	30-09-2022	JSPCB/HO/RNC/CTO-5895756/2019/1922	singhpk5920@gmail.com	9939400452	SANJAY YADAV

153	SAHANI ENTERPRISES	25.22579	87.71858	TALJHARI	Stone crushers	Mauza - Gadwa, Khata No.- 08, Plot No.- 38 & 39	6.12	36	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-8081193/2020/1334	sahani2021@gmail.com	9893820982	BHOLA KUMAR SAHANI
154	M/S A D STONE WORKS	25.05221	87.7094	TALJHARI	Stone crushers	Khata No.- 10, Plot No.- 60	2	18	Standalone	31-03-2023	JSPCB/HO/RNC/CTO-12193058/2022/158	adstoneworks@gmail.com	9973763663	DHANANJAY TIWARI
155	Shiv Shankar Stone Works	25.23892	87.72451	TALJHARI	Stone crushers	Mauza - Ambadih, J.B. No.-04, Plot No -259	0.575	100	Standalone	31-03-2022	JSPCB/HO/RNC/CTO-5404493/2019/1453	9801319520@gmail.com	9801319520	Sri Gobardhan Yadav
156	M/S SARASWATI STONE WORKS	25.23557	87.719557	TALJHARI	Stone crushers	Mauza - Chhoti Bhagamari, Plot No . 844/P & 845, Khata	1.29125	72	Standalone	30-09-2022	JSPCB/HO/RNC/CTO-8809645/2020/1492	pintusinghslj@gmail.com	9110047682	PINTU SINGH
157	M/S G R G STONE WORKS	25.23558	87.719557	TALJHARI	Stone crushers	Mauza - Chhoti Bhagamari, Plot No-824	0.39333333	36	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-5161634/2019/967	parmendar0001@gmail.com	9973555099	PARMENDAR GOEL
158	M/S KISHORE KUMAR	25.23876	87.7229	TALJHARI	Stone crushers	Mauza-Ambadiha, Plot No.- 183 & 184	3	18	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-8142879/2020/1321	kishoresbg@yahoo.com	9431154162	KISHORE KUMAR
159	NEW RAJASTONE WORKS OLDSHIVAM STONEWORKS	25.23662	87.71932	TALJHARI	Stone crushers	Mauza- Chhoti Bhagiyamari, Plot No.-822/P, J.B. No. 47	0.66666667	76	Standalone	31-12-2023	JSPCB/HO/RNC/CTO-11416807/2021/1656	sanjeevgupta8809@gmail.com	9113410633	MADAN KANT
160	Prakash Chandra Yadav	25.23186	87.72151	TALJHARI	Stone crushers	Mauza-Gudwa, Khata No.- 47,55,12,25,49, 50 & 34, Plot No.- 10/P, 11/P, 14/P,	12	2000	Standalone	30-09-2022	JSPCB/HO/RNC/CTO-8619298/2021/697	yadavjbsw@gmail.com	9771492807	Sri Prakash Chandra Yadav
161	M/S KISHOR KUMAR RAY	25.2383	87.72163	TALJHARI	Stone crushers	Mauza - Ambadiha, Khata No. 31, Plot No 186	1.39166667	18	Standalone	31-03-2023	JSPCB/HO/RNC/CTO-10645262/2022/95	kishorkumarray001@gmail.com	9006868535	KISHOR KUMAR RAY
162	M/S ADITAYA STONE	25.23349	87.718535	TALJHARI	Stone crushers	Mauza - Chhota Bhagiya Mari, Khata No.-42, Plot	1.90583333	105.6	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-5095076/2019/958	YADAV@GMAIL.COM	9162044464	BYAS YADAV
163	M/S ARJUN YADAVSTONE WORKS	25.22511	87.707322	TALJHARI	Stone crushers	Mauza -Kirokuri a, J.B. No.- 01 & 09, Plot No.- 44 & 45	3	320	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-5353310/2019/1180	arjunsbg06@gmail.com	7781877760	ARJUN YADAV

164	M/S SUBHAM STONE WORKS	25.23965	87.72474	TALJH ARI	Stone crushers	Mauza अंबादिहा, Plot No. 170/P, J.B. No.- 30	1.8775	92	Standalone	31-03-2023	JSPCB/HO/RNC/CTO-7596397/2020/991	subhamstonewor ks@yahoo.com	8092935034	GANESH PRASAD TIWARY
165	M/S SWASTIK MINERAL AGENCY	25.12038	87.71569	TALJH ARI	Stone crushers	Mauza अकरिगुनिया No.- 11, Plot No . 170/P, J.B. No.- 23	5.05	1350	Standalone	31-03-2022	JSPCB/HO/RNC/CTO-7427632/2020/1068	bhwatanmay1967@gmail.com	7903012586	VIKRAM PRATAP
166	M/S SANTOSHSTONE INDUSTRIES	25.23403	87.72473	TALJH ARI	Stone crushers	Mauza-Jamuni, Plot No.- 170 & 171	0.66	20	Standalone	31-03-2022	JSPCB/HO/RNC/CTO-4858001/2019/775	SHANTI6989@GMAIL.COM	8969652411	SHANTI SINGH
167	M/S SAMIM STONE WORKS	25.04917	87.70515	TALJH ARI	Stone crushers	Mauza अंबेकचुरी, Plot No. अंबेकचुरी/P, Khata No.- 01	3.03333333	320	Standalone	31-03-2022	JSPCB/HO/RNC/CTO-7426694/2020/915	pawanram99316@gmail.com	9973848050	MD SAMIM
168	M/S Mineral India	25.23028	87.72097	TALJH ARI	Stone crushers	Mauza - Gudwa, Plot No.- 26 P & 27 P, Khata No.- 44 & 09	12.3058371	2548	Standalone	31-12-2023	JSPCB/HO/RNC/CTO-5338225/2020/837	yadavjbaw@gmail.com	9771492807	Shri Suresh Yadav and Shri Mantu Kumar Yadav
169	M/s Prakash Chandra Yadav (Stone Crushing)	25.23758	87.722033	TALJH ARI	Stone crushers	Mauza - Gudwa, Plot No.-10, 11, 14 to 17 & 18(P), Khata No.-	11.9999951	1800	Standalone	31-03-2024	JSPCB/HO/RNC/CTO-5338215/2020/640	yadavjbsw@gmail.com	6201625554	Sri Prakash Chandra Yadav
170	M/S SHLOK YADAV	25.23395	87.71954	TALJH ARI	Stone crushers	Mauza अंचोती Bhagiyamari, Plot No. 924/P & 10/P, Khata No.- 56 &	1.4	360	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-8025322/2020/1317	shlokyadavsgk@gmail.com	9523327612	SHLOK YADAV
171	M/S AMIT YADAV	25.2332	87.719836	TALJH ARI	Stone crushers	Mauza अंचोती Bhagiyamari, Plot No. 854, Khata No.- 72	1.11916667	200	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-8334425/2020/1220	amityadavsakri@gmail.com	7004576239	AMIT YADAV
172	PATNIBONA STONE QUARRIES	24.92858	87.79747	TALJH ARI	Stone crushers	Mauza अंधे Pathnibona, Plot No. 148, Khata No.- 27	3	630	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-9645148/2021/235	PRAVESH LAKHMANI@YAHOO.COM	7903012586	PRAVESH KUMAR LAKHMANI

173	M/S RAJESH STONE WORKS	25.22869	87.718179	TALJH ARI	Stone crushers	Mauza - Kalyani, Khata No.- 15, Plot No.- 185, 186 &	2.1175		18	Standalone	31-03-2022	JSPCB/HO/RNC/CTO-7339210/2020/1125	rajeshchirania@gmail.com	9006570236	RAJESH CHIRANIA
174	M/S RAHUL METALS	24.92376	87.780553	TALJH ARI	Stone crushers	Mauza- Ranga Crusher Rly Siding, Khata No.- 19 & 20, Plot No.- 19, 20, 21, 22, & 23	2.54		72	Standalone	31-03-2022	JSPCB/HO/RNC/CTO-7537070/2020/698	arsenterprise16@gmail.com	9937199022	Shree GOPI SADHWANI
175	M/S STAR STONE WORKS	24.95734	87.756074	TALJH ARI	Stone crushers	Khata No.- 87, 10, Plot No.- 137, 138, 139	1.765		36	Standalone	31-12-2023	JSPCB/HO/RNC/CTO-11554034/2022/301	starstoneworks7857@gmail.com	9199711860	MURSHID ALAM
176	M/S MD MUSTAKIM ANSARI STONE WORKS	25.101	87.733	TALJH ARI	Stone Crusher	Mauza-Bekchuri, J.B. No.-05, Plot No.- 135	0.66		60	Standalone	31-03-2023	JSPCB/HO/RNC/CTO-8269654/2020/1459	mabhww@gmail.com	7903470817	MUSTAKI M ANSARI
177	M/S ADITYA STONE WORKS	25.23411	87.71839	TALJH ARI	Stone crushers	Mauza-Chhotib hagia mari, Plot No.- 922	1.58333333		32	Standalone	30-06-2022	JSPCB/HO/RNC/CTO-9164979/2021/395	mohanyadav9934@gmail.com	9934155659	MOHAN PDARSAD YADAV
178	M/s Vishwanath Stone Works	25.23798	87.720208	TALJH ARI	Stone crushers	Mauza- Ambadiha No.- 07, J.B. No.12	0.9275		72	Standalone	31-03-2024	JSPCB/HO/RNC/CTO-9621646/2021/454	vishwanathstoneworks@yahoo.com	7781877760	Arjun Yadav
179	M/S GOPE STONE WORKS	25.22119	87.72729	TALJH ARI	Stone crushers	Mauza-Gadwa, Khata No.- 31, Plot No.- 54/P	1		72	Standalone	30-09-2023	JSPCB/HO/RNC/CTO-10580403/2021/1130	csc.mahadevsingh@gmail.com	8210189939	Pankaj Kumar Yadav
180	APEX ENTERPRISES	25.23461	87.71758	TALJH ARI	Stone crushers	Mauza- Chhoti Bhaiyamari, Khata No. 72, Plot No. 849/P	0.3		72	Standalone	30-09-2024	JSPCB/HO/RNC/CTO-10933765/2021/1314	apexenterprisessbg@gmail.com	7991151500	GOPAL PRASAD
181	M/S MADANKANT	25.22732	87.70793	TALJH ARI	Stone crushers	Mauza - Kirokuria, J.B. No. 14 Plot No. 02/P (Outside Mining Lease Area)	2		169.2	Standalone	31-12-2023	JSPCB/HO/RNC/CTO-11418767/2021/1668	MADAN@GMAIL.COM	9113410633	MADANKANT
182	M/S SHANTI STONE WORKS	2523802	8771946	TALJH ARI	Stone crushers	Mauza-Ambadiha, Khata No.- 02, 07, Plot No.- 202, 226, 299, 300 & 323	1.1		28	Standalone	31-12-2022	JSPCB/HO/RNC/CTO-9261189/2021/864	shantistone1972@gmail.com	9931406362	HARENDRA YADAV

183	M/S INSHA STONE WORKS	25.22326	87.698543	TALJHARI	Stone crushers	Mauza- Boha - 2, Khata No.- 58, Plot No.- 411	1.35083333	60	Standalone	31-03-2024	JSPCB/HO/RNC/CTO-9954310/2021/451	inshastone0786@gmail.com	7004501803	MD IRSHAD ALI
184	MAA SHITLA STONE WORKS	25.23513	87.720839	TALJHARI	Stone crushers	Mauza - Gudwa, Khata No.- 47, Plot No.- 10/P,	2	164	Standalone	31-12-2023	JSPCB/HO/RNC/CTO-4296420/2019/214	maashetalastone@gmail.com	9661385597	SANJAY KUMAR YADAV
185	M/S SHIV STONE WORKS	25.23613	87.719829	TALJHARI	Stone crushers	Mauza- Chhoti Bhagiyamari, J.B. NO. 04, Plot No. 825	2.20833333	94	Standalone	31-03-2022	JSPCB/HO/RNC/CTO-4846145/2019/710	ry63899@gmail.com	9006768667	RAJENDR A PRASAD YADAV
186	M/S SANTOSH STONE INDUSTRIES	25.2372	87.723216	TALJHARI	Stone crushers	Mauza- Bara Bhagiamari, Plot No.- 189/P, 190/P, 191 & 45	0.66666667	20	Standalone	31-03-2022	JSPCB/HO/RNC/CTO-4857524/2019/774	shanti8969@gmail.com	8969658411	SMT SHANTI SINGH
187	M/S HAR HAR MAHADEV STONE	25.23319	87.718095	TALJHARI	Stone crushers	Plot No. -840, J.B. No. 71, Mauza- Chhotibhagiyamari	1.33333333	32	Standalone	30-09-2022	JSPCB/HO/RNC/CTO-11379832/2022/38	ashok0123@gmail.com	9771845775	ASHOK YADAV
188	M/s Abbas & Sons (Stone Cusher)	24.95094	87.7546	TALJHARI	Stone crushers	Mauza - Dhamdhamia, Khata No. -78, Plot No -160	1	200	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-10366879/2021/782	mushtaquewin@gmail.com	97719066	Md Anis Ansari
189	M/S DEV STONE WORKS	25.23835	87.72419	TALJHARI	Stone crushers	Mauza- Chhotti Bhagiyamari, Plot No. 861, 862, 864, 865, 866, 873/P, Khata No.- 82	3.4	40	Standalone	30-06-2023	JSPCB/HO/RNC/CTO-8242710/2021/292	deostone001@gmail.com	9199429027	SMT NIRAJ SINGH
190	ZEON EARTH MINERAL RESOUCES PRIVATE LIMITED (STEAD TRADERS)	24.86132	87.690649	BARHARIT	Mines with Crusher	Mauza-Banspahar, Plot No.- 62 to 64, Khata No.- 02 & 16	4.55	72	Common	31-03-2022	JSPCB/HO/RNC/CTO-10255151/2021/704	ZEONEARTH@GMAIL.COM	9830009477	Sri MANISH Maheshwri
191	M/S SWASTIK MINERAL AGENCY	25.12038	87.715685	Taljhari	Mines & Crusher	Mauza-Karigunia, Plot No.83 to 96, 98, 100 & Khata no.- 01,03,08,11, 16 to	37.0287087	2250	Common	31-03-2022	JSPCB/HO/RNC/CTO-7275244/2020/1060	swastikrajmahal@gmail.com	7903012586	SRI VIKRAM PRATAP
192	M/S MAA BHAVANI STONE WORKS	25.24802	87.481923	MANDRO	Mines & Crusher	Mauza - Nimgachi, Khata No. 15, Plot No.- 682	1.14916667	25.2	Standalone	30-09-2023	JSPCB/HO/RNC/CTO-8258602/2020/1320	dinanathsingh854@yahoo.in	9931541573	DINA NATH SINGH

Sl No	Industry Name	Latitude	Longitude	Industry Address	District	Block	Type of Industry	Khata No. & Plot No.	Area in acre	Product Name & Capacity	Date of Expiry	Ref. No.	Occupier Email	Occupier Mobile No.	Occupier Name	Product Name & Capacity	Stone boulder capacity in TPD	Stone chips capacity in TPD
1	ZEON EARTH MINERAL RESOURCES PRIVATE LIMITED (STEAD TRADERS PVT LTD)	24.8613	87.6906	Banspahar	SAHEBGANJ	BARHAIT	Mines with Crusher	Mauza-Banspahar, Plot No.- 62 to 64, Khata No.-02 & 16	4.55	Stone Boulder - 2000 Cft/Day and Stone Chips - 1800 Cft/Day	31-03-2022	JSPCB/H O/RNC/ CTO- 1025515/2021/704	ZEONEAR TH@GMAIL.COM	983009477	Sr MANISH Maheshwri	Stone Boulder - 2000 Cft/Day and Stone Chips - 1800 Cft/Day	80	72
2	M/S SWASTIK MINERAL AGENCY	25.1204	87.7157	KARIGUNIA	SAHEBGANJ	TALJHARI	Mines & Crusher	Mauza-Karigunia, Plot No.83 to 96, 98, 100 & Khata No.- 01,03,08,11, 16 to 20,22,26	37.03	Stone Boulders - 2500 TPD & Stone Chips - 2250 TPD	31-03-2022	JSPCB/H O/RNC/ CTO- 7275244/2020/1060	swastikraj mahal@g mail.com	7903012586	SRI VIKRAM PRATAP	Stone Boulders - 2500 TPD and Stone Chips - 2250 TPD	2500	2250
3	M/S RAJAN STONE WORKS	24.8434	87.72	MOUZA-BORNA PO-BISHANPUR P.S-BARHARWA DIST-SAHIBGANJ	SAHEBGANJ	PATHNA	Mines with Crusher	Mauza- Borna, Khata No.- 37, 43, 18, 20 & Plot No.- 44/P, 45 to 49.51 & 52/P	3.88	Stone Boulder - 250 TPD and Stone Chips - 225 TPD	31-12-2023	JSPCB/H O/RNC/ CTO- 8834272/2021/33	jaykumar 294@gma il.com	8969155765	RAJAN KUMAR	Stone Boulder - 250 TPD and Stone Chips - 225 TPD	250	225
4	M/S SHIV SHAKTI STONE WORKS	24.8274	87.7248	MOUZA-MODIKOLA P.S-RANGA DIST-SAHIBGANJ	SAHEBGANJ	PATHNA	Mines with Crusher	Mauza æModikola, Plot No . 1/P, 2/P, 3, 4, 5, 6, 7, 8, 9, 10/P, 11, 14, 21, 22 & 23	7.59	Stone Boulders æ 289 TPD, Stone Chips æ 260.10 TPD and Stone Dust æ 28.90 TPD	30-06-2022	JSPCB/H O/RNC/ CTO- 1103973/8/2021/1485	shiveshak tistone@ gmail.co m	7667422735	SHANKAR KUMAR	Stone Boulders æ 289 TPD, Stone Chips æ 260.10 TPD and Stone Dust æ 28.90 TPD.	289	260.1
5	M/S BAJRANGBALI STONE WORKS	24.8564	87.724	GANGOPARA RAMAKO P.S-RANGA DIST-SAHIBGANJ	SAHEBGANJ	PATHNA	Mines with Crusher	Mauza-Gangopara Mako, Plot No.- 23, Khata no.12	5.906	Stone Boulders - 200 TPD & Stone Chips 180 TPD	06-11-2022	JSPCB/H O/RNC/ CTO- 9099897/2020/2013	prakashke dia1969@ gmail.co m	9955916589	SRI PRAKESH KEDIA	Stone Boulders - 200 TPD & Stone Chips 180 TPD	200	180
6	KRISHNA KUMAR SAHA	24.8343	87.7157	BORNA P.O-BISHANPUR	SAHEBGANJ	PATHNA	Mines with Crusher	Mauza- Borna, Khata No.-58, 05, 36, 11, Plot No.-214/P, 215, 219/P, 396 to 400 & 402/P	8.62	Stone Boulders æ 450 TPD, Stone Chips æ 405 TPD and Stone Dust æ 45 TPD	31-03-2023	JSPCB/H O/RNC/ CTO- 9779901/2021/393	mr.kksah a@gmail.com	9955577806	KRISHNA KUMAR SAHA	Stone Boulders æ 450 TPD, Stone Chips æ 405 TPD and Stone Dust æ 45 TPD	450	405
7	RIPLEY & COMPANY STEVEDORING & HANDLING PVT LTD	24.8669	87.7462	AMBADPE PAHARID PE P.S-RANGA DIST-SAHIBGANJ	SAHEBGANJ	PATHNA	Mines with Crusher	Mauza-Ambade Bade Pahar & IDPE, Khata No.- 04,08,10 & 15, Plot No.- 02,09,10,13,37/P,40 & 41	12.01	Stone Boulders - 1500 TPD and Stone Chips - 1350 TPD	31-03-2022	JSPCB/H O/RNC/ CTO- 1056251/2021/1212	miming@r iplely.co.in	8240997796	PRASHANT KUMAR JAISWAL AND OTHERS	Stone Boulders - 1500 TPD and Stone Chips - 1350 TPD	1500	1350
8	KRISHNA KUMAR SAHA	24.8558	87.7313	CHAPANDEY P.O-PATNA DIST-SAHIBGANJ	SAHEBGANJ	PATHNA	Mines with Crusher	Mauza- Chapandey, Khata No.- 11,3 & 31 G.M., Plot No.- 47 to 52, 44 & 45/P	6.13	Stone Boulders æ 300 TPD, Stone Chips æ 270 TPD and Stone Dust æ 30 TPD.	30-06-2023	JSPCB/H O/RNC/ CTO- 1014387/8/2021/493	kksgroup. qry@gma il.com	9931348063	KRISHNA KUMAR SAHA	Stone Boulders æ 300 TPD, Stone Chips æ 270 TPD and Stone Dust æ 30 TPD.	300	270
9	M/S ANSARI STONE WORKS	24.8485	87.7256	GANGOPARA BEDO P.S-RANGA DIST-SAHIBGANJ	SAHEBGANJ	PATHNA	Mines with Crusher	Mauza-Gangopara Bedo, Plot No.- 59 to 62 & 80/P	6.3	Stone Boulders - 225 TPD and Stone Chips - 202.5 TPD	30-09-2022	JSPCB/H O/RNC/ CTO- 8235384/2020/1467	shahbaj. bh@gmail. com	9931734305	MD SHAHBAJ ANSARI	Stone Boulders - 225 TPD and Stone Chips - 202.5 TPD	225	202.5
10	M/s Bhai Bhai Stone Works	24.8624	87.6912	Banspahar, Po.- Ranga, Dist.- Sahibganj	SAHEBGANJ	PATHNA	Mines with Crusher	Mauza - Banspahari, Plot No.- 53, 54, 55, 60, 61/P, Khata No.- 07, 08, 01	7.401	Stone Boulder - 392 Tonnes/Day, Stone Chips - 352.8 Tonnes/Day	30-06-2023	JSPCB/H O/RNC/ CTO- 1024154/5/2021/863	bhaibhais tonework s8@gmail. com	9955679518	Md Faik Sakh Md Mektur Seikh	Stone Boulder - 392 Tonnes/Day, Stone Chips - 352.8 Tonnes/Day	392	352.8
11	GangoparaBedo stonemine M/s Ghose stone works	24.8532	87.728	Gangopara Bedo	SAHEBGANJ	PATHNA	Mines with Crusher	Mauza - Gangopara Bedo, 25(P), 44(P), J.B. No. 11	9.291	Stone Boulders - 525 TPD & Stone Chips - 472.5 TPD	31-03-2022	JSPCB/H O/RNC/ CTO- 9845098/2021/490	sunilkgho sh2016@ gmail.co m	9905191160	Sri Sunil kumar Ghose	Stone Boulders - 525 TPD & Stone Chips - 472.5 TPD	525	472.5
12	Sk Md Siraj	24.8247	87.7239	BORNA	SAHEBGANJ	PATHNA	Mines with Crusher	Mauza- Borna, Plot No.- 444P, 445, 446, 458P, 463, Khata No.-05	5.25	Stone Boulders - 300 TPD & Stone Chips - 270 TPD	30-06-2022	JSPCB/H O/RNC/ CTO- 8065223/2020/1154	mdarmaa siraj@gm ail.com	9155058911	Sk Md Siraj	Stone Boulders - 300 TPD & Stone Chips - 270 TPD	300	270
13	M/S BAJRANGBALI STONE WORKS	24.8436	87.7227	GANGOPARA RAMAKO & GANGOPARA BEDO P.S.	SAHEBGANJ	PATHNA	Mines & Crusher	Mauza-Gangopara Mako & Bedo, Khata No.-12 Plot No.- 21,23P, Khata No.-4 Plot No.- 75 Khata No.- 7 Plot No.- 71 to 75 Khata No.- 10 Plot No.- 74, Khata No.- 00 Plot No.-	14.46	Stone Boulders - 1000 Tonnes/Day Stone Chips- 900 Tonnes/Day	20-02-2023	JSPCB/H O/RNC/ CTO- 9100024/2020/2014	prakashke dia1969@ gmail.co m	9955916589	SRI PRAKESH KEDIA	Stone Boulders - 1000 Tonnes/Day Stone Chips-900 Tonnes/Day	1000	900
14	KRISHNA KUMAR SAHA	24.8343	87.7156	BORNA	SAHEBGANJ	PATHNA	Mines with Crusher	Mauza- Borna, Khata No.-47, 56 & 05, Plot No.-201/P to 203 & 216 to 219 (ML Area)	6.75	Boulders- 360 TPD & After crushing - 324 TPD	31-03-2023	JSPCB/H O/RNC/ CTO- 9800459/2021/43	kksgroup. qry@gma il.com	9931348063	KRISHNA KUMAR SAHA	Stone Boulders - 360 TPD & After crushing Stone Chips-324 TPD and Stone Dust-360 TPD	360	324
15	Metals (Old Name Bihar Bentonite Supply Company) Mines	24.9212	87.768	BaraBanaP ara and Matiyani	SAHEBGANJ	TALJHARI	Mines with Crusher	Mauza -Bara BanaPara and Matiyani, Plot No.- 15, 17/P, 18, 19, 24, 25/P, 26 & 15 to 18, Khata - Nil	22.45	Stone Chips- 946 TPD & Stone Boulders- 1051 TPD	30-06-2023	JSPCB/H O/RNC/ CTO- 10925709/2/2021/706	a.dokania 1961@g mail.com	9937199022	Sri Gopi Sadhwani	Stone Chips-946 TPD & Stone Boulders-1051 TPD	1051	946
16	M/S SARASWATI STONE WORKS	25.2282	87.7161	VILL- KIROKURI A.PO-SAKRIGAL IPS-TALJHARI, DIST-SAHIBGANJ	SAHEBGANJ	TALJHARI	Mines with Crusher	Mauza- Kirokuri a, Plot No 4/P, 8/P, 9/P & 30/P	9.22	Stone Boulders - 935 TPD, Stone Chips 841.5 TPD and Stone Dust- 93.5 TPD	30-09-2022	JSPCB/H O/RNC/ CTO- 8586867/2020/1822	dineshshil a@gmail.co m	9955331504	DINESH YADAV	Stone Boulders - 935 TPD, Stone Chips 841.5 TPD and Stone Dust- 93.5 TPD	935	841.5

17	M/s Hindustan Industries & Mining Corporation	24.7944	87.7995	Patnibona	SAHEBGANJ	Taljhari	Mines with Crusher	Mauza-Patnibona, Khata No.2,7,8,9,11,16,19,22 & 34, Plot No.- 26/P to 33, 49 to 51, 166, 170 to 182	38.5	Stone Boulders - 834 TPD & Stone Chips 750.6 TPD	31-03-2022	JSPCB/H ORNC/ CTO- 1092296 4/2021/1396	bhwtanmay1967@gmail.com	7903012586	Sri Pravesh Kumar Lakhmani	Stone Boulders - 834 TPD & Stone Chips 750.6 TPD	834	750.6
18	M/s Jial Das & co.	24.934	87.8047	Bakudi.P.O + Distt- Sahbeganj	SAHEBGANJ	TALJHARI	Mines with Crusher	Mauza-Pakturi, KhataNi, Plot No.- 45	4.05	Stone Chips - 185 TPD & Stone Boulders - 205 TPD	31-12-2022	JSPCB/H ORNC/ CTO- 8293948 /2020/1470	jialdasco@gmail.com	9903151413	Sumit Sadhwani	Stone Chips - 185 TPD & Stone Boulders - 205 TPD	205	185
19	M/s Mayur Machine Pvt Ltd	25.2132	87.7425	Motijharna	SAHEBGANJ	TALJHARI	Mines with Crusher	Mauza-Motijharna, Plot No.- 205/P, Khata Nil	19.35	Stone Boulders - 509 TPD & Stone Chips - 458 TPD	30-09-2023	JSPCB/H ORNC/ CTO- 3537207 /2018/1928	mayurma chinemp@gmail.com	9031119211	Sri Mayur Khuswani	Stone Boulders - 509 TPD & Stone Chips - 458 TPD	509	458
20	M/s Bihar Bentonite supply company	24.9311	87.7932	Chalpahar& Patnibona	SAHEBGANJ	TALJHARI	Mines with Crusher	Mauza - Chalpahar & Patnibona, Plot No.-33 P, 34 to 37, 87, 88 P, 89, 90, 83, 80, 86, 84, 85, 6, 11, 12, Bandobasti No.- 44 & 45	22.44	Stone Boulders - 620 TPD, Stone Chips - 558 TPD	30-06-2022	JSPCB/H ORNC/ CTO- 8045313 /2020/1089	sanjeev18in@yahoo.com	7004271488	Sri Nand Lal Bhagat	Stone Boulders - 620 TPD, Stone Chips - 558 TPD	620	558

जिला समाहरणालय, साहेबगंज

(खनन शाखा)

पत्रांक.13.93/एम0, दिनांक.....9/12/2020

प्रेषक :

उपायुक्त,  
साहेबगंज।

सेवा में,

वन प्रमंडल पदाधिकारी, साहेबगंज।

अनुमंडल पदाधिकारी, साहेबगंज।

अनुमंडल पदाधिकारी, राजमहल।

क्षेत्रीय पदाधिकारी, झा0रा0प्र0नि0प0, दुमका।

जिला खनन पदाधिकारी, साहेबगंज।

विषय : क्रशर/खनन क्षेत्र का डाटा संकलन के संबंध में।

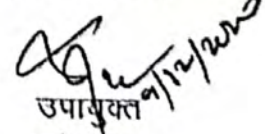
प्रसंग : केन्द्रीय प्रदूषण नियंत्रण बोर्ड के पत्रांक 1077/दिनांक 04.12.2020

महाशय

उपर्युक्त विषय के संदर्भ में कहना है कि जिला टॉस्क फोर्स खनन के सदस्यों के माध्यम में साहेबगंज जिलान्तर्गत सभी क्रशर एवं खदानों का डाटा संकलन कर केन्द्रीय प्रदूषण नियंत्रण बोर्ड, कोलकाता का उपलब्ध करना है।

अतः आप अपने विभाग से स्वयं/प्रतिनिधि को दिनांक 11.12.2020 से प्रतिनियुक्त करते हुए यथाशीघ्र डाटा संकलन कर अधोहस्ताक्षरी को एक सप्ताह के अंदर उपलब्ध करना सुनिश्चित करें।

विश्वासभाजन

  
उपायुक्त  
साहेबगंज।



केन्द्रीय प्रदूषण नियंत्रण बोर्ड  
CENTRAL POLLUTION CONTROL BOARD  
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार  
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

July 08, 2020

CPCB/ IPC-V/NGT\_OA\_ 739/ Stone/2020 2232

To,

All SPCBs/PCCs  
List attached

Sub: O.A. No. 739/2018 in the matter of Residents of Gram Panchayat Varahiya Versus State of M.P. before NGT, PB, New Delhi

Sir,

This has reference to the above cited Hon'ble NGT Matter, wherein CPCB was directed vide order dated 30/5/2019 to develop the requisite mechanism for stone crushers to study: i) Damage to the Air Quality; ii) Damage Assessment of Health Issues and iii) Agricultural Production Loss. Accordingly, mechanism was developed and circulated to all SPCBs/PCCs vide e-mail dated 19/2/2020, (copy attached).

In this regard, while considering CPCB report, Hon'ble NGT passed the following order on 01/07/2020.

"CPCB may circulate the compensation regime to all PCBs/PCCs to serve as a guiding factor for assessment of compensation based on different fact situations. Further report about the status of compliance may be furnished by the State PCB before the next date by e-mail".

Hon'ble NGT directed that report of compliance may be furnished by State PCBs/PCCs before the next date by e-mail. The matter is listed for consideration on 2.11.2020 (Copy of order dated 01/07/2020 is attached).

Yours faithfully

(S.K. Gupta)  
AD & Div. Head, IPC - V

Encl: as above

Copy to:-

✓ All Regional Directors (Not enclosed) :  
(Bengaluru, Bhopal, Kolkata,  
Lucknow, Shillong, Vadodara,  
Chennai, Chandigarh, Pune)

For follow-up please.

Central Pollution Control Board  
भारतीय प्रदूषण नियंत्रण बोर्ड  
Regional Directorate - North East, Shillong - 793014  
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार  
Ministry of Environment, Forest & Climate Change, Govt. of India

RECEIPT NO ..... 581

DATED ..... 31/07/2020

'परिवेश भवन' पूर्वी अर्जुन नगर, दिल्ली-110032  
Parivesh Bhawan, East Arjun Nagar, Delhi-110032

दूरभाष/Tei : 43102030, 22305792, वेबसाइट/Website : www.cpcb.nic.in

Mechanism for “Assessment of Damage to Air Quality”, “Damage Assessment of Health Issues” and “Agricultural Production Loss” w.r.t Stone Crushers, in compliance of Hon’ble NGT Order dated 30.05.2019, in the matter of O.A. No. 739/2018; Residents of Gram Panchayat Varahiya versus State of MP

### Mechanism for Assessment of Damage:

The requisite mechanism has been developed for the following parameters relevant to stone crushers:

1. Damage to the Air Quality
2. Damage Assessment of Health Issues
3. Agricultural Production Loss.

#### 1. Damage to the Air Quality:

For calculating the damage to air quality, the following details are needed:

- i. Total Load of particulate Emissions ( $PM_{10}$  and  $PM_{2.5}$ ) beyond prescribed limits i.e.  $Load_{PM_{10}}$  and  $Load_{PM_{2.5}}$
- ii. Environmental Price of Particulate Emissions ( $PM_{10}$  and  $PM_{2.5}$ ) i.e.  $EP_{PM_{10}}$  and  $EP_{PM_{2.5}}$
- iii. A Formula to calculate Damage to air quality in monetary terms i.e.  $Damage_{AQ}$

#### 1.1 Calculation of Total Load of Particulate Emissions ( $Load_{PM_{10}}$ and $Load_{PM_{2.5}}$ ) beyond prescribed standard:

##### 1.1.1 Calculations for Load of $PM_{10}$ Emissions ( $Load_{PM_{10}}$ ):

The load of  $PM_{10}$  emissions may be calculated by using the following details and methodology:

Limit of  $PM_{10}$  as per prescribed standard (A): a  $\mu g/m^3$

Average measured Concentration of  $PM_{10}$  in the ambient Air in the affected site (B): b  $\mu g/m^3$ . The sampling and analysis of ambient air will be required at various distances from the stone crushers, to determine the affected area and average concentration.

Concentration of  $PM_{10}$  emissions in excess of prescribed limit (C):  $B-A = c \mu g/m^3$

Concentration of  $PM_{10}$  emissions in excess of prescribed limit in  $Kg/m^3$  (D): d  $Kg/m^3$   
(e.g. if the Concentration in  $mg/l$  i.e. C is  $c \mu g/m^3$ , the concentration in  $Kg/m^3$  is:  $cE-9$ )

Mixing height of air in the affected Site (E): e meters

Area of the affected site (F):  $f\text{m}^2$

Volume of Ambient air in Affected area (G):  $= E \times F = g\text{ m}^3$

Total Load of  $\text{PM}_{10}$  in excess of the prescribed limit in the affected site (H):  $D \times G = h\text{ Kg}$

Since depending on the wind speed, the air in a particular area is being replaced continuously with the new air. Since we, need to calculate the total Load of  $\text{PM}_{10}$  Emissions per day, a replacement factor needs to be derived as follows:

Let's suppose:

Radius covered for ambient air monitoring: 2 Km

Average wind speed: 1 Km/h

Then, Air replacement factor (I) :  $1/2 \times 24 = 12$

Total Load of  $\text{PM}_{10}$  in excess of the prescribed site in the affected site (**Load  $\text{PM}_{10}$** ):  $H \times I = i\text{ kg/day}$

*As an alternative to the above method, the load of particulate emissions from the different stone crushers may also be calculated by using emission factor for stone crushers.*

### 1.1.2 Calculations for Load of $\text{PM}_{2.5}$ Emissions:

Limit of  $\text{PM}_{2.5}$  as per prescribed standard (K):  $j\mu\text{g}/\text{m}^3$

Average measured Concentration of  $\text{PM}_{2.5}$  in the ambient Air in the affected site (L):  $k\mu\text{g}/\text{m}^3$ . The sampling and analysis of ambient air will be required at various distances from the stone crushers, to know the affected area and average concentration.

Concentration of  $\text{PM}_{2.5}$  emissions in excess of prescribed limit (M):  $L - K = l\mu\text{g}/\text{m}^3$

Concentration of  $\text{PM}_{2.5}$  emissions in excess of prescribed limit in  $\text{Kg}/\text{m}^3$  (N):  $m\text{ Kg}/\text{m}^3$   
(e.g. if the Concentration in  $\text{mg}/\text{l}$  i.e  $M$  is  $l\mu\text{g}/\text{m}^3$ , the concentration in  $\text{Kg}/\text{m}^3$  is:  $l \times 10^{-9}$ )

Mixing height of air in the affected Site (O):  $n\text{ meters}$

Area of the affected site (P):  $o\text{ m}^2$

Volume of Ambient air in Affected area (Q):  $= O \times P = p\text{ m}^3$

Total Load of  $\text{PM}_{2.5}$  in excess of the prescribed limit in the affected site (R):  $M \times Q = q\text{ Kg}$

Since depending on the wind speed, the air in a particular area is being replaced continuously with the new air. Since we, need to calculate the total Load of PM<sub>2.5</sub>Emissions per day, a replacement factor needs to be derived as follows:

Let's suppose:

Radiuscovered for ambient air monitoring: 2 Km

Average wind speed: 1 Km/h

Then, Air replacement factor (S):  $1/2 \times 24 = 12$

Total Load of PM<sub>2.5</sub>in excess of the prescribed site in the affected site (**Load** PM<sub>2.5</sub>):  
 $R \times S = j \text{ Kg/day}$

*As an alternative to the above method, the load of particulate emissions from the different stone crushers may also be calculated by using emission factor for stone crushers.*

### 1.2. Environmental Price of Particulate Emissions(EPPM<sub>10</sub> and EP<sub>PM2.5</sub>):

To calculate the environmental prices of particulate emissions i.e. PM<sub>10</sub> and PM<sub>2.5</sub>, “Environmental Prices Handbook EU28 version” Methods and numbers for valuation of environmental impacts, Bruym, S.T. et al,2018, Delft, CE Delft was referred. The environmental prices are the constructed prices for pollution or social cost per Kg Emissions. In other words, environmental prices represent the loss of economic welfare that one additional Kg. of the Pollutant (PM<sub>10</sub>and **PM**<sub>2.5</sub> in the present case) is introduced into the environment. The Environmental Prices Handbook EU28 version and the associated webtool provide environmental prices for over 2500 pollutants. The value for environmental price given for pollutant level i.e value for emissions on environmentally damaging substances (PM<sub>10</sub> and PM <sub>2.5</sub> in the present case) have been considered in the proposed mechanism.

The values for the Environmental Prices for average particulate Emissions (**PM**<sub>10</sub> and **PM**<sub>2.5</sub>) as reported in the above hand book are as follows:

Pollutant	Environmental Price for average atmospheric Emissions(€/kg Emissions, 2015)		
	Lower	Central	Upper
Particulate Matter (PM <sub>10</sub> )	19	26.6	41
Particulate Matter (PM <sub>2.5</sub> )	27.7	38.7	59.5

The values per Kg of average particulate emissions were recalculated specific to India by considering the Central values, Exchange rates and inflation factor (2015 to 2019) as follows:

**Environmental Price for Average Particulate Emissions (Rs./Kg. Emission) = Environmental Price per Kg Emission x Exchange Rate x inflation factor**

1. Environmental Price for Average Particulate Emissions, PM<sub>10</sub>(EP<sub>PM10</sub>): 26.6 x 79.59 x 1.19 = Rs. 2519.34/Kg Emission
2. Environmental Price for Average Particulate Emissions, PM<sub>2.5</sub>(EP<sub>PM2.5</sub>): 38.7 x 79.59 x 1.19 = Rs. 3665.36/Kg Emission

**1.3. Formula to calculate the damage to Air Quality /day (Damage<sub>AQ</sub>) in monetary terms:**

The formula/equation for calculating the damage to the air quality (Damage<sub>AQ</sub>) is derived by using the following values:

- i. Total Load of PM<sub>10</sub> in excess of the prescribed site in the affected site in Kg/day (**Load<sub>PM10</sub>**)
- ii. Total Load of PM<sub>2.5</sub> in excess of the prescribed site in the affected site in Kg/day (**Load<sub>PM2.5</sub>**)
- iii. Environmental Price for Average Particulate Emissions, PM<sub>10</sub>(EP<sub>PM10</sub>): Rs. 2519.34/kg Emission
- iv. Environmental Price for Average Particulate Emissions, PM 2.5 i.e.(EP<sub>PM2.5</sub>):Rs. 3665.36 /kg Emission

-----  
**Damage to Air Quality in Monetary Terms /Environmental Price Rs. /day:**

$$\text{Damage}_{AQ} \text{ (Rs/day)} = (\text{Load}_{PM10} \times EP_{PM10}) + (\text{Load}_{PM2.5} \times EP_{PM2.5}) \quad \text{Eq (1)}$$

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**Note:**

- a) The value obtained from this formula should be multiplied by the number of days depending on the time period for which environmental damage is to be calculated.
- b) The sites/areas where many types of the industries are co-existing, % contribution of stone crushers for PM<sub>10</sub> and PM<sub>2.5</sub> in the ambient air, may be calculated based on source apportionment studies. In such cases, the contribution of the stone crusher may be calculated by multiplying the Damage AQ with the contribution factor for stone Crushers.

## 2. Damage Assessment of Health Issues:

The major health issues associated with the pollution caused by stone crushers are respiratory infections such as aggravation of asthma, respiratory symptoms and increase in hospital admissions. PM<sub>10</sub> and PM<sub>2.5</sub> emissions have high risk of mortality and morbidity impacts on the human population in the vicinity of stone crushers.

For assessing the damage caused to health by the stone crushers, the data with respect to respiratory illness/symptoms in the affected area, needs to be obtained from the Health Centres serving the affected sites. Since, all the cases of these health impacts are not reported to medical facilities, health survey of the affected area with the help of questionnaire needs to be done simultaneously to have realistic data of the affected people.

Once the above data is obtained the damage assessment may be done based on the cost of illness approach. The reference document used for developing the mechanism for damage assessment of health issues is **Srivastava, A and Kumar, R (2002). "Economic Valuation of health impacts of Air Pollution in Mumbai". Environ. Monit. Assess. 75: 135-143.**

The cost of Illness due to respiratory illness/diseases in the affected area is estimated by considering the base estimate reported in the reference study, by using per capita income of both the cities i.e. Mumbai as reported in the reference document and the affected area in question, by using the following details:

No. of cases of respiratory illness/diseases reported based on the data obtained from Medical facilities serving the affected area and health survey: X

Cost of Illness per person in Mumbai area (**COI<sub>Mumbai</sub>**) in Rs.: Rs. 14378 as of 1997

\*Per capita income of the affected area for the year 1997 in Rs. (**Inc<sub>Affected area</sub>**)

\*Per capita income of Mumbai for the year 1997 in Rs. (**Inc<sub>Mumbai</sub>**)

Cost of Illness per person in the affected area (**COI<sub>Affected area</sub>**) in Rs:

$$\text{COI}_{\text{Affected area}} = \text{COI}_{\text{Mumbai}} \times \frac{\text{Inc}_{\text{Affected area}}}{\text{Inc}_{\text{Mumbai}}}$$

(Note: if per capita income of both the cities for 1997 is not available, the values of any year having per capita income for both the cities may be taken and the COIMumbai may also be inflated to that year to calculate COI affected area)

The cost of illness determined from the above formula may be inflated to required year.

Damage to the health due to respiratory diseases may be calculated with the following formula/Equation:

---

**Damage to Health due to Respiratory diseases (Damage<sub>H</sub>) in Rupees:**

$$\text{Damage}_H \text{ (Rs)} = \text{No. of cases Reported (X)} \times \text{COI}_{\text{Affected area}} \text{ Eq (2)}$$

---

**Note:**

The sites/areas where many types of the industries are co-existing, % contribution of stone crushers for Particulate matter in the ambient air, may be calculated based on source apportionment studies. In such cases, the contribution of the stone crusher may be calculated by multiplying the Damage<sub>H</sub> with the contribution factor for stone Crushers.

**3. Agriculture Production Loss:**

Model sensitivity studies carried out in India has identified NOx as the key pollutant causing as much as 93% of the crop loss. Since, NOx emissions are not directly related to stone crusher operation, it is proposed to attribute 100-93 = 7% (say 10%) of total yield loss to particulate matter emissions (PM<sub>10</sub> and PM<sub>2.5</sub>) to start with. The formula/equation for calculating the agricultural production loss is calculated by using the following details:

Average production yield for Crop A in Tonnes/Acre (Yield<sub>AvgCrop A</sub>)

Actual Yield of Crop A in the Affected area in Tonnes/Acre (Yield<sub>ActCropA</sub>)

Affected Area in Acres (Area<sub>Acr</sub>)

Total Yield Loss (Loss<sub>Yld</sub>) = (Yield<sub>ActCropA</sub> - Yield<sub>AvgCrop A</sub>) x Area<sub>Acr</sub>

Minimum Sale Price of Crop A in Rs/Tonne (MSP<sub>Crop A</sub>)

---

**Agriculture Production Loss of Crop A (APL<sub>CropA</sub>) in Rs.:**

$$\text{APL}_{\text{CropA}} = \text{Loss}_{\text{Yld}} \times \text{MSP}_{\text{Crop A}} \text{ Eq (3)}$$

---

Estimated Percentage Contribution of Stone Crushers in Yield Loss: 10%

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**Agriculture Production Loss of Crop A by PM<sub>10</sub> and PM<sub>2.5</sub> (APL<sub>PMCropA</sub>) in Rs.:**

$$\text{APL}_{\text{PMCropA}} = \text{APL}_{\text{CropA}} \times 10\% \text{ Eq (4)}$$

Note:

The sites/areas where many types of the industries are co-existing, % contribution of stone crushers for particulate matter in the ambient air, may be calculated based on source apportionment studies. In such cases, the contribution of the stone crusher may be calculated by multiplying the  $APL_{PM_{CropA}}$  with the contribution factor for stone Crushers.

With the help of the following three equations derived in the above mechanism developed by CPCB and the calculations explained in the present document, it is possible to assess the damage caused to Air, public Health and agricultural crops in an affected site/ area by the stone crushers operating illegally or without complying with the prescribed norms.

Damage to Air Quality (Damage<sub>AQ</sub>) in Rs.:

$$\text{Damage}_{AQ} = (\text{Load}_{PM_{10}} \times EP_{PM_{10}}) + (\text{Load}_{PM_{2.5}} \times EP_{PM_{2.5}})$$

Damage to Health due to Respiratory diseases (Damage<sub>H</sub>) in Rs.:

$$\text{Damage}_H = \text{No. of cases Reported (X)} \times COI_{\text{Affected area}}$$

Agriculture Production Loss of Crop A by PM<sub>10</sub> and PM<sub>2.5</sub> ( $APL_{PM_{CropA}}$ ) in Rs.:

$$APL_{PM_{CropA}} = APL_{CropA} \times 10\%$$

If accepted and approved by Hon'ble NGT, the above mechanism developed by CPCB may be used to assess the damage caused by the stone crushers in the matter O.A. No. 739/2018; Residents of Gram Panchayat Varahiya versus State of MP, by the Joint Committee constituted in this matter.

CPCB will keep on updating the mechanism for assessment of the damage caused to the environment, health and agriculture based on the new findings from time to time, to make it relevant and realistic all the time.

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## Annexure-A

### Explanation of the Mechanism in terms of Monetary Calculations

#### a) Calculation of Damage to the Air Quality:

Formula:  $Damage_{AQ} = (Load_{PM_{10}} \times EP_{PM_{10}}) + (Load_{PM_{2.5}} \times EP_{PM_{2.5}})$

#### Calculations for Load of PM<sub>10</sub> Emissions (Load<sub>PM10</sub>):

Limit of PM<sub>10</sub> as per prescribed standard: 100 µg /m<sup>3</sup>

Let us assume that average measured concentration of PM<sub>10</sub> in the ambient Air in the affected site is 150 ug /m<sup>3</sup>.

Concentration of PM<sub>10</sub> in excess of the prescribed limit: 150-100 = 50 ug/m<sup>3</sup> i.e 50 x 10<sup>-9</sup>Kg/m<sup>3</sup>

Let us assume, Area of the affected site: 100000 m<sup>3</sup> and Mixing Height : 500 meter

So, the volume of ambient air in Affected area: = 100000 x 500 = 50000000 m<sup>3</sup>

Total Load of PM<sub>10</sub> in excess of the prescribed limit in the affected site = 50000000 x 50 x 10<sup>-9</sup> = 2.5 Kg

Let us assume that the radius covered for ambient air monitoring: 2 Km

Average wind speed: 1 Km/h

so, Air replacement factor (I) : 1/2 x 24 =12

**Total Load of PM<sub>10</sub> in excess of the prescribed site in the affected site (Load<sub>PM10</sub>):**  
2.5 x12 = 30 Kg/day

#### Calculations for Load of PM<sub>2.5</sub> Emissions (Load<sub>PM2.5</sub>):

Limit of PM<sub>2.5</sub> as per prescribed standard : 60µg /m<sup>3</sup>

Let us assume that average measured concentration of PM<sub>2.5</sub> in the ambient Air in the affected site is 70 ug /m<sup>3</sup>.

Concentration of PM<sub>2.5</sub> in excess of the prescribed limit: 70-60 = 10 ug/m<sup>3</sup> i.e  
10 x 10<sup>-9</sup>Kg/m<sup>3</sup>

Let us assume, Area of the affected site: 100000 m<sup>3</sup> and Mixing Height : 500 meter

So, the volume of ambient air in Affected area : = 100000 x 500 = 50000000 m<sup>3</sup>

Total Load of PM<sub>2.5</sub> in excess of the prescribed limit in the affected site = 50000000 x 10 x 10<sup>-9</sup> = 0.5 Kg

Let us assume that the radius covered for ambient air monitoring: 2 Km

Average wind speed: 1 Km/h

so, Air replacement factor (I) : 1/2 x 24 =12

**Total Load of PM<sub>2.5</sub> in excess of the prescribed site in the affected site (Load<sub>PM2.5</sub>):**  
0.5 x12 = 6 Kg/day

**Environmental Price of Particulate Emissions (PM<sub>10</sub> and PM<sub>2.5</sub>) i.e. EP<sub>PM10</sub> and EP<sub>PM2.5</sub>**

Environmental Price for Average Particulate Emissions, PM<sub>10</sub> (EPPM<sub>10</sub>): Rs. 2519/Kg Emission

Environmental Price for Average Particulate Emissions, PM<sub>2.5</sub> (EPPM<sub>2.5</sub>): Rs. 3665.36/Kg Emission

**Calculation of Damage to air quality in monetary terms i.e. Damage<sub>AO</sub>**

$$\text{Damage}_{AO} (\text{Rs/day}) = (\text{Load}_{PM10} \times EP_{PM10}) + (\text{Load}_{PM2.5} \times EP_{PM2.5})$$

$$\begin{aligned} \text{Damage}_{AO} (\text{Rs/day}) &= (30 \times 2519) + (6 \times 3665) \\ &= 75570 + 21990 = \text{Rs. } 97560/\text{day} \end{aligned}$$

Let us assume that the contribution of stone crushers in air quality in affected site as calculated from the source apportionment study is 25%

*So, the damage to air quality recoverable from stone crushers in monetary terms:  $97560 \times 25/100 = \text{Rs. } 24390/\text{day}$*

*Let us assume the period of damage caused/non-compliance is 20 days.*

So, the total damage recoverable from the stone crushers will be:  $24390 \times 20 = \text{Rs. } 487800/=$

Let us further assume that 10 stone crushers having same capacity were found to be non-compliant in the affected area.

Hence, the environmental damage recoverable from each stone crusher:  $487800/10 = \text{Rs. } 48780/-$  (1)

**b) Calculation of Damage Assessment of Health Issues:**

**Formula:**  $\text{Damage}_H: \text{No. of cases Reported (X)} \times \text{COI}_{\text{Affected areaEq}}$

Let us assume that the damage is to be calculated for the year 2018.

Per Capita Income of the of Mumbai ( $\text{Inc}_{\text{Mumbai}}$ ) for 2017-18 as per Economic Survey of Maharashtra 2018-19 is Rs. 176102.

Cost of Illness per person in Mumbai area ( $\text{COI}_{\text{Mumbai}}$ ): Rs. 14378 as of 1997

Cost of Illness per person in Mumbai area ( $\text{COI}_{\text{Mumbai}}$ ) inflated to 2018 is Rs. 54202 (Average Inflation rate 6.52%)

Let us assume Per capita Income of affected area ( $\text{Inc}_{\text{Affected area}}$ ) for the year 2018 is Rs. 50000

So, the cost of Illness per person in the affected area ( $\text{COI}_{\text{Affected area}}$ ) in Rs:

$$\text{COI}_{\text{Affected area}} = \text{COI}_{\text{Mumbai}} \times \frac{\text{Inc}_{\text{Affected area}}}{\text{Inc}_{\text{Mumbai}}}$$

$$COI_{\text{Affected area}} = 54202 \times 50000/176102 = 15389/= \text{ (Say Rs. 15390/=)}$$

Let us further assume the no. of cases of respiratory illness/diseases reported based on the data obtained from Medical facilities serving the affected area and health survey: 30

So, the damage to Health due to Respiratory diseases ( $Damage_H$ ):

$$Damage_H \text{ (Rs): No. of cases Reported (X) } \times COI_{\text{Affected area}}$$

$$Damage_H \text{ (Rs): } 30 \times 15390 = 461700/=$$

*Let us assume that 10 stone crushers having same capacity were found to be non-compliant in the affected area and that the contribution of stone crushers in air quality in affected site as calculated from the source apportionment study is 25%*

So, the damage to Health due to Respiratory diseases ( $Damage_H$ ) recoverable from each stone crusher :  $(461700 \times 25/100)/10 = 115425/10 = \text{Rs. 11543/-}$  (2)

### c) Calculation Agriculture Production Loss:

$$\text{Formula: } APL_{PM_{CropA}} = APL_{CropA} \times 10\%$$

Let us assume crop in the affected area during damage period is wheat.

Let us further assume that:

- i) Average production yield for wheat in the affected area ( $Yield_{AvgWheat}$ ) is 2Tonnes/acre
- ii) Actual Yield of Crop A in the Affected area in Tonnes/Acre ( $Yield_{ActWheat}$ ) is 1.60 Tonnes/acre
- iii) Affected Area in Acres ( $Area_{Act}$ ) is 50 acres

$$\text{So, Total Yield Loss (Loss}_{Yld}) = (2 - 1.6) \times 50 = 20 \text{ tonnes}$$

Let us assume that minimum Sale Price of Wheat ( $MSP_{Wheat}$ ) in the affected area is Rs. 18000/- per ton

$$\text{Agriculture Production Loss of Wheat (} APL_{Wheat} \text{) in affected area : Loss}_{Yld} \times MSP$$

$$\text{So, Agriculture Production Loss of Wheat (} APL_{Wheat} \text{) in affected area: } 20 \times 18000 = \text{Rs. 360000}$$

Estimated Percentage Contribution of Stone Crushers in Yield Loss: 10%

$$\text{Agriculture Production Loss of Wheat crop by PM}_{10} \text{ and PM}_{2.5} \text{ in affected area by stone crushers (} APL_{PM-Wheat} \text{) = } APL_{CropA} \times 10\% \text{ i.e } 360000 \times 10/100 = 36000$$

Let us assume that 10 stone crushers having same capacity were found to be non-compliant in the affected area.

So, the agriculture production loss recoverable from each stone crusher :  $36000/10 = \text{Rs. } 3600/-$  (3)

*Therefore, Total damage recoverable from each non-compliant stone crusher in the affected site for damage to air quality, public health and agriculture production loss :  $\text{Damage}_{AQ} (1) + \text{Damage}_H (2) + \text{APL}_{PM-Wheat} (3)$  i.e*

Total damage recoverable from each non-compliant stone crusher in the affected area  $48780 + 11543 + 3600 = \text{Rs. } 63923$

## Annexure-B

### Analysis of Mechanism under different Scenarios :

Taking the example of a stone crusher having following details, four scenarios are being analysed below for testing the mechanism under different situations for assessment of damage based on emission factors caused by stone crushers:

Operating Capacity : 40 ton/h

Primary Jaw Crusher: 01 No.

Secondary Crusher: 1 No.

Tertiary Crusher: 1 No.

No. of Screens: 03 Nos.

No. of Conveyor Transfer Points: 04

Operating Hours /day: 10

EPPM10 = Rs. 2519/Kg

EPPM2.5 = Rs. 3665/Kg

Damage/Non-Compliance Period: 20 days

Scenario 1: Only Primary Clushing is done; End product is Primary Crushed stone; One Screen and One conveyor transfer point Operational											
Stone Crushing Equipment	No of Operating Equipments	Operating Capacity, TPH	Operating Hours	Non-Compliance /damage Period, days	Controlled, Kg/ton, PM10	Uncontrolled, Kg/ton for PM10	Controlled Kg/ton, PM2.5	Uncontrolled, Kg/ton, PM2.5	Total Environmental Damage Cost, PM10, Rs.	Total Environmental Damage Cost, PM 2.5, Rs.	Recoverable Damage Cost, Rs
Primary Jaw Crusher	1	40	10	20	2.70E-04	1.21E-03	5.00E-05	2.24E-04	18958.24	5107.99	
Secondary Crusher	0	0	0	20	2.70E-04	1.21E-03	5.00E-05	2.24E-04	0.00	0.00	
Tertiary Crusher	0	0	0	20	2.70E-04	1.21E-03	5.00E-05	2.24E-04	0.00	0.00	
Screens	1	40	10	20	3.70E-04	4.40E-03	2.50E-05	2.98E-04	81308.52	7993.19	
Conveyor Transfer Points	1	40	10	20	2.30E-04	5.61E-03	6.50E-06	1.59E-04	108412.84	4457.71	
<b>Total</b>									<b>208679.61</b>	<b>17558.89</b>	<b>208679.61</b>

Scenario 2: Primary & Secondary Clushing done during damage priod; Two Screens and two Conveyor transfer points Operational. End product is combination of primary crushed and secondary crushed material											
Stone Crushing Equipment	No of Operating Equipments	Operating Capacity, TPH	Operating Hours	Non-Compliance/damage Period, days	Controlled, Kg/ton, PM10	Uncontrolled, Kg/ton for PM10	Controlled Kg/ton, PM2.5	Uncontrolled Kg/ton, PM2.5	Total Environmental Damage Cost, PM10, Rs.	Total Environmental Damage Cost, PM 2.5, Rs.	Recoverable Damage Cost, Rs
Primary Jaw Crusher	1	40	10	20	2.70E-04	1.21E-03	5.00E-05	2.24E-04	18958.24	5107.99	
Secondary Crusher	1	40	3	20	2.70E-04	1.21E-03	5.00E-05	2.24E-04	5687.47	1532.40	
Tertiary Crusher	0	0	0	20	2.70E-04	1.21E-03	5.00E-05	2.24E-04	0.00	0.00	
Screen1	1	40	10	20	3.70E-04	4.40E-03	2.50E-05	2.98E-04	81308.52	7993.19	
Screen2	1	40	3	20	3.70E-04	4.40E-03	2.50E-05	2.98E-04	24392.56	2397.96	
Conveyor Transfer Points 1	2	40	10	20	2.30E-04	5.61E-03	6.50E-06	1.59E-04	216825.69	8915.43	
Conveyor Transfer Points 2	2	40	3	20	2.30E-04	5.61E-03	6.50E-06	1.59E-04	65047.71	2674.63	
<b>Total</b>									<b>412220.19</b>	<b>28621.59</b>	<b>412220.19</b>

Scenario 3: Primary , Secondary and Tertiary Clushing done during damage priod; Three Screens and four Conveyor transfer points Operational. Endproduct is combination of primary secondary and tertiary crushed material											
Stone Crushing Equipment	No of Operating Equipments	Operating Capacity, TPH	Operating Hours	Non-Compliance/damage Period, days	Controlled, Kg/ton, PM10	Uncontrolled, Kg/ton for PM10	Controlled Kg/ton, PM2.5	Uncontrolled Kg/ton, PM2.5	Total Environmental Damage Cost, PM10, Rs.	Total Environmental Damage Cost, PM 2.5, Rs.	Recoverable Damage Cost, Rs
Primary Jaw Crusher	1	40	10	20	2.70E-04	1.21E-03	5.00E-05	2.24E-04	18958.24	5107.99	
Secondary Crusher	1	40	3	20	2.70E-04	1.21E-03	5.00E-05	2.24E-04	5687.47	1532.40	
Tertiary Crusher	1	40	2	20	2.70E-04	1.21E-03	5.00E-05	2.24E-04	3791.65	1021.60	
Screen 1	1	40	10	20	3.70E-04	4.40E-03	2.50E-05	2.98E-04	81308.52	7993.19	
Screen 2	1	40	3	20	3.70E-04	4.40E-03	2.50E-05	2.98E-04	24392.56	2397.96	
Screen 3	1	40	2	20	3.70E-04	4.40E-03	2.50E-05	2.98E-04	16261.70	1598.64	
Conveyor Transfer Point 1	1	40	10	20	2.30E-04	5.61E-03	6.50E-06	1.59E-04	108412.84	4457.71	
Conveyor Transfer Point 2	1	40	3	20	2.30E-04	5.61E-03	6.50E-06	1.59E-04	32523.85	1337.31	
Conveyor Transfer Point 3	1	40	2	20	2.30E-04	5.61E-03	6.50E-06	1.59E-04	21682.57	891.54	
Conveyor Transfer Point 4	1	40	2	20	2.30E-04	5.61E-03	6.50E-06	1.59E-04	21682.57	891.54	
<b>Total</b>									<b>334701.98</b>	<b>27229.88</b>	<b>334701.98</b>

Scenario 4: Primary, Secondary and tertiary Clushing done during damage period; End product is tertiary crushed material; All Equipment sopertaional											
Stone Crushing Equipment	No of Operating Equipments	Operating Capacity, TPH	Operating Hours, H	Non-Compliance /damage Period, days	Controlled, Kg/ton, PM10	Uncontrolled, Kg/ton for PM10	Controlled Kg/ton, PM2.5	Uncontrolled, Kg/ton, PM2.5	Total Environmental Damage Cost, PM10, Rs.	Total Environmental Damage Cost, PM 2.5, Rs.	Recoverable Damage Cost, Rs
Primary Jaw Crusher	1	40	10	20	2.70E-04	1.21E-03	5.00E-05	2.24E-04	18958.24	5107.99	
Secondary Crusher	1	10	10	20	2.70E-04	1.21E-03	5.00E-05	2.24E-04	4739.56	1277.00	
Tertiary Crusher	1	10	10	20	2.70E-04	1.21E-03	5.00E-05	2.24E-04	4739.56	1277.00	
Screens	3	40	10	20	3.70E-04	4.40E-03	2.50E-05	2.98E-04	243925.57	23979.57	
Conveyor Transfer Points	4	40	10	20	2.30E-04	5.61E-03	6.50E-06	1.59E-04	433651.38	17830.85	
<b>Total</b>									<b>706014.31</b>	<b>49472.41</b>	<b>706014.31</b>

Item Nos. 11 to 13

(Court No. 1)

**BEFORE THE NATIONAL GREEN TRIBUNAL  
PRINCIPAL BENCH, NEW DELHI**

(By Video Conferencing)

Original Application No. 23/2017 (EZ)

(With report dated 09.12.2021)

Syed Arshad Nasar

Applicant

Versus

Union of India & Ors.

Respondent(s)

**WITH**

Original Application No. 776/2018

Ramchandra Chaurasia

Applicant

Versus

State of Jharkhand

Respondent

**WITH**

Original Application No. 373/2019

Pradeep Kumar Singh

Applicant

Versus

State of Jharkhand

Respondent

Date of hearing: 22.12.2021

**CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON  
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER  
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER**

Applicant: None

Respondent(s): Mr. Mukesh Kumar, Advocate for CPCB

**ORDER**

1. These three matters relate to enforcement of environmental norms in the operation of quarrying and crushing units in Rajmahal hills of the Vindhya Mountains, District Sahebganj, Jharkhand. In earlier orders, the Tribunal noted that the area is rich in mineral resources. The mining companies or other entities are indulging in indiscriminate mining and operating stone crushers without due regard to the environmental norms. In this process, the hills are blown up. To remedy the problem, the Tribunal passed several orders in the last three years, including prohibiting illegal mining and non-compliant stone crushing activities vide order dated 06.07.2017, followed by order dated 17.04.2018.

2. Finally, a Committee was constituted comprising (a) Senior Scientist/ Engineer from CPCB; (b) Regional Office, EZ, MoEF&CC, Bhubneswar and, (c) Experts from SEIAA and Jharkhand State PCB to undertake study and give a report as follows: -

- “i) Undertake Carrying Capacity Assessment of the area viz-a-viz stone mines and stone crushing units.*
- ii) Undertake Ambient Air Quality Assessment in atleast 10 representative locations of the area.*
- iii) Assess (a) the pollution control devices of the stone mining and stone crushing units in the area and the environmental damage caused and (b) the cost of restoration of such damage.*
- iv) Any other relevant studies cognate to the above.*

*In undertaking the task, the Committee may co-opt expert/experts from any institution identified by it.”*

3. The Tribunal noted vide order dated 07.05.2019 that the State PCB had failed to take adequate remedial action against illegal mining and crusher units and also failed to realize Environmental Compensation on ‘Polluter Pays’ principle. The Committee constituted by the Tribunal filed its report in O.A. 23/2017 (EZ) finding wide scale flouting of norms and

also recommended that only compliant mining should be allowed purported the Bio-diversity of the area. On 11.09.2019, the Member Secretary, State PCB appeared in person and made a statement that there are 407 stone crushers and 300 stone mines. The specific detail of non-conforming stone crushers and mines were directed to be complied. Further, as per information given by the Member Secretary, 508 units had applied for Consent to Operate out of which 445 had been granted and the case of 24 had been rejected, while in the case of 39, applications for grant of Consent to Operate were under consideration. 293 stone crusher units and stone mining units had been found to be non-compliant during the inspections between 11.11.2019 to 17.11.2019 and, therefore, show cause notices had been issued. 106 units had been imposed with interim environmental compensations. Total environmental compensation of ₹6,33,57,000/- had been imposed by the State PCB cumulatively on the stone mines and stone crusher units out of which ₹2,36,25,000/- was upon 55 stone mines and ₹3,97,32,000/- against 141 stone crushing units. The District Task Force had demolished 34 illegal crusher units and sealed and demolished another 107 where illegal storage, processing and dispatch of minerals were being indulged in. 70 such illegal processing units (stone crushers) had been sealed and demolished. Apart from lodging FIRs, further 47 numbers of illegal stone crushers were also sealed and demolished as observed during the inspection undertaken on January, 2019.

4. Vide order dated 05.12.2019, the Tribunal observed:-

*“18. Upon consideration of the entire facts and circumstances borne out of the record of O.A. No. 23/2017/EZ and O.A. No. 776/2018, it is more than evident that the State machinery and the regulatory authorities had allowed a free run to the operation of mines and crusher units resulting in the present sordid condition. Even after the present cases were filed, they had been reluctant in dealing with the matters as directed by the Tribunal.*

*They had to be perforce made to discharge their responsibilities and perform the duties. The actions taken by them are as a result of repeated orders passed by the Tribunal from time to time. **The reports filed by the regulatory authorities are found to be far from satisfactory, mutually conflicting, bereft of clarity and inconsistent. The Member Secretary, State PCB who had appeared before the Tribunal was unable to answer questions put by the Tribunal and chose to be adamant in not furnishing the requisite information with clarity. As would be quite apparent from what had been noted earlier, the State PCB and the District authorities including the District Mining Officer did not appear to be clear as to how many stone mines and stone crusher units are in operation. The Member Secretary was also unable to answer on the distance maintained between the stone crusher units as well as the individual leases granted for stone mines. Taking the figure provided by the Member Secretary on 11.09.2019, there are more than 407 stone crushers and 300 stone mines operating in the area notwithstanding the fact that actual figures have not been provided as admittedly detailed inventORIZATION of all such units have not been undertaken thus far.***

19. *The photographs placed before us by the Applicant demonstrate an alarming situation where hills had been found to have been flattened due to mining out of the stones. The terms of reference which had been referred to the Committee vide order dated 19.01.2019 have also not been considered by the Committee so far except to give general recommendations in the report filed through the CPCB on 30.04.2019.*

20. *As regards undertaking carrying capacity assessment, ambient air quality assessment and effectiveness of pollution control devices, it has been stated in a note of the Committee as follows:*

***“Regarding Carrying Capacity Assessment, Ambient Air Quality Assessment and effectiveness of Pollution Control Devices is a study of one year to arrive at a certain conclusion. This in-depth study requires ‘Secondary Data Base’ of at least last five years and one ‘Primary Data Base’ to arrive at a meaningful conclusion through ‘Time Series’ analysis. Already in the World Bank project-National Ganga River Basin Authority (NGRBA) a project on industrial monitoring and assessment is given to Jadavpur University. Considering the gravity, similar study may be awarded to Department of Environmental Engineering, Jadavpur University or any other reputed Institute.”***

*We find the observation of the Committee to be unreasonable and an attempt to delay the entire process.*

21. *The Member Secretary instead of answering the questions upfront chose to hedge around to deflect the questions posed to him. Considering the obvious ineptitude of the Member Secretary, option before this Tribunal is either to take coercive measures for failure and negligence of the Member*

**Secretary or to require the Chief Secretary to look into the matter and take decision whether such important office as Member Secretary, State PCB should be headed by any other suitable, technically sound person with the ability of effective environmental governance. Such decision may be taken at the earliest so that public service functions assigned to such high office are discharged in a responsible manner.”**

5. Finally, the Tribunal directed as follows:-

*“26. We direct the Committee constituted vide order dated 22.01.2019 to place before us a table giving the details of the stone mines and the stone crushers separately containing the following particulars:*

- a) Name of the mines and crusher units and its locational depiction on the map of appropriate scale.*
- b) Dates of grant of Consent to Establish, Consent to Operate and, also Environmental Clearance (EC) in respect of stone mines. The area of stone mines and distance with adjoining mine(s) may clearly be stated.*
- c) Adequacy of pollution control devices of stone crushing units.*
- d) Details of individual violations of conditions of EC/Consent to Operate w.r.t. mining units and details of violation of Consent to Operate w.r.t. Stone Crushing units.*
- e) Action taken against those which do not have EC and Consent to Operate and against those which have violated the conditions of EC/Consent to Operate w.r.t. mining units.*
- f) The amount of environmental compensation assessed and recovered along with the individual computation sheets indicating period of default.”*

6. The matter was then considered on 23.09.2020 in light of report of the joint Committee filed on 21.09.2020 and also report of the Member Secretary. The Tribunal, on consideration, found that situation was deteriorating on account of failure of the statutory regulator in taking adequate action. Possibility of concerned officers colluding with the law violators was not ruled out. Compensation assessed was inadequate and was not being recovered. Further, there was a need for a scientific action plan being prepared after relevant study by an Expert Committee which

was accordingly constituted. The extracts from the said order are as follows:-

“7. xxx .....xxx.....xxx

8. *Apart from the above report, the State PCB has filed an undated report under the heading ‘Additional information for the Hon’ble Tribunal w.r.t. the measures taken by the Jharkhand State Pollution Control Board for curbing the air pollution caused by the stone mines/crushers in Sahebganj district’ which states that Source Apportionment Study, Carrying Capacity Assessment and preparation of Clean Air Action Plan for Sahebganj district has been awarded to Centre for Environment and Energy Development (CEED), New Delhi. The preliminary Clean Air Action Plan for Sahebganj district has been submitted by them and the final report is expected by January 2021. It is further stated that total Environmental Compensation of INR 6,33,57,000/- had been imposed by JSPCB cumulatively on the stone mines and stone crusher units out of which INR 2,36,25,000/- was upon 55 stone mines and INR 3,97,32,000/- against 141 stone crushing units. An Environmental Compensation amounting to INR 1,66,71,000/- has been collected by JSPCB cumulatively from the stone mines and stone crusher units. Due to Covid-19 pandemic the Occupiers have requested for some extra time to deposit the Environmental Compensation. Accordingly, time has been granted till December, 2020 with a clause that interest as per the guidelines of CPCB will be charged on the Units till the deposition of the Compensation to the Board.*

9. *From the above, it is patent that **the violation of environmental norms is rampant and in spite of orders passed by the Tribunal in the last three years, the situation has only deteriorated on account of failure of the statutory regulator in taking adequate action. The State PCB appears either to be in collusion or incompetent in performing its duties of taking stringent action against rampant violation of law. The damage to the environment and public health cannot be brushed aside and effective measures are required to be taken for realizing the guaranteed Fundamental Right to clean environment which is part of Right to life.** The Tribunal has to enforce the principle of “Sustainable Development”, the “Precautionary Principle” and the “Polluter Pays” principle under Section 20 read with Section 15 of the National Green Tribunal Act, 2010. The environmental compensation assessed is highly inadequate, in spite of the parameters being clearly laid down, the State PCB has chosen to assess compensation equal to violation on or before 30 days though violation is more than three years in flagrant violation of the mandate of ‘Polluter Pays’ principle, to the benefit of the law violators. Thus, there is patent incompetence and /or collusion which needs to be looked into at appropriate level. If situation is not remedied, the State itself may have to be held accountable for causing huge loss to the environment. The loss apparently is to the extent of hundreds of crores. The agency hired is not shown to be having requisite credentials. The exercise falls short of the requirements. Such exercise must be done with the involvement of CPCB*

10. *In view of above, to enforce the rule of law and for protection of environment and public health, we are of the view that a scientific action plan is required to be prepared after in-depth study of the problem with a clear road map. For this purpose, **we constitute a four-member Committee to be headed by an officer of the rank of Joint Secretary in the MoEF&CC, Government of India. The other three members will be the nominees of Indian Institute of Technology (IIT), Dhanbad, a Senior Officer of CPCB and Secretary Environment, Government of Jharkhand.** The State PCB and the District Magistrate, Sahebganj will provide all logistic support to the Committee to undertake their task. It will be open to the Committee to co-opt any other Expert or Institution and to conduct the proceedings in such manner as may be found viable. CPCB will be the nodal agency for compliance. First meeting of the Committee may be held within one month. Restoration plan and mode of execution may also be proposed. The report may be furnished within three months by e-mail at [judicial-ngt@gov.in](mailto:judicial-ngt@gov.in) preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF.*

11. *There is a need to examine as to how many stone crushers and mining units can be allowed and subject to what special conditions, having regard to the existing scenario already noted and to what extent the existing activities need to be regulated. It is made clear that in the light of joint Committee and observations of the Tribunal, with a view to protect environment, the State PCB must perform its duties of maintaining necessary vigil and close polluting activities not complying with the norms and permit them only when norms are achieved. The 'Polluter Pays' principle should be implemented effectively having regard to the cost of restoration, extent of damage and the deterrent element. The Chief Secretary may in light of the above observation to take steps to revamp the State PCB and file his own affidavit of compliance, failing which this Tribunal may have to take stringent action for enforcing the law."*

7. The matter was last considered on 12.03.2021 in the light of report of the State PCB dated 29.01.2021 and report of the CPCB dated 10.03.2021 seeking time to file a comprehensive joint Committee report. The Tribunal granted the time sought and also directed that the joint Committee may consider the pattern in report dated 06.07.2020 in O.A. No. 1016/2019, *Utkarsh Panwar vs. Central Pollution Control Board & Ors.*, about the carrying capacity of the NCR to sustain the number of brick kilns and siting criteria including *inter-se* distance. The operative part of the order is reproduced below:

*"7. Accordingly, report dated 29.01.2021 has been filed by the State PCB inter-alia as follows:*

- “3. In the meanwhile, after the last order of the Hon'ble Tribunal, 170 Units (Mines/Crusher) has been inspected by the Board. A Third and final show cause has been issued to the non-complying Units with a condition that if they don't comply with the conditions of the CTO/EC(as applicable) then a closure direction will be issued to them with immediate effect and Environmental Compensation will be levied.
4. To curb down the pollution and to ensure the compliances of the directions issued by Hon'ble NGT, a Monitoring Committee has been notified vide Notification no. 3001 dated 30.09.2020 by the Forest Environment & Climate Change Dept., Govt. of Jharkhand under the chairmanship of the Secretary, Urban Development & Housing Department. (The copy of Notification no. 3001 dated 30.09.2020 is enclosed as Annexure - 2).
5. A total of Seventeen stone crushing units has been issued a show cause notice in light of the report of the Deputy Commissioner, Sahebganj and if found non complaint then closure direction would be issued.
6. The District Mining Task Force, Sahebganj including Regional Officer, Dumka, JSPCB as a member, have conducted rigorous inspections against all the units involved in illegal mining, storage and transportation. However, RR against 125 defaulters have been lodged by the Task Force from Jan-19 till Dec-2020.
7. The Deputy Commissioner, Sahebganj has directed the Executive Engineer, Electric Supply Circle, Sahebganj not to provide electrical connectivity to the Stone Crushers which are not having valid CTO and Dealers Licence (Mining). Moreover he has also provided a list of Sixty Nine such Units which were illegal and has directed to disconnect their electric supply.”
8. A report has also been filed by the CPCB dated 10.03.2021 on behalf of the joint Committee mentioning the steps taken so far and seeking three months' time for filing comprehensive report. The concluding part of the report reads as follows:

“The final comprehensive joint committee report, which is to be submitted to Hon'ble NGT is proposed to consist of the restoration plan and minimum infrastructural requirements for control and abatement of pollution at sources along with compliance of regulatory provisions. A comprehensive clean air action plan, inventory of the activities along with compliance verification of individual units w.r.t. EC & CTO will also be submitted after compilation of all such information. It will also include action taken against the individual stone mines/crushers with invalid EC and CTO, amount of environmental compensation imposed, environmental management status and field visit report of the committee members.

The study carried out by CEED, Delhi as well as inspection of the stone mines and crushers by DMTF Sahebganj for

*verification of environmental management status got delayed due to the CoVID-19 situation. The outcomes of these reports are required to prepare the final comprehensive joint committee report. Therefore, **the committee requests Hon'ble NGT to grant three months time for submission of the comprehensive joint committee report** considering the quantum of field.”*

9. *While we propose to give time sought by the Committee, we find that the action taken by the State PCB continues to be inadequate. Preventive measures to control pollution are not being taken inspite of repeated show cause notices remaining uncomplied. We note that CPCB submitted report dated 06.07.2020 in O.A. No. 1016/2019, Utkarsh Panwar vs. Central Pollution Control Board & Ors., about the carrying capacity of the NCR to sustain the number of brick kilns and siting criteria including inter-se distance. **The joint Committee may take into account the pattern followed in the said report, while preparing the report in the present case. The joint Committee may also make recommendations on the subject of assessment of compensation taking into account the cost of restoration for the damage caused and its apportionment among the violators.***

10. *The report may be furnished on or before 30.06.2021 by e-mail at [judicial-ngt@gov.in](mailto:judicial-ngt@gov.in) preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF. A copy of the report be placed on the website of the CPCB simultaneously for response, if any, of the stake holders on or before 15.07.2021.”*

8. In pursuance of above, report dated 09.12.2021 has been filed by CPCB mentioning the steps taken for compiling information and annexing an interim report of the joint Committee. The report has been prepared jointly by:

- a) Joint Secretary, MoEF&CC, GoI. (Chairman of the Committee)
- b) Nominees of Indian Institute of Technology (IIT), Dhanbad  
(Committee Member)
- c) Senior officer of CPCB (Nodal Agency & Committee Member)
- d) Secretary Environment, Government of Jharkhand (Committee Member)
- e) Principle Investigator (P.I.) of the study “Source Apportionment Study, Carrying Capacity Assessment and Clean Air Action

Plan” from Centre for Environment and Energy Development (CEED), Delhi and

- f) Sri. Sundeep, Scientist F, Ministry of Environment Forest & Climate Change

9. It is further stated that the study completed is not adequate and requires further study as data of critical months of December, January has not been taken into account.

10. We have carefully considered the interim report of the joint Committee. At the outset we express our disappointment with the report which lacks in legal as well as scientific basis, vitiating the conclusions. As found by the Tribunal in earlier orders, there is indiscriminate illegal mining and stone operations in the area, resulting in damage to Rajmahal Hills of the Vindhya Mountains, District Sahebganj, Jharkhand. The Tribunal has passed several orders including orders prohibiting illegal mining and non-compliant stone crushers. The Tribunal expected meaningful assistance to protect the environment against such widespread flouting of norms and continued deterioration of environment in the area. The Tribunal has noted the failure of the State PCB either due to collusion or incompetence resulting in failure to protect environment and public health by taking effective measures. Assessment of compensation was farcical. The Tribunal also observed the need to revamp the State PCB. This undesirable situation is to be remedied by application of ‘Precautionary’ and ‘Polluter Pays’ principles. Far from this, the interim report, if accepted, will lead to undesirable consequences. The report has thus to be rejected. Reasons follow.

11. As per assessment given in Table 7, air quality is continuously critical from the year 2000 to 2019. The Table is reproduced for ready reference:

**“Table 7. Assessment of Exceedance Factor for the year 2000-2019**

<b>Year</b>	<b>EF</b>	<b>CATEGORY</b>		<b>Year</b>	<b>EF</b>	<b>CATEGORY</b>
2000	1.6	Critical		2010	2.0	Critical
2001	1.9	Critical		2011	2.1	Critical
2002	1.8	Critical		2012	2.3	Critical
2003	1.9	Critical		2013	2.1	Critical
2004	1.9	Critical		2014	2.3	Critical
2005	1.9	Critical		2015	2.1	Critical
2006	2.0	Critical		2016	2.0	Critical
2007	1.9	Critical		2017	2.0	Critical
2008	1.9	Critical		2018	2.3	Critical
2009	2.1	Critical		2019	2.0	Critical

12. However, surprisingly, the Committee has relied upon data of 2020 during which period there was a lockdown and observed that the 24-hour concentrations of PM10 at all monitoring stations in year 2020 were recorded within the national standard (100 ug/m<sup>3</sup>). Based on the data monitored in these stations, it is concluded **“the annual average concentration of PM10 is noted as 42 mcg/m<sup>3</sup>, which is below the national standard of 60 mcg/m<sup>3</sup>”**. Such conclusion is clearly perverse. It is elementary that data for one year due to lock down, in conflict with data for long period, cannot be mechanically accepted unless there are reasons for improved air quality shown by such data. No reasonable person can make such data basis for further action.

13. Status of management of individual stone crushers has been noted to be inadequate on all aspects in table 8, which is reproduced below for ready reference:-

**“5.3.1 Stone Crushers**

- I. *The assessment of environmental management for the stone crusher units was done by CPCB, ERD Kolkata*

on the basis of inspection reports of all the individual units provided by JSPCB (Table 8) is tabulated as below:

**Table 8.** Environmental Status of the Stone Crushers in the Sahebganj District

Sl No	Process	Recommended Emission Control System	Existing Emission Control System Status		Adequacy *(w.r.t. recommended emission control system)
			Type	Implementation Status	
1	Hauling from Mines to Crushers	1. Water Sprinkling 2. Treatment with Surface Agents 3. Soil Stabilization 4. Paving 5. Traffic Control 6. Covered HEMM	Tanker	16%	Inadequate
2	Feeding to Crusher	1. Enclosed hopper 2. Sprinklers	Single Water Tap	<1%	Inadequate
			Tanker	10%	
3	Primary Crusher	1. Enclosed  1. Wet Dust Suppression (Series of Scientifically designed Sprinklers) 2. Capturing and venting emission to a control device as: i. Fabric Filter ii. Bag House	Single Water Tap	38%	Inadequate
			Single Water Tap with Covered Conveyer	2%	
			Three Water Tap	<1%	
4	Secondary Crusher	1. Wet Dust Suppression (Series of Scientifically designed Sprinklers) 2. Capturing and venting emission to a control device as: i. Fabric Filter ii. Bag House	Single Water Tap	16%	Inadequate
5	Tertiary Crusher	1. Wet Dust Suppression (Series of Scientifically designed Sprinklers) 2. Capturing and venting emission to a control device as: i. Fabric Filter ii. Bag House	Single Water Tap	14%	Inadequate
6	Screening after Primary Crushing	1. Covered Screens 2. Wet Dust Suppression (Series of Scientifically designed Sprinklers)	Single Water Tap	20%	Inadequate
			Covered Screen	3%	

		3. Capturing and venting emission to a control device as: i. Fabric Filter ii. Bag House	Single Water Tap with Screen Covered	16%	
7	Screening after Secondary Crushing	1. Covered Screens 2. Wet Dust Suppression (Series of Scientifically designed Sprinklers) 3. Capturing and venting emission to a control device as: i. Fabric Filter ii. Bag House	Single Water Tap	13%	Inadequate
			Covered Screen	<1%	
8	Screening after Tertiary Crushing	1. Covered Screens 2. Wet Dust Suppression (Series of Scientifically designed Sprinklers) 3. Capturing and venting emission to a control device as: i. Fabric Filter ii. Bag House	Single Water Tap	13%	Inadequate
			Covered Screen	<1%	
9	Conveyer Belt (Screen to Product Stock Pile)	1. Covered 2. Wet-dust suppression (Series of Scientifically designed Sprinklers)	Single Water Tap	34%	Inadequate
			Covered Screen	<1%	
			Covered with Single Water Tap	3%	
10	Conveyer Belt (Screen to Fine Stock Pile)	1. Covered 2. Wet-dust suppression (Series of Scientifically designed Sprinklers)	Single Water Tap	29%	Inadequate
			Covered	<1%	
			Covered with Single Water Tap	2%	
11	Transfer Points	1. Wet Dust Suppression System (Series of Scientifically designed Sprinklers)	Single Water Tap	29%	Inadequate
			Mist Canon Gun	<1%	
12	Storage (Products)	1. Water Wetting 2. Surface active agents 3. Covering 4. Wind-breaks	Covered	<1%	Inadequate
13	Storage (Fines)	1. Water Wetting 2. Surface active agents 3. Covering 4. Wind-breaks	Covered	<1%	Inadequate
14	Others	1. Wind Breaking Wall (Altitude should be greater than the crusher units)	Four Sided	2%	Inadequate
			Three Sided	20%	
			Two Sided	17%	
			One Sided	11%	
			No Boundary Wall	50%	
		2. Green Belt	-	-	Inadequate

\*The recommended emission control system are referred from Comprehensive Industry Document, Stone Crusher by CPCB (Series: COINDS/78/2007-08)

### 5.3.2 Major findings of the field survey on Stone crushers:

I. The crushers are situated at a distance of approximately or greater than 100 m from the nearby village or highway. Major findings of the field survey are as follows:

1. The crusher units are not equipped with proper emission control system such as bag house or fabric filter combat the air pollution.
2. The crusher units which have installed the basic pollution control system but the systems installed to control the pollution are inadequate and need to be improved.
3. Out of the crusher units inspected, very few units (<2% of the units) have enclosed crushers, <3% of units have covered conveyer belt with single water tap as sprinklers, <16% of units have primary screen covered with single water tap as sprinklers.
4. Less than 38% of the total units has installed single water tap as the sprinkler system, which are ineffective to control the pollution.
5. The product and fine pile are kept uncovered, which will lead to dust emission. Even, less than 1% of the units out of the crushers unit inspected have covered product and fine stock piles.
6. The height of the wind braking wall constructed across the crushing units are less than the height of the crushers. Therefore, these wind breaking wall are not effective against the control of dust emission. Even, the green belt has very scare number of plantation.

**II. Therefore, the emission control devices implemented in the crushing units are inadequate to control the pollution. A systematic time bound control measures needs to be implemented for effective results.**

### 5.3.3 Stone Mines

I. The District Task Force Committee (DTC) members, Sahebganj visited all mines to access the environmental status during 11.02.2020 to 16.02.2021. The mines were at a distance of approximately 500 m from the nearby village. The Environmental Status of the Stone Mines in the Sahebganj District based on the report are tabulated below ( Table 9):

**Table 9. Environmental Status of the Stone Mines in the Sahebganj District**

<b>Sl No</b>	<b>Process</b>	<b>Recommended Emission Control System</b>	<b>Existing Emission Control System</b>	<b>Adequacy</b>
1	Drilling	1. Liquid Injection (Water/ wetting agent)	No Facilities	Inadequate

2	Blasting	1. Controlled Basting (use of millisecond delay detonators) 2. at a specific time 3. optimization of use of explosive energy 4. use of 'water ampoules' during blasting 5. Over charging of blast holes should be avoided	No Facilities	Inadequate
3	Excavation	1. Water Sprinkling	No Facilities	Inadequate
4	Hauling	1. Water Sprinkling 2. Treatment with Surface Agents 3. Soil Stabilization 4. Paving 5. Traffic Control 6. Covered HEMM	No Facilities	Inadequate
5	Product Storage	1. Water Wetting 2. Surface active agents 3. Covering	Uncovered	Inadequate
6	OB/Waste Storage	4. Water Wetting 5. Surface active agents 6. Covering	Unscientific & Uncovered	Inadequate
7	Transportation of Stone	1. Water Sprinkling 2. Treatment with Surface Agents 3. Soil Stabilization 4. Paving 5. Traffic Control 6. Covered HEMM	Uncovered Vehicles	Inadequate
8	Others	1. Green Belt	-	Inadequate

\*The recommended emission control system are referred from Comprehensive Industry Document, Stone Crusher by CPCB (Series: COINDS/78/2007-08)

### 5.3.4 Major findings of the field survey on mines

#### I. Major findings of the field survey of the stone quarry are as follows:

1. Almost all the mines bench height and width were found not proper.
2. Unscientific and unsystematic mining were being done in all mines.
3. Environmental & pollution control measures were found inadequate or not followed such as: No Sump/rainwater storage arrangement, however, few the mines has very small capacity of sump where water would finish within 1-3 months after the rainy season.
4. Haul roads were found Kutcha and inadequate arrangement for water spraying on haul roads were observed.
5. Overburden / waste materials were also dumped improperly. Mine plan/drawing sections were not made available so it was difficult to ascertain whether the O/B dump is within the lease area or outside.
6. O/B was dumped without any catch drain, siltation ponds & retaining wall in its periphery.
7. No grassing and vegetation on O/B dump were done.
8. There was no separate dump for top soil storage.
9. No future plan for mine reclamation/ closure.”

14. In spite of above unsatisfactory state of affairs noted by the Committee, it has recorded its findings of supportive carrying capacity, merely on th basis of lockdown data. Further, ignoring serious violations,

no effective remedial measures have been suggested before recommending permission to continue such errant units. Tables 11 and 13 of the report are as follows:-

**“Table 11** Total Estimation Load, Assimilative Capacity and Supportive Carrying Capacity in Sahebganj

<b>Month</b>	<b>Total Estimated load (kg)</b>	<b>Assimilative Capacity (kg)</b>	<b>Supportive Capacity (kg)</b>	<b>% Supportive Capacity</b>
January	31,503	42,901	11,398	26.57
February	30,945	70,937	39,991	56.38
March	33,725	96,094	62,369	64.90
April	38,000	1,25,929	87,928	69.82
May	40,143	1,33,391	93,249	69.91
June	25,688	1,40,162	1,14,475	81.67
July	14,981	1,01,499	86,518	85.24
August	12,211	86,576	74,366	85.90
September	11,825	80,113	68,288	85.24
October	18,577	62,584	44,006	70.32
November	27,453	49,895	22,442	44.98
December	25,419	45,253	19,834	43.83

\*Based on the PM Value required to keep ambient air quality as ‘Good’ Level

**Table 13** Total Estimation Load, Assimilative Capacity and Supportive Carrying Capacity in Sahebganj

<b>Month</b>	<b>Total Estimated Load (kg)</b>	<b>Assimilative Capacity (kg)</b>	<b>Supportive Capacity (kg)</b>
January	31,503	25,741	-5,762
February	30,945	42,562	11,617
March	33,725	57,657	23,932
April	38,000	75,557	37,557
May	40,143	80,035	39,892
June	25,688	84,097	58,409
July	14,981	60,899	45,918
August	12,211	51,946	39,735
September	11,825	48,068	36,243
October	18,577	37,550	18,973
November	27,453	29,937	2,484
December	45,253	27,152	-18,101

\*Based on the PM Value required to keep ambient air quality as ‘Good’ Level”

15. Further, compensation assessment formula of the Committee is patently unscientific, wrongly styled as “NGT recommended”. The formula

suggests that 80% compliance will be enough which is against settled precautionary principle that in environmental issues compliance has to be absolute and not even substantial. Table 15 suggesting allocation of weightage under different heads is as follows:-

**“Table 15** Maximum Weightage assigned to Control Techniques proposed by CEED, Delhi

<b>Sl No</b>	<b>Pollution Control Technique</b>	<b>Weightage</b>
1	Meeting all the sting criteria specified by JSPCB	8
2	SPM concentration should be less than 600 µg/m <sup>3</sup> at a distance of 3-10 m	18
3	Dust control techniques (Only one can be assigned)	
3.1	Combination of wet and dry dust suppression system, OR	28
3.2	Enclosure of crusher, screen and conveyor belts and then venting it to a control device (Dry dust collection system), OR	15
3.3.	Sprinkling at all the crusher feed and transfer points as per model crusher plan (Wet dust suppression system), OR	5
3.4	Only enclosure structures (without control devices)	5
4	Emission control technique from Haul roads (Only one can be assigned)	
4.1	Paving, OR	8
4.2	Water sprinkling at regular intervals/ Soil stabilisation	5
5	Green Belt development around the periphery (@100 trees per acre of land)	9
6	Height of Wind breaking structures must be greater than height of stockpiles	8
7	Regular Cleaning of equipment	4
8	Boundary Wall height of at least 10 m all around the site periphery	5
9	Loaded trucks should be covered with tarpaulin while transportation	3
10	Rainwater Harvesting system cum ground water recharge unit	9

The maximum score that can be awarded is 100.

- v. **In order to avoid the environmental compensation, the occupier must comply with 80 percent of the above-listed control techniques i.e., an aggregate score of 80.**
- vi. *The inspecting official is allowed to deduct scores on the basis of incomplete or ineffective or insufficient application of control technique.*
- vii. **Therefore, the complying score is calculated by the difference between minimum score required (i.e. 80)**

**and the score obtained.** *The higher value of complying score implies the lesser compliance with control measures as listed in the Table 15.”*

16. The formula suggested will enable even non-compliant stone crushers to be treated as compliant against the object of the environmental law, particularly, the ‘precautionary’ principle. This is so inspite of degradation of environment in the area and continuous past violations which will require any reasonable person to tread with caution.

17. The recommendations in the report are as follows:-

### **“11.0 Recommendations**

*Based on the above observations, findings and key issues of the area it is recommended as follows:*

- I. *142 stone mines and 299 stone crushers with valid CTO are only allowed to operate in the district as per the list provided by JSPCB via letter Ref No. B-1949, dated 9.11.2021 (Annexure 2). Other stone mines and crushers, which are not listed by JSPCB should be allowed to operate only after obtaining consent from JSPCB.*
- II. *The stone mines and crushers which have valid CTE, but do not comply to the stipulated condition in CTO issued by JSPCB or mining authority as the case may be, shall not be allowed to operate unless they are found complying with the conditions as per rule.*
- III. *A district level monitoring committee (DMC) headed by District Commissioner, may be constituted to ensure that the measures, as per the conditions imposed by JSPCB through consent to operate for stone crushers and mines are in operation/complied on sustainable basis. DMC should review the progress every six month*
- IV. *Hotspot Cluster to be identified and based on the scientific studies, and accordingly, micro level time bound environment management action plan shall be prepared and implemented. This should be monitored by District Monitoring Committee.*
- V. *A cluster management committee comprising of all the industrial units in the cluster shall be constituted and held responsible for implementation of cluster specific action plan in time bound manner. Failure to comply will result in combined failure and all units will be closed till cluster / individual corrective measures as per the cluster action plan is not complied.*
- VI. *The impact of stone crushers and mines are zone specific or area specific. These zones should be contoured as cluster or individual basis and cluster specific action plan should be prepared in*

*agreement with the finding of carrying capacity and activities should be control or regulated as per the assimilating capacity of the cluster/zone.*

- VII. *The sitting of the stone mines and crushers with respect to the nearby human settlement, highways etc. should comply the criteria specified by JSPCB (**Annexure A**).*
- VIII. *The crushing units in case on stone crushers should be placed in a covered section with proper pollution control equipment.*
- IX. *Conveyor belts should be covered /enclosed to avoid fugitive emission, without side gaps, in enclosure and belts.*
- X. *The crushed stones or finished products should be stored in silo or the height of finished goods should be kept lower than the height of wind breaking walls. Strong structural base and framing should be provided for wind breaking wall to withstand in strong wind conditions. The height of the stockpile should always be kept lower than the height of the wind breaking wall. The wall can be erected radially with a screen as center point. In addition, proper sprinkling arrangement should be provided all around the stock piles.*
- XI. *The dusts collected in bag house, which are of more than 5 um size have market value. The dust should be collected in bags and should be sold. The unit should not be allowed to dispose the collected materials as solid waste. In case, disposal of such waste is necessary, adequate facility for disposal with earmarked area and proper designed disposal pit duly approved by SPCB should be made by the unit.*
- XII. *Proper house-keeping should be maintained for the crushing units placed in the covered section. Layers of dust should not be allowed to accumulate on floor of the crusher premises. Scrapers could be utilized for dust accumulation at a place which can be disposed subsequently.*
- XIII. *JSPCB to ensure compliance of its order as mandate to all stone crushers having capacity above 500 TPD or more than 10000 CFT/Day to install the certified PM 10 analyzer with on-site display and online connectivity to JSPCB server (**Annexure 12**).*
- XIV. **General Guidelines for Abatement of Pollution (enclosed as Annexure A)** shall be adopted and implemented as preventive measure to control the pollution in the area.
- XV. *In order to have real time data of pollutants mainly PM10, PM2.5 and meteorological variation, it is recommended to have continuous monitoring of air quality. CAAQMS be installed as per the guidelines and the data so generated shall be managed and disseminated to Public, by JSPCB. Funding may be generated through Environmental compensation fund collected by JSPCB as per the guidelines approved by Hon'ble NGT or any other means.*

- XVI. *JSPCB should develop an online dashboard and an app to properly observe and disseminate the levels of pollution in real time for general awareness and take informed decision by the local administration and or JSPCB.*
- XVII. *There has to be a new policy to allow stone dust generated from the mines and crusher activities to be used as sand in the building and construction material which will resolve its proper disposal and will also prevent it from merging with the water of the Ganges and other water bodies.*
- XVIII. *There should be specific measures to reclaim the land of closed and abandoned mines. A proper plan to regain greenery and vegetation should be in place to reduce further land degradation.*
- XIX. *The haul roads within the mines/industry premises as well as city and district roads which cater to the transportation of the products from the stone crushers or mines shall be appropriately managed to ensure that resuspension of dust is minimize and also the carrying capacity of these roads as per the traffic in the region.*
- XX. *Separate action plan should be prepared by the Divisional Railway Manager (DRM), Sahebganj for the railway sliding to mitigate the environmental pollution in the area and submitted to district administration and JSPCB with 6 months times for its effective implementation after approval.*
- XXI. *The local administration shall work out for development of by-pass road to avoid the movement of Heavy vehicles /stone loaded vehicles etc. through city area/densely habitats in the region.*
- XXII. *Movement of heavy vehicles or stone carrying vehicles shall continued to be monitored trucks by District transport authority for compliance of covering of truck and movement through city area/dense Habitats during peak traffic periods and preferable allowed to be move during 10.00 PM TO 6 AM.*
- XXIII. *JSPCB and CEED should carryout the grid-based monitoring of the study area to estimate the carrying and supporting capacity of the region. Based on the findings, a protocol may be derived to regulate the emission sources.*
- XXIV. *EC as proposed at section 8 of this report may be imposed to the non-complying units by JSPCB*
- XXV. *As the carrying capacity study carried out by CEED, Delhi is based on formulae recommended by Hon'ble NGT in its order dated 12.03.2021 for Delhi, which is a land locked area. However, Sahebganj has different topography, it's a hilly area and is bounded by river Ganga in one of its boundaries., which is different from the topography of Delhi. The studies reveal that there is only 3 months of concern and the prediction is based on satellite-based data. Therefore, in absences of any ground-*

*based monitoring data during the predicted critical season, it is proposed that a detail ground-based air quality data for the period Nov – Feb be carried out to establish the factual status and assess the scientific study based supporting cum carrying capacity of the region and work out the requirement to comply with the order of Hon'ble NGT dt. 12.03.2021.*

*XXVI. It is humbly submitted that an extension of time period for submission of final report by the committee to comply with the requirement arising from the Hon'ble NGT order dated 12.03.2021 may be given. During this period, field level study for primary data collection (DEC – FEB), and based on the same, carrying capacity-based outcome will be prepared and submitted to Hon'ble NGT, by 1<sup>st</sup> week of April 2022.”*

18. The Committee failed to extrapolate PM<sub>2.5</sub> data to PM<sub>10</sub> data as was done in matter of OA 1016/2019 by CPCB. PM<sub>2.5</sub> data shows clearly that there is no supportive carrying capacity and this data needs to be used for carrying capacity computations. NCF (Non-Compliance Factor) in formula has been designed in such a way that the units with most serious non-compliance will have to pay no or least environmental compensation e.g. unit found to be set up without meeting siting criteria will have to pay no environmental compensation or unit consistently not complying with prescribed norms can escape the environmental compensation by using the proposed formula. Further, units complying with 80% of listed pollution control techniques will have to pay no EC as 20% rebate is with any logic.

19. For the reasons already given, the recommendations are unacceptable being based against law and science and is unprofessional and hence rejected. However, to the extent stone crushers and mines are non-compliant even according to the Committee need to be forthwith closed, if not already closed.

20. In view of failure of the joint Committee to provide sound basis for assistance of the Tribunal, we have no option except to reject the report of the Committee CPCB may assign the task to the Committee which

undertook study and submitted report dated 6.10.2020 in OA No. 1016/2019, *Utkarsh Panwar vs. Central Pollution Control Board & Ors.* The Committee may be steered by Member Secretary, CPCB, who will be free to take assistance from any other expert. The Committee may give its report within three months by e-mail at [judicial-ngt@gov.in](mailto:judicial-ngt@gov.in) preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF. The report may also be uploaded on the website of CPCB for any response by any stakeholder before the next date.

21. We also direct the State PCB to close the illegally operating stone crushers/mines - those not having valid consents, those not following valid siting criteria and those not maintaining laid down safeguards noted in paragraphs 5.3.1 and 5.3.3 in the above report. This may be ensured by a joint Committee of CPCB, State PCB and the District Magistrate and compliance report filed before the next date. The affected parties are at liberty to move this Tribunal, if they are aggrieved.

List for further consideration on 20.04.2022.

A copy of this order be forwarded to CPCB, State PCB and District Magistrate, Sahebganj by e-mail for compliance.

Adarsh Kumar Goel, CP

Sudhir Agarwal, JM

Dr. Nagin Nanda, EM

December 22, 2021  
Original Application No. 23/2017 (EZ)  
AVT