



**DISTRICT SURVEY REPORT(DSR)
OF
DEOGARH DISTRICT, ODISHA
FOR
ROAD METAL/BUILDING STONE/BLACK STONE
(FOR PLANNING & EXPLOITATION OF MINOR MINERAL RESOURCES)**



**As per Notification No. S.O. 3611(E) New Delhi
dated 25th July 2018 of
Ministry of Environment, Forest & Climate Change
(MoEF & CC)
COLLECTORATE DEOGARH**

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PREAMBLE

In pursuance of MoEF & CC Notification S.O. 141(E) dated 15th Jan. 2016, District level Expert Appraisal Committee (DEAC) has been formed for Category –B2 Minor Minerals having area less than or equal to 5 ha. Prior to the formation of Odisha Minor Mineral Concession Rule 2004, (OMMCR -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 Odisha framed the aforementioned rule, which has been amended with period of times in the year 2014, 2015 and 2016.

Keeping in view of experience gained in period of decade, the MoEF & CC came out with Environmental Impact Assessment Notification S.O.-1533(E) dated 14th Sept. 2006. It has been made mandatory to obtain environmental clearance for different kinds of development projects as listed in Scheduled -I of notification. Further, pursuance of the order of Hon' ble Supreme Court Petition (C) No. 19628- 19629 of 2009, dated 27th 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 13th Jan. 2015 the matter regarding Sand, Road metal, & 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 minor minerals lease in cluster.

Subsequently, Hon'ble Supreme Court vide their order dt. 18.01.2022 in connection with Civil Appeal Nos. 3661-3662 of 2020, the State of Bihar and others Vrs- Pawan Kumar and others at Paragraph 14 " We therefore find it appropriate to substitute the directions issued by Tribunal vide judgment and order dated 14th October-2020 with the following directions,

- (i). The exercise of preparation of DSR for the purpose of mining of the State of Bihar in all the Districts shall be under taken afresh. The Draft DSRs shall be prepared by the Sub-Divisional Committees consisting of the Sub-Divisional Magistrate, Officers from Irrigation Department, State Pollution Control Board or Committee, Forest Department, Geological or Mining Officer. The same shall be prepared by undertaking site visits and also using by modern technology. After the Draft DSRs are prepared the District Magistrate of the concerned District shall forward the

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same for examination and evaluation by the SEAC. The same shall be examined by the SEAC and its report shall be forwarded to SEIAA. The SEIAA will thereafter consider the grant of approval such DSRs.

- (ii). Needless to state that while preparing DSRs and appraisal thereof by SEAC and SEAI. It should be ensured that a strict adherence to the procedure and parameters laid down in the policy of January-2020 should be followed.

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 statute.

In lieu of above guideline and orders of Hon'ble Supreme Court and in compliance to the orders of Hon'ble NGT, EZ, Kolkata, in connection with O.A No. 63/2020, the Member Secretary, SEIAA, Bhubaneswar issued a Letter on 27th December, 2022 to Collector & District Magistrate, Deogarh with a direction " the DSR is to be signed afresh by the Collector and District Magistrate, along with members of the designated sub-committee consisting of Sub-Divisional Magistrate, and District Level Officers from Irrigation Department, State Pollution Control Board, Forest Department, Geology and /or Mining Department. Keeping in view of the orders of Hon'ble Supreme Court, Hon'ble NGT and directions of SEIAA, Bhubaneswar a fresh DSR has been prepared observing all formalities in the year,2023

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 potentiality where mining can be allowed.
3. Identification of area and proximity to infrastructure and installations where mining should be prohibited.

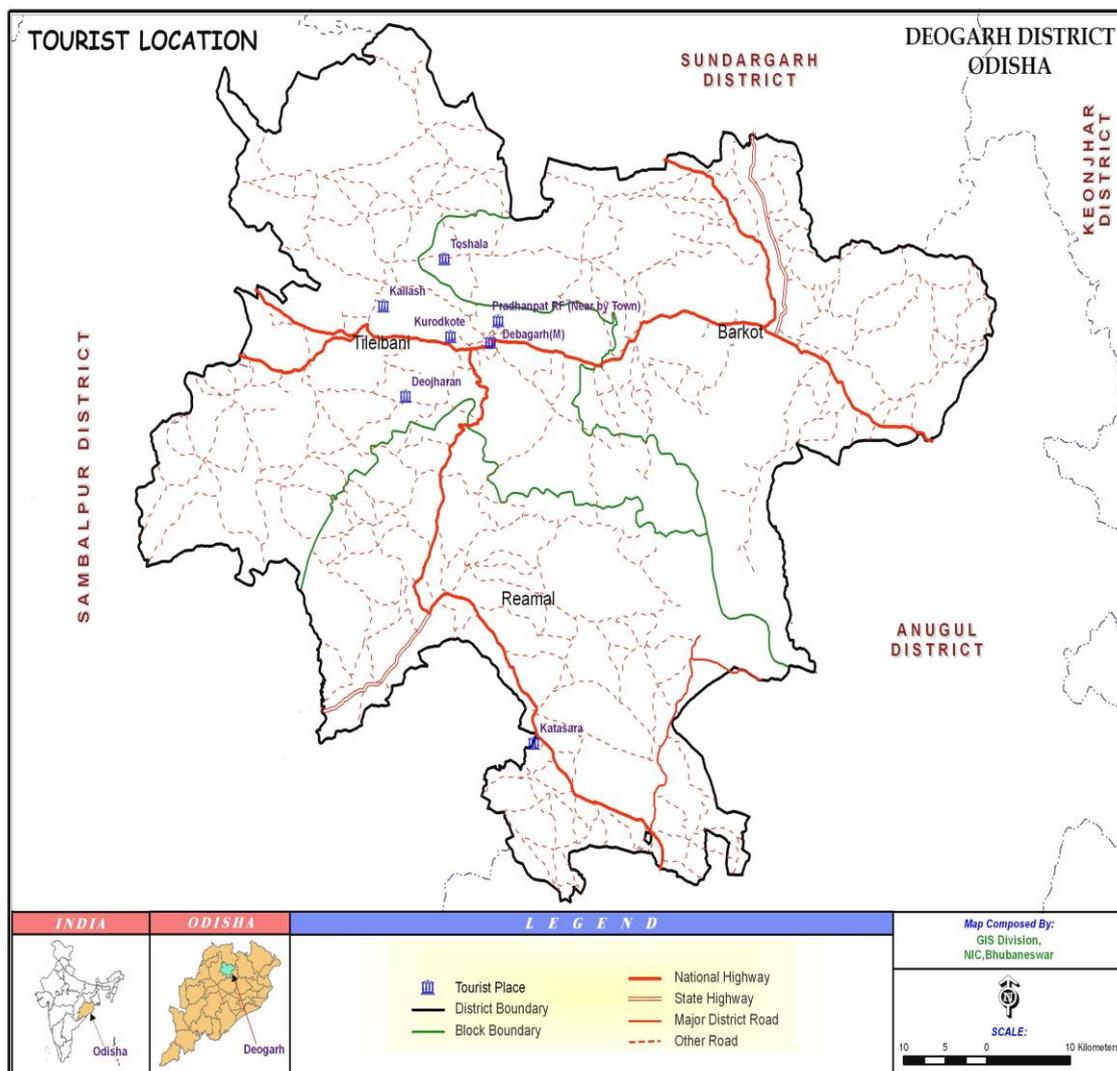
1.0 INTRODUCTION**Deogarh at a Glance:****1.1 Location and Geographical Area:**

Deogarh District is an administrative District of Odisha state in Western India. The District is named after the town of Deogarh, which is the District headquarters. It came into existence on 1st January 1994. Its another name is Debagarh. This District is bounded by Sundargarh District on the north, Anugul District of Odisha in the east, Sambalpur District on the west. It is located at 21°.11' to 21°.43'N Latitude and 84°.28' to 85°.15'E Longitude. The Deogarh District covers an area of 6702 Sq.Km. with geographical area of 2, 94,000 Hect. The total population of the District is 3,12,164 with total male population as 1,58,017 and female population as 1,54,147. Total SC Population of the District is 42,117 whereas the total ST population is 92,103. Total OBC Population is 22,265. The Deogarh District has got two sub division namely Deogarh & Madhupur. There are 03 Tahasils and 03 blocks and 774 villages functioning in the District. One Municipality, One NAC, 05 Police stations, 70 Gram Panchayats are there in the Deogarh District. The climate of this District is generally hot and dry summer, moist winter and distributed rains during the South-West monsoon season. Winter season commences from late November and lasts until the end of February. Summer season lasts from mid-March to mid-June. The South West monsoon hits Deogarh district during mid-June and rains continue up to late September. The months of October and November constitute the post monsoon season followed by the harvesting period. The rainfall during June to October constitutes at least 86% Percent of the actual rainfall of this District. Agriculture is the main source of income of the District. Paddy is grown as the main crop in Kharif covering approximately 94 Percent of the total cultivable area. The district is also endowed with abundant water resources. Rivers like the Brahmani and Tikira and the reservoirs like Rengali and Gohira dams have immensely contributed to the livelihood of the people. Many people earn their livelihood through mining and quarrying by raising minor mineral and construction materials. As per District's economy is concerned Deogarh District does not have any large scale industries, the 18 small scale industries and 144 cottage industries based on forest produce and other available natural resources provide employment and livelihood to a large number of people. In Deogarh district, agriculture, horticulture and forestry have good potential of growth and development for providing a

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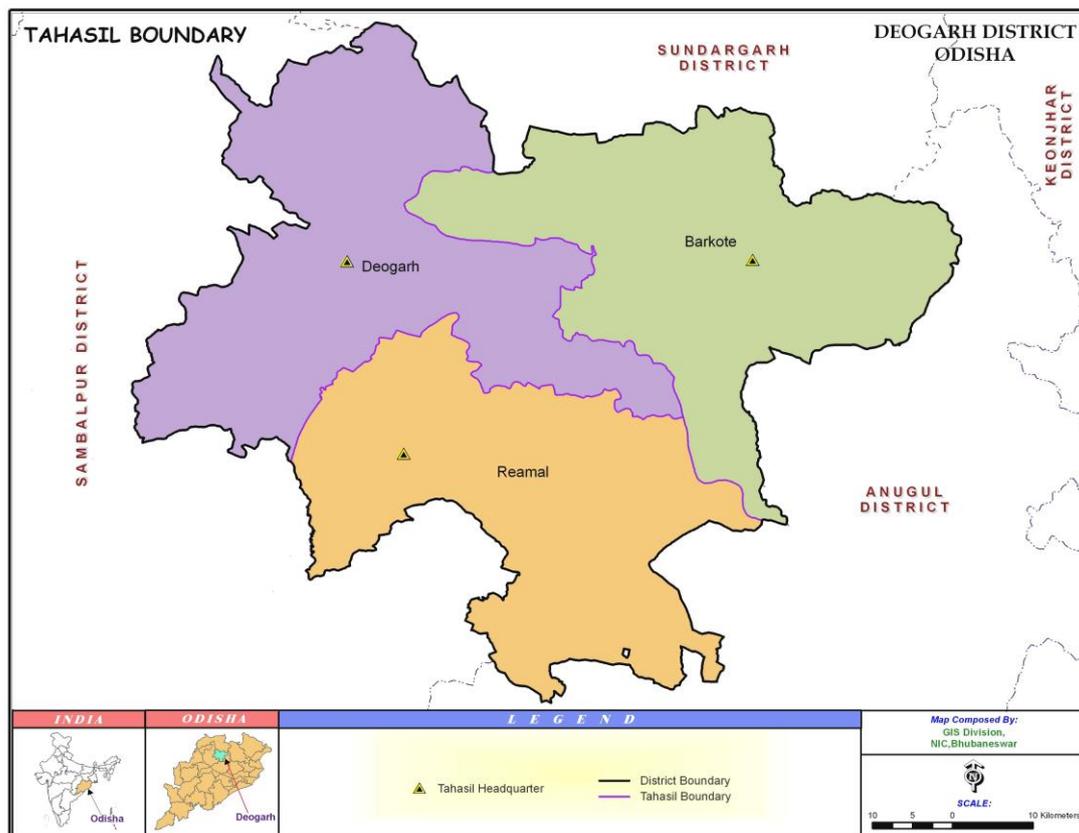
diversified livelihood pattern to the people. Government programmes are trying to strengthen these activities to make them sustainable sources of livelihoods. There are many historical places and monuments to visit in the Deogarh District. Sri Jagannath temple is famous for Jagannath, Balabhadra & Subhadra Temple. Baba Jhadeswar shiv Temple is one of the most visited temples of Deogarh District. Kailash Palace mainly indicated the Historical landmark. Pradhanpat waterfall is the most popular waterfall present in this district.



(Tourist location Map Deogarh District)

1.2 Administrative Units:-

Deogarh is the administrative headquarter of Deogarh district. It is located at a distance of 247 km from Bhubaneswar, state capital of Odisha. It has 774 villages covering 03 Blocks, 03 Tahasils. The district is divided into 03 Blocks & Tehasils, namely i) Barkote N ii) Reamal iii) Tileibani. The population of the district 3, 12,144 according to the 2011 Census. As per provisional reports of Census India, population of Deogarh in 2011 is 3, 12,144; of which male and female are 1, 58,017 and 1, 54,147 respectively. Although Deogarh city has population of 3, 12,520; its urban / metropolitan population is 22,265 of which 11,564 are males and 10,826 are females.



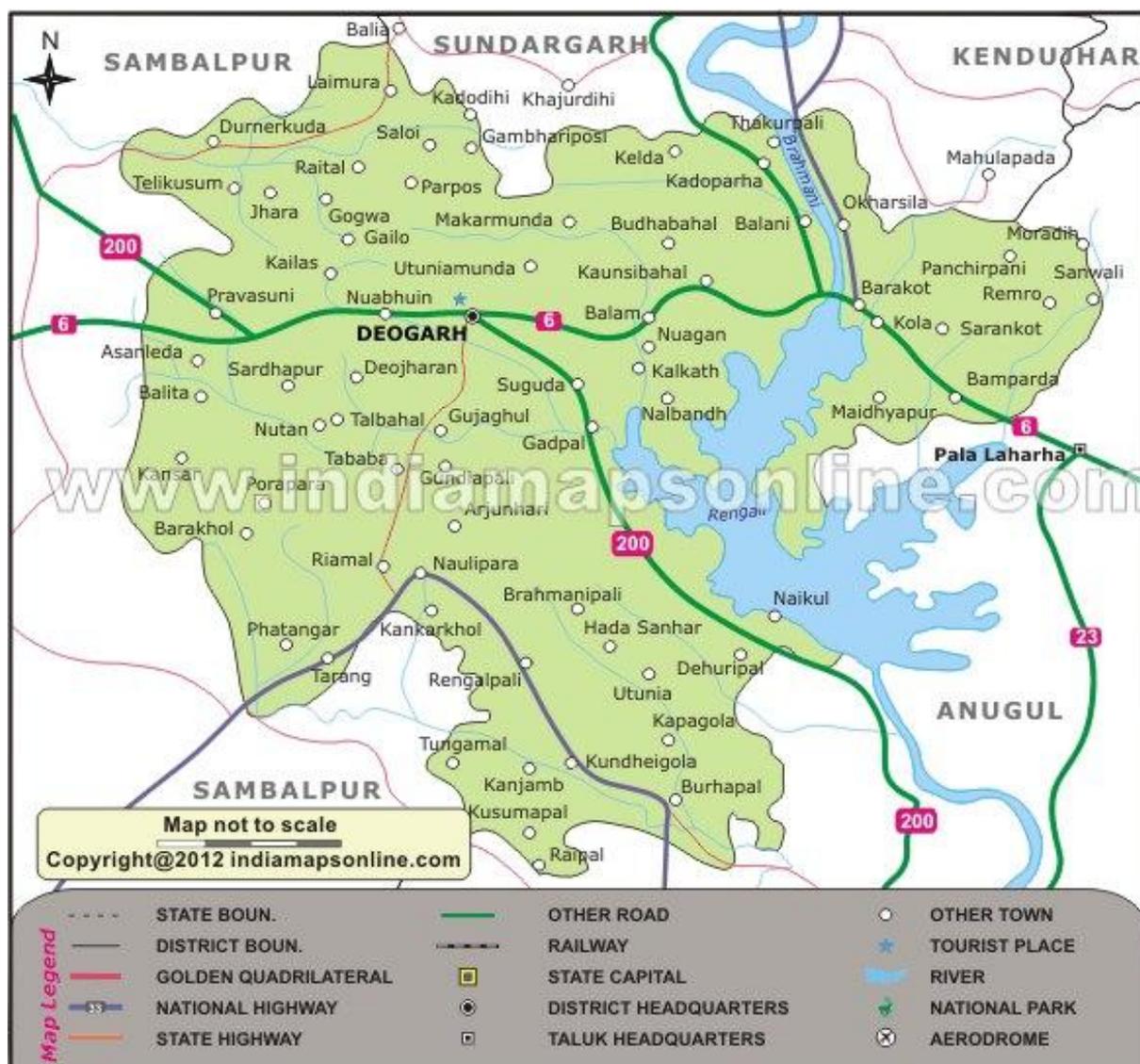
(Tahasil Boundary of Deogarh District)

1.3 Connectivity facilities:-

Road Network

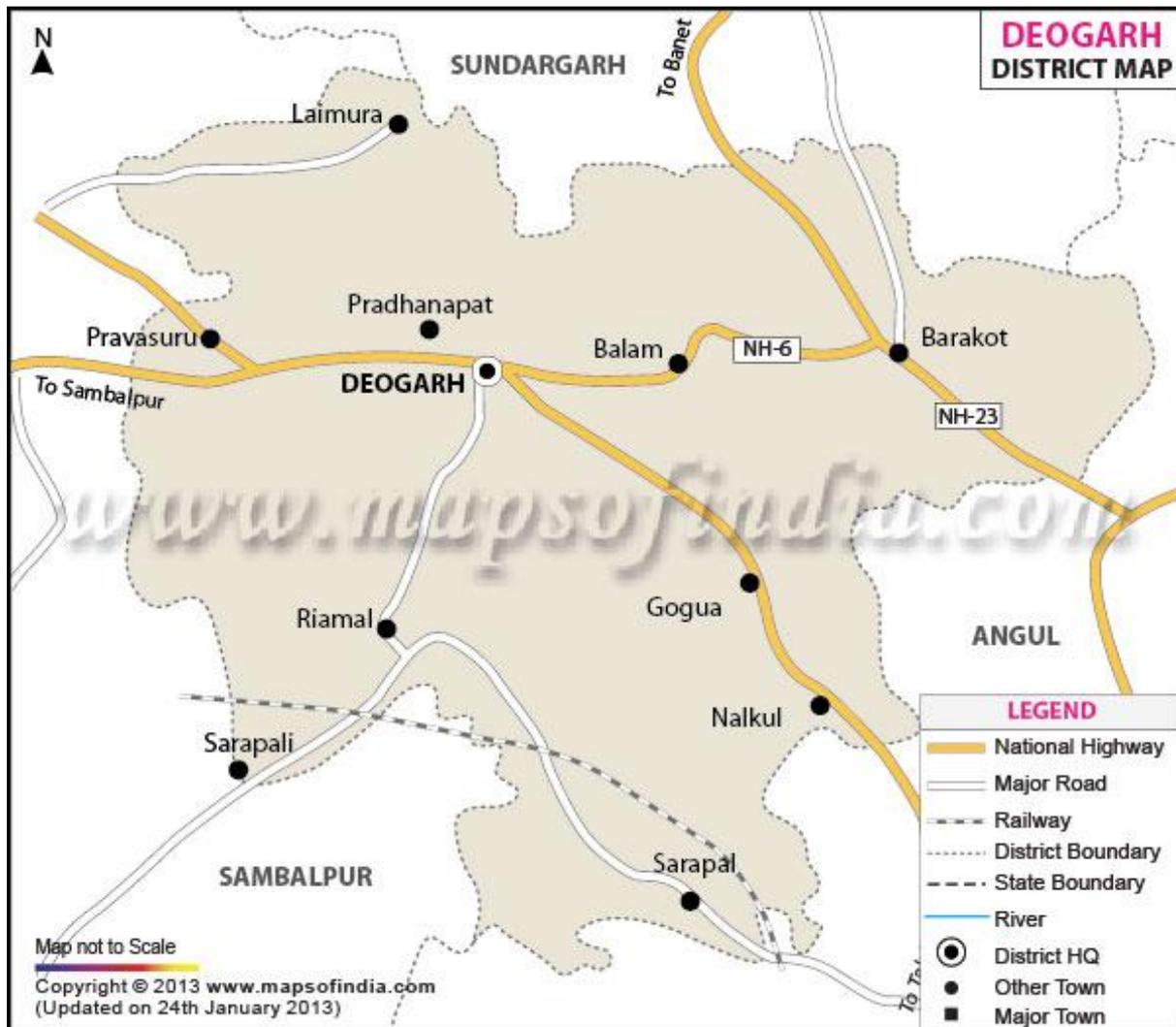
Road Network

The district is well served by a network of good roads and has been called the motorists paradise. The chief roads emanating from Deogarh town are NH-49 and NH-53 passes the district. Deogarh is 252 Kms from Baripada, 344 Kms from Kharagpur, 268 Kms from Jamshedpur 227 Kms from Cuttack, 244Kms from Bhubaneswar. It is also connected with other cities such as Sambalpur, Sundargarh, Kendujhar, Bhubaneswar, Cuttack, Angul, and Kolkata via Odisha State Road Transport Corporation and some private travel services.



(Road connectivity map of Deogarh district)

Deogarh district is well connected by rail link to different places, Deogarh railway station is an important station on the Jharsuguda-Barkote main line of the North Eastern Railway. The distance to Kolkata is approximately 272km, while the distance to Bhubaneswar is about 260 km; the city of Deogarh is well connected to many places in India like Sundargarh, Sambalpur, Anugul, Kendujhar, Bhubaneswar and Cuttack.



(Rail Network map of Deogarh district)

At present, Deogarh has no connection by airway. The site selection for aerodrome is presently under process. Nearest airport is Rourkela Airport, Rourkela, 135Kms from Deogarh. Netaji Subhas Chandra Bose International Airport in Kolkata is 272 Kms from Deogarh.

2. OVERVIEW OF MINING ACTIVITY IN THE DISTRICT:

Deogarh district is a transition land features of both coastal plain and hilly region. Most of the mining activity in the district is only restricted to minor minerals i.e. of sand, granite stone, and brick clays. Altogether there are leases have been granted to the district is regulated as per minerals concession rules of Odisha. No minerals in large quantity which can be explored in commercial purpose found in the district. This district is divided in to three zones according to its soil condition. 1 Sandy Soil, 2 Loamy Soil & 3 Clay & Salty Soil. This district is naturally divided into two well-designed tracks. 1. As per the agro climatic condition of the district the areas may be divided into four zones.

3.0 GENERAL PROFILE OF THE DISTRICT:

3.1 Demography:

Table-1

Census - 2011	
Geographical Area	2,94,000 Sq. Km.
Total population	3,12,164
Male Population	1,58,017
Female Population	1,54,147
Male Literacy	81.92
Female Literacy	63.05
Rural Population	2,89,899
Urban Population	22,265
Schedule Cast Male	26,343
Schedule Cast Female	25,769
Schedule Tribe Male	55,126
Schedule Tribe Female	55,274

4.0 GEOLOGY OF THE DISTRICT:

Odisha is one of the 28 states in the Republic of India. Odisha is located in the eastern part of the Indian peninsula and the Bay of Bengal lies to its East while Chhattisgarh shares its border in the west and north-west. The state also shares geographic boundaries with West Bengal in the north-east, Jharkhand in the north and Andhra Pradesh in the south. The western and northern portions of the state are part of the Chota Nagpur plateau. The coasts composed of fertile alluvial plains and the valleys of the Mahanadi, Brahmani, and Baitarani rivers, which empty into the Bay of Bengal. The coastal tract of Orissa is underlain by the Tertiary and Quaternary Formations. Weathered and fractured zones in granite gneiss rocks of Khondalites and Charnockites constitute phreatic and confined aquifers respectively. Hydrogeological characteristics wise wells sited in favourable locations in weathered residuum and fractured zones of granite gneiss rocks yield from 2 to 25 liters per second specific capacity of vary from 6 to 286 lpm/meter. Charnockitic rocks are rather less weathered and bear poor prospects for ground water development barring in highly fractured and joined zones giving rise to secondary porosity. Semi consolidated lower gondwana sandstones occurring in small patch in southern parts of district have limited yield with depth to water level ranging from 3 to 10 mbgl. Laterite and alluvium of quaternary to recent age also occur in very limited extent forming shallow aquifers tapped mostly through dugwells. Granitic gneiss, Quartzite, Syenite, Nepheline-syenite. Deogarh is a unique district in Odisha with varied geology, of these the Tertiaries are least exposed on the surface, whereas the Quaternaries are extensively developed along the coast and further inland. The Pre-Cambrian crystallines occur as hills and mounds in the west just outside the present area. Exploratory drilling reveals that in the subsurface the warped Pre-Cambrian basement is overlain by Miocene marine sediments, Mio- Pliocene estuarine sediments, laterites and alluvium. The Mio-Pliocene sediments and alluvial sections contain the principal ground water reservoirs. The marine sediments are dominantly composed of finer elastics and non-clastics (Bhatnagar et al, 1970). Lithology refers to an individual rock type, which is a basic geologic unit. The role of lithology in groundwater studies needs no emphasis. In the unconsolidated/semi consolidated sediments and some rocks which have primary porosity and permeability, the lithology exercises major control on the ground water regime. Under favourable morphologic and recharge condition they form very good aquifers. Remote sensing provides the basis for discrimination and

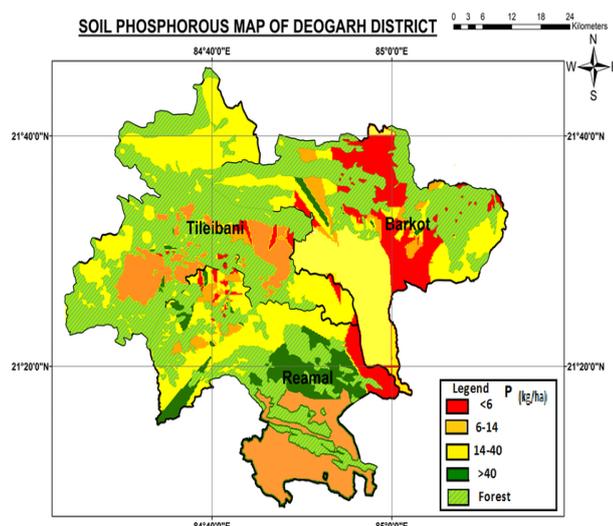
differentiation of rock types. Though, direct identification is limited to a few contrasting rock types, many of the rocks can be discriminated based on their spectral and morphological characteristics. Once rock types are identified, their physical continuity of individual rock units could be easily traced and the exact shape, size and geometry can be identified and mapped more accurately by using satellite imagery. According to lithologic unit some other types of rock are Biotite-granite gneiss, Charnockite, Khondalite, Sandstone, Conglomerate.

4.1 Physiography & Geomorphology:

Physiography:

The District of Deogarh is having unique physiographic setup. It is bounded by Sundargarh District on the north, Sambalpur District on the west & Anugul District on the east part it is marked by a set of hillocks and mounds. In the northern part of district east – west trending Khajuria hill range is there in Badbar area attaining a maximum height of 745 meters above mean sea level and Pradhanpat & Kaidanta hill ranges having maximum heights of 743 and 816 meters above mean sea level. In the eastern side of Brahmani river Pawri hill range with a maximum height of 678 meters above mean sea level.

The Ushakothhi and Kansar hill ranges with elevations of 610 and 762 meters above mean sea levels. Weathered and fractured zones in granite gneiss rocks of Khondalites and Charnockites constitute phreatic and confined aquifers respectively. Hydrogeological characteristics wise wells sited in favourable locations in weathered residuum and fractured zones of granite gneiss rocks yield from 2 to 25 liters per second specific capacity of vary from 6 to 286 lpm/meter. Charnockitic rocks are rather less weathered and bear poor prospects for ground water development barring in highly fractured and jointed zones giving rise to secondary porosity. Semi consolidated lower gondwana sandstones occurring in small patch in southern parts of district have limited yield with depth to water level ranging from 3 to 10 mbgl. Laterite and alluvium of quaternary to recent age also occur in very limited extent forming shallow aquifers tapped mostly through dugwells.



Geomorphology :

Deogarh is a predominantly hilly and undulating district created from bifurcation of Sambalpur district in the year 1994. It is situated in western portion of Orissa. The District of Deogarh is having unique physiographic setup. It is bounded by Sundargarh District on the north, Sambalpur District on the west & Angul District on the east part it is marked by a set of hillocks and mounds. Deogarh district in Odisha is characterized by a hilly terrain with four main ranges: Khajuria, Pradhanpat, Kaidanta, and Pawri, with elevations ranging from 610 to 816 meters above sea level. In the northern part of district east – west trending Khajuria hill range is there in Badbar area attaining a maximum height of 745 meters above mean sea level and Pradhanpat & Kaidanta hill ranges having maximum heights of 743 and 816 meters above mean sea level. In the eastern side of Brahmani river Pawri hill range with a maximum height of 678 meters above mean sea level.

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occurrence and recharge of groundwater and are classified in terms of groundwater recharge potentiality. Geomorphologic units are delineated based on the image characteristics such as tone, texture, shape, colour and associations. By overlapping the base map over the geocoded FCC image, the geomorphologic units and landforms, the structural information and structural trend lines are incorporated. Structural hills are observed on South and west part of the study area, which are the linear or acute hills exhibiting definite trend lines and mostly act as runoff zones due to its sloping topography. This shows poor potentiality for groundwater occurrence and recharge. Valleys are low lying depressions formed longitudinally along the streams or amongst the ridge portions, which shows excellent potential for groundwater occurrence and recharge.

4.2 Stratigraphy:

Table-2

Age	Group/Formation	Lithology
Proterozoic	Eastern Ghat Supergroup	Khondalite, Charnockite, Quartzite, Leptynite, Garnet-Sillimanite Schist, Gneiss, Granulites.
Proterozoic (Iron ore group- IOG)	Badampahar-Gorumahisani-Suleipat Belt	Banded Iron Formation (BIF), Ferruginous Quartzite, phyllite, Amphibolites.
Proterozoic	Bonai Granite & Granitoids	Granite, Gneiss, Migmatite.
Archean-Proterozoic	Singhbhum Granite Complex	Granite, Quartzite, Schist, Gneisses, Pegmatites.

4.3 Mineral Resources:

Minerals like minor minerals, stones, sands & Soils are available in the district. The deposits of granite stones provides tremendous scope for development of few more industries based on this resources. Except these, no other mineral deposits which can be explored for commercial purpose found in the district. As the district boundary are situated the adjacent to Sundargarh district, it mainly situated for the formation of

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Granite & Granite Gneiss. At present 1,000 persons are working in this unit. The basic raw materials of this industry is Granite which is procured from Boula Mines of Keonjhar Dist and Sukinda Valley Mines of Jajpur Dist. It is an Export oriented Industries and its product are being exported to the countries of Europe and Japan etc. However, it has not spawned any downstream industries. Some other minerals are also found in this district are Apatite, Biotite, Feldspar Group, Nepheline, Hornblende Group etc.

4.4 Soil:

Major soil class in all the three districts is Mixed Grey Soil (Inceptisols), which cover about 92% of total area of the district. The main soil types of the district are sandy loam and red soils. On the basis of average annual rainfall, and soil types all the three blocks falls under agroecological (farming) situations-Low rainfall lateritic soils. Tileibani block has mixed grey soil (Inceptisols) coverage of almost 93.15% of total block area where as Reamal and Barkote block has 92.59% and 86.80% respectively. All three blocks are predominantly hilly and undulating terrain. The hills are thickly wedded and are intersected with valleys under cultivation. Analysis of terrain or slope of land in the district reveals that land under all slope classes starting from plain land to mountainous land above 25% slope are distributed in all 3 blocks.

The below table shows the % and Area of following types of soil:

Table-3

Sl.No	Major Soils(common names like red sandy loam deep soils (etc.,))*	Area ('000 ha)	Percent (%) of total
1	Red soil	85.72	46.02
2	Sandy soils	16.13	8.66
3	Sandy loamy soils	58.62	31.47
4	Black soils	1.44	2.0
5	Other soils (red and yellow, brown forest soil, alluvial soils)	24.34	12.67

Source: Strategic research and Extension Plan (SREP) of Deogarh district, 2008. pp 18-19

5. DRAINAGE OF IRRIGATION PATTERN

The district has considerable flat land, which provide suitable site for agricultural use. The hilly areas are mostly under forest with patches of cultivation on scarp areas. Major rivers flowing in the district are Brahmani, Tikira. Major crops grown in the district are rice, only.16.35 percent area of agricultural use are net irrigated and major source of irrigations are wells and tube-wells. Most part of the district are drained by Brahmani river and its tributaries flowing from north to south direction.

Sl. No.	Name of the River	Area drained (Sq. Km.)	% Area drained in the District
1	Brahmani	40	10%
2	Tikira	10	10%

Table-4

Irrigation	Area ('000 ha)		
Net irrigated area	18.52		
Gross irrigated area	28.21		
Rainfed area	38.48		
Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
Canals (medium and minor)	24 (1 med., 23 minor)	13.80	48.92
Tanks	2463	0.85	3.03
Open wells	4292	5.11	18.11
Bore wells	3279	0.61	2.15
Lift irrigation schemes	3728	3.55	12.58
Micro-irrigation (Drip and sprinkler)	233	0.35	1.25
Other sources (please specify) WHS	89	3.93	13.94
Total Irrigated Area		28.21	0
Pump sets	1775	0	0
No. of Tractors	226	0	0
Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils	(%) area	Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)
Over exploited	0		00
Critical	0	0	0
Semi- critical	0	0	0

5.1 River System

Major River: Brahmani

The Brahmani River is the second-largest river in Odisha. It is formed by the confluence of the Sankh and South Koel rivers at Vedavyasa near Rourkela in Sundargarh district. From there, it flows southeast through Deogarh, continuing through Angul, Dhenkanal, Jajpur, and Kendrapara districts before emptying into the Bay of Bengal at the Dhamra estuary . In Deogarh, the Brahmani River plays a vital role in the district's ecology and hydrology. The Pawri Hill Range lies on the eastern side of the Brahmani River, with elevations reaching up to 678 meters above mean sea level .

Tributaries and Streams

In addition to the Brahmani, Deogarh district features several smaller streams and tributaries that contribute to its river system. These include seasonal streams and nalas such as Balam Nala and Manibhanga Nala, particularly in areas like the Tileibani and Reamal blocks .

These water bodies are crucial for local agriculture, groundwater recharge, and maintaining the region's biodiversity.

6.0 LAND UTILIZATION PATTERN IN THE DISTRICT

6.1 Forest and non-forest land

The forest of this division of Deogarh district covers almost pure mangrove forest and its few associates. The important species present including plantations are *Avicennia alba*, *Ipomoea pes-carpae*, *Canavalia maritime*, *Hydrophlyx maritime*, *Sesuvium portulacastrum*, *Casuta reflexa*, *Avicennia marina*, *Avicennia officinalis*, *Sonneratia alba*, *Sueda maritime*, *Sesuvium portulacastrum*, *Casuarina equisetifolium*, *Azadirachata indica*, *Pongamia pinnata*, *Opuntia stricta*, *Ficus bengalensis*, *Calotropis gigantia*, *Ziziphus oenoplia*, *Acacia auriculiformis*, *Tamarindus indica*, *Borassus flabellifer*, *Sueda nudiflora*, *Vernonia cinera*, *Tylophora tenuissima*, *Ipomoea tuba* etc. A wide range of carnivorous & herbivorous wild animals also available in this forest. The district has no Wildlife Sanctuaries. The mangroves support rich marine life including crabs, prawns, mudskippers and variety of fishes which form the base of biological pyramid. Besides, mangrove sustains a wide range of reptiles like water monitor lizards, pythons, king cobras, kraits, other snakes and mammals such as fishing cat, mongoose, otter etc. The mangrove wetland serve as

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a potential habitat for variety species of birds. Apart from that, the rivers like Baitarani, Mantei and Salandi supports fauna like crocodiles.

Table-5
District-wise Forest Cover Area in Odisha (Area in Km2)

2023 Assessment								
District	Geographical Area Km2	Very Dense Forest	Open forest	Mod. Dense Forest	Total	Percentof GA	Change	Scrub
Angul	6,375	371.01	1,031.62	1,380.00	2,782.63	43.65	27.63	84.18
Bolangir	6,575	70.00	841.26	224.00	1,135.26	36.64	4.26	143.16
Deogarh	3,806	23.00	226.18	133.38	382.56	5.82	2.56	46.59
Bargarh	5,873	175.01	501.31	374.14	1,050.46	27.60	19.46	40.57
Bouda	3,098	262.911	465.99	562.04	1,290.94	51.53	1.94	57.39
Bhadrak	2,505	0.00	69.30	8.70	78.00	1.34	3.00	0.00
Cuttack	3,932	53.00	525.38	226.00	804.38	20.46	8.38	67.80
Deogarh	2,940	191.00	618.75	667.41	1,477.16	50.23	5.16	14.08
Dhenkanal	4,452	173.99	851.24	420.38	1,445.61	32.47	28.61	83.88
Gajapati	4,325	84.16	947.12	1,490.09	2,521.37	58.30	1.37	262.88
Ganjam	8,206	164.39	866.69	1,074.32	2,105.40	25.66	2.40	655.000
Jagatsinghpur	1,668	0.00	131.64	4.64	136.28	8.17	0.28	0.00
Jajpur	2,899	6.00	228.09	71.99	306.08	10.56	3.08	49.78
Jharsugada	2,114	3.00	155.82	173.82	332.64	15.74	10.64	29.21
Kalahandi	7,920	361.64	1,323.97	734.19	2,419.80	30.55	1.80	371.69
Kandhamal	8,021	660.95	2,143.53	2,593.23	5,397.71	65.01	5.71	285.51
Kendrapada	2,644	83.40	139.36	88.54	311.30	3.88	6.30	1.99
Keonjhar	8,303	288.78	1,513.31	1,420.07	3,222.16	121.87	10.16	53.24
Khorda	2,813	21.00	260.09	186.00	467.09	16.60	10.09	90.47
Koraput	8,807	94.48	1,263.38	740.41	2,098.27	23.83	9.27	947.86
Malkangiri	5,791	158.00	1,465.41	712.76	2,336.17	40.34	5.83	45.90
Mayurbhanj	10,418	1,334.95	1,041.98	1,717.24	4,094.17	39.30	14.17	37.57
Nabarangpur	5,291	172.63	527.08	447.04	1,146.75	29.48	43.75	48.62
Nayagarh	3,890	189.00	559.75	965.00	1,713.75	44.49	3.75	171.36
Nuapada	3,852	86.01	706.76	481.69	1,274.46	24.09	1.46	108.82
Puri	3,479	0.00	165.36	59.73	225.09	6.47	11.09	10.79
Rayagada	7,073	419.54	1,873.55	853.42	3,146.51	44.49	20.51	359.9
Sambalpur	6,624	498.99	1,096.98	1,696.32	3,292.29	49.70	12.29	40.55
Deogarh	2,337	2.00	161.85	187.00	350.85	15.01	0.85	29.22
Sundargarh	9,712	1,020.87	1,394.12	1,858.38	4,273.37	44.00	9.37	88.89
Grand Total	1,55,707	6,969.71	23,096.87	21,551.93	51,618.51	33.15	273.51	4,326.91

(Source: India state of forest report 2023-Odisha)

Road metal/Building Stone Mining

DSR of Deogarh District

The very less portion of the district is covered by forest (50.07 % of TGA) and has scattered settlement pattern .The forest is full of variety of medicinal plants, kendu leaves, bamboo, sal, teak and other timber species .The district has considerable flat land, which provide suitable site for agricultural use .The hilly areas are mostly under forest with patches of cultivation on scarp areas .Major crops grown in the district are rice and pulses.

Table-6 Forest Land Use

Tahasil	Forest Area	Misc Tree	Permanent Pasture	Cultivated waste	Non Agricultural uses	Barren land	Current Fallow	Other Fallow	Net area shown
Barkote	19456	195	1053	1979	3338	6566	1593	0	20925
Reamal	30331	286	2372	1703	3559	11056	258	0	24200
Tileibani	22330	185	1568	3906	2993	7621	2212	0	21825
Total	72117	666	4993	7588	9890	25243	4063	0	66950

6.2 Mining Land: Deogarh district in Odisha is not particularly rich in mineral resources compared to some other districts in the state like Keonjhar, Sundargarh, or Angul.

However, it does have some limited and localized mineral occurrences that support certain industries and local needs. Sand and Clay (Most Abundant) River sand from the Brahmani, Tikira, Hinjuli rivers is extensively used in construction. Clay deposits are found in several areas, useful for making bricks and pottery. Laterite and morrum are found in small patches, primarily used for road construction and embankments. Gravel and stone chips are quarried in limited quantities for local infrastructure work.

6.3 Agriculture Land:

The primary objective of Agriculture Department is increase of production as well as productivity of major crops like paddy, groundnut, mustard, Mung, Biri & vegetables which is widely covered in this District in both Kharif & Rabi season. Another key objective is the all round development of the farming community of the District. At present the district has one Deputy Director, 2 District Agriculture Officers (DAO) and 119VAWs to implement to supervise agricultural programme of the district. Before it became a separate district, Deogarh was an agricultural district since 2010. A Krushi Vigan Kendra has been established in this district since 2004 for taking farm testing, demonstration and production of quality seeds and awareness program. Rice is the principal crop grown in this district, followed by other cereals, pulses, oilseeds, vegetables, spices and sugarcane. The agricultural statistics for the district is shown in subsequent tables below:

Table-7

Sl.No	Agricultural land use	Area ('000 ha)	Cropping intensity %
1	Net sown area	62	175
2	Area sown more than once	46.53	
3	Gross cropped area	108.53	

6.4 Horticulture Land:

The primary objective of Horticulture Department to increase the production as well as productivity of major fruits like Mango, Guava, Citrus etc. which is widely covered in this District. Another key objective is the all round development of the farming community of the District. The Deputy Director of Horticulture is the head of office. The horticulture statistics for the district is shown in subsequent tables below:

Table-8

Horticulture crops-Fruits	Total Area (hectares)
Mango	2.41
Litchi	0.61
Sweet orange	0.42
Banana	0.24
Guava	0.10
Papaya	0.03
Sapota	0.03

Horticulture crops-Vegetables	Total Area (hectares)
Onion	0.58
Chilli	1.69
Sweet potato	0.67
Potato	0.31
Vegetables	7.07
Water melon	0.35

Horticulture crops-Flowers	Total Area (hectares)
Marigold	35.0
Rose	25.0
Gladioli	30.0
Tuberose	9.0

7.0 SURFACE WATER AND GROUND WATER SCENARIO OF THE DISTRICT

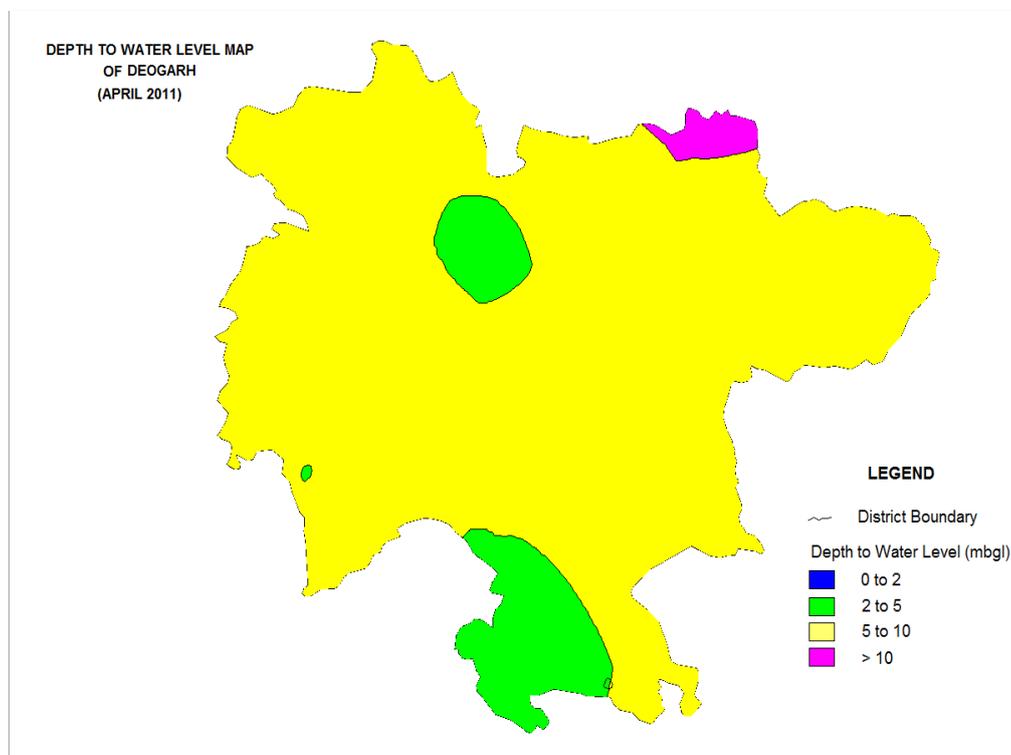
7.1 Hydrogeology

Weathered and fractured zones in granite gneiss rocks of Khondalites and Charnockites constitute phreatic and confined aquifers respectively. Hydrogeological characteristics wise wells sited in favourable locations in weathered residium and fractured zones of granite gneiss rocks yield from 2 to 25 liters per second specific capacity of vary from 6 to 286 lpm/meter. Charnockitic rocks are rather less weathered and bear poor prospects for ground water development barring in highly fractured and joined zones giving rise to secondary porosity. Semi consolidated lower gondwana sandstones occurring in small patch in southern parts of district have limited yield with depth to water level ranging from 3 to 10 mbgl.

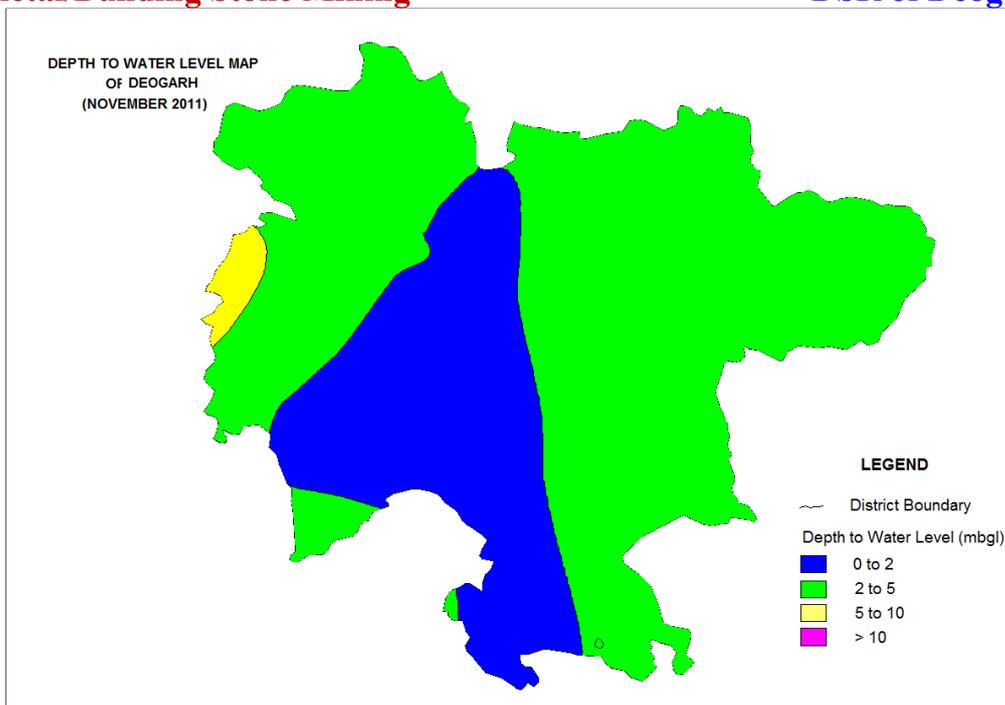
Laterite and alluvium of quaternary to recent age also occur in very limited extent forming shallow aquifers tapped mostly through dugwells.

7.2 Depth of water level:

Overall premonsoon depths to water level vary from 4 to 6 meters below ground levels. Postmonsoon water levels vary from 0 to 4 meters below ground levels. Changes in water levels on long term basis do not show any significant changes. post monsoon period of year 2006 are presented in the map 1 & 2)



(Depth to Water Level Map-1)



(Depth to Water Level Map-2)

7.3 Ground Water Quality

Overall ground water quality of ground water in Deogarh district is good for drinking, industrial and irrigation uses. All the chemical constituents are within the permissible limits. (Barring slight alkalinity and an isolated instance of presence of Fluoride as 1.56 mg/liter in Barkote iii observation well in Barkote block of Deogarh district).

7.4 Ground Water Development

Estimated annually replenishable ground water resources mostly relating to phreatic aquifers are estimated as 206.29 mcm. Net annual ground water draft is estimated as 27.95mcm and stage of ground water development in the vicinity of 13.55%.

Table: Blockwise Stage of Ground Water Development of Deogarh District (As per March, 2009)

Table-9

Sl No	Block	Net Annual Ground Water Availability	Existing Gross Ground Water Draft for Irrigation	Existing Gross Ground Water Draft for domestic & Industrial Supply	Existing Gross Ground Water Draft for all uses	Provision for domestic & industrial requirement supply for next 25 years	Net Ground Water Availability for future irrigation development	Stage of Ground Water Development
(ham)	(ham)	(ham)	(ham)	(ham)	(ham)	(ham)	(ham)	(%)
1	2	3	4	5	6	7	8	9
1	Barkote	6729.00	627.00	243.35	871.00	359.00	5742.00	12.94
2	Reamal	8588.00	1021.00	240.60	1261.00	348.00	7219.00	14.68
3	Tilebani	5312.00	496.00	166.88	663.00	242.00	4574.00	12.48
District Total	20629.00	2144.00	650.00	2795.00	949.00	17535.00	13.55	

Overall ground water situation in the district leaves lot of scope and potential for ground water development keeping aside about 7.86 mcm for meeting projected drinking and industrial sectors requirements for coming 25 years. As per stage of ground water development, all the three blocks of Deogarh district namely Barkote, Riamal and Tilebani are in safe Category.

7.5 Ground Water Related Issue and Problems

Some of key ground water related issues are

The ground water resources occurring in district are satisfactory quantity and quality wise and possess no problem of imminent or grave nature.

7.6 Mass Awareness Campaign (MAP) & Water Management Training Programme (WMTP) by CGWB

Central Ground Water Authority has not organized any mass awareness programme and water management & rain water harvesting programme in Deogarh district.

7.7 Area Notified by Cgwb/Sgwa

There are no parts as 'Notified area' by Central Ground Water Authority/ State Ground Water Authority in Deogarh district.

7.8 RECOMMENDATIONS

- 1.** More emphasis be given develop ground water resources of Deogarh district by government departments agencies and public efforts for meeting growing water demands of drinking, irrigation and industries.
- 2.** Ground water abstraction structures (dug wells, dug cum bored wells and bore wells) for irrigational purposes be planned keeping in view safe distance of 200-250 meters to avoid interference.
- 3.** Energisation of existing Ground water abstraction structures (dug wells, dug well cum bored wells and bore wells) for irrigational uses to be done for optimum utilization of ground water resources.
- 4.** Site specific hydrogeological investigations be carried out before digging/drilling groundwater abstraction structures to avoid failures.
- 5.** Measures to tap excess runoff for recharging aquifers by constructing check dams, nala bunding, contour bunding, gully plugs, percolation tanks etc. needed to be regularly be taken up in addition to roof top rainwater harvesting in big building of urban area.

8.0 RAINFALL OF THE DISTRICT AND CLIMATE CONDITION

Rainfall variation is more important for assessing need for irrigation. Majority of the annual rainfall in Deogarh district is caused mainly from south western monsoon, occurring mostly during middle of june to September months. About 2 to 5% of rainfall is also contributed by winter showers occurring in the months of December to February. Average annual rainfall of the district is 1,014.2 millimeters. Whenever the rain fall is less, drought or drought-like situation is created in rain-fed areas thereby causing loss of crops and fall in production. The annual rainfall for all 3 blocks in the years 2021 to 2024 is given in the below table.

8.0 Rainfall of the District and Climate Condition

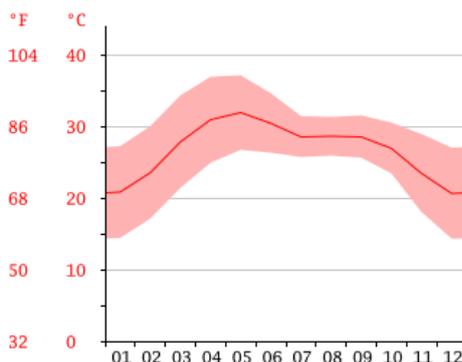
8.1 Annual Rainfall Table-10

Block	Annual Rainfall (in mm.)				
	2020-2021	2021-2022	2022-2023	2023-2024	4 Year average
Barkote	1476.8	1651.7	655.2	1095.8	1219.9
Tileibani	1351.5	1567.3	1109.5	1656.2	1421.1
Reamal	1437.0	1531.6	1414.0	1406.4	1447.3
Grand Total	4265.3	4750.6	3178.7	4158.4	00
Monthly Avg.	118.5	132.0	88.3	115.5	113.6
Annual Avg.	1421.8	1583.5	1059.6	1386.1	1362.8

The Data inputted as per Special relief Commissioner Website.

8.2 Climate

Deograh district experiences tropical monsoon climate with three distinct seasons during the year, namely, oppressive hot summer, moderate winter, high humidity and well distributed monsoonic rainfall. Winter commencing from last week of November till February with maximum temperature of 30.5°C and minimum temperature of 15.5°C. March to June is the summer season with mean maximum temperature of 40.5°C and mean minimum temperature of 24.4°C. Average annual rainfall during the last four years (2012-2015) of the district is 1362.75 millimeters. Minimum average annual rainfall of 655 mm was observed at Barkote block during the year 2013 and maximum rainfall amount 1656.2 mm was observed at Tileibani block during the year 2012. Average annual rainfall in all the 3 (three) district during last four years were below district annual normal rainfall.



9.0 DETAILS OF MINING LEASE OF ROAD METAL IN THE DISTRICT

Table-11

Name of the Tahasil	S.No.	Name of the Quarry Lease	Name of the lessee	Address & Contact number of the Lessee	Mining Lease Grant order No & Date	Area of Mining Lease in (Hc)	Period for Minig Lease		Date of Commencement of Mining Operation	Status (working /Non working/te mp. Working for dispatch etc	captive / Non captive	Obtained Environmental Clearance (yes/No). If yes Letter No with Date of grant of EC	Location of the Minor lease(Longitude/Latitude)	Method of Mining(open cast /under ground)
							From	To						
DEOGARH														
Deogarh	1	Banjari -1 Stone Quarry	Nihar Ranjan Patel	At-Kend eijhuri Po-Barg hat, PS-Real Dist-Deogarh	Data is not available	Kha ta-8 Plot - 140 Kisa m-Pat harchata n Ac-2.00 Ha-0.809	14 .09 .20 22	13 .09 .20 27	Data is not available	Running	Non captive	File No-456190 /11-MINB2/ 12-2023 Dt-13.05.2024	Latitudes- 21°31' 29.87" N to 21 31' 33.06" N. and Longitudes- 84°29' 31.47" E to 84° 29 34.78" E	Open Cast
Deogarh	2	Banjari -3 Stone Quarry	Nihar Ranjan Patel	At-Kend eijhuri Po-Barg hat, PS-Real Dist-Deogarh	Data is not available	Kha ta-8 Plot - 140 Kisa m-Dun guri Ac-2.00 Ha-0.809	26. 04. 20 22	25. 04. 20 27	Data is not available	Running	Non captive	Letter No- EC22B0 01OR1 86061 Dt-27.12.2022	Latitudes- 21° 31 29.90" N to 21° 31' 31.73" N and Longitudes- 84° 29' 25.40" E to 84° 29' 30.73" E.	Open Cast
D	3	Jualibh	Bh	At/P	Da	Kha	Dat	Dat	Data	Runn	No	SEIAA-	Latitud	Ope

Deogarh		Anga Stone Quarry -1	Agabati Prasad Jaiswal	Do-Bindpur, Tileibani, Dist-Deogarh	Data is not available	Khat-125 Plot - 1354 Kism-Pat harchatani Ac-1.87 Ha-0.756	Data is not available	Data is not available	Data is not available	is not available	ing	non captive	SIAIOR IMINI2 80277/ 2022 Dt- 13.07.2022	es-21°32' 13.248 24"N to 21°32' 16.954 80"N and Longitudes 84°32' 29.443 56" E to 84°32' 33.380 16"E.	Open Cast
Deogarh	4	Jualibhanga Stone Quarry -2	Chandraprasad Jaiswal,	Near gopajli temple college road, Deogarh	Data is not available	Khat-125 Plot - 1416 Kism-Pat harchatani Ac-4.00 Ha-1.618	Data is not available	Non-operational	Non captive	Data is not available	Latitude es-21° 32' 06.21" N to 21° 32' 21.24" N and Longitudes 84° 32' 04.56" E to 84° 32' 11.28 "E	Open Cast			
Deogarh	5	Laxmipur Stone Quarry	New Source	New Source	New Source	Khat-23, Plot - 86,102,104, Kism-Malasa dhara Ac-2.29 Ha-0.926	New Source	New Source	New Source	New Source	New Source	Non captive	New Source	Latitude es-21°31' 46.208 41"N To 21°31' 48.788 94"N and Longitudes 84°34' 22.203 81"E to 84°34' 29.875 29"E	Open Cast

Barkote														
Barkote	6	Mahajamunda(D) Stone Quarry	New Source	New Source	New Source	Khata-64 Plot - 300, Kisa m-goda Ac-4.27 Ha-1.728	New Source	New Source	New Source	New Source	Non-Captive	New Source	Latitudes- 21°34' 25.064 04"N To 21°34' 27.997 68"N and Longitudes 84°50' 24.121 68"E to 84°50' 31.947 36"E	Open Cast
Reamal														
Reamal	7	Dimirimunda Stone Quarry	Data is not available	Data is not available	Data is not available	Khata-50 Plot - 315 Kisa m-Dun guri Ac-3.00 Ha-1.21	Data is not available	Data is not available	Data is not available	Non-Operational	Non captive	Data is not available	Latitudes-18° 35' 36.46" N to 18° 35' 39.14" N and Longitudes- 84° 28' 53.33" E to 84° 28' 56.25 "E	Open Cast

R e a m a l	8	Khand adhua n(Kha) Stone quarry	M/ s. Lo gik kar t Ent erp ris es	AT- Chhe ndip ada, P.O/ P.S- Angu l, Dist- Angu l, Odis ha- 7591 24	Da ta is no t av ail ab le	Kha ta- 73 Plot - 636 (P) Kisa m- Dun guri Ac- 4.00 Ha- 1.61 8	Da ta is no t av ail ab le	Da ta is no t av ail ab le	Da ta is no t av ail ab le	Oper ation al	No n cap tive	Da ta is no t av ail ab le	Latitud es- 21°15' 13.017 55"to 21°15' 15.716 78"and Longit udes- 84° 49'11. 22791 "to 84°49' 18.300 04"	Ope n Cas t
R e a m a l	9	Ratanp ur Stone quarry	M/ s. C. R. Sto ne Cr us her	At/P. O- Kund heig ola,P .S- Deo garh , Dist- Deo garh - 7681 09	Da ta is no t av ail ab le	Kha ta- 34 Plot - 284 (P) Kisa m- Pah ad Ac- 10.0 0 Ha- 4.04 6	27. 11. 20 24	26. 11. 20 29	Da ta is no t av ail ab le	Oper ation al	No n cap tive	Da ta is no t av ail ab le	Latitud es- 21° 27'46. 58436 "N to 21° 27'52. 65792 " N and Longit udes- 84° 42"34. 70688 " E to 84° 42'50. 72004 " E	Ope n Cas t

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

Table-12

SL No.	Name of the Tahasil	Name of Source & location	Royalty revenue in last three years (in Rs.)			Total amount in Rupees
			2021-22	2022-23	2023-24	
A1	DEOGARH	Banjari-1 Stone Quarry	Nil	₹ 20,39,544.00	₹ 20,64,996.00	₹ 41,04,540.00
A2		Banjari-3 Stone Quarry	Nil	Nil	Nil	Nil
A3		Jualibhanga Stone Quarry-1	Nil	Nil	₹ 1,70,994.00	₹ 1,70,994.00
A4		Jualibhanga Stone Quarry-2	Nil	Nil	Nil	Nil
A5		Laxmipur Stone Quarry	Nil	Nil	Nil	Nil
B1	BARKOTE	Mahajanmunda(D) Stone quarry	Nil	Nil	Nil	Nil
C1	REAMAL	Dimirimunda Stone Quarry	Nil	Nil	Nil	Nil
C2		Khandadhuan(Kha)Stone quarry	Nil	Nil	Nil	Nil
C3		Ratanpur Stone quarry	Nil	Nil	Nil	Nil

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

Table-13

SL No.	Name of the Tahasil	Name of Source & location	Production in last three years (in Cum)			Total quantity in CUM
			2021-22 MGQ	2022-23 MGQ	2023-24 MGQ	
A1	DEOGARH	Banjari-1 Stone Quarry	5005	5005	5005	15015
A2		Banjari-3 Stone Quarry	Nil	Nil	Nil	Nil
A4		Jualibhanga Stone Quarry-1	Nil	Nil	Nil	Nil
A5		Jualibhanga Stone Quarry-2	Nil	Nil	Nil	Nil
A6		Laxmipur Stone Quarry	Nil	Nil	Nil	Nil
B2	BARKOTE	Mahajanmunda(D) Stone quarry	Nil	Nil	Nil	Nil

C2	REAMAL	Dimirimunda Stone Quarry	1700	1700	1700	5100
C3		Khandadhuan(Kha)Stone quarry	1080	1080	1080	3240
C5		Ratanpur Stone quarry	6300	6300	6300	18900

12. MINERAL MAP OF THE DISTRICT:

Nil

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

Table-14

Sl. No.	Name of the Quarry Lease	Name of the lessee	Address & Contact number of the Lessee	Letter of Intent Grant order No & Date	Area of Mining Lease in (Hc)	Validity of LOI	capti ve/ Non capti ve	Location of the Minor lease(Longit ude/Latitude)
DEOGARH								
1	Banjari-1 Stone Quarry	Nihar Ranjan Patel	At- Kendeijhuri Po- Barghat, PS- Reamal Dist- Deogarh	Data is not availb ale	Khata-8 Plot-140 Kisam- Patharcha tan Ac-2.00 Ha-0.809	14.09. 2022	Non capti ve	Latitudes- 21°31'29.87" N to 21° 31' 33.06"N. and Longitudes- 84°29'31.47" E to 84° 29 34.78"E
2	Banjari-3 Stone Quarry	Nihar Ranjan Patel	At- Kendeijhuri Po- Barghat, PS- Reamal Dist- Deogarh	Data is not availb ale	Khata-8 Plot-140 Kisam- Dunguri Ac-2.00 Ha-0.809	26.04.2 022	Non capti ve	Latitudes- 21° 31' 29.90" N to 21° 31' 31.73" N and Longitudes- 84° 29' 25.40" E to 84° 29' 30.73" E.
3	Jualibhanga Stone Quarry-1	Bhagab ati Prasasd Jaiswal	At/Po- Bindpur, Til eibani, Dist- Deogarh	Data is not availb ale	Khata-125 Plot-1354 Kisam- Patharcha tani Ac-1.87 Ha-0.756	Data is not availbal e	Non capti ve	Latitudes- 21°32'13.248 24"N to 21°32'16.954 80"N and Longitudes 84°32'29.443 56" E to 84°32'33.380 16"E.

4	Jualibhanga Stone Quarry-2	Chandrama prasad jaiswal,	Near gopalji temple college road, Deogarh	Data is not available	Khata-125 Plot-1416 Kisam-Patharcha tani Ac-4.00 Ha-1.618	Data is not available	Non captive	Latitudes- 21° 32' 06.21" N to 21° 32' 21.24" N and Longitudes 84° 32' 04.56"E to 84° 32' 11.28" E
5	Laxmipur Stone Quarry	New Source	New Source	New Source	Khata-23, Plot-86,102,104, Kisam-Malasadharana Ac-2.29 Ha-0.926	New Source	Non captive	Latitudes- 21°31'46.208 41"N To 21°31'48.788 94"N and Longitudes 84°34'22.203 81"E to 84°34'29.875 29"E
BARKOTE								
6	Mahajanmunda(D) Stone Quarry	New Source	New Source	New Source	Khata-64 Plot-300, Kisam-goda Ac-4.27 Ha-1.728	New Source	Non captive	Latitudes- 21°34'25.064 04"N To 21°34'27.997 68"N and Longitudes 84°50'24.121 68"E to 84°50'31.947 36"E
REAMAL								
7	Dimirimunda Stone Quarry	Data is not available	Data is not available	Data is not available	Khata- 50 Plot-315 Kisam-Dunguri Ac- 3.00 Ha-1.21	Data is not available	Non captive	Latitudes-18° 35' 36.46" N to 18° 35' 39.14" N and Longitudes- 84° 28' 53.33" E to 84° 28' 56.25" E

8	Khandadhuan(Kha)Stone quarry	M/s. Logikkart Enterprises	AT-Chhendipada, P.O/P.S-Angul, Dist-Angul, Odisha-759124	Data is not available	Khata- 73 Plot- 636(P) Kisam-Dunguri Ac- 4.00 Ha-1.618	Data is not available	Non captive	Latitudes- 21°15'13.017 55"to 21°15'15.716 78"and Longitudes- 84° 49'11.22791"to 84°49'18.300 04"
9	Ratanpur Stone quarry	M/s. C.R. Stone Crusher	At/P.O-Kundheigola, P.S-Deogarh, Dist-Deogarh-768109	Data is not available	Khata- 34 Plot- 284(P) Kisam-Pahad Ac- 10.00 Ha-4.046	27.11.2024	Non captive	Latitudes- 21° 27'46.58436" N to 21° 27'52.65792" N and Longitudes- 84° 42'34.70688" E to 84° 42'50.72004" E

14. TOTAL MINERAL RESERVE AVAILABLE IN THE DISTRICT

Total mineral reserve of Road metal will access after detail study or grant of potential area, which may investigate as per details below.

- (i) Blocks were identified based on geological studies through field observation.
- (ii) Mineable resource was calculated by considering detail prospecting.
- (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.

Summary of Identified Mineral Potential: Table-15

Name of the Tahasil	Name of the Quarry Lease	Area of Mining Lease in (Hc)	Geological Reserve (MT/Cums)	Mineable Reserve (MT/Ccums)
DEOGARH				
Deogarh	Banjari-1 Stone Quarry	Khata-8 Plot-140 Kisam- Patharchatan Ac-2.00 Ha-0.809	GR-102789	MR-40230
Deogarh	Banjari-3 Stone Quarry	Khata-8 Plot-140 Kisam-Dunguri Ac-2.00 Ha-0.809	GR-68411	MR-28210
Deogarh	Jualibhanga Stone Quarry-1	Khata-125 Plot-1354 Kisam- Patharchatani Ac-1.87 Ha-0.756	GR-141599.5	MR-62090
Deogarh	Jualibhanga Stone Quarry-2	Khata-125 Plot-1416 Kisam- Patharchatani Ac-4.00 Ha-1.618	GR-229878	MR-113280
Deogarh	Laxmipur Stone Quarry	Khata-23, Plot-86,102,104, Kisam- Malasadharana Ac-2.29 Ha-0.926	New Source	New Source
Barkote				
Barkote	Mahajanmunda(D) Stone Quarry	Khata-64 Plot-300, Kisam-goda Ac-4.27 Ha-1.728	New Source	New Source
Reamal				
Reamal	Dimirimunda Stone Quarry	Khata- 50 Plot- 315 Kisam- Dunguri Ac- 3.00 Ha-1.21	GR-200812	MR-97740

Reamal	Khandadhuan(Kha)Stone quarry	Khata- 73 Plot-636(P) Kisam- Dunguri Ac- 4.00 Ha-1.618	GR-276453.1	MR-172298
Reamal	Ratanpur Stone quarry	Khata- 34 Plot-284(P) Kisam- Pahad Ac- 10.00 Ha-4.046	GR-388332	MR-312781.7

15. QUALITY/GRADE OF MINERAL AVAILABLE IN THE DISTRICT

Road metal found in District: -

Road metal of the District is very much suitable for used various construction purposes.

16. Use of Mineral:

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.

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.

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.

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

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 Granitic rocks are the main raw minerals for the above activities and considering the last three years actual production of Deogarh with respect to the requirement of the state has a huge gap..

18. MAP OF EXISTING MINING LEASES IN THE DISTRICT:

Enclosed as Plate-I

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

Attached in Annexure-VI

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

There is no Eco sensitive zone is located within the District. Near by District Debrigarh wild life sanctuary and Hadgarh Wildlife Sanctuary.

21. IMPACTS OF MINING ON ENVIRONMENT:

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. 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.

Transportation sources:

Transpiration 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 are 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."

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

- Water sprinkling on haul road, loading and unloading points.
- Plantation along the safety zone and dump area.
- Providing dust masks to workers.
- Regular monitoring of ambient air quality.
- Provision of air conditioned cabin of Excavators and Dumpers.
- Regular and proper maintenance of working equipments.
- Periodic medical examination of the workers and organize medical camp in the area.
- Use Milli Second Delay Detonator in blasting operation.
- Provisions of ear plug to the workers.
- Regular training program to the mine workers and operators.

23. RECLAMATION OF MINED OUT AREA

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:

- i. **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 in conformity with a prior land use. Reclamation always may not be a single-phase operation.
- ii. **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.
- iii. **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.

iv. 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:

a. 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:

Mining activity because of the very nature of the operation, complexity of the systems, procedures and methods always involves some amount of hazards. Hazard identification and risk analysis is carried for identification of undesirable events that can lead to a hazard, the analysis of hazard mechanism by which this undesirable event could occur and usually the estimation of extent, magnitude and likelihood of harmful effects. The activities which can cause high risk related to face stability and the person blasting the shots. It was observed that on a working face of the mine, there were large cracks and unsupported rocks were present, which can lead to a serious hazard and injure workers engaged in loading operation and machineries because of rock falls or slides. This type of condition turns out because improper dressing of the bench and improper supervision. To avoid the hazards due to fall of rocks the face must be examined, made suitable for working and the remedial measures must be taken to make it safe if there is any doubt that a collapse could take place. Working of the face should be in the direction considering the geology of the area such that face and quarry side remain stable. Another major risk identified in mines is due to the firing of explosive by an unqualified person. In the mines there is problem of fly rocks and the village is located close to the mine and so it is rated high as it can affect many people. Explosives by nature have the potential for the most serious and catastrophic accident. Planning of round of shots, holes correctly drilled, direction logged, weight of explosive suitable for good fragmentation are the few of the steps necessary to ensure its safe use and if the shots are not properly designed can result in misfires, early ignition and flying rocks. No person is allowed to use explosives without being properly trained in its handling. In the mine a large number of heavy vehicles were in operation and the roads were not proper for haulage purpose. The haulage roads were not even and were not wide enough for the crossing purpose and hence the chances of hazards are very high. The main hazards arising from the use of large earth moving vehicles are incompetent drivers, brake failure, lack of all-around visibility from the driver position, vehicle movements particularly reversing, roll over, and maintenance. Those most at risk are the driver and pedestrians likely to be struck by the vehicle, and drivers of smaller vehicles, which cannot be seen from the cabs of large vehicles. Edge protection is always necessary to prevent inadvertent movement over the edge of roadway or a bench. Seatbelt will protect driver in case of roll. Good maintenance and regular testing are necessary to

reduce the possibility of brake failure. Access to the vehicles should always be restricted to those people necessary for the work in hand. The use of personal protective equipment and proper arrangements is essential to check if the person is wearing protective equipment or not. The personal protective equipment includes helmet, non-skid safety boots, safety glasses, earmuffs etc. The required personal protective equipment should be provided and used in a manner that protects the individual from injury. Few minor injuries which can be prevented are slip, trip, or fall hazards; hazards due to rock falls and collapse of unstable rocks, atmosphere containing toxic or combustible gases; protects from chemical or hazardous material etc. A disaster management plan should be prepared for taking care of for any disaster. Other risk which are included in this category are noise, as it occurs and it can lead to permanent disability. There are problems related to road traffic in and out issuers; inappropriate exposure of moving machines; mechanical failure and because of large number of moving trucks and dumpers there is large quantity of dust present in roadways which affects the operators and can lead to accidents causing injury. They are in acceptable range because of precautions measures taken but no step is taken it can cause hazard hence steps should be taken to reduce the hazards such as for dust suppression system should be installed. Other problems like occurrence of lots of mosquitoes in the area due to unhygienic conditions which affect the human health causing malaria, dengue etc. and causing a person to be hospitalized.

Disaster in the mines like fires, explosions, entrapments, and inundations can occur any time, so emergency preparedness is a must. The Disaster management plan and risk assessment in the mines will include all sorts of above-mentioned emergency and the extent that this plan will be implemented will depend on the nature and scope of the emergency. The basic purpose of Disaster management plan and risk assessment to ensure that mine rescue and recovery activities are conducted safely for rescuer and survivors. According to MMR act 1961 a standard operating procedure should be drawn for involvement different category of staff and officers. The SOP should be updated periodically to reduce the chaos and response to the emergency should be quick and smooth. The responsible person should be familiar with his responsibility during the mock drills. One or two standby should be there to replace the person in Emergency situation. Rescue operations should not include the survivors for any assistance.

First Information of Disaster / Emergency should go to the attendance clerk on duty. Duties of attendance Clerk (Emergency Siren) the attendance clerk or other designated person should on getting information of major accident, sound a hooter or a siren immediately declaring a state of emergency at the mine and then to contact the manager and on his advice to call key personnel using the information listed in the Emergency Organization Chart. It is important that all telephone calls are recorded in a telephone log book. Duties of Other Officials should be displayed and handed over to all concerned. Copy the same should be kept at Manager's Office for ready reference. Establishment of Control Room at Unit Level, Area Level and Company Level is essential. Control Room should keep the contact information about –

- Company Manager
- Company owner/ Administrative officer.
- District Administration
- Govt. Hospitals in Nearby Localities,
- Private Nursing Homes of Localities

Attendance roaster and duty charge register should be properly maintained so the record of missing people can be obtained.

25. DETAILS OF THE OCCUPATIONAL HELTH ISSUE IN THE DISTRICT:

The persons employed in the mines are exposed to a number of hazards at work which adversely affect their health. Some of the important ones are dust, noise, heat, humidity, vibration etc. In recent times, there has been increasing awareness among mining industry and the workers about occupational diseases such as Coal Worker's Pneumoconiosis, Silicosis, Manganese Poisoning, Hearing Impairment etc. caused by exposure to health hazards at work. Almost all occupational diseases are known to cause permanent disablement and there is no effective treatment. However, most of the occupational diseases can be prevented by adopting proper occupational health measures and engineering control on airborne dust at workplace.

Following diseases have been notified as the diseases connected with mining operations for the purpose of sub-section (1) of Section 25 of the Mines Act, 1952:

S.R.O. 1306 dated the 21st July, 1952

1. Silicosis (No Silicosis cases found in the District Deogarh)
2. Tuberculosis

Total Number of TB cases in Deogarh District of last 5 years

Table-16

Year	No. of Cases notified/ detected	No. of TB cases under Treatment.
2018-19	No specific data available	No specific data available
2019-20	No specific data available	No specific data available
2020-21	No specific data available	No specific data available
2021-22	No specific data available	No specific data available
2022-23	No specific data available	No specific data available

Deogarh identified among 20 districts with high TB mortality

2024–25* Part of "100-Day Intensified TB Campaign"; 60% of vulnerable population mapped & screened

Statewide (20 districts): 4,668 TB cases diagnosed (Deogarh included but not individually stated)

S.R. O. 2521 dated the 26th June, 1986

Cancer of lung or the stomach or the pleura and peritoneum (i.e. mesothelioma)

25 S.O. 399(E) dated 21st February, 2011

1. Noise Induced Hearing Loss
2. Contact Dermatitis caused by direct contact with chemical.
3. Pathological manifestations due to radium or radioactive substances

System of Detection of Occupational Diseases in Mines In order to detect occupational diseases the industry is required to conduct medical examinations and health surveillance of workers as per the provisions of Mines Act. The present efforts of mines management are concentrated on detection of silicosis, Pneumoconiosis and other notified diseases. Very little attention is paid to other occupational diseases. The essential features of health surveillance programme required to be carried out in mines are:

- (a) Initial Medical Examination of persons to be employed in mines.
- (b) Periodic Medical Examination once every five years. General physical examination, chest radiographs, lung function tests and audiometry.
- (c) Classification of chest radiographs of workers as per ILO Classification.

- (d) Medical examination within one year of superannuation. Evaluation of all cases of suspected pneumoconiosis by Pneumoconiosis Medical Board.
- (f) Maintenance of medical records till the person is in service and 10 years thereafter. The cases of silicosis detected during health surveillance programme are referred to Pneumoconiosis Medical Board of the mining companies for evaluation and certification. If certified, the case is notified to the enforcement authority and evaluated for disability and payment of compensation. Many cases of silicosis and other pneumoconiosis go undetected and a large number of cases of silicosis are misdiagnosed due to lack of training of medical professionals.

26. PLANTATION GREEN BELT DEVELOPMENT IN RESPECT OF LEASE ALREADY GRANTED IN THE DISTRICT:

During mining operation green belt development through plantation is most important for environment safe guard, which should be supervision by mining department. Different type of species should be planted near lease periphery to keep environment clean at post mining period through reclamation. Where specific usefulness of land could be decided, afforestation is normally planned through the site could have been considered for better possibilities of land use.

27. CONCLUSION:

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 regularly. The insitu mining activity in any area is on one hand bring revenue and employment (Direct and indirect) and on other hand if not done properly potential pollution and ecological imbalance increases, the ability of the ecosystem can also be reduced. Particulate matter transported by the wind as a result of excavations, blasting, transportation of materials, heavy equipment used raise these particulate levels; and Gas emissions from the combustion of fuels in stationary and mobile sources, explosions, and mineral processing. All these activities indirectly affected the biodiversity of area. Larger potential and smaller areas have been identified in Deogarh District on the basis of geological study carried out during field observation, which can be considered for mining concession after all the parameters for statutory clearances are verified by consulting with concerned authorities.

Annexure-V

Sl. No.	Name of the Tahasil	Name of the Quarry Lease	Area of Mining Lease in (Hc)	Distance (in KM) from PA/BR/WC/ Forest	Mining leases within 500 meters (if yes cluster area)	Total excavation in Tonnes /Annum considering digging depth max as 3 meters	Mineral to be mined in tonnes (Stone)	Existing/ Proposed
1	2	3	4	5	6	7	8	9
DEOGARH								
1	DEOGARH	Banjari-1 Stone Quarry	Khata-8 Plot-140 Kisam-Patharchatan Ac-2.00 Ha-0.809	R.F-21 KM	NO	15015	STONE	Existing
2	DEOGARH	Banjari-3 Stone Quarry	Khata-8 Plot-140 Kisam-Dunguri Ac-2.00 Ha-0.809	R.F-21 KM	NO	Nil	STONE	Existing
3	DEOGARH	Jualibhanga Stone Quarry-1	Khata-125 Plot-1354 Kisam-Patharchatani Ac-1.87 Ha-0.756	R.F-26 KM	NO	Nil	STONE	Existing
4	DEOGARH	Jualibhanga Stone Quarry-2	Khata-125 Plot-1416 Kisam-Patharchatani Ac-4.00 Ha-1.618	R.F-25 KM	NO	Nil	STONE	Existing
5	DEOGARH	Laxmipur Stone Quarry	Khata-23, Plot-86,102,104, Kisam-Malasadharana Ac-2.29 Ha-0.926	R.F-3 KM	NO	Nil	STONE	New Source
BARKOTE								
6	BARKOTE	Mahajanmunda(D) stone Quarry	Khata-64 Plot-300, Kisam-goda Ac-4.27 Ha-1.728	R.F-5 KM	NO	Nil	STONE	New Source

REAMAL								
7	REAMAL	Dimirimunda Stone Quarry	Khata- 50 Plot-315 Kisam- Dunguri Ac- 3.00 Ha-1.21	R.F-45 KM	NO	5100	STONE	Existing
8	REAMAL	Khandadhuan(Kha)Stone quarry	Khata- 73 Plot-636(P) Kisam- Dunguri Ac- 4.00 Ha-1.618	R.F-62 KM	NO	3240	STONE	Existing
9	REAMAL	Ratanpur Stone quarry	Khata- 34 Plot-284(P) Kisam- Pahad Ac- 10.00 Ha-4.046	R.F-43 KM	NO	18900	STONE	Existing

Cluster & Contiguous Cluster details**Cluster:**

Stone Source Name	Tahasil	Cluster No	Lease No.	Location (Patharchatan, Chatan, Dangari, Dunguri, Parbata)	Village	Area (in Hectares)	Total Excavation (Cum)
No contiguous Cluster Situation available in respect of Deogarh District							

Contiguous Cluster Details

Stone Source Name	Contiguous Cluster No.	Cluster No.	Number of leases in the cluster	Location (Pathara Chatana, Chatana, Dangari, Dungri, Parbata)	Distance between clusters	Village	Area of cluster (in Ha.)	Total excavation (Ton)
No contiguous Cluster Situation available in respect of Deogarh District								

Transportation Routes for individual leases and leases in Cluster.

Name of the Tahasil	Name of the Stone source	Lease No.	Transportation Route number	Whether runs on Govt. or Private Land	Details of village/Forest area/Agricultural land through which the approach road runs if any	Number of tippers / day of lease	Number of tippers /day of all the lease on route	Length of Route in K.M	Type of Road (Black Topped/ unpaved)	Recommendation for road (Black Topped/ unpaved)	The road will be constructed by Government /Lease Owner	Route map and location
1	2	3	4	5	6	7	8	9	10	11	12	13
Deogarh Tahasil												
Deogarh	Banjari-1 Stone Quarry	Data is not available	Village Road	Govt. Land	Banjari	5	9	6	Unpaved	Unpaved	Lease Owner	Map Attached in Plate-2
Deogarh	Banjari-3 Stone Quarry	Data is not available	Village Road	Govt. Land	Banjari	4	6	3	Unpaved	Unpaved	Lease Owner	Map Attached in Plate-2
Deogarh	Jualibhanga Stone Quarry-1	Data is not available	Village Road	Govt. Land	Jualibhanga	4	8	3	Unpaved	Unpaved	Lease Owner	Map Attached in Plate-2
Deogarh	Jualibhanga Stone Quarry-2	Data is not available	Village Road	Govt. Land	Jualibhanga	4	8	3	Unpaved	Unpaved	Lease Owner	Map Attached in Plate-2
Deogarh	Laxmipur Stone Quarry	Data is not available	Village Road	Govt. Land	Laxmipur	4	8	3	Unpaved	Unpaved	Lease Owner	Map Attached in Plate-2
Barkote Tahasil												
Barkote	Mahajanmunda-D Stone Quarry	Data is not available	Village Road	Govt. Land	Mahajanmunda	4	9	5	Unpaved	Unpaved	Lease Owner	Map Attached in Plate-2
Reamal Tahasil												
Reamal	Dimirimunda Stone Quarry	Data is not available	Village Road	Govt. Land	Dimirimunda	6	12	5	Unpaved	Unpaved	Lease Owner	Map Attached in Plate-2
Reamal	Khandadhuan(Kha)Stone quarry	Data is not available	Village Road	Govt. Land	Khandadhuan	5	9	7	Unpaved	Unpaved	Lease Owner	Map Attached

												in Plate-2
Reamal	Ratanpur Stone quarry	Data is not available	Village Road	Govt. Land	Ratanpur	5	9	7	Unpaved	Unpaved	Lease Owner	Map Attached in Plate-2

Transportation Routes for individual leases and leases in Cluster.

Cluster No.	Transportation Route number	Number of tippers / day of Cluster	Number of tippers / day of all the Cluster on route	Length of Route in K.M	Type of Road (Black Topped/ unpaved)	Recommendation for road (Black Topped/ unpaved)	The road will be constructed by Government /Lease Owner	Route map and location
No Cluster Situation available in respect of Deogarh District.								

Certification Regarding Preparation of DSR

The District Survey Report for Stone (Minor Mineral) in respect of Deogarh District in accordance with Appendix-X, Para-7 (iii) (a) of S.O. 3611(E) dt. 25.07.2018 of Ministry of Environment, Forest and Climate Change, New Delhi, Enforcement & Monitoring Guideline for Sand Mining-2020 and in compliance with the orders of Hon'ble Supreme Court dt. 10.11.2021 in connection with C.A Nos. 3661-3662 of 2020. Before preparation of this report, a survey has been conducted by District Environment Impact Assessment Authority (DEIAA) with the assistance of Irrigation Department, Forest Department, Public Works Department, Mining Department, Ground Water Boards, Remote Sensing Department, Mining Departments. The DSR is being submitted to SEIAA, Odisha, Bhubaneswar for necessary evaluation and approval.

**S.D.O, Irrigation Division,
Deogarh**

**Regional officer,
OSPCB, Deogarh**

**Mining Officer,
Deogarh Circle, Deogarh**

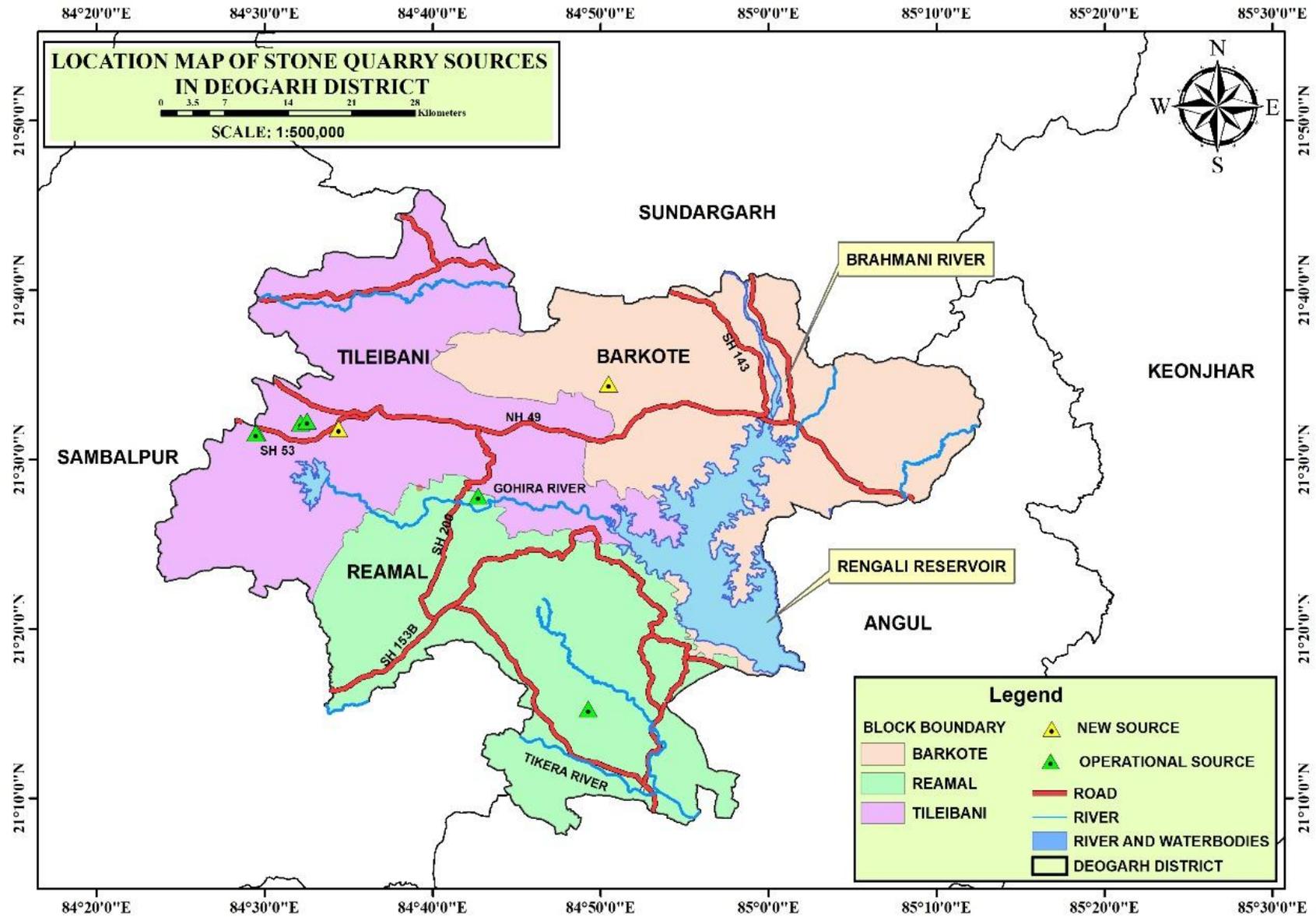
**Deputy Director of Mines,
Deogarh**

**Sub-Collector, Deogarh -Cum,
Sub-Divisional Committee, Deogarh,**

**Divisional Forest Officer,
Deogarh**

**Superintending Engineer,Irrigation Division
Deogarh**

**Collector & Chairman,
Deogarh**



TRANSPORTING ROUTE MAP OF DEOGARH DISTRICT

PLATE -2

