



DISTRICT SURVEY REPORT (DSR)
OF
ANGUL DISTRICT, ODISHA
FOR
RIVER SAND

**(FOR PLANNING & EXPLOITING OF MINOR
MINERAL RESOURCES)**

ODISHA



ANGUL



As per Notification No. S.O. 3611(E) New Delhi,
25th July, 2018

**MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE
(MoEF & CC)**

COLLECTORATE, ANGUL



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PREAMBLE

Odisha is renowned for its rich mineral resources, with a diverse array of both major and minor minerals found throughout the state. Angul district, located in the central part of Odisha, is widely recognized for its substantial contribution to the state's mineral and industrial landscape. Rich in natural resources, the district possesses a diverse range of minerals that play an essential role in Odisha's economic development. Its geological formations are marked by extensive deposits of coal and other key minerals, making Angul one of the state's major resource hubs. With its strategic location and abundant mineral wealth, Angul continues to be one of the essential core for mining, energy production, and related industrial activities in Odisha.

In compliance to the notification issued by the Ministry of Environment and Forest and Climate Change Notification no. S.O.3611 (E) NEW DELHI dated 25-07-2018 the preparation of district survey report of river sand mining has been prepared in accordance with Clause II of Appendix X of the notification. Every effort has been made to cover river sand mining locations, future potential areas and overview of sand mining activities in the district with all its relevant features pertaining to geology and mineral wealth. This report will act as a compendium of available mineral resources, geological set up, environmental and ecological set up of the district and based on data of various departments like Revenue, Water Resources, Forest, Geology and Mining in the district as well as statistical data uploaded by various state Government departments for preparation for district survey report. The main purpose of preparation of District Survey Report is to identify the mineral resources and developing the mining activities along with other relevant data of the district.

The District Survey Report (DSR) for sand in Angul district has been prepared to provide a scientific and systematic assessment of the district's sand resources. Angul, located in central Odisha, is characterized by its diverse geomorphology and river systems that contribute to the formation of sand deposits at various locations. This report aims to support sustainable mining practices by identifying potential sand sources, evaluating their environmental impact, and ensuring compliance with regulatory guidelines. The DSR serves as a vital tool for effective decision-making, ensuring the responsible extraction, management, and long-term sustainability of sand resources within the district.

1. INTRODUCTION:

The district of Angul situated at the heart of Odisha was a part of Undivided Dhenkanal district till early March 1993, but for the administrative convenience, Dhenkanal District was divided into two parts i.e. Dhenkanal and Angul vide State Government Notification No. DRC-44/93/14218/R. dated 27 March 1993. Angul District came into existence as a separate district on April 1, 1993. The district is surrounded by Cuttack & Dhenkanal on the east, Sambalpur & Deogarh on the west, Sundargarh & Keonjhar on the north and Phulbani on the south. Covering an area of 6232 sq.km, Angul District is located at Latitude 20° 31' to 21° 41' North to 84° 16' to 85° 23' East Longitude. The altitude of this place is 564 to 1187 mt. The district is abundant with natural resources. Angul, The district headquarters is about 150 kilometers (93 mi) from the state capital Bhubaneswar.

The name "Angul" is believed to be derived from the Odia word "Anugul", which has a few possible interpretations.

"Anu" means "inside" and "gul" means "cavity" or "hollow". Some believe it's derived from "Antargarh", meaning "inner fort". The exact origin of the name "Angul" is unclear, but it's thought to be linked to the region's geographical features or historical significance.

To ensure better administrative control, Angul district has been divided into four sub divisions: Angul, Athmallik, Pallahara, Talcher, encompassing a total of 8 Tahasil/blocks. This initiative reflects a commitment to decentralization and empowers local leaders to address the unique challenges faced by their areas.

Table-1
Blocks/Tahasils of Angul District

NAME OF DISTRICT	NAME OF THE SUB-DIVISION	NAME OF THE BLOCK	NAME OF THE TAHASIL	NO. OF R.I. CIRCLE	NO. OF VILLAGE
Angul	Angul	Angul	Angul	9	230
		Banarpal	Banarpal	5	156
		Chhendipada	Chhendipada	7	184
	Athamallik	Athamallik	Athamallik	10	351
		Kishorenagar	Kishorenagar	8	251
	Talcher	Talcher	Talcher	4	205
		Kaniha	Kaniha	5	234
	Pallahara	Pallahara	Pallahara	7	319
TOTAL	4	8	8	55	1930

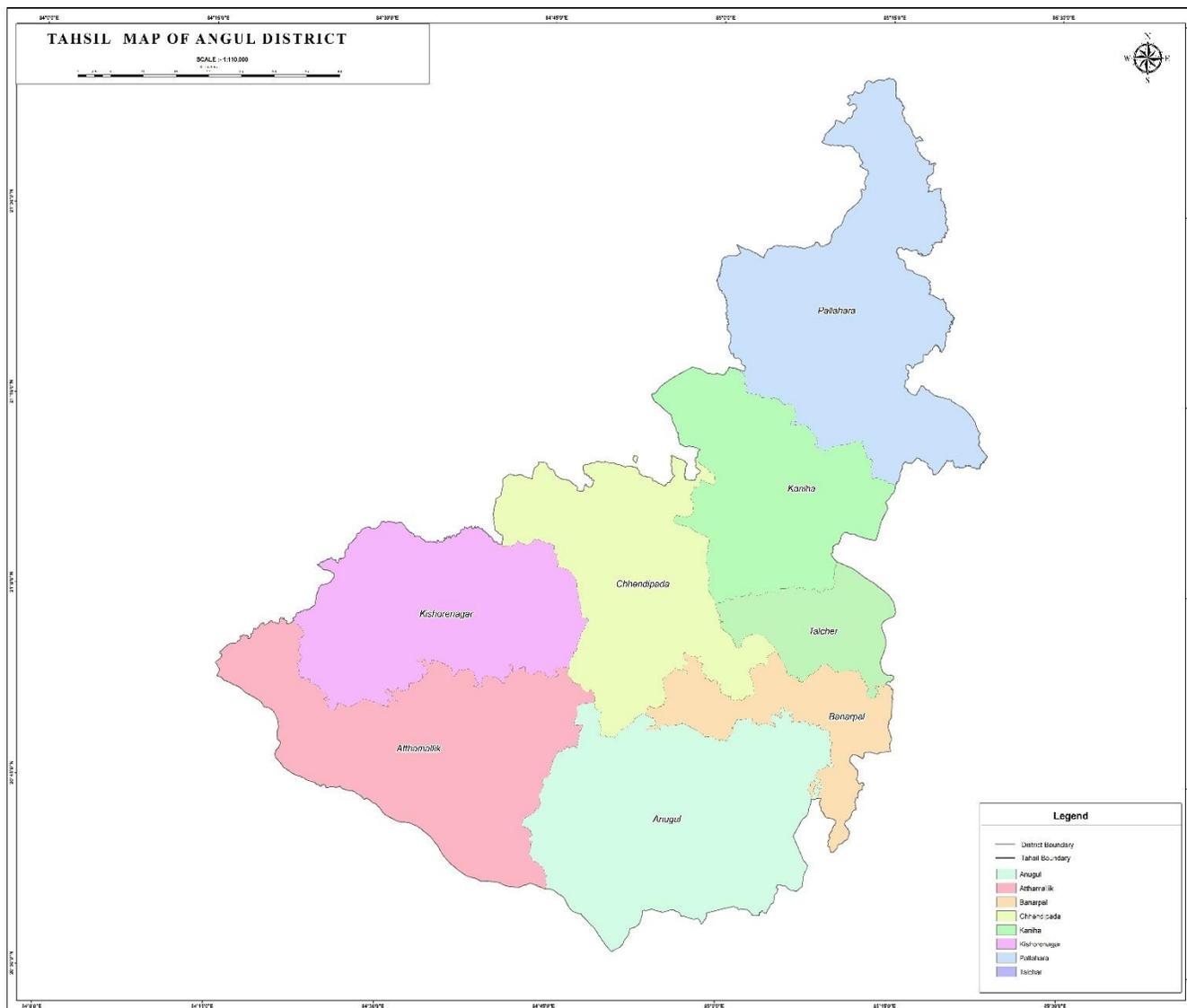


Fig 1: Tahasil Map of Angul District

Angul district has a well-developed transport and communication network that supports both local and regional connectivity. Road transport is the primary mode, with highways and regular bus services linking Angul to nearby towns and major cities across Odisha. The district is also served by an important railway network, providing direct connections to key industrial and urban centres. In addition, modern communication systems—including mobile networks, internet services, and postal facilities—ensure efficient communication across the district.

Table-2
Road/Communication Details

Communication	Units
Railway route length	102.165 Km
No of Rly stations and PH	13
Forest road	449.53 Km
National Highway	264.04 Km
State Highway	177.38 Km
Major district roads	30.90 Km
Other dist roads	1117.44 Km
Village roads	2425.23 Km
Inter village roads	2032.16 Km
Intra village roads	2359.83 Km

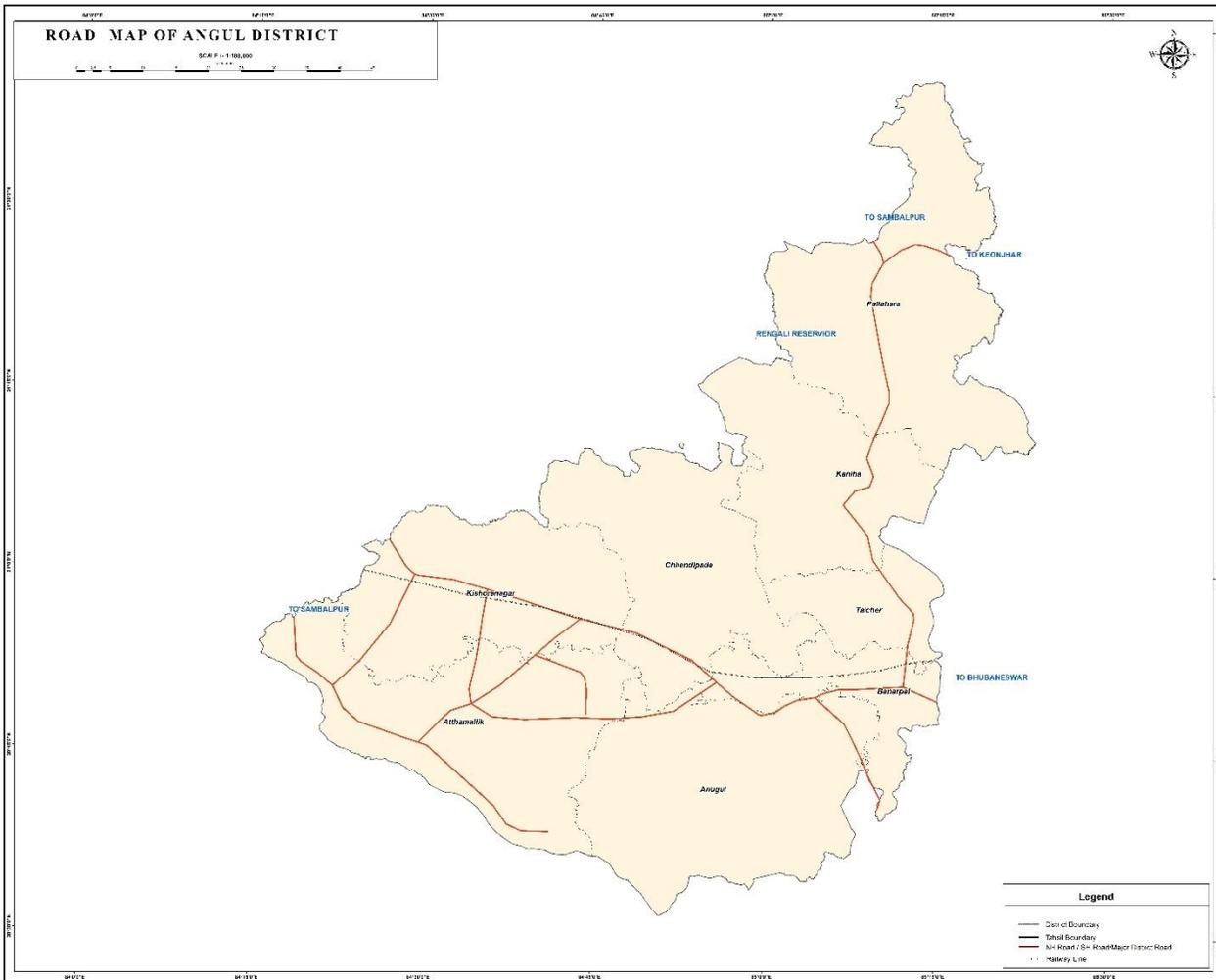


Fig2: Road Map of Angul District

Angul district in Odisha, India, has a tropical climate with three main seasons: summer, monsoon, and winter. During Summer Season it is Hot and humid, monsoons receive significant rainfall and winters are relatively cool and dry.

The climate of Angul district is suitable for agriculture, with the region being predominantly agrarian. However, the district is also prone to extreme weather events like heatwaves and cyclones.

Angul district's economy is driven by a mix of industries, agriculture, and natural resources. Angul is home to several major industries, including – National Aluminium Company Limited (NALCO): One of India's largest aluminum producers. Mahanadi Coalfields Limited (MCL): A major coal producer in India. National Thermal Power Corporation (NTPC): A leading power generation company. Jindal Steel and Power Limited (JSPL): A prominent steel and power producer. Agriculture: Agriculture is a significant contributor to the district's economy, with crops like paddy, wheat, and pulses being major produce. Coal mining: Angul district has significant coal reserves, with the Talcher and Brahmani Valley coalfields being among the largest in India. Power generation: The district has several power plants, including thermal and hydroelectric power plants. Small-scale industries: The district also has a thriving network of small-scale and ancillary industries, providing employment and growth opportunities. Handicrafts and cottage industries: The district is known for its handicrafts, including Pattachitra paintings, stone carvings, and Dhokra metal crafts.

2. OVERVIEW OF MINING ACTIVITIES IN THE DISTRICT:

Angul district is one of India's major coal-mining regions, dominated by the Talcher Coalfield, which produces nearly 100 MMT of coal annually through mostly open-cast mines operated by Mahanadi Coalfields Ltd. Besides coal, the district has minor deposits of chromite, graphite, manganese, mica, quartz and laterite, though these play a smaller role. The availability of coal has driven significant industrial growth, including steel, aluminium, and thermal power plants. Mining has also created environmental pressures involving forest diversion, land degradation, and water contamination, leading to the establishment of District Mineral Foundation (DMF) mechanisms to support affected communities. Angul continues to expand mining operations, with new coal blocks and minor mineral sources being developed, making mining a central economic activity but also a key environmental and social concern for the district.

Apart from this, Angul district is enriched with many valuable economic minerals like kyanite, graphite, fireclay, china clay, precious and semi-precious stones, dimension and decorative stones etc.

Coal:

Angul district occupies a significant position in the mineral map of India because of its vast resources of coal in the Talcher coalfield. A total reserve of 50,406 million tonnes of coal of all categories has been estimated in the district in Talcher coalfield. The Karaharbari and Barakar formations belonging to Damuda series are coal bearing. Coal produced in this area is mostly used for power generation purpose.

Fireclay:

Fireclay occurs sporadically within a stretch of 15 sq. km area in and around Badaganduri, Kansamunda and Telisinga villages of Kaniha Block, Angul district. In Talcher Lower Gondwana basin, the fireclay beds usually overly the coal seams. Fireclay also occurs in Handapa area around Kakarpani, Ichhapur villages. The total fireclay resource of the district has been estimated at 1.22 million tonnes. This fireclay contains Lower Gondwana plant fossils like Glossopteris and Gangompteris.

Kyanite:

Kyanite occurrences are reported around Magarmuhan and Bankoli villages of Pallahara sub-division. In Magarmuhan, Kyanite occurs in association with quartzite-kyanite-schist and quartz-

chlorite-kyanite schist extending over a length 1.5 km with an average width of 5 m. A reserve of 6000 tonnes of Kyanite has been inferred upto a depth of 1.5 m with Al₂O₃ content varying from 19.02% to 53.81% and silica content varying from 32.84% to 54.07%.

Graphite:

Incidence of graphite are recorded in the khondalite suite of rocks within a 25 km long and 10 km wide belt extending in NW-SE direction between Dondatopa and Patharkupa of Athmallik sub-division. The graphite occurs as flakes and disseminations. The important locations are Kamalpur, Dandatopa, Bhuasuninali, Adeswar, Girida, Akharkata, Sanrohila, Lanchi, Govindapur, Polamahal, Siariamalia, Cherkhandi, Karadagadia, Dhauragoth, Brahmanidei and Padmapokhari. Graphite occurrence near Dandatopa is high grade and pocket type where the F.C. content varies between 54% to 77%. In the remaining areas, graphite occurs as disseminations and flakes in khondalites with F.C. content ranging from 5% to 15%. Besides the above, occurrences of graphite are reported around Badakantakul, Kanja and Talisara in Angul sub-division.

China clay:

China clay occurs in Panduripathar area of Athmallik sub-division. It extends over a strike length of 250 m with an average width of 150 m.

Precious and Semi-Precious Stones:

Garnet (pink, violet, red and honey yellow varieties), red corundum, moonstone, blue Kyanite etc. have been reported in Nuagaon, Parhang, Burubura, Kulad, Karanpal area of the district.

Manganese Ore:

Floats of Pyrolusite and psillomelane are strewn over the ground near Teleipathar, Pathartaila and Akharkata village

Decorative and Dimension stone:

Granite, granite-gneiss, porphyritic granite gneiss and charnockites exposed between Boinda and Athmallik along the roadside are suitable for decorative and dimension stone. 4800 cu.m of decorative and dimension stone has been estimated in Govinda Panasahi and Durgapur Panasahi.

Other than the above-mentioned minerals, minor minerals such as river sand, laterite slabs, building stone/black stone/road metals, morrum, brick earth etc. are also available in the district.

In the district of Angul, there are ten working mines and two non-working coal mines. Besides, one sand and one quartz mines are also operating in this district. Detailed of the working/non-working mines are given below.

Table-3
List of Working Mines

Sl. No.	Name of working mines	Mineral	Area (in sq. km)
1	Talcher Colliery	Coal	11.4
2	Nandira Colliery	Coal	3.70
3	Jagannath Colliery	Coal	5.12
4	Bharatpur OCP	Coal	17.67
5	Anata OCP	Coal	5.35
6	Lingaraj	Coal	12.48
7	Balaram OCP	Coal	11.17
8	Hingula OCP	Coal	10.64
9	Chhendipada OCP	Coal	0.24
10	Bhubaneswari	Coal	6.88
11	Mandapal Sand mine for stowing	Sand	0.18

Name of the non-working Mines:

- | | |
|-----------------------------------|----------|
| 1. Deulabera Colliery | Coal |
| 2. Handidhua Colliery | Coal |
| 3. Kakudi & Kishoripal Sand Mines | Sand |
| 4. Bilinga/Bikser Sand Mines | Sand |
| 5. Kandapal Sand Mines | Sand |
| 6. Telisinga F.C. Mines | Fireclay |

Further, Angul District is self-sufficient in its minor mineral resources. The district boasts a total of 45 sand sources including 12 currently in operation, 11 non-operational and 22 new sources. The abundant availability of these resources supports local infrastructure development and contributes to the district's economic sustainability.

3. LIST OF QUARRY LEASES IN THE DISTRICT:

SI No	NAME OF THE MINERAL	NAME OF THE LESSEE	ADDRES S & CONTA CT NO OF LESSEE	MINING LEASE GRANT ORDER NO. AND DATE	ARE A OF MINI NG LEAS E (ha)	PERIOD OF MINING LEASE (INITIAL)		PERIOD OF MININ G LEASE (1 ST /2 ^N D ... RENEW AL)	DATE OF COMMEN CEMENT OF MINING OPERATIO N	STATUS (WORKI NG/NON - WORKIN G/TEMP. WORKIN G FOR DESPATC H ETC.)	CAPTIV E/ NON- CAPTIV E	OBTAINED ENVIRONMEN T CLEARANCE (YES/NO), IF YES LETTER NO WITH DATE OF GRANT OF EC	LOCATION OF THE MINING LEASE (LATITUDE, LONGITUDE, VILLAGE, KHATA NO. PLOT NO. AND KISSAM)
						7 FRO M	8 TO						
TAHASIL-CHHENDIPADA													
1	BADABERE NA SAND QUARRY	NA	NA	NA	0.83 0	NA	NA	NA	NA	NON- WORKIN G	NA	NA	LAT- 20°41'55.6" LONG- 84°32'06.9"KH ATA-316 PLOT-4016 KISSAM-NADI
2	MANDUA SAND QUARRY	NA	NA	NA	5.00 0	NA	NA	NA	NA	NON- WORKIN G	NA	NA	LAT- 20°54'07.87" LONG- 84°24'58.95"K HATA-70 PLOT-2201 KISSAM-NADI
3	MANDUA SAND QUARRY A	Bidder not Finalised	Bidder not Finalised	Quarry Operatio n not Started	6.47 1	Quarry Operation not Started		NA	Quarry Operation not Started	NEW	Quarry Operati on not Started	NO	LAT- 21°09'12.6720 0" LONG- 84°59'28.2480 0"KHATA-70 PLOT-2201/p KISSAM-NADI

4	KAMPASAL A SAND QUARRY 1	Bidder not Finalised	Bidder not Finalised	Quarry Operation not Started	1.128	Quarry Operation not Started	NA	Quarry Operation not Started	NEW	Quarry Operation not Started	NO	LAT-21°07'58.8720 0" LONG-84°56'56.5440 0" KHATA-323 PLOT-6019 KISSAM-NADI	
5	KAMPASAL A SAND QUARRY 2	Bidder not Finalised	Bidder not Finalised	Quarry Operation not Started	1.307	Quarry Operation not Started	NA	Quarry Operation not Started	NEW	Quarry Operation not Started	NO	LAT-21°08'13.2360 0" LONG-84°56'54.6720 0" KHATA-323 PLOT-5954 KISSAM-NADI	
TAHASIL-TALCHER													
6	GOPINATHPUR SAND QUARRY	BANAMBAR BHUTIA	Vill: Mandapal, Talcher Town, Ps: Talcher, Dist: Angul	NA	9.110	NA	NA	NA	NA	NON-WORKING	NON-CAPTIVE	NO	LAT-20°56'04.95 LONG-85°14'29.15"K HATA-83 PLOT-100/343 KISSAM-NADI
7	HATURIPAL SAND QUARRY	Tophan Mohanty	At/Po: Santhapada, PS: Talcher Sadar, Angul-759104	10052500869, 28-04-2025	10.724	28-04-25	27-04-30	NA	28-04-25	WORKING	NON-CAPTIVE	YES: EC25B001OR133431, 21-01-2025	LAT-21°06'13.22" LONG-84°56'11.12"K HATA-34 PLOT-1 KISSAM-NADI
8	NIZGARHZAMI SAND QUARRY	Pitambar Bhutia	S/o Banambar Bhutia Vill: Mandapal, Talcher Town, Ps:	20-11-2020	10.060	19-01-2025	18-01-2030	NA	19-01-2025	WORKING	NON-CAPTIVE	YES: EC25B0107OR5193515A, 28-12-2022	LAT-21°23'59.76" LONG-85°11'14.31"K HATA-646 PLOT-3695 KISSAM-NADI

			Talcher, Dist: Angul										
9	SANTHAPA DA-A SAND QUARRY	Sheranw ali Infrastru cture Pvt.Ltd.	At: Jagannat h Colony, PS: South Balanda, Dist: Angul.	1005250 0881, 30-04- 2025	7.28 5	29- 04- 2025	28- 04- 2030	NA	29-04- 2025	WORKIN G	NON- CAPTIV E	YES: EC24B000OR1 10192, 22-03- 2024	LAT- 20°53'47.4" LONG- 85°14'27.8"KH ATA-480 PLOT-4198 KISSAM-NADI
10	SANTHAPA DA-B SAND QUARRY	Mr. Rakesh Tiwari	Champa pasi Road, Talcher Town, Talcher, Angul - 759107.	NA	7.28 5	NA	NA	NA	NA	NON- WORKIN G	NA	NA	LAT- 20°54'27.7" LONG- 85°14'08.1"KH ATA-480 PLOT-4198 KISSAM-NADI
11	SIRIGIDA SAND QUARRY	Sangha mitra Bhutia	At- Biharipur , Po- Kankili, Dist- Angul.	1005240 0549, 28-03- 2024	7.28 0	30- 03- 2024	29- 03- 2029	NA	30-03- 2024	WORKIN G	NON- CAPTIV E	YES: EC23B001OR1 45454, 28-12- 2023	LAT- 84° 45' 41.99" LONG- 85°13'32.68" KHATA-142 PLOT-1791 KISSAM-NADI
12	KANKILI SAND QUARRY	NA	NA	NA	7.28 5	NA	NA	NA	NA	NON- WORKIN G	NA	NA	LAT- 21°04'42.28" LONG- 85°08'22.57"K HATA-778 PLOT- 7446/8031 KISSAM-NADI

13	KANKILI SAND QUARRY A	Bidder not Finalised	Bidder not Finalised	Quarry Operation not Started	6.797	Quarry Operation not Started	NA	Quarry Operation not Started	NEW	Quarry Operation not Started	NO	LAT-21°00'03.1320 0" LONG-85°14'38.6520 0" KHATA-778 PLOT-1 KISSAM-NADI	
14	KANKILI SAND QUARRY B	Bidder not Finalised	Bidder not Finalised	Quarry Operation not Started	11.723	Quarry Operation not Started	NA	Quarry Operation not Started	NEW	Quarry Operation not Started	NO	LAT-20°58'48.8640 0" LONG-85°15'30.1320 0" KHATA-778 PLOT-8031 KISSAM-NADI	
15	Gurujang Sand Quarry 1	Bidder not Finalised	Bidder not Finalised	Quarry Operation not Started	18.928	Quarry Operation not Started	NA	Quarry Operation not Started	NEW	Quarry Operation not Started	NO	LAT-21°01'34.5720 0" LONG-85°12'23.1120 0" KHATA-523 PLOT-5361 KISSAM-NADI	
16	Gurujang Sand Quarry 2	Bidder not Finalised	Bidder not Finalised	Quarry Operation not Started	15.78	Quarry Operation not Started	NA	Quarry Operation not Started	NEW	Quarry Operation not Started	NO	LAT-21°01'24.6720 0" LONG-85°12'38.8080 0" KHATA-523 PLOT-5361 KISSAM-NADI	
TAHASIL-KANIHA													
17	BURUKUNA SAND QUARRY	Sri Paramananda Sahoo	At/Po-Deranga, PS-Kaniha, Dist: Angul, PIN-759117	08-10-2020	1.214	24-11-2021	23-11-2026	NA	24-11-2021	WORKING	NON-CAPTIVE	YES: 2788/SEIAA, 22-09-2021	LAT-21°08'27.46" LONG-85°12'52.91" KHATA-185 PLOT-2006/1, 2243/1 KISSAM-NADI
18	DENALI SAND QUARRY	SRI RASHMI RANJAN	S/o: Jugal Kishore	31-12-2020	4.856	17-10-	16-10-	NA	17-10-2022	WORKING	NON-CAPTIVE	YES: 242968/97-MINB/12-	LAT-21°14'09.93" LONG-

		PATRA	Patra, At: Bramhan bati, Po: Badamul ei, Ps: Gobindp ur, Dist: Cuttack - 754018			2022	2027					2021, 18-07- 2022	85°02'42.77" KHATA-132 PLOT-2412/1 KISSAM- BALICHAR
1 9	DERANG SAND QUARRY	Kishore Chandra Sahoo	At/Po- Deranga, PS- Kaniha, Dist: Angul, PIN- 759117	1005250 0376, 19-02- 2025	6.07 0	18- 02- 2025	17- 02- 2030	NA	18-02- 2025	WORKIN G	NON- CAPTIV E	YES: EC24B0107OR 5428145N, 30- 01-2025	LAT- 20°51'56.18" LONG- 85°00'30.14"K HATA-758 PLOT- 8953/10218 KISSAM-NADI
2 0	KHAJURIA SAND QUARRY	Sri Paraman anda Sahoo	At/Po- Deranga, PS- Kaniha, Dist: Angul, PIN- 759117	NA	6.07 0	NA	NA	NA	NA	NON- WORKIN G	NA	NO	LAT- 21°02'21.31" LONG- 85°03'32.43"K HATA-59 PLOT-1000 KISSAM-NADI
2 1	TAKUA SAND QUARRY	Abhinan dan Mohanty	Sri Abhinan dan Mohanty , Plot no - 1545, Lane - 4/A Jagannat hnagar, GGP Colony PS - Saheed Nagar,	NA	8.29 6	NA	NA	NA	NA	NON- WORKIN G	NA	NA	LAT- 21°07'11.03" LONG- 85°02'30.67"K HATA-99 PLOT-2207 KISSAM-NADI

			Bhubaneswar-751025										
22	BAJRAKOTE SAND QUARRY	Agnibesh Swain	MS Laxmi Export, D.No- 6-18-3/1C, LIG Plot No. 4, Beside Sai Sadan Apartments, East point Colony, Chinawal tair, Visakhapatnam, 02- Andhra Pradesh, 91-India, 530017	10052400940, 25-06-2024	4.788	21-06-2024	20-06-2029	NA	21-06-2024	WORKING	NON-CAPTIVE	YES: 424804/1000-MINB2/12-2023, 20-03-2024	LAT- 20°49'57.33" LONG- 84°41'27.41"K HATA-519 PLOT-2402 KISSAM-NADI
23	BAJRAKOTE SAND QUARRY A	Bidder not Finalised	Bidder not Finalised	Quarry Operation not Started	8.170	Quarry Operation not Started		NA	Quarry Operation not Started	NEW	Quarry Operation not Started	NO	LAT- 21°12'02.6640 0" LONG- 85°03'35.4240 0" KHATA-519 PLOT-5656 KISSAM-NADI

24	Uchabali Sand Quarry	Bidder not Finalised	Bidder not Finalised	Quarry Operation not Started	1.065	Quarry Operation not Started		NA	Quarry Operation not Started	NEW	Quarry Operation not Started	NO	LAT-21°08'30.44400" LONG-84°59'15.82800" KHATA-46 PLOT-1 KISSAM-NADI
TAHASIL-ATHAMALLIK													
25	GHODAMARA GHAT RIVER SAND QUARRY	Ghasiram Mahakud	Sri Ghasiram Mahakud, S/O: Dhableswar Mahakud, At: Khadrapada, P.O: Kudgaon, P.S: Athamallik, Dist: Angul.	10022200410, 07-09-22	4.856	07-09-2022	06-09-2027	NA	07-09-2022	WORKING	NON-CAPTIV	YES: EC24C0107OR 5139033A, 13-11-2024	LAT-20°41'55.6" LONG-84°32'06.9" KHATA-840 PLOT-3359 KISSAM-NADI
26	GHODAMARA GHAT RIVER SAND QUARRY- A	Bidder not Finalised	Bidder not Finalised	Quarry Operation not Started	14.991	Quarry Operation not Started		NA	Quarry Operation not Started	NEW	Quarry Operation not Started	NO	LAT-20°41'50.17200" LONG-84°32'39.04800" KHATA-840 PLOT-3358 KISSAM-NADI
27	KEUTABHUI N SAND QUARRY	Apollo Kumar Garanayak	Sri Apollo Kumar Garnayak, S/o- Prahalla dGarnayak At-	NA	35.289	NA	NA	NA	NA	NON-WORKING	NA	NO	LAT-21°02'46.41" LONG-85°04'52.75" KHATA-7 PLOT-25 KISSAM-NADI

			Arakhakud, PS-Thakurgarh, Dist-Angul, Pin-759125										
28	KHADARAPADA SAND QUARRY	Apollo Kumar Garanayak	Sri Apollo Kumar Garnayak, S/o-PrahalladGarnayak At-Arakhakud, PS-Thakurgarh, Dist-Angul, Pin-759125	10022500539, 28-11-25	12.141	28-11-2025	27-11-2030	NA	28-11-2025	NON-WORKING	NA	NA	LAT-21°14'09.93" LONG-85°02'42.77" K HATA-33 PLOT-410 KISSAM-NADI
29	NILAKANTHAPADA SAND QUARRY	Apollo Kumar Garanayak	Sri Apollo Kumar Garnayak, S/o-PrahalladGarnayak At-Arakhakud, PS-Thakurgarh, Dist-Angul, Pin-759125	NA	21.934	NA	NA	NA	NA	NON-WORKING	NA	NA	LAT-20°53'03.11" LONG-84°16'27.49" K HATA-72 PLOT-762 KISSAM-NADI
30	ODASINGA SAND	Rajkishore	Sri Rajkishor	NA	140.457	NA	NA	NA	NA	NON-WORKING	NON-CAPTIV	YES EC25B0107OR	LAT-21°12'24.2"

	QUARRY	Mohanty	e Mohanty , S/o: Late Chaitanya a Mohanty , Netaji Nagar, Ghatkula , PO: Madhup atana, Cuttack- 753010 (Successful bidder for Odasinga Sand Quarry)							G	E	5457913N, 31- 10-25	LONG- 85°15'16.9"KH ATA-173 PLOT-1829, 1835 KISSAM- NADI
3 1	TAINSAR SAND QUARRY	Apollo Kumar Garanay ak	Sri Apollo Kumar Garnaya k, S/o- Prahalla dGarnay ak At- Arakhak ud, PS- Thakurg arh, Dist- Angul, Pin- 759125	1002250 0119, 26-03- 2025	20.5 58	26- 03- 2025	25- 03- 2030	NA	26-03- 2025	WORKIN G	NON- CAPTIV E	YES: EC24B001OR1 1854630-11- 2025	LAT- 20° 44'45.0 LONG- 84° 24' 40.5"KHATA- 72 PLOT-741, 747 KISSAM- NADI

32	NAIKPADA SAND QUARRY	Mohinuddin Khan	S/o Kamanul lah Khan, At: Rugudisahi, PS: Athamallik, Dist: Angul	01-03-2021	4.856	01-12-2021	30-11-2026	NA	01-12-2021	WORKING	NON-CAPTIVE	YES: TO24C0107OR 5172087A, 22-09-2021	LAT-20°54'20.91" LONG-84°45'41.99" KHATA-67 PLOT-349 KISSAM-NADI
33	NAIKPADA SAND QUARRY- A	Bidder not Finalised	Bidder not Finalised	Quarry Operation not Started	9.258	Quarry Operation not Started		NA	Quarry Operation not Started	NEW	Quarry Operation not Started	NO	LAT-20°53'01.71600 "LONG-84°16'43.39200 "KHATA-67 PLOT-349 KISSAM-NADI
34	NAIKPADA SAND QUARRY- B	Bidder not Finalised	Bidder not Finalised	Quarry Operation not Started	18.618	Quarry Operation not Started		NA	Quarry Operation not Started	NEW	Quarry Operation not Started	NO	LAT-20°52'52.78800 " LONG-84°16'36.37200 " KHATA-67 PLOT-349 KISSAM-NADI
35	DHULIAPADA SAND QUARRY- A	Bidder not Finalised	Bidder not Finalised	Quarry Operation not Started	19.551	Quarry Operation not Started		NA	Quarry Operation not Started	NEW	Quarry Operation not Started	NO	LAT-20°52'49.87200 " LONG-84°16'56.35200 " KHATA-55 PLOT-632 KISSAM-NADI
36	DHULIAPADA SAND QUARRY- B	Bidder not Finalised	Bidder not Finalised	Quarry Operation not Started	21.099	Quarry Operation not Started		NA	Quarry Operation not Started	NEW	Quarry Operation not Started	NO	LAT-20°52'43.14000 " LONG-84°17'08.12400 " KHATA-55 PLOT-632 KISSAM-NADI
37	HATUAPADA SAND QUARRY A	Bidder not Finalised	Bidder not Finalised	Quarry Operation not Started	9.324	Quarry Operation not Started		NA	Quarry Operation not Started	NEW	Quarry Operation not Started	NO	LAT-20°52'32.01600" LONG-84°17'35.70000" KHATA-24 PLOT-238

												KISSAM-NADI
38	HATUAPAD A SAND QUARRY B	Bidder not Finalised	Bidder not Finalised	Quarry Operatio n not Started	14.8 35	Quarry Operation not Started	NA	Quarry Operation not Started	NEW	Quarry Operati on not Started	NO	LAT- 20°52'35.76000 " LONG- 84°17'24.46800 " KHATA-27 PLOT-237 KISSAM-NADI
39	HINSEI SAND QUARRY	Bidder not Finalised	Bidder not Finalised	Quarry Operatio n not Started	9.53	Quarry Operation not Started	NA	Quarry Operation not Started	NEW	Quarry Operati on not Started	NO	LAT- 20°44'52.36800 " LONG- 84°27'20.41200 " KHATA-73 PLOT-971 KISSAM-NADI
40	LIPILEI SAND QUARRY A	Bidder not Finalised	Bidder not Finalised	Quarry Operatio n not Started	8.60 1	Quarry Operation not Started	NA	Quarry Operation not Started	NEW	Quarry Operati on not Started	NO	LAT- 20°41'45.24000 " LONG- 84°33'12.96000 " KHATA-172 PLOT-2298 KISSAM-NADI
41	LIPILEI SAND QUARRY B	Bidder not Finalised	Bidder not Finalised	Quarry Operatio n not Started	6.36 7	Quarry Operation not Started	NA	Quarry Operation not Started	NEW	Quarry Operati on not Started	NO	LAT- 20°41'36.99600 " LONG- 84°33'26.06400 " KHATA-172 PLOT-2299 KISSAM-NADI
42	Haridakotha Sand Quarry	Bidder not Finalised	Bidder not Finalised	Quarry Operatio n not Started	4.90 8	Quarry Operation not Started	NA	Quarry Operation not Started	NEW	Quarry Operati on not Started	NO	LAT- 20°41'28.96800 " LONG- 84°33'51.66000 " KHATA-47 PLOT-294 KISSAM-NADI

43	Kuteswar Sand Quarry	Bidder not Finalised	Bidder not Finalised	Quarry Operation not Started	7.649	Quarry Operation not Started	NA	Quarry Operation not Started	NEW	Quarry Operation not Started	NO	LAT-20°41'22.92000 " LONG-84°34'01.88400 " KHATA-135 PLOT-1660 KISSAM-NADI	
44	Satbandhali Sand Quarry	Bidder not Finalised	Bidder not Finalised	Quarry Operation not Started	8.683	Quarry Operation not Started	NA	Quarry Operation not Started	NEW	Quarry Operation not Started	NO	LAT-20°41'33.93600 " LONG-84°33'40.42800 " KHATA-55 PLOT-305 KISSAM-NADI	
TAHASIL-PALLAHARA													
45	KUNJAM SAND QUARRY	GOPABA NDHU SAHOO	S/o: Juanga Pradhan, At: Jenapada, PO/PS: Khamar, Dist: Angul, PIN-759118	10042500194, 23-05-25	4.656	23-05-2025	22-05-2030	NA	23-05-2025	WORKING	NON-CAPTIVE	YES: EC24C0107OR 5374768T, 23-05-2025	LAT-21°11'55.95288 " LONG-85°14'52.12176 "KHATA-187 PLOT-1137, 1902, 1141 KISSAM-NADI

NB: (i) "NA" is mentioned in column 8 for the leases that are not renewed, hence the renewal period is Not Applicable

(ii) The omitted Columns in the above table are,

Column-15: Method of Mining (Opencast/Underground) – All are Opencast

Column-16: Reasons for Non-Working – Annexure (V) – Remarks

"Due to transfer of all mining files from the Revenue Department to the Steel and Mines Department, there is a lack of file availability, resulting in several data points being unavailable during table compilation."

4. DETAILS OF ROYALTY OR REVENUE RECEIVED IN LAST THREE YEARS:

SL NO	NAME OF TAHASIL	NAME OF THE SOURCE	REVENUE COLLECTION IN LAST THREE YEARS (IN RS)		
			2022-23	2023-24	2024-25
1	CHHENDIPADA	BADABERENA SAND QUARRY	0.00	0.00	0.00
2	CHHENDIPADA	MANDUA SAND QUARRY	3,50,000.00	9,54,026.13	14,19,282.87
3	CHHENDIPADA	MANDUA SAND QUARRY A	0.00	0.00	0.00
4	CHHENDIPADA	KAMPASALA SAND QUARRY 1	0.00	0.00	0.00
5	CHHENDIPADA	KAMPASALA SAND QUARRY 2	0.00	0.00	0.00
6	CHHENDIPADA	KANKARPAL SAND QUARRY	0.00	0.00	0.00
7	CHHENDIPADA	KAMPASALA SAND QUARRY	3,762.00	9,07,236.00	0.00
8	TALCHER	GOPINATHPUR SAND QUARRY	0.00	0.00	0.00
9	TALCHER	HATURIPAL SAND QUARRY	0.00	0.00	28,35,363.00
10	TALCHER	NIZGARHZAMI SAND QUARRY	22,62,537.00	86,52,213.00	72,69,342.00
11	TALCHER	SANTHAPADA-A SAND QUARRY	0.00	0.00	27,22,736.00
12	TALCHER	SANTHAPADA-B SAND QUARRY	7,97,599.00	7,97,599.00	0.00
13	TALCHER	SIRIGIDA SAND QUARRY	0.00	0.00	60,22,496.00
14	TALCHER	KANKILI SAND QUARRY	0.00	0.00	0.00
15	TALCHER	KANKILI SAND QUARRY A	0.00	0.00	0.00
16	TALCHER	KANKILI SAND QUARRY B	0.00	0.00	0.00
17	TALCHER	GURUJANG SAND QUARRY 1	0.00	0.00	0.00
18	TALCHER	GURUJANG SAND QUARRY 2	0.00	0.00	0.00
19	TALCHER	DASANALI SAND QUARRY	6,58,153.00	6,58,153.00	0.00
20	TALCHER	DHOBAPAL SAND QUARRY	0.00	0.00	0.00
21	KANIHA	BURUKUNA SAND QUARRY	2,66,782.00	1,49,679.00	3,36,482.00
22	KANIHA	DENALI SAND QUARRY	3,16,010.00	0.00	0.00
23	KANIHA	DERANG SAND QUARRY	0.00	0.00	0.00
24	KANIHA	KHAJURIA SAND QUARRY	0.00	0.00	0.00
25	KANIHA	TAKUA SAND QUARRY	0.00	0.00	0.00
26	KANIHA	BAJRAKOTE SAND QUARRY	0.00	0.00	11,22,000.00
27	KANIHA	BAJRAKOTE SAND QUARRY A	0.00	0.00	0.00
28	KANIHA	UCHABALI SAND QUARRY	0.00	0.00	0.00
29	KANIHA	BOL SAND QUARRY	2,12,440.00	3,51,986.00	10,57,743.00
30	KANIHA	CHANDRABIL SAND QUARRY	0.00	0.00	0.00
31	KANIHA	DANGARABEDA SAND QUARRY	11,89,483.00	0.00	0.00
32	KANIHA	KAMAREI SAND QUARRY	0.00	0.00	0.00
33	KANIHA	RUTUBHUIN SAND QUARRY	2,00,000.00	0.00	15,66,251.00
34	KANIHA	SANTRIBIDA SAND QUARRY	7,903.00	90,704.00	4,02,085.00
35	KANIHA	SULEIPAL SAND QUARRY	3,25,048.00	1,58,282.00	4,99,317.00
36	KANIHA	SUSUBA SAND QUARRY	0.00	0.00	0.00
37	ATHAMALLIK	GHODAMARA GHAT RIVER SAND QUARRY	11,44,000.00	0.00	14,99,461.00
38	ATHAMALLIK	GHODAMARA GHAT RIVER SAND QUARRY- A	0.00	0.00	0.00

39	ATHAMALLIK	KEUTABHUIN SAND QUARRY	0.00	0.00	0.00
40	ATHAMALLIK	KHADARAPADA SAND QUARRY	0.00	0.00	0.00
41	ATHAMALLIK	NILAKANTHAPADA SAND QUARRY	0.00	0.00	0.00
42	ATHAMALLIK	ODASINGA SAND QUARRY	0.00	0.00	0.00
43	ATHAMALLIK	TAINSAR SAND QUARRY	0.00	0.00	24,69,683.00
44	ATHAMALLIK	NAIKPADA SAND QUARRY	0.00	0.00	0.00
45	ATHAMALLIK	NAIKPADA SAND QUARRY- A	0.00	0.00	0.00
46	ATHAMALLIK	NAIKPADA SAND QUARRY- B	0.00	0.00	0.00
47	ATHAMALLIK	DHULIAPADA SAND QUARRY- A	0.00	0.00	0.00
48	ATHAMALLIK	DHULIAPADA SAND QUARRY- B	0.00	0.00	0.00
49	ATHAMALLIK	HATUAPADA SAND QUARRY A	0.00	0.00	0.00
50	ATHAMALLIK	HATUAPADA SAND QUARRY B	0.00	0.00	0.00
51	ATHAMALLIK	HINSEI SAND QUARRY	0.00	0.00	0.00
52	ATHAMALLIK	LIPILEI SAND QUARRY A	0.00	0.00	0.00
53	ATHAMALLIK	LIPILEI SAND QUARRY B	0.00	0.00	0.00
54	ATHAMALLIK	HARIDAKOTHA SAND QUARRY	0.00	0.00	0.00
55	ATHAMALLIK	KUTESWAR SAND QUARRY	0.00	0.00	0.00
56	ATHAMALLIK	SATBANDHALI SAND QUARRY	0.00	0.00	0.00
57	PALLAHARA	KUNJAM SAND QUARRY	0.00	0.00	1,20,543.00
58	PALLAHARA	RAIPAL-JAMBUA SAND QUARRY	1,75,820.00	0.00	6,30,952.00

NB: Values shown as 0.00 indicate that the quarry was non-operational during the period.

5. DETAILS OF PRODUCTION OF SAND IN LAST TWO YEARS:

SL NO	NAME OF TAHASIL	NAME OF THE SOURCE	PRODUCTION OF LAST 2 YEARS (IN CUM)	
			2023-24	2024-25
1	CHHENDIPADA	BADABERENA SAND QUARRY	0.00	0.00
2	CHHENDIPADA	MANDUA SAND QUARRY	450	1104
3	CHHENDIPADA	MANDUA SAND QUARRY A	0.00	0.00
4	CHHENDIPADA	KAMPASALA SAND QUARRY 1	0.00	0.00
5	CHHENDIPADA	KAMPASALA SAND QUARRY 2	0.00	0.00
6	CHHENDIPADA	KANKARPAL SAND QUARRY	0.00	0.00
7	CHHENDIPADA	KAMPASALA SAND QUARRY	600	0.00
8	TALCHER	GOPINATHPUR SAND QUARRY	0.00	0.00
9	TALCHER	HATURIPAL SAND QUARRY	0.00	0.00
10	TALCHER	NIZGARHZAMI SAND QUARRY	11053	6063
11	TALCHER	SANTHAPADA-A SAND QUARRY	0.00	0.00
12	TALCHER	SANTHAPADA-B SAND QUARRY	0.00	115
13	TALCHER	SIRIGIDA SAND QUARRY	0.00	10,617
14	TALCHER	KANKILI SAND QUARRY	0.00	0.00
15	TALCHER	KANKILI SAND QUARRY A	0.00	0.00
16	TALCHER	KANKILI SAND QUARRY B	0.00	0.00
17	TALCHER	GURUJANG SAND QUARRY 1	0.00	0.00
18	TALCHER	GURUJANG SAND QUARRY 2	0.00	0.00
19	TALCHER	DASANALI SAND QUARRY	0.00	0.00
20	TALCHER	DHOBAPAL SAND QUARRY	0.00	0.00
21	KANIHA	BURUKUNA SAND QUARRY	2214	161
22	KANIHA	DENALI SAND QUARRY	0.00	0.00
23	KANIHA	DERANG SAND QUARRY	0.00	0.00
24	KANIHA	KHAJURIA SAND QUARRY	0.00	0.00
25	KANIHA	TAKUA SAND QUARRY	0.00	0.00
26	KANIHA	BAJRAKOTE SAND QUARRY	0.00	0.00
27	KANIHA	BAJRAKOTE SAND QUARRY A	0.00	0.00
28	KANIHA	UCHABALI SAND QUARRY	0.00	0.00
29	KANIHA	BOL SAND QUARRY	0.00	0.00
30	KANIHA	CHANDRABIL SAND QUARRY	0.00	0.00
31	KANIHA	DANGARABEDA SAND QUARRY	0.00	0.00
32	KANIHA	KAMAREI SAND QUARRY	0.00	0.00
33	KANIHA	RUTUBHUIN SAND QUARRY	730	2458
34	KANIHA	SANTRIBIDA SAND QUARRY	150	1941
35	KANIHA	SULEIPAL SAND QUARRY	150	429
36	KANIHA	SUSUBA SAND QUARRY	0.00	0.00
37	ATHAMALLIK	GHODAMARA GHAT RIVER SAND QUARRY	0.00	0.00
38	ATHAMALLIK	GHODAMARA GHAT RIVER SAND QUARRY- A	0.00	0.00

39	ATHAMALLIK	KEUTABHUIN SAND QUARRY	0.00	0.00
40	ATHAMALLIK	KHADARAPADA SAND QUARRY	0.00	0.00
41	ATHAMALLIK	NILAKANTHAPADA SAND QUARRY	0.00	0.00
42	ATHAMALLIK	ODASINGA SAND QUARRY	0.00	0.00
43	ATHAMALLIK	TAINSAR SAND QUARRY	0.00	0.00
44	ATHAMALLIK	NAIKPADA SAND QUARRY	450	0.00
45	ATHAMALLIK	NAIKPADA SAND QUARRY- A	0.00	0.00
46	ATHAMALLIK	NAIKPADA SAND QUARRY- B	0.00	0.00
47	ATHAMALLIK	DHULIAPADA SAND QUARRY- A	0.00	0.00
48	ATHAMALLIK	DHULIAPADA SAND QUARRY- B	0.00	0.00
49	ATHAMALLIK	HATUAPADA SAND QUARRY A	0.00	0.00
50	ATHAMALLIK	HATUAPADA SAND QUARRY B	0.00	0.00
51	ATHAMALLIK	HINSEI SAND QUARRY	0.00	0.00
52	ATHAMALLIK	LIPILEI SAND QUARRY A	0.00	0.00
53	ATHAMALLIK	LIPILEI SAND QUARRY B	0.00	0.00
54	ATHAMALLIK	HARIDAKOTHA SAND QUARRY	0.00	0.00
55	ATHAMALLIK	KUTESWAR SAND QUARRY	0.00	0.00
56	ATHAMALLIK	SATBANDHALI SAND QUARRY	0.00	0.00
57	PALLAHARA	KUNJAM SAND QUARRY	0.00	0.00
58	PALLAHARA	RAIPAL-JAMBUA SAND QUARRY	1155	61

NB: Values shown as 0.00 indicate that the quarry was non-operational during the period.

6. PROCESS OF DEPOSITION OF SEDIMENTS:

Sediment deposition is the geological process in which sediments are transported by natural forces and eventually settle in various environments, forming layers of sediments over time. The sediments or sand undergo different processes such as:

i. **Erosion**

- **Upstream Erosion:** Sand and sediments are primarily generated through erosion of rocks and soil in the upstream areas of the river.
- **Human Activities:** Deforestation, agricultural activities, and construction work can increase the rate of erosion, leading to more sand and sediment being carried by the river.

ii. **Transportation**

- **River Flow:** The sand and sediment eroded from upstream areas are transported downstream by the flow of the river. During the monsoon season, the flow is stronger, and more sand is carried.
- **Suspension and Bed Load:** Sand is transported in two forms: suspension (floating within the water) and bed load (rolling or sliding along the riverbed).

iii. **Deposition**

- **Decrease in River Velocity:** As the river reaches flatter areas or the riverbed widens, the flow velocity decreases. This reduction in velocity causes the river to lose its capacity to carry sand, leading to deposition.
- **Sand bars and Islands:** Over time, the deposited **Sand** forms Sand bars or islands in the river, especially in areas where the river meanders or its gradient reduces.
- **Seasonal Variations:** Deposition is often more pronounced during the dry season when the water level decreases, leaving more sand exposed along the riverbanks and on sand bars.

iv. **Human Influence**

- **Mining Activities:** In some regions, sand mining can alter the natural deposition process, either by removing sand or changing the river's course.

The rate of sand deposition in river systems varies according to environmental conditions such as discharge variability, sediment characteristics, and channel geometry. Deposition can occur **slowly**, **moderately**, or **rapidly** depending on the flow energy and setting. The key factors influencing deposition are:

- **Discharge variability:** Seasonal floods can deposit large amounts of sediment rapidly, while base flow conditions result in slow accumulation.
- **Grain size and sediment load:** Coarse sand and gravel settle quickly under high-energy flow, whereas fine sand and silt require calmer conditions.
- **Channel geometry:** Channel width, depth, and slope influence local flow velocity and turbulence, affecting where and how sediment is deposited.

i. Slow Deposition:

- **Environment:** Lower course or floodplain (low-gradient rivers, deltas)
- **Rate:** ~0.1–10 mm/yr (depending on flood frequency)
- **Conditions:** Calm or low-energy flow in deep pools or areas with gentle water flow like overbank areas.
- **Processes:** Fine to medium sand settles slowly during floods; sediment accumulates gradually in floodplains, while active channels may build sandbars faster.

ii. Moderate Deposition:

- **Environment:** Middle course (meandering or anabranching rivers)
- **Rate:** ~1–10 mm/yr (0.1–1 cm/yr)
- **Conditions:** Steady flow along riverbanks and gentle bends.
- **Processes:** Sand is gradually deposited on point bars, levees, and channel bars. Seasonal changes in discharge create variable deposition rates.

iii. Fast Deposition:

- **Environment:** Upper course (mountain streams, braided rivers)
- **Rate:** ~10–100 mm/yr (1–10 cm/yr)
- **Conditions:** High-energy, steep slopes with coarse sand and gravel.

- **Processes:** Rapid sediment accumulation occurs when flow velocity suddenly decreases—at channel bends, at the foot of slopes, or after floods. Flash floods and debris flows contribute to rapid bar and delta formation.

Table-4
Brief details of area and sediment deposition of rivers flowing in Angul District

Sl. no	Name of the River	Place of origin	Altitude at origin (m)	Total length in the district (in km)	Area drained (sq km)	% area drained in the district
A	B	C	D	E	F	G
1	MAHANADI	Amarkanta Malabhumi, Chhattisgarh	1048	61	1,420	22.27%
2	BRAHMANI	Confluence point of Sankh and South Keol rivers meet near Rourkela	700	65	1,180	18.51%
3	LINGARA	Boinda	650	51	420	6.59%
4	AUNLI	Hilly Region of Redhakhol	720	28	210	3.29%
5	SAMAKOI	Nalapanga reserve forest of Ghatagaon, Keonjhar	800	36	350	5.49%
6	MANJORE	Sureswari Jore and Poradiha Jore	680	40	300	4.71%
7	MANKADA	Rengali Reservoir	620	15	120	1.88%
8	TIKIRA	Geol-Mundi in Khalasuni wildlife sanctuary in the Badrama Range of the Bamra Forest of Sambalpur District.	750	35	260	4.08%

Drainage and Irrigation Pattern:

Drainage and irrigation patterns describe how water naturally flows across a landscape and how it is managed for human use. Drainage patterns reflect the arrangement of rivers and streams shaped by the terrain, geology, and climate of an area. Irrigation patterns, on the other hand, show how water from these natural systems is captured, stored, and distributed to support agriculture and other needs. Together, they provide insight into both the natural hydrology of a region and the human interventions used to optimize water resources. The drainage of the district is mainly controlled by rivers like Mahanadi, Brahamani, Tikira and their tributaries. Major part of the district is irrigated through canal irrigation from Rengali dam on river Brahmani.

i. Drainage Pattern:

Brahmani and Mahanadi are the two major rivers of the district. Both these rivers have numerous perennial and non-perennial tributaries. Most part of the district lies within the Brahmani basin while the Mahanadi basin spreads over Athmallik subdivision and southern part of Angul sub-division. The Brahmani River which is the second longest river in Orissa flows through Talcher subdivision. The major portion of the district is drained by Brahmani River and its tributaries. The Brahmani flows in a general SE direction, broadly parallel to the general strike trends of the prevalent rock formations, but locally guided by major joints and faults. The major tributaries of Brahmani are Tikra Jhor, Singhara Jhor, Samakoi, Nandira Jhor, Gambhira, Nigra, Bade Jhor etc. These major streams show a general right-angle pattern while joining with the river Brahmani. The Mahanadi flows along the south-west boundary of the district, parallel to the strike of Khondalites and is guided by a major shear zone. The major tributaries of this river are Karandi Jhor, Ghosar Jhor, Sindol Jhor, Chanagorhi and Malia Jhor etc., all flow from the northern side of the river originating in Athmalik and Angul subdivisions. The river Mahanadi though flows in a general SE direction, but occasionally flows due south or east at places.

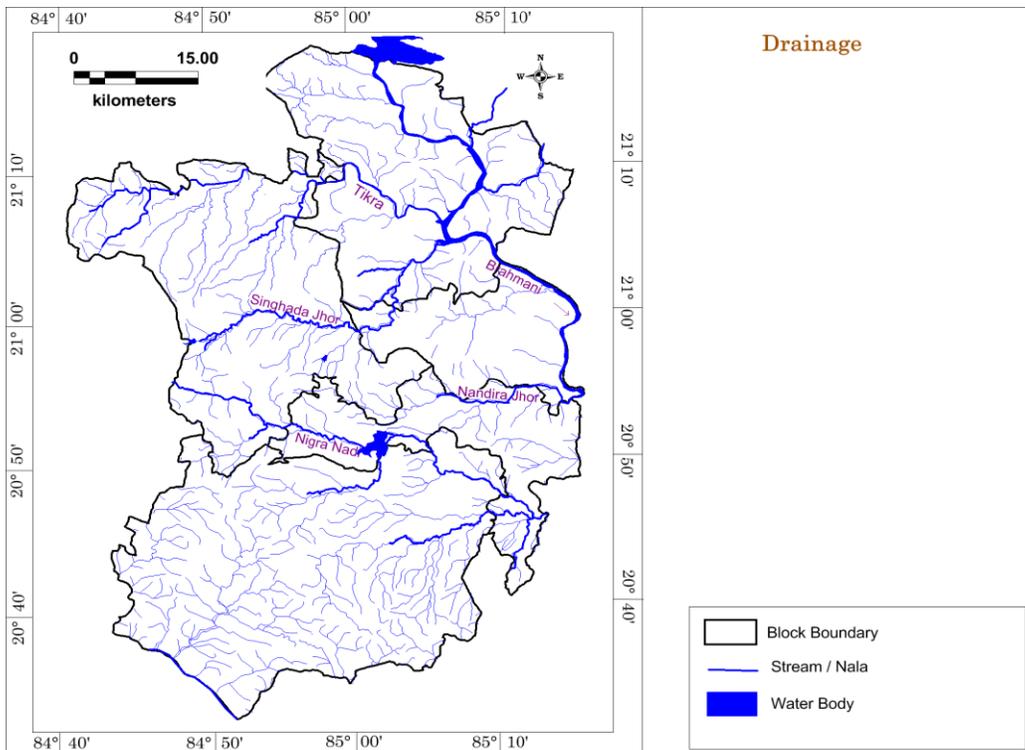


Fig 3: Drainage Pattern of Angul District

The Angul district has a mainly dendritic drainage pattern, with some parallel drainage in the hills. Rivers are used for irrigation through bunds and medium dams. The Darjanga Reservoir, about 3 km east of Angul town, is the area's main surface water source.

ii. Irrigation Pattern:

Irrigation in Angul district is largely dependent on the monsoon, with surface water from reservoirs and medium irrigation projects, along with groundwater, providing supplementary support. Crop production is highest during the kharif season. In irrigated areas, cereals cover about 40,856 ha, while in rainfed areas they cover 63,326.8 ha. Coarse cereals occupy 3,880.71 ha during the kharif season. Fibre crops are absent in kharif but cover 1,240 ha during the rabi season. Rabi production is dominated by oilseeds (8,492.2 ha) followed by pulses (4,208.3 ha). Summer cropping is generally absent.

The district has a total cropped area of 171,673 ha, of which 83,890 ha are rainfed and 87,783 ha are irrigated. Horticultural and plantation crops—such as vegetables, condiments, sugarcane, and other plantation crops—are mostly found in rainfed areas, covering 26,635 ha.

Angul district is supported by two medium irrigation projects. The Derjung Medium Irrigation Project, built on the Ningara and Matalia rivers in Angul block, has a catchment area of 399 sq km and a CCA of 7,392 ha. The Aunli Medium Irrigation Project, constructed on the Aunli river in Chhendipada block, has a 150 sq km catchment area with a CCA of 1,746 ha in kharif and 300 ha in rabi.

Additionally, the district receives significant irrigation support from the Rengali Dam on the Brahmani River, which provides regulated water supply for agriculture in parts of Angul, enhancing irrigation reliability during both kharif and rabi seasons.

Replenished Mineable Resource:

Replenishment is the rate at which sand is naturally replaced in a riverbed or floodplain after mining. It determines how much sand can be safely extracted without causing degradation to the river ecosystem, groundwater, or infrastructure. The process can either be natural or artificial.

Table-5
Replenishment Data for respective leases

SL NO.	TAHASIL	NAME OF THE RIVER OR STREAM	PORTION OF THE RIVER OR STREAM RECOMMENDED FOR MINERAL CONCESSION	AREA IN HA	REPLENISHED VOLUME (IN CUM)	MINEABLE RESOURCE IN CUM	REMARKS
1	CHHENDIPADA	Ulani	BADABERENA SAND QUARRY	0.830	NOT DONE	18550	NON-WORKING SOURCE: OPERATIONS TO COMMENCE
2	CHHENDIPADA	Tikira	MANDUA SAND QUARRY	5.000	NOT DONE	26274	LESEE INTIMATED FOR REPLENISHMENT STUDY
3	CHHENDIPADA	Tikira	MANDUA SAND QUARRY A	6.471	NOT DONE	66004.2	NEWLY PROPOSED
4	CHHENDIPADA	Tikira	Kampasala Sand Quarry 1	1.128	NOT DONE	11505.6	NEWLY PROPOSED
5	CHHENDIPADA	Tikira	Kampasala Sand Quarry 2	1.307	NOT DONE	13331.4	NEWLY PROPOSED
6	TALCHER	Brahmani	GOPINATHPUR SAND QUARRY	9.110	NOT DONE	98,843	NON-WORKING SOURCE: OPERATIONS TO COMMENCE
7	TALCHER	Brahmani	HATURIPAL SAND QUARRY	10.724	NOT DONE	45,430	LESEE INTIMATED FOR REPLENISHMENT STUDY
8	TALCHER	Brahmani	NIZGARHZAMI SAND QUARRY	10.060	NOT DONE	90,636	LESEE INTIMATED FOR REPLENISHMENT STUDY
9	TALCHER	Brahmani	SANTHAPADA-A SAND QUARRY	7.285	NOT DONE	1,24,416	LESEE INTIMATED FOR REPLENISHMENT STUDY
10	TALCHER	Brahmani	SANTHAPADA-B SAND QUARRY	7.285	NOT DONE	18,900	NON-WORKING SOURCE: OPERATIONS TO COMMENCE
11	TALCHER	Brahmani	SIRIGIDA SAND QUARRY	7.280	NOT DONE	64,289	LESEE INTIMATED FOR REPLENISHMENT STUDY
12	TALCHER	Brahmani	KANKILI SAND QUARRY	7.285	NOT DONE	69,955	NON-WORKING SOURCE: OPERATIONS TO COMMENCE
13	TALCHER	Brahmani	KANKILI SAND QUARRY A	6.797	NOT DONE	75106.85	NEWLY PROPOSED
14	TALCHER	Brahmani	KANKILI SAND QUARRY B	11.723	NOT DONE	129539.15	NEWLY PROPOSED
15	TALCHER	Brahmani	Gurujang Sand Quarry 1	18.928	NOT DONE	209154.4	NEWLY PROPOSED
16	TALCHER	Brahmani	Gurujang Sand Quarry 2	15.78	NOT DONE	160956	NEWLY PROPOSED

17	KANIHA	Samakoi	BURUKUNA SAND QUARRY	1.214	NOT DONE	22685	LESEE INTIMATED FOR REPLENISHMENT STUDY
18	KANIHA	Brahmani	DENALI SAND QUARRY	4.856	NOT DONE	40501	LESEE INTIMATED FOR REPLENISHMENT STUDY
19	KANIHA	Tikira	DERANG SAND QUARRY	6.070	NOT DONE	117370	LESEE INTIMATED FOR REPLENISHMENT STUDY
20	KANIHA	Tikira	KHAJURIA SAND QUARRY	6.070	NOT DONE	93506	NON-WORKING SOURCE: OPERATIONS TO COMMENCE
21	KANIHA	Tikira	TAKUA SAND QUARRY	8.296	NOT DONE	28901	NON-WORKING SOURCE: OPERATIONS TO COMMENCE
22	KANIHA	Brahmani	BAJRAKOTE SAND QUARRY	4.788	NOT DONE	8178	LESEE INTIMATED FOR REPLENISHMENT STUDY
23	KANIHA	Brahmani	BAJRAKOTE SAND QUARRY A	8.170	NOT DONE	83334	NEWLY PROPOSED
24	KANIHA	Tikira	Uchabali Sand Quarry	1.065	NOT DONE	5431	NEWLY PROPOSED
25	ATHAMALLIK	Mahanadi	GHODAMARA GHAT RIVER SAND QUARRY	4.856	7441	50,657	DONE
26	ATHAMALLIK	Mahanadi	GHODAMARA GHAT RIVER SAND QUARRY- A	14.991	NOT DONE	305816.4	NEWLY PROPOSED
27	ATHAMALLIK	Mahanadi	KEUTABHUIN SAND QUARRY	35.289	NOT DONE	6,62,796	NON-WORKING SOURCE: OPERATIONS TO COMMENCE
28	ATHAMALLIK	Mahanadi	KHADARAPADA SAND QUARRY	12.141	NOT DONE	2.20,850	NON-WORKING SOURCE: OPERATIONS TO COMMENCE
29	ATHAMALLIK	Mahanadi	NILAKANTHAPADA SAND QUARRY	21.934	NOT DONE	4,03,926	NON-WORKING SOURCE: OPERATIONS TO COMMENCE
30	ATHAMALLIK	Mahanadi	ODASINGA SAND QUARRY	140.457	NOT DONE	26,99,066	NON-WORKING SOURCE: OPERATIONS TO COMMENCE
31	ATHAMALLIK	Mahanadi	TAIN SAR SAND QUARRY	20.558	266296	76,125	DONE
32	ATHAMALLIK	Mahanadi	NAIKPADA SAND QUARRY	4.856	59981	36,000	DONE
33	ATHAMALLIK	Mahanadi	NAIKPADA SAND QUARRY- A	9.258	NOT DONE	180993.9	NEWLY PROPOSED
34	ATHAMALLIK	Mahanadi	NAIKPADA SAND QUARRY- B	18.618	NOT DONE	348156.6	NEWLY PROPOSED
35	ATHAMALLIK	Mahanadi	DHULIAPADA SAND QUARRY- A	19.551	NOT DONE	382222.05	NEWLY PROPOSED

36	ATHAMALLIK	Mahanadi	DHULIAPADA SAND QUARRY- B	21.099	NOT DONE	412485.45	NEWLY PROPOSED
37	ATHAMALLIK	Mahanadi	HATUAPADA SAND QUARRY A	9.324	NOT DONE	190209.6	NEWLY PROPOSED
38	ATHAMALLIK	Mahanadi	HATUAPADA SAND QUARRY B	14.835	NOT DONE	290024.25	NEWLY PROPOSED
39	ATHAMALLIK	Mahanadi	HINSEI SAND QUARRY	9.53	NOT DONE	186311.5	NEWLY PROPOSED
40	ATHAMALLIK	Mahanadi	LIPILEI SAND QUARRY A	8.601	NOT DONE	160838.7	NEWLY PROPOSED
41	ATHAMALLIK	Mahanadi	LIPILEI SAND QUARRY B	6.367	NOT DONE	124474.85	NEWLY PROPOSED
42	ATHAMALLIK	Mahanadi	Haridakotha Sand Quarry	4.908	NOT DONE	100123.2	NEWLY PROPOSED
43	ATHAMALLIK	Mahanadi	Kuteswar Sand Quarry	7.649	NOT DONE	149537.95	NEWLY PROPOSED
44	ATHAMALLIK	Mahanadi	Satbandhali Sand Quarry	8.683	NOT DONE	169752.65	NEWLY PROPOSED
45	PALLAHARA	Samakoi	KUNJAM SAND QUARRY	4.656	NOT DONE	4225.5	NON-WORKING SOURCE: OPERATIONS TO COMMENCE

N.B: The complete replenishment study reports have been prepared only for the operational sources where as for the non-operational sources a drone survey report was conducted by the ORSAC empanelled agency to estimate the current mineable resources. For newly added sources, once the DSR get approved and Boundary will be well marked by DGPS survey, resource will be estimated with Drone survey by ORSAC empanelled agency.

7. GENERAL PROFILE OF THE DISTRICT:

a. Administrative set up:

Angul district, located in the central part of Odisha, functions under the administrative control of the Angul District Collector and is organized into multiple administrative units to ensure effective governance and service delivery. The district is divided into several tahasils and blocks, along with a network of gram panchayats and municipalities that facilitate local administration. Various line departments operate under the supervision of the district administration to implement development programmes, maintain law and order, and deliver essential public services across both urban and rural areas.

*Table-6
Administrative set up of Angul District*

Sl No	Item	Unit	Magnitude
1	Location		
	Longitude	Degree	84 ⁰ 16' to 85 ⁰ 23'East
	Latitude	Degree	20 ⁰ 31' to 21 ⁰ 41' North
2	Geographical area	Sq. Km.	6375
3	Sub-division	Numbers	4
4	Tahasils	Numbers	8
5	C D Blocks	Numbers	8
6	Municipalities	Numbers	2
7	NACs	Numbers	1
8	Police Stations	Numbers	23
9	Gram Panchayats	Numbers	225
10	Villages	Numbers	1871
	Inhabited	Numbers	1654
	Uninhabited	Numbers	217
11	Assembly constituencies	Numbers	5

b. Area and Population:

The district has an area of 6375 sq. kms and 12.74 lakhs of population as per 2011 census. The district accounts for 4.09 percent of the state's territory and shares 3.03 percent of the state's population. The

density population of the district is 200 per sq. km as against 270 person per sq. km. of the state. It has 1871 villages (including 217 un-inhabited villages) covering 8 blocks, 8 Tahasils and 4 Subdivisions. As per 2011 census the schedule caste population is 239552 (18.8.%) and schedule tribe population is 179603 (14.1.%). The literacy percentage of the district constitutes 77.53 against 72.9 of the state

Table-7
Population status of Angul District

Odisha, Angul District				
No. of households:295,922				
Sl. No.	Indicators	Persons	Males	Females
1	Population	12,73,821	6,55,718	6,18,103
2	Child Population	1,52,403	80,666	71,737
3	Scheduled Castes	2,39,552	1,21,459	1,18,093
4	Scheduled Tribes	1,79,603	89,980	89,623
5	Literate	8,69,456	4,94,425	3,75,031
6	Illiterate	4,04,365	1,61,293	2,43,072
7	Workers	2,47,707	1,72,018	75,689
8	Non-Workers	3,31,798	1,24,672	2,07,126

c. Climate:

The climate condition of the district is generally hot and high humidity during April to May and cold during November to December. The monsoon generally breaks during the month of July, Average annual rainfall of the district was 1147.52 mm during last four years, which is less than the normal rainfall 1401.9 mm.

d. Economy:

Agriculture occupies a vital place in the economy of Angul District, as it provides direct and indirect employment to around 70 % of its total work force, as per the 2001 census. The total cultivable area of this District is 2, 16,403 hectares, covering 32.7 % of its total geographical area. The major crops of the Kharif season are paddy, maize, ragi, oilseeds, pulses, small millets and vegetables etc. Paddy, wheat, maize, field pea, sunflower, garlic, ginger, potato, onion, tobacco, sugarcane and coriander etc are the major Rabi crops.

The last decade has witnessed a tremendous improvement in the industrial scenario of Angul District. Many public sector undertakings have setup up plants and offices here, like National Aluminium Company Limited (NALCO), Mahanadi Coal Fields Limited (MCL), National Thermal Power

Corporation (NTPC) and Talcher Thermal Power Station (TTPS). One of the major coalfields is the Talcher coalfield, which contains huge reserves of power grade non-coking coal. Engineering Units, Rice Mills, Hotels, Fly Ash Brick units, Stone Crushers, Service Units, Bleaching units, Bread and Bakery units, Tyre Retreading units, Flour Mills and Spices Grinding units etc. are some of the small scale industries functioning here.

Dhokra casting works, Terracotta works, Wood carvings, Art textiles and Soft toys etc. are some examples of the crafts that have been generating revenues for this District. The District Industries Center functioning in the District promotes its various industrial activities.

e. Industry:

Angul district is a significant industrial hub in Odisha. It is known for its large-scale industries, including coal, bauxite, and steel and is home to the National Aluminium Company Limited (NALCO), Mahanadi Coal Fields Limited (MCL), National Thermal Power Corporation (NTPC) and Talcher Thermal Power Station (TTPS).

The Micro, small and Medium Enterprises (MSMEs) play a crucial role in the local economy. The district is home to significant industries, including the National Aluminium Company, which is a major contributor to the company. The District Industry Centre (DIC) in Angul provides essential support services for entrepreneurs, helping them set up MSMEs and access various government schemes and subsidies. During the year 2021-22, 1485 nos of Micro, Small and Medium Enterprises have been established with total capital investment of about Rs 7846.69 lakhs with 3055 nos of Employment generated in Angul district.

Apart from this, a good number of Thermal power plants and sponge plants have been established within the district including NTPC and various private companies due to abundant availability of thermal grade coal. Besides various kinds of handicraft works like dhokra casting, bell metals, textile products have been developed by the skilled workers and artisans of the district.

Table-8
Brief Industrial Profile of Angul, 2021-22

No. of MSME units set up	Investment (Rs. In lakhs)	Employment Generated
1485	7846.69	3055

f. Agriculture:

Agriculture continues to be an important livelihood source for a significant portion of the population in Angul district. The district possesses a mix of alluvial, lateritic, and red soils, supported by moderate rainfall and expanding irrigation coverage from major and minor irrigation projects, making it suitable for a variety of agricultural activities. Paddy remains the principal crop cultivated predominantly during the kharif season, followed by pulses, oilseeds, vegetables, and maize. In recent years, farmers have also diversified into horticulture and cash crops owing to improved market access and support services. During the year 2024-25 the net area sown was 141884 hectares against 200575 hectares of the state. The production of was as below:

*Table-9
Agricultural Scenario for year 2024-25*

Name	Production in MT
Paddy	326679
Wheat	0
Maize	6322
Mung	3635
Biri	3701
Kulthi	5985
Til	1606
Groundnut	7648
Mustard	2695
Potatoes	NA
Jute	NA
Sugarcane	5202

g. Fertilizer consumption:

The major fertilizers used include urea, DAP (Di-Ammonium Phosphate), MOP (Muriate of Potash), and complex fertilizers, applied mainly for paddy, pulses, oilseeds, and vegetable cultivation. The average fertilizer consumption in the district is moderate, reflecting balanced use of nutrients based on soil fertility and crop requirements. The total fertilizers used in the district during 2024-25, the total fertilizers used in the district was about 34.29 Kg per Ha.

Table -10
The total fertilizers used in the district in year 2024-25

Type of fertiliser	Nitrogenous	Phosphatic	Pottasic	Total	Consumption (Kg per Ha)
Quantity in MT	3687.05	1965.29	294.9	5947.24	34.29

h. Power:

Consumption of electricity in Angul district during the year 2021-22 is reported, and villages so far electrified as on 31.03.2020 is 1654 revenue villages which constitutes 100% of the total inhabited revenue villages of the district.

i. Transport & Communication:

Angul district has a well-connected transportation and communication network that supports the movement of people, goods, and mineral resources. The district is linked by major national and state highways, along with an efficient rail system centered around Angul and Talcher, which facilitates both passenger travel and mineral transport. While Angul has no commercial airport, it is adequately served through the airport at Bhubaneswar. The district also has reliable mobile, internet, and postal communication services. Overall, this infrastructure plays a key role in supporting industrial development and ensuring smooth, regulated mineral transportation within the district.

Table-11
Roads and Railways Overview (in km)

Communication	Units
Railway route length	102.165 Km
No of Rly stations and PH	13
Forest road	449.53 Km
National Highway	264.04 Km
State Highway	177.38 Km
Major district roads	30.90 Km
Other dist roads	1117.44 Km
Village roads	2425.23 Km
Inter village roads	2032.16 Km
Intra village roads	2359.83

j. Health:

The health sector in Angul district operates through a multi-tiered system of healthcare facilities supported by government institutions, private providers, and voluntary organizations. Services are delivered through the District Headquarters Hospital, CHCs, PHCs, and Health & Wellness Centres, complemented by private hospitals and clinics. Together, these institutions work to improve accessibility, affordability, and the overall quality of healthcare across the district.

Table-12
Category-wise Distribution of Health Institutions and Bed facilities

Category	Units
Medical college/DHq Hospitals	1 No.
Sub divisional hospitals including mobile	3 Nos.
Bed facilities	990 Nos.
Homoeopathic dispensaries	19 Nos.
Ayurvedic dispensaries	16 Nos.
CHC	9 Nos.
PHC	33 Nos.
Health Subcenter	166 Nos.
Mobile Health Unit	1 No. of MHU & 16 Nos. of MHT

k. Tourist places:

There are 13 nos. of tourist center such as Angul, Banarpal, Bhimkand, Binikei, Bulajhar, Deulajhari, Tikarapada, Talchar, Handapapatrapada, Hingulapitha, khuladi, Rengali and Derjanga as identified by Department of Tourism and culture, Odisha. During 2023 the numbers of Domestic tourists were 435224 and foreign tourists were 1228 who visited the tourists' spots of the district

Table-13
List of Tourists Places

Year	Domestic Tourists	Foreign Tourists
2020	206757	119
2021	229257	59
2022	335699	874
2023	435224	1228

l. Forest areas:

The forests in Angul district, spread across both reserved and protected categories, play a vital role in maintaining ecological balance, biodiversity conservation, carbon sequestration, and supporting soil and water conservation efforts. They also provide essential livelihoods for local communities through non-timber forest products, eco-tourism, and minor forest produce collection. As per the latest available official records from the district administration, the forest area constitutes approximately 35.78% of the district's total geographical area (1041.22 sq km out of 2909.54 sq km), underscoring Angul's significant environmental importance within Odisha despite its industrial prominence.

Table-14
Forest Area Statistics – Angul District

Category of forest	Area in Ha
Reserve Forest	51357.137
Proposed Reserve Forest	21845.631
Unclassified Forest	54.2
Demarcated Protected Forest (DRF)	488.068
Village Forest	694.0
Other forest under Revenue Dept	29682.7
Total	104121.736

m. Education:

Angul District features a robust network of educational institutions, from primary and upper primary schools to high schools, higher secondary schools, degree colleges (e.g., Government Autonomous College, Angul; Talcher Autonomous College), and technical institutions (polytechnics, ITIs, and engineering colleges).

The Government of Odisha, along with private partners, is actively enhancing access, infrastructure, and quality through initiatives like Samagra Shiksha, 5T reforms, smart classrooms, and skill development programs, with special focus on rural and tribal areas to reduce dropout rates and improve learning outcomes

Table-15

Category-wise Number of Educational Institutions along with students enrolled– Angul District

Educational Institution	Details	Number
Primary school	No. of Schools	746
	No. of Enrolment	96064
	No. of Teacher	3499
	Pupil Teacher Ratio	27.45
Upper Primary School	No. of Schools	669
	No. of Enrolment	62646
	No. of Teacher	3751
	Pupil Teacher Ratio	16.70
Secondary School	No. of Schools	291
	No. of Enrolment	37786
	No. of Teacher	2297
	Pupil Teacher Ratio	16.45
Higher Secondary	No. of Schools	57
	No. of Enrolment	23247
	No. of Teacher	549
	Pupil Teacher Ratio	42.34

n. Culture & Heritage:

Angul district is very much rich in its fairs and festivals. Laxmi Puja is celebrated in the city of Angul. The celebration starts from Kumar Purnima and continues for long 11 days. Ganesh Puja of Talcher is one of the most famous festivals celebrated in the district. Amb Nua (fresh mango eating), Raja, Gammha Purnima, and Push Punei are functions celebrated by the people with much enthusiasm. The Hingula Jatra in Talcher and the Viswakarma Puja in Angul are of immense importance. The number of fairs and festivals observed in the district showcase its varied culture vividly.

8. LAND UTILIZATION PATTERN IN THE DISTRICT:

The land-use pattern of Angul district reflects a balanced distribution among agriculture, forestry, and other uses. A substantial portion of the district is covered by forests, while agriculture continues to dominate in the non-forest areas. Additional categories include land under non-agricultural use, fallow land, and cultivable waste. Together, these patterns underscore the district's reliance on natural resources for both ecological stability and economic livelihood. The Land utilization pattern of Angul district is as follows:

*Table-16
Land utilization pattern of Angul district*

SI No	Landuse	Area in Ha
1	Forest Area	272000
2	Misc. trees & Grooves	23000
3	Permanent Pasture	36000
4	Culturable Waste	19000
5	Land put to Non Agril Use	28000
6	Barren &Unculturable Land	17000
7	Current Fallow	19000
8	Other Fallow	17000
9	Net Area Sown	197000
10	Mining	10000
Geographical Area		638000

a. Forest Profile of the District

Angul district in central Odisha has extensive forest cover of about 2720km², comprising mainly Moist and Dry Deciduous Forests, Sal forests, and mixed bamboo-rich areas. The forests provide valuable timber (sal, teak, bamboo), NTFPs such as kendu leaves, mahua, sialifibre, honey, and several medicinal plants. These forests support rich wildlife, protect watersheds, and contribute significantly to local livelihoods.

b. Agriculture profile of the district:

Agriculture remains a primary livelihood in Angul district, with farmers adopting diverse practices including intensive paddy cultivation, mixed cropping, crop rotation, pulses-oilseeds intercropping, and horticulture for improved yields.

Angul falls under the Mid Central Table Land agro-climatic zone and comprises eight blocks: Angul, Banrapal, Chhendipada, Athamallik, Kishorenagar, Pallahara, Talcher, and Kaniha. Parts of the district, particularly in riverine and canal-irrigated areas along the Brahmani River, benefit from medium/major irrigation projects, while upland and tribal-dominated blocks (Pallahara, Chhendipada, Athamallik) remain largely rainfed.

*Table-17
Details of cultivated area block wise*

SL.NO.	BLOCK	CULTIVATED AREA (IN HA)
1	Angul	18353
2	Banrapal	12954
3	Banrapal	25559
4	Athamallik	26277
5	Kishorenagar	22129
6	Talcher	3363
7	Kaniha	15461
8	Pallahara	17788
TOTAL		141884

The district has fairly developed agriculture in irrigated pockets, supporting double-cropping and contributing to food security, while rain fed areas focus on drought-resistant crops.

Four major types of soils are found in the district: Red lateritic soils (predominant in uplands, suitable for pulses like arhar, oilseeds, and horticulture); red and yellow soils (suitable for rice-pulse sequences); sandy soils (ideal for groundnut and pulses); and alluvial soils along river basins (highly fertile for paddy, vegetables, and spices).

Table-18
Land use details of District Agricultural Area

Sl No.	District Agriculture Area		Land Use (Fig. in Ha.)
1	Geographical Area		432458
2	Cultivable Area		200575
3	Cultivated Area	High	68111
		Medium	49411
		Low	24362
		Total	141884
4	Paddy Area (Kharif)	High	17770
		Medium	48218
		Low	24232
		Total	90220
5	Cropping Intensity	Year	Cropping Intensity %
		2019-20	141%
		2020-21	140.5 %
		2021-22	137 %
		2022-23	153 %
		2023-24	155%
6	Irrigation Potential	Kharif	50368 Ha.
		Rabi	39651 Ha.
7	Total nos. of GPs	Total number of GP	225 nos.
		Village	1920 nos.
		NAC	2 nos.
		Municipality	1 nos.
8	Major Crops	Kharif	Paddy, Maize, Green gram, Red gram, Groundnut
		Rabi	Green gram, Black gram, Groundnut, Mustard, Kulthi

c. Horticulture profile of the district:

The Horticulture Department in Angul district focuses on enhancing the production and productivity of major fruit crops commonly grow in the region, such as mango, guava, citrus, banana and papaya. The department works toward strengthening the horticulture sector by promoting improved cultivation practices, encouraging and adopting of high-yielding varieties, and facilitating efficient use of available resources.

Table-19
Fruit Plantation Data for Angul District

Year		2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	Total
Fruit Plantation (Area in ha/ Nos)	Mango Normal (ha.)	130	120	130	120	200	700
	Cashew (ha.)	70	120	112	155	250	707
	Mango High/ Medium Density (ha.)	155	160	180	110	150	755
	Banana TC (ha.)	10	8	5	48	38	109
	Papaya (Nos)	2000	2500	2200	20000	12080	38780
	Litchi (ha.)	2	0	0	19	17	38
	Pine Apple (ha.)	0	0	0	0	0	0
	Pomegranate (ha.)	0	0	0	0	0	0
	Amla (ha.)	0	0	0	0	0	0
	Mixed Fruit	0	0	0	0	0	0
	Guava (ha.)	5	3	2	52	50	112
	K. Lime (ha.)	12	15	20	16.5	15	78.5
	Black Pepper (Nos)	0	0	0	0	0	0
	Apple (ha.)	0	0	0	0	0	0
	Orange (ha.)	0	0	0	0	0	0
Tamarind (ha.)	0	0	0	0	0	0	
Name Of Scheme	Central and State Plant	Central and State Plant	Central and State Plant	Central and State Plant	Central and State Plant		

In addition to fruit crops, the department is also placing significant emphasis on the development of perennial crops and vegetable cultivation. By supporting farmers with modern techniques, quality planting materials, and appropriate crop management practices, the department aims to ensure year-round production, diversify income sources, and enhance nutritional security in the district.

Table-20
Perennial and Vegetable Cultivation Data of Angul District

Sl No.	Year	Perennial crop cultivation (Lemon Grass)	Vegetables (Area in ha/Unit) 1 unit (Mushroom) = 150 bed		(Area in ha)		Name of scheme
			Hybrid vegetable (Ha.)	Mushroom	Cut flowers	Loose Flower	
1	2019-20	0	130	10	0	5	Central and State Plan
2	2020-21	0	120	10	0	7	Central and State Plan
3	2021-22	0	120	25	0	5	Central and State Plan
4	2022-23	0	520	485	0	23	Central and State Plan
5	2023-24	0	750	925	0	23	Central and State Plan
	Total	0	1640	1455	0	63	

The department aims to increase crop productivity while also supporting the overall socio-economic development of the farming community by providing technical assistance, training, and access to government schemes. The office is headed by the Deputy Director of Horticulture, who oversees planning, implementation, and monitoring of all horticulture-related activities across the district.

d. Mining activities of the district:

Angul district is richly endowed with significant mineral resources, which play a crucial role in supporting Odisha's industrial growth and contributing substantially to the State Exchequer. The district hosts deposits of coal, fireclay, laterite, and other minor minerals, making it one of the key mining zones in the state.

Angul is largely self-reliant in terms of minor mineral, including road metal (stone), sand, morrum, and laterite, which are widely utilized in construction, infrastructure development, and industrial activities across the district.

9. PHYSIOGRAPHY OF THE DISTRICT:

Physiographically, the district can be divided into three regions:

(i) Northern Mountainous Region

(ii) Central Undulating Plain

(iii) Southern & South-western Mountainous Region.

Northern Mountainous Region: This region contains WNW – ESE trending hills immediately north of the Talcher coalfield and NW-SE trending hills towards the boundary of Keonjhar district which locally changes to E-W direction and form the Malayagiri hill, in the south of Pallahara. Malayagiri hill contains one of the loftiest peaks (1,187 m.a.m.s.l in Odisha. The hills and ridges are separated by broad valleys and low hilly areas. The heights above sea level of this region vary from about 76 meters on the bank of Brahmani River to 1,187 meters on Malayagiri peak. The high hills of this region are composed of Quartzites while the lesser hills are made of Quartz-Mica schists, Granites and other rocks. The broad valleys are mostly underlain by gneissic rocks.

Central Undulating Plain: The Central part of the district is characterized by undulating plain. This region is covered by Talcher subdivision and northern parts of Angul and Athmallik subdivisions. The Brahmani valley portion of this region exposes mainly Granites and its variants and Gneisses with occasional hillocks of Khondalites, while the remaining part from west of Murhi and north of Angul up to the western end of the district is characterized by considerably flat country underlain by sedimentary rocks of Gondwana Group having large deposits of coal (Talcher Coalfield). The general slope of the area is from WNW-ESE.

Southern and South Western Mountainous Region: The Southern and South Western parts comprise of hill ranges trending WNW-ESE and is covered by the sub-divisions of Athmallik and Angul. The elevations vary from 60 to 971 meters above sea level. Banamadali peak in Angul Sub-division is 790 meter in height. In Athamallik Subdivision the main peaks are Panchadhara and Hingamandal hills. The southern & south western 11 hilly regions form the watershed between Brahmani and Mahanadi rivers.

10. RAINFALL AND CLIMATIC CONDITION

The district of Angul experiences a largely sub-humid climate, with a well-defined seasonal cycle that significantly influences its agriculture, water resources and socio-economic landscape. The summers, during April and May, are generally hot with dry to sub-humid condition and the winters, during December and January, are cool and pleasant. The temperature goes as high as up to 45°C in the summer and up to 7°-8° C during peak winter.

The southwest monsoon, active from mid-June to September, delivers most of the district's rainfall, contributing to a long-term annual average of about 1600 mm. The variability in rainfall, particularly during crucial monsoon months, often affects Kharif cultivation and water availability. Understanding these rainfall patterns is essential for effective groundwater management, land-use planning, and promoting sustainable development across the district. The rainfall statistics of the district for last six years is given below in table-21.

Table-21
The rainfall statistics of the district for last five years (in mm)

Year/Month	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	TOTAL
2019-20	241.2	607.6	1208.8	1812.4	2475.2	2166.5	1111.0	0	29.2	196.5	611.6	592.6	11052.6
2020-21	879.7	614.8	1884.1	1904.6	4691.8	1038.6	1408.7	0	0	0	5.0	35.2	12462.5
2021-22	44.8	1283.3	1165.4	2019.2	970.8	3273.6	373.1	286.1	318.2	286.2	19.3	0	10004.0
2022-23	3.2	524.50	1313.2	2361.1	3218.6	803.9	754.9	0.0	0.0	0.0	0.0	337.50	9316.9
2023-24	306.7	267.40	2221.9	2468.81	2571.1	2130.9	1004.6	77.3	78.5	153.4	100.8	577.5	11958.91
2024-25	12.13	52.12	115.74	322.1	349.55	254.9	78.37	6.81	28.62	-	12.18	20.63	1253.15
NORMAL	27.4	63.7	197.6	329.6	336.7	216.8	89.6	18.2	6.6	10.4	12.8	17.3	1326.7

11. GEOLOGY AND MINERAL WEALTH OF THE DISTRICT:

The district can be broadly divided into five sectors such as central, northern, southern, eastern and north-central sectors. The Eastern Ghat Super-group of rocks occurs in the southern sector, whereas the rocks of Gondwana Supergroup, Gorumahasani and Lower Bonai Groups occur in the central, north-central and northernmost sectors respectively. The Quaternary sediments overlie the above groups of rocks and occur in the south, central and eastern parts of the district. The rocks of Eastern Ghat Supergroup, Gorumahasani Group and Lower Bonai Group are overlain by laterites (both in-situ and transported). The Eastern Ghat Super-group of rocks mainly comprises quartz - feldspar -garnet - sillimanite - graphite schist /gneiss, garnetiferous quartzite, charnockite, pyroxene granulite, leptynite and augen gneiss. The meta-sedimentaries of Gorumahasani Group constitute quartzite, gritty quartzite, and quartz - mica schist. Fuchsite quartzite, quartz - chlorite schist, hornblende schist, and metabasics. The Lower Bonai Group constitutes biotite gneiss, biotite-hornblende granite gneiss and granodiorite. Meta-sedimentaries of Lower Bonai Group consist of ferruginous shale, cherty shale, phyllite, sandstone and conglomerate. The Gondwana Supergroup consists of sandstone, shale, conglomerate and fire clay. The Quaternary sediments mainly consist of sandy clay with calcareous concretions, coarse to fine sand, silt and clay.

The geological succession in the district is as follows:

STRATIGRAPHY:

AGE	GROUP/SUPER GROUP	FORMATION	LITHOLOGY
Holocene	Quaternaries	Brahmani / Mahanadi formation	Alluvium
Upper Pleistocene to Holocene		Kaimundi formation	Gray sandy clay with calcareous concretions
Pleistocene	Tertiaries		Laterite / Latosol (in situ)
Permian to Triassic		Mahadeva Formation	Sandstone. shale
Permian	Gondwana Supergroup	Barakar, Barren Measures. Raniganj &	Conglomerate . sandstone, shale, coal

		Damuda Formations (Unclassified)	
Carboniferous (?) to Permian		Talchir Formation	Sandstone, shale, tillite
Archaean to Palaeoproterozoic		Lower Bonai Group	Gabbro Metavolcanics Granite, biotite gneiss, biotite - hornblende granite gneiss, granodiorite
		Gorumahisani Group	Ferruginous shale, cherty shale with ash IBT and tuts, mangarfilerous shale/ phyllite Gritty sandstone, orthoquartzite, conglomerate Metabasics
Archaean		Granitoids	Quartzite, sericite schist, quartz schist, quartz -mica schist, mica schist, micaceous quartzite Actinolite quartzite, tremolite - actinolite schist Augen gneiss, garnetiferous gneiss, biotite gneiss, migmatisedkhondalite Leptynite
	Eastern Ghat Supergroup	Charnockite Group	Acid and intermediate charnockite Basic charnockite, pyroxene granulite
		Khondalite Group	Quartz-feldspar-garnet- sillimanite graphite schist/ gneiss Coarse crystalline quartzite, quartz-sillimanite schist, garnetiferous quartzite

Angul district is enriched with many valuable economic minerals like coal, Kyanite, graphite, fireclay, china clay, precious and semi-precious stones, dimension and decorative stones etc.

Coal:

Angul district occupies a significant position in the mineral map of India because of its vast resources of coal in the Talcher coal field. A total reserve of 50,406 million tonnes of coal of all categories has been estimated in the district in Talcher coalfield. The Karaharbari and Barakar formations belonging to Damuda series are coals bearing. Coal produced in this area is mostly used for power generation purpose.

Fireclay:

Fireclay occurs sporadically within a stretch of 15 sq. km area in and around Badaganduri, Kansamunda and Telisinga villages of Kaniha Block, Angul district. In Talcher Lower Gondwana basin, the fireclay beds usually overly the coal seams. Fireclay also occurs in Handapa area around Kakarpani, Ichhapur villages. The total fireclay resource of the district has been estimated at 1.22 million tonnes. This fireclay contains Lower Gondwana plant fossils like Glossopteris and Gangompteris.

Kyanite:

Kyanite occurrences are reported around Magarmuhan and Bankoli villages of Pallahara sub-division. In Magarmuhan, Kyanite occurs in association with quartzite-kyanite-schist and quartz-chlorite-kyanite schist extending over a length 1.5 km with an average width of 5 m. A reserve of 6000 tonnes of Kyanite has been inferred upto a depth of 1.5 m with Al₂O₃ content varying from 19.02% to 53.81% and silica content varying from 32.84% to 54.07%.

Graphite:

Incidence of graphite are recorded in the khondalite suite of rocks within a 25 km long and 10 km wide belt extending in NW-SE direction between Dondatopa and Patharkupa of Athmallik sub-division. The graphite occurs as flakes and disseminations. The important locations are Kamalpur, Dandatopa, Bhuasuninali, Adeswar, Girida, Akharkata, Sanrohila, Lanchi, Govindapur, Polamahal, Siariamalia, Cherkhandi, Karadagadia, Dhauragoth, Brahmanidei and Padmapokhari. Graphite occurrence near Dandatopa is high grade and pocket type where the F.C. content varies between 54% to 77%. In the remaining areas, graphite occurs as disseminations and flakes in khondalites with F.C. content ranging from 5% to 15%. Besides the above, occurrences of graphite are reported around Badakantakul, Kanja and Talisara in Angul sub-division.

China clay:

China clay occurs in Panduripathar area of Athmallik sub-division. It extends over a strike length of 250 m with an average width of 150 m.

Precious and Semi-Precious Stones:

Garnet (pink, violet, red and honey yellow varieties), red corundum, moonstone, blue Kyanite etc. have been reported in Nuagaon, Parhang, Burubura, Kulad, Karanpal area of the district.

Manganese Ore:

Floats of Pyrolusite and psillomelane are strewn over the ground near Teleipathar, Pathartaila and Akharkata village.

Decorative and Dimension stone:

Granite, granite-gneiss, porphyritic granite gneiss and charnockites exposed between Boinda and Athmallik along the roadside are suitable for decorative and dimension stone. 4800 cu.m of decorative and dimension stone has been estimated in Govinda Panasahi and Durgapur Panasahi.

Other than the above-mentioned minerals, minor minerals such as river sand, laterite slabs, building stone/black stone/road metals, morrum, brick earth etc. are also available in the district.

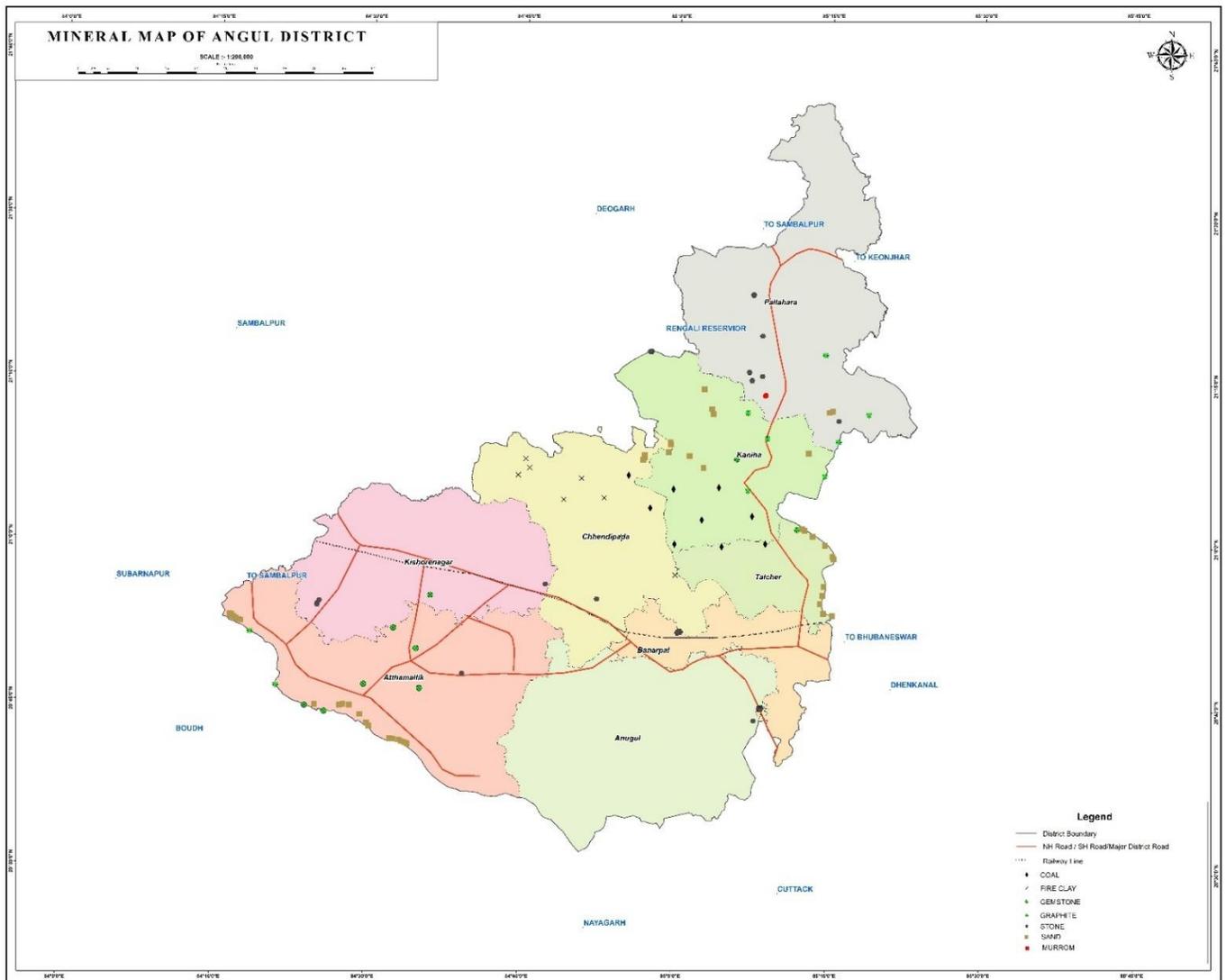


Fig 4: Mineral Map of Angul District

12. DETAIL OF RIVER STREAM AND OTHER SAND SOURCE:

Sl. No.	Name of the River	Financial Year	Rate of Deposition of Sediments
1	Mahanadi	2022-23	MODERATE
		2023-24	MODERATE
		2024-25	MODERATE
2	Brahmani	2022-23	MODERATE
		2023-24	MODERATE
		2024-25	MODERATE
3	Lingara	2022-23	SLOW
		2023-24	SLOW
		2024-25	SLOW
4	Aunli	2022-23	SLOW
		2023-24	SLOW
		2024-25	SLOW
5	Samakoi	2022-23	SLOW
		2023-24	SLOW
		2024-25	SLOW
6	Manjore	2022-23	SLOW
		2023-24	SLOW
		2024-25	SLOW
7	Mankada	2022-23	SLOW
		2023-24	SLOW
		2024-25	SLOW
8	Tikira	2022-23	SLOW
		2023-24	SLOW
		2024-25	SLOW

13. CONCLUSION:

The District Survey Report for *Sand (Minor Mineral)* in respect of Angul District prepared 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 (“Sustainable Sand Mining Management Guidelines, 2016”) 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. This report provides information on the development and planning of the district gathered from various government departments, i.e., Irrigation Department, Forest Department, Public Works Department, Revenue Department, Water Resource Department, ORSAC, and Mining Department.

Angul district has witnessed rapid industrialization and infrastructure growth in recent years, increasing demand for sand and other minor minerals. To ensure sustainable resource management and bridge demand–supply gaps, a comprehensive District Survey Report (DSR) for *Sand (Minor Mineral)* has been prepared for five years. The DSR outlines geological settings, sand availability, environmental safeguards, monitoring mechanisms, and regulatory compliance, supporting planned mining, curbing illegal extraction, and enhancing district and state revenue. The DSR of Angul District serves as a vital tool for guiding responsible sand mining operations, ensuring resource availability for infrastructure and development while maintaining ecological stability and environmental integrity for future generations.

A. SALIENT FEATURES OF IMPORTANT RIVERS & STREAMS:

SL N O.	NAME OF THE RIVER OR STREAM	TOTAL LENGTH IN THE DISTRICT (IN KM)	PLACE OF ORIGIN	ALTITUDE AT ORIGIN IN M FROM MSL	AREA DRAINED (SQ KM)	PORTION OF THE RIVER OR STREAM RECOMMENDED FOR MINERAL CONCESSION	LENGTH OF AREA RECOMMENDED FOR MINERAL CONCESSION (IN M)	AVERAGE WIDTH OF AREA RECOMMENDED FOR MINERAL CONCESSION (IN M)	AREA RECOMMENDED FOR MINERAL CONCESSION (IN SQ. M)	MINEABLE MINERAL (IN CUM) (60% OF TOTAL MINERAL POTENTIAL)
1	Ulani	28	Hilly Region of Redhakhol	720	210	BADABERENA SAND QUARRY	561.86	36.24	0.830	18550
2	Tikira	35	Geol-Mundi in Khalasuni wildlife sanctuary in the Badrama Range of the Bamra Forest of Sambalpur District.	750	260	MANDUA SAND QUARRY	267.72	187.19	5.000	26274
3	Tikira	35	Geol-Mundi in Khalasuni wildlife sanctuary in the Badrama Range of the Bamra Forest of Sambalpur District.	750	260	MANDUA SAND QUARRY A	409.41	158.06	6.471	66004.2
4	Tikira	35	Geol-Mundi in Khalasuni wildlife sanctuary in the Badrama Range of the Bamra Forest of Sambalpur District.	750	260	Kampasala Sand Quarry 1	396.04	28.48	1.128	11505.6
5	Tikira	35	Geol-Mundi in Khalasuni wildlife sanctuary in the Badrama Range of the Bamra Forest of Sambalpur District.	750	260	Kampasala Sand Quarry 2	416.01	31.43	1.307	13331.4

6	Brahmani	65	Confluence point of Sankh and South Keol rivers meet near Rourkela	700	1180	GOPINATHPUR SAND QUARRY	477.27	190.92	9.110	98,843
7	Brahmani	65	Confluence point of Sankh and South Keol rivers meet near Rourkela	700	1180	HATURIPAL SAND QUARRY	614.58	174.29	10.724	45,430
8	Brahmani	65	Confluence point of Sankh and South Keol rivers meet near Rourkela	700	1180	NIZGARHZAMI SAND QUARRY	429.70	229.23	10.060	90,636
9	Brahmani	65	Confluence point of Sankh and South Keol rivers meet near Rourkela	700	1180	SANTHAPADA-A SAND QUARRY	488.77	231.78	7.285	1,24,416
10	Brahmani	65	Confluence point of Sankh and South Keol rivers meet near Rourkela	700	1180	SANTHAPADA-B SAND QUARRY	488.64	231.77	7.285	18,900
11	Brahmani	65	Confluence point of Sankh and South Keol rivers meet near Rourkela	700	1180	SIRIGIDA SAND QUARRY	386.60	188.05	7.280	64,289
12	Brahmani	65	Confluence point of Sankh and South Keol rivers meet near Rourkela	700	1180	KANKILI SAND QUARRY	356.48	204.41	7.285	69,955
13	Brahmani	65	Confluence point of Sankh and South Keol rivers meet near Rourkela	700	1180	KANKILI SAND QUARRY A	469.90	144.65	6.797	75106.85

14	Brahmani	65	Confluence point of Sankh and South Keol rivers meet near Rourkela	700	1180	KANKILI SAND QUARRY B	378.25	309.92	11.723	129539.15
15	Brahmani	65	Confluence point of Sankh and South Keol rivers meet near Rourkela	700	1180	Gurujang Sand Quarry 1	465.31	406.77	18.928	209154.4
16	Brahmani	65	Confluence point of Sankh and South Keol rivers meet near Rourkela	700	1180	Gurujang Sand Quarry 2	440.96	357.85	15.78	160956
17	Samakoi	36	Nalapanga reserve forest of Ghatagaon, Keonjhar	800	350	BURUKUNA SAND QUARRY	357.26	43.50	1.214	22685
18	Brahmani	65	Confluence point of Sankh and South Keol rivers meet near Rourkela	700	1180	DENALI SAND QUARRY	261.97	184.98	4.856	40501
19	Tikira	35	Geol-Mundi in Khalasuni wildlife sanctuary in the Badrama Range of the Bamra Forest of Sambalpur District.	750	260	DERANG SAND QUARRY	877.35	69.68	6.070	117370
20	Tikira	35	Geol-Mundi in Khalasuni wildlife sanctuary in the Badrama Range of the Bamra Forest of Sambalpur District.	750	260	KHAJURIA SAND QUARRY	1118.32	53.95	6.070	93506

21	Tikira	35	Geol-Mundi in Khalasuni wildlife sanctuary in the Badrama Range of the Bamra Forest of Sambalpur District.	750	260	TAKUA SAND QUARRY	711.23	116.78	8.296	28901
22	Brahmani	65	Confluence point of Sankh and South Keol rivers meet near Rourkela	700	1180	BAJRAKOTE SAND QUARRY	246.22	193.31	4.788	8178
23	Brahmani	65	Confluence point of Sankh and South Keol rivers meet near Rourkela	700	1180	BAJRAKOTE SAND QUARRY A	402.41	203.02	8.170	83334
24	Tikira	35	Geol-Mundi in Khalasuni wildlife sanctuary in the Badrama Range of the Bamra Forest of Sambalpur District.	750	260	Uchabali Sand Quarry	185.40	57.47	1.065	5431
25	Mahanadi	61	Amarkanta Malabhumi, Chhattisgarh	1048	1,420	GHODAMARA GHAT RIVER SAND QUARRY	273.90	251.05	4.856	50,657
26	Mahanadi	61	Amarkanta Malabhumi, Chhattisgarh	1048	1,420	GHODAMARA GHAT RIVER SAND QUARRY-A	594.68	252.09	14.991	305816.4
27	Mahanadi	61	Amarkanta Malabhumi, Chhattisgarh	1048	1,420	KEUTABHUIN SAND QUARRY	1166.96	302.82	35.289	6,62,796
28	Mahanadi	61	Amarkanta Malabhumi, Chhattisgarh	1048	1,420	KHADARAPADA SAND QUARRY	455.71	266.45	12.141	2.20,850
29	Mahanadi	61	Amarkanta Malabhumi, Chhattisgarh	1048	1,420	NILAKANTHAPADA SAND QUARRY	814.35	269.05	21.934	4,03,926
30	Mahanadi	61	Amarkanta Malabhumi, Chhattisgarh	1048	1,420	ODASINGA SAND QUARRY	573.36	124.93	140.457	26,99,066

31	Mahanadi	61	Amarkanta Malabhumi, Chhattisgarh	1048	1,420	TAINSAR SAND QUARRY	698.56	276.17	20.558	76,125
32	Mahanadi	61	Amarkanta Malabhumi, Chhattisgarh	1048	1,420	NAIKPADA SAND QUARRY	268.27	192.70	4.856	36,000
33	Mahanadi	61	Amarkanta Malabhumi, Chhattisgarh	1048	1,420	NAIKPADA SAND QUARRY-A	410.29	225.64	9.258	180993.9
34	Mahanadi	61	Amarkanta Malabhumi, Chhattisgarh	1048	1,420	NAIKPADA SAND QUARRY-B	642.80	289.63	18.618	348156.6
35	Mahanadi	61	Amarkanta Malabhumi, Chhattisgarh	1048	1,420	DHULIAPADA SAND QUARRY-A	649.23	301.14	19.551	382222.05
36	Mahanadi	61	Amarkanta Malabhumi, Chhattisgarh	1048	1,420	DHULIAPADA SAND QUARRY-B	672.08	313.94	21.099	412485.45
37	Mahanadi	61	Amarkanta Malabhumi, Chhattisgarh	1048	1,420	HATUAPADA SAND QUARRY A	377.41	247.06	9.324	190209.6
38	Mahanadi	61	Amarkanta Malabhumi, Chhattisgarh	1048	1,420	HATUAPADA SAND QUARRY B	576.04	257.53	14.835	290024.25
39	Mahanadi	61	Amarkanta Malabhumi, Chhattisgarh	1048	1,420	HINSEI SAND QUARRY	392.92	242.56	9.53	186311.5
40	Mahanadi	61	Amarkanta Malabhumi, Chhattisgarh	1048	1,420	LIPILEI SAND QUARRY A	343.09	250.70	8.601	160838.7
41	Mahanadi	61	Amarkanta Malabhumi, Chhattisgarh	1048	1,420	LIPILEI SAND QUARRY B	362.02	175.87	6.367	124474.85
42	Mahanadi	61	Amarkanta Malabhumi, Chhattisgarh	1048	1,420	Haridakotha Sand Quarry	261.13	187.97	4.908	100123.2
43	Mahanadi	61	Amarkanta Malabhumi, Chhattisgarh	1048	1,420	Kuteswar Sand Quarry	474.98	161.03	7.649	149537.95
44	Mahanadi	61	Amarkanta Malabhumi, Chhattisgarh	1048	1,420	Satbandhali Sand Quarry	434.06	200.04	8.683	169752.65
45	Samakoi	36	Nalapanga reserve forest of Ghatagaon, Keonjhar	800	350	KUNJAM SAND QUARRY	244.82	107.15	4.656	4225.5

B. AVAILABILITY OF SAND OR GRAVEL OR AGGREGATE RESOURCES

MINERAL POTENTIAL:

SAND(CUM)	TOTAL MINEABLE MINERAL POTENTIAL(CUM)
1,02,42,325	53,91,149

ANNUAL DEPOSITION:The annual replenished volume is considered as the annual deposition.

Sl No.	Name of the River or Stream	Portion of the River or Stream Recommended for Mineral Concession	Length of area recommended for mineral concession (in M)	Average width of area recommended for mineral concession (in M)	Area recommended for mineral concession (in Sq. M)	Mineable mineral (in Cum) (60% of total mineral potential)
1	Ulani	BADABERENA SAND QUARRY	561.86	36.24	0.830	18550
2	Tikira	MANDUA SAND QUARRY	267.72	187.19	5.000	26274
3	Tikira	MANDUA SAND QUARRY A	409.41	158.06	6.471	66004.2
4	Tikira	KAMPASALA SAND QUARRY 1	396.04	28.48	1.128	11505.6
5	Tikira	KAMPASALA SAND QUARRY 2	416.01	31.43	1.307	13331.4
6	Brahmani	GOPINATHPUR SAND QUARRY	477.27	190.92	9.110	98,843
7	Brahmani	HATURIPAL SAND QUARRY	614.58	174.29	10.724	45,430
8	Brahmani	NIZGARHZAMI SAND QUARRY	429.70	229.23	10.060	90,636
9	Brahmani	SANTHAPADA-A SAND QUARRY	488.77	231.78	7.285	1,24,416
10	Brahmani	SANTHAPADA-B SAND QUARRY	488.64	231.77	7.285	18,900
11	Brahmani	SIRIGIDA SAND QUARRY	386.60	188.05	7.280	64,289
12	Brahmani	KANKILI SAND QUARRY	356.48	204.41	7.285	69,955

13	Brahmani	KANKILI SAND QUARRY A	469.90	144.65	6.797	75106.85
14	Brahmani	KANKILI SAND QUARRY B	378.25	309.92	11.723	129539.15
15	Brahmani	GURUJANG SAND QUARRY 1	465.31	406.77	18.928	209154.4
16	Brahmani	GURUJANG SAND QUARRY 2	440.96	357.85	15.78	160956
17	Samakoi	BURUKUNA SAND QUARRY	357.26	43.50	1.214	22685
18	Brahmani	DENALI SAND QUARRY	261.97	184.98	4.856	40501
19	Tikira	DERANG SAND QUARRY	877.35	69.68	6.070	117370
20	Tikira	KHAJURIA SAND QUARRY	1118.32	53.95	6.070	93506
21	Tikira	TAKUA SAND QUARRY	711.23	116.78	8.296	28901
22	Brahmani	BAJRAKOTE SAND QUARRY	246.22	193.31	4.788	8178
23	Brahmani	BAJRAKOTE SAND QUARRY A	402.41	203.02	8.170	83334
24	Tikira	UCHABALI SAND QUARRY	185.40	57.47	1.065	5431
25	Mahanadi	GHODAMARA GHAT RIVER SAND QUARRY	273.90	251.05	4.856	50,657
26	Mahanadi	GHODAMARA GHAT RIVER SAND QUARRY- A	594.68	252.09	14.991	305816.4
27	Mahanadi	KEUTABHUIN SAND QUARRY	1166.96	302.82	35.289	6,62,796
28	Mahanadi	KHADARAPADA SAND QUARRY	455.71	266.45	12.141	2,20,850
29	Mahanadi	NILAKANTHAPADA SAND QUARRY	814.35	269.05	21.934	4,03,926
30	Mahanadi	ODASINGA SAND QUARRY	573.36	124.93	140.457	26,99,066
31	Mahanadi	TAIN SAR SAND QUARRY	698.56	276.17	20.558	76,125
32	Mahanadi	NAIKPADA SAND QUARRY	268.27	192.70	4.856	36,000
33	Mahanadi	NAIKPADA SAND QUARRY- A	410.29	225.64	9.258	180993.9

34	Mahanadi	NAIKPADA SAND QUARRY- B	642.80	289.63	18.618	348156.6
35	Mahanadi	DHULIAPADA SAND QUARRY- A	649.23	301.14	19.551	382222.05
36	Mahanadi	DHULIAPADA SAND QUARRY- B	672.08	313.94	21.099	412485.45
37	Mahanadi	HATUAPADA SAND QUARRY A	377.41	247.06	9.324	190209.6
38	Mahanadi	HATUAPADA SAND QUARRY B	576.04	257.53	14.835	290024.25
39	Mahanadi	HINSEI SAND QUARRY	392.92	242.56	9.53	186311.5
40	Mahanadi	LIPILEI SAND QUARRY A	343.09	250.70	8.601	160838.7
41	Mahanadi	LIPILEI SAND QUARRY B	362.02	175.87	6.367	124474.85
42	Mahanadi	HARIDAKOTHA SAND QUARRY	261.13	187.97	4.908	100123.2
43	Mahanadi	KUTESWAR SAND QUARRY	474.98	161.03	7.649	149537.95
44	Mahanadi	SATBANDHALI SAND QUARRY	434.06	200.04	8.683	169752.65
45	Samakoi	KUNJAM SAND QUARRY	244.82	107.15	4.656	4225.5
Total					565.685	8351893.2

C. DETAILS OF EXISTING MINING LEASE OF SAND AND AGGREGATES:

For Details please refer to point no. 3 and Annexure I to VII

DETAILS OF SAND/M-SAND SOURCES:

a) Rivers:

River Name/M-Sand Plant	Total Stretch of River (in KM)	Type of River (Perennial or Non-perennial)
MAHANADI	61	Non-perennial
BRAHMANI	65	Non-perennial
LINGARA	51	Perennial
AUNLI	28	Perennial
SAMAKOI	36	Perennial
MANJORE	40	Perennial
MANKADA	15	Perennial
TIKIRA	35	Perennial

b) De-siltation Location: (Lakes/Ponds/Dams etc.)

NAME OF RESERVOIR/DAMS	MAINTAIN/CONTROLLED BY STATE GOVT./PSU ETC.	LOCATION	DISTRICT	TAHASIL	VILLAGE	SIZE (HA)
NOT APPLICABLE						

c) Patta Lands/Khatedari Land:

OWNER	SY. NO	AREA (HA)	DISTRICT	TAHASIL	VILLAGE	AGRICULTURE LAND (YES/NO)
NOT APPLICABLE						

d) M-Sand Plants:

PLANT NAME	OWNER	DISTRICT	TAHASIL	VILLAGE	GEO-LOCATION	QUANTITY TONNES/ANNUM
NOT APPLICABLE						

Note: For inclusion of M-Sand Plant/Patta Land in DSR the plant/landowners need to submit the request to the Mining Department with complete details. Inclusion in DSR does not give them the right to operate the M-Sand Plant/Sand Mining lease.

FINAL LIST OF POTENTIAL MINING LEASES (EXISTING AND PROPOSED):

SI No	TAHASIL	RIVER DETAILS	LEASE DETAILS			AREA (IN HA)	DISTANCE (IN KM FROM PA/BR/W C)	DISTANC E FROM FOREST AREA (IN KM)	MININ G LEASES WITHIN 500 METER S (IF YES CLUSTE R AREA)	TOTAL EXCAVATIO N IN TONES / ANNUM CONSIDERIN G DIGGING DEPTH MAX AS 3 METERS	MINERAL TO BE MINED (SAND / BAJRI / RBM ETC.)	EXISTING / PROPOSED	REMARKS
			LEASE NAME	KHAT A	PLOT								
1	Chhendipa da	Ulani	BADABERENA SAND QUARRY	316	4016	0.830	5.5/2/0	5.5	NO	3710	18550.00	Non- Working	STATUTO RY CLEARANC E AWAITED
2	Chhendipa da	Tikira	MANDUA SAND QUARRY	70	2201	5.000	1/2.5/0	1.5	YES	5255	26274.00	Working	
3	Chhendipa da	Tikira	MANDUA SAND QUARRY A	70	2201/p	6.471	0.49/3/0	2.27	YES	13200	66004.20	NEW	
4	Chhendipa da	Tikira	Kampasala Sand Quarry 1	323	6019	1.128	3.5/0.9/0	4.5	YES	2302	11505.60	NEW	
5	Chhendipa da	Tikira	Kampasala Sand Quarry 2	323	5954	1.307	4.39/0.4/0	1.12	YES	2666	13331.40	NEW	
6	TALCHER	Brahma ni	GOPINATHPUR SAND QUARRY	83	100/343	9.110	10.29/2/0	1.51	NO	19768	98843.00	Non- Working	STATUTO RY CLEARANC E AWAITED
7	TALCHER	Brahma ni	HATURIPAL SAND QUARRY	34	1	10.724	9.5/23/0	5.5	NO	9086	45430.00	Working	
8	TALCHER	Brahma ni	NIZGARHZAMI SAND QUARRY	646	3695	10.060	9.6/0.5/0	2.15	NO	18127	90636.00	Working	
9	TALCHER	Brahma ni	SANTHAPADA-A SAND QUARRY	480	4198	7.285	8.11/20.5/ 0	4	YES	24883	124416.00	Working	

10	TALCHER	Brahmani	SANTHAPADA-B SAND QUARRY	480	4198	7.285	8/20.5/0	4	YES	3780	18900.00	Non-Working	STATUTORY CLEARANCE AWAITED
11	TALCHER	Brahmani	SIRIGIDA SAND QUARRY	142	1791	7.280	3.8/11/0	2.4	NO	12858	64289.00	Working	
12	TALCHER	Brahmani	KANKILI SAND QUARRY	778	7446/8031	7.285	8.36/9.1/0	2.8	YES	13991	69955.00	Non-Working	STATUTORY CLEARANCE AWAITED
13	TALCHER	Brahmani	KANKILI SAND QUARRY A	778	1	6.797	6.17/7.1/0	1.48	YES	15021	75106.85	NEW	
14	TALCHER	Brahmani	KANKILI SAND QUARRY B	778	8031	11.723	8.67/7.1/0	3.7	YES	25908	129539.15	NEW	
15	TALCHER	Brahmani	Gurujang Sand Quarry 1	523	5361	18.928	2.13/9.4/0	2.5	YES	41831	209154.40	NEW	
16	TALCHER	Brahmani	Gurujang Sand Quarry 2	523	5361	15.78	2.5/9.4/0	2.5	YES	32191	160956.00	NEW	
17	KANIHA	Samakoi	BURUKUNA SAND QUARRY	185	2006/1, 2243/1	1.214	13.65/1/0	2.12	NO	4537	22685.00	Working	
18	KANIHA	Brahmani	DENALI SAND QUARRY	132	2412/1	4.856	9.5/15/0	4	NO	8100	40501.00	Working	
19	KANIHA	Tikira	DERANG SAND QUARRY	758	8953/10218	6.070	4/6.5/0	2	YES	23474	117370.00	Working	
20	KANIHA	Tikira	KHAJURIA SAND QUARRY	59	1000	6.070	4/6/0	2	YES	18701	93506.00	Non-Working	STATUTORY CLEARANCE AWAITED
21	KANIHA	Tikira	TAKUA SAND QUARRY	99	2207	8.296	4.5/3.7/0	1	NO	5780	28901.00	Non-Working	STATUTORY CLEARANCE AWAITED
22	KANIHA	Brahmani	BAJRAKOTE SAND QUARRY	519	2402	4.788	8/2.5/0	2	YES	1635	8178.00	Working	
23	KANIHA	Brahmani	BAJRAKOTE SAND QUARRY A	519	5656	8.170	7.55/9.8/0	1.27	YES	16666	83334.00	NEW	
24	KANIHA	Tikira	Uchabali Sand Quarry	46	1	1.065	1.92/1.7/0	0.186	NO	1086	5031	NEW	

25	ATHAMALLI K	Mahana di	GHODAMARA GHAT RIVER SAND QUARRY	840	3359	4.856	29/2.5/0	1.5	YES	10131	50657.00	Working	
26	ATHAMALLI K	Mahana di	GHODAMARA GHAT RIVER SAND QUARRY- A	840	3358	14.991	29.54/3.1/ 0	1.61	YES	61163	305816.40	NEW	
27	ATHAMALLI K	Mahana di	KEUTABHUIN SAND QUARRY	7	25	35.289	23/3.6/0	8.5	YES	132559	662796.00	Non- Working	STATUTO RY CLEARANC E AWAITED
28	ATHAMALLI K	Mahana di	KHADARAPADA SAND QUARRY	33	410	12.141	21/6.4/0	7	NO	44170	220850.00	Non- Working	STATUTO RY CLEARANC E AWAITED
29	ATHAMALLI K	Mahana di	NILAKANTHAPA DA SAND QUARRY	72	762	21.934	20/4.5/0	7	NO	80785	403926.00	Non- Working	STATUTO RY CLEARANC E AWAITED
30	ATHAMALLI K	Mahana di	ODASINGA SAND QUARRY	173	1829, 1835	140.45 7	25/7.1/0	8	YES	539813	2699066.0 0	Non- Working	STATUTO RY CLEARANC E AWAITED
31	ATHAMALLI K	Mahana di	TAIN SAR SAND QUARRY	72	741, 747	20.558	19/11/0	8	NO	15225	76125.00	Working	
32	ATHAMALLI K	Mahana di	NAIKPADA SAND QUARRY	67	349	4.856	10/4.5/0	2.5	YES	7200	36000.00	Working	
33	ATHAMALLI K	Mahana di	NAIKPADA SAND QUARRY- A	67	349	9.258	10.19/4.1/ 0	1.93	YES	36200	180993.90	NEW	
34	ATHAMALLI K	Mahana di	NAIKPADA SAND QUARRY- B	67	349	18.618	10.02/4.2/ 0	2.83	YES	69631	348156.60	NEW	
35	ATHAMALLI K	Mahana di	DHULIAPADA SAND QUARRY- A	55	632	19.551	9.7/3.7/0	1.94	YES	76444	382222.05	NEW	
36	ATHAMALLI K	Mahana di	DHULIAPADA SAND QUARRY- B	55	632	21.099	9.28/3.2/0	1.91	YES	82497	412485.45	NEW	

37	ATHAMALLI K	Mahana di	HATUAPADA SAND QUARRY A	24	238	9.324	8.86/2.4/0	3.54	YES	38042	190209.60	NEW	
38	ATHAMALLI K	Mahana di	HATUAPADA SAND QUARRY B	24	237	14.835	31.58/2.8/ 0	5.52	YES	58005	290024.25	NEW	
39	ATHAMALLI K	Mahana di	HINSEI SAND QUARRY	73	971	9.53	20.13/8/0	5.83	NO	37262	186311.50	NEW	
40	ATHAMALLI K	Mahana di	LIPILEI SAND QUARRY A	172	2298	8.601	30.206/4/ 0	5.09	YES	32168	160838.70	NEW	
41	ATHAMALLI K	Mahana di	LIPILEI SAND QUARRY B	172	2299	6.367	30.87/4.5/ 0	5.74	YES	24895	124474.85	NEW	
42	ATHAMALLI K	Mahana di	Haridakotha Sand Quarry	47	294	4.908	31.54/5.2/ 0	1.76	NO	20025	100123.20	NEW	
43	ATHAMALLI K	Mahana di	Kuteswar Sand Quarry	135	1660	7.649	31.78/5.6/ 0	5.46	NO	29907	149537.95	NEW	
44	ATHAMALLI K	Mahana di	Satbandhali Sand Quarry	55	305	8.683	31.17/4.9/ 0	5.78	NO	33950	169752.65	NEW	
45	PALLAHAR A	Samakoi	KUNJAM SAND QUARRY	187	1137, 1902, 1141	4.656	8/6/0	2	NO	845	4225.50	Non- Working	STATUTO RY CLEARANC E AWAITED

NB: The resource estimation is tentative and the actual resource will be estimated as per the approved mining plan.

Annexure VI

FINAL LIST OF CLUSTER AND CONTIGUOUS CLUSTER DETAILS

13 clusters have been identified in Angul District. Details of the clusters are as below:

River Name	Cluster No	Lease No	Location (River bed / Patta land)	Village	Area (in Hect.)	Total excavation	Total Mineral Excavation
Tikira	CHH-1	1	MANDUA SAND QUARRY	MANDUA	5	43790	26274
Tikira		2	MANDUA SAND QUARRY A	MANDUA	6.471	110007	66004.2
Tikira	CHH-2	1	KAMPASALA SAND QUARRY 1	Kampasala	1.128	19176	11505.6
Tikira		2	KAMPASALA SAND QUARRY 2	Kampasala	1.307	22219	13331.4
Brahmani	TAL-1	1	SANTHAPADA-A SAND QUARRY	SANTHAPADA	7.285	207360	1,24,416
Brahmani		2	SANTHAPADA-B SAND QUARRY	SANTHAPADA	7.285	31500	18,900
Brahmani	TAL-2	1	KANKILI SAND QUARRY	KANKILI	7.285	116591.6667	69,955
Brahmani		2	KANKILI SAND QUARRY A	KANKILI	6.797	125178.0833	75,106.85
Brahmani		3	KANKILI SAND QUARRY B	KANKILI	11.723	215898.5833	1,29,539.15
Brahmani	TAL-3	1	GURUJANG SAND QUARRY 1	Gurujang	18.928	348590.6667	2,09,154
Brahmani		2	GURUJANG SAND QUARRY 2	Gurujang	15.78	268260	1,60,956
Tikira	KAN-1	1	DERANG SAND QUARRY	DERANG	6.070	195616.6667	117370.00
Tikira		2	KHAJURIA SAND QUARRY	KHAJURIA	6.070	155843.3333	93506.00
Brahmani	KAN-2	1	BAJRAKOTE SAND QUARRY	BAJRAKOTE	4.788	13630	8,178
Brahmani		2	BAJRAKOTE SAND QUARRY A	BAJRAKOTE	8.17	138890	83334
Mahanadi	ATH-1	1	GHODAMARA GHAT RIVER SAND QUARRY	KAINTRAGARH	4.856	84428.33333	50,657
Mahanadi		2	GHODAMARA GHAT RIVER SAND QUARRY- A	KAINTRAGARH	14.991	509694	305816.4
Mahanadi	ATH-2	1	KEUTABHUIN SAND QUARRY	KEUTABHUIN	35.289	1104660	662796.00
Mahanadi		2	ODASINGA SAND QUARRY	ODASINGA	140.457	4498443.333	2699066.00
Mahanadi	ATH-3	1	NAIKPADA SAND QUARRY	NAIKPADA	4.856	60000	36,000
Mahanadi		2	NAIKPADA SAND QUARRY-A	NAIKPADA	9.258	301656.5	180993.9
Mahanadi		3	NAIKPADA SAND QUARRY-B	NAIKPADA	18.618	580261	348156.6

Mahanadi	ATH-4	1	DHULIAPADA SAND QUARRY- A	DHULIAPADA	19.551	637036.75	382222.05
Mahanadi		2	DHULIAPADA SAND QUARRY- B	DHULIAPADA	21.099	687475.75	412485.45
Mahanadi	ATH-5	1	HATUAPADA SAND QUARRY A	HATUAPADA	9.324	317016	190209.6
Mahanadi		2	HATUAPADA SAND QUARRY B	HATUAPADA	14.835	483373.75	290024.25
Mahanadi	ATH-6	1	LIPILEI SAND QUARRY A	LIPILEI	8.601	268064.5	160838.7
Mahanadi		2	LIPILEI SAND QUARRY B	LIPILEI	6.367	207458.0833	124474.85

CONTIGUOUS CLUSTERS:

RIVER NAME	CONTIGUOUS CLUSTER NO.	CLUSTER NO.	NUMBER OF LEASES IN THE CLUSTER	LOCATION (RIVERBED/ PATTA LAND)	DISTANCE BETWEEN CLUSTERS	VILLAGE	AREA OF CLUSTER (HA)	TOTAL MINERAL EXCAVATION (TON)
NOT APPLICABLE								

Annexure VII

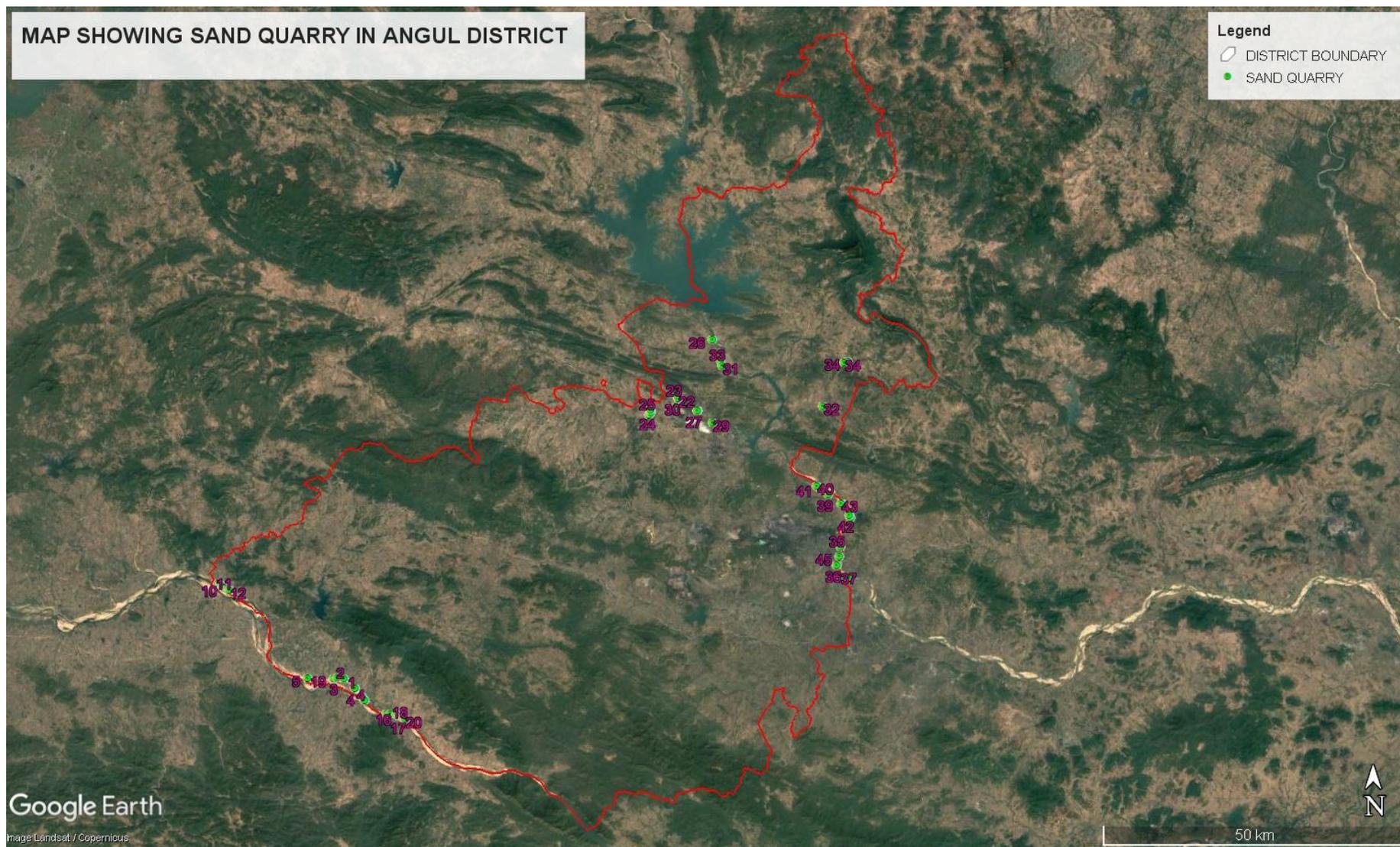
FINAL LIST TRANSPORTATION ROUTES FOR INDIVIDUAL LEASES AND LEASES IN CLUSTER:

LEASE NO	NAME OF SOURCE (SAND)	TRANSPORTATION ROUTE NO.	NUMBER OF TIPPER / DAY OF LEASE	NUMBER OF TIPPER / DAY OF ALL LEASE ON ROUTE	LENGTH OF ROUTE IN KM	TYPE OF ROAD (BLACK TOPPED / UNPAVED)	RECOMMENDATION FOR ROAD (BLACK TOPPED / UNPAVED)	THE ROAD WILL BE CONSTRUCTED BY GOVT. / LEASE OWNER	ROUTE MAP & LOCATION
1	BADABERENA SAND QUARRY	1	4	4	7.44	BLACK TOPPED	BLACK TOPPED	GOVT.	BADABERANA-SALAKHAMAN-SH63
2	MANDUA SAND QUARRY	2	6	15	8.79	BLACK TOPPED	BLACK TOPPED	GOVT.	MANDUA-TALABHAL-BHAJIPUR-NH200
3	MANDUA SAND QUARRY A	3	10	15	7.9	BLACK TOPPED	BLACK TOPPED	GOVT.	ATABIRA_JHARABE NI_NH-53
4	KAMPASALA SAND QUARRY 1	4	3	6	7.5	BLACK TOPPED	BLACK TOPPED	GOVT.	SALAKHAMAN_NU APADA_NH-63
5	KAMPASALA SAND QUARRY 2	5	3	6	8.2	BLACK TOPPED	BLACK TOPPED	GOVT.	SALAKHAMAN_NU APADA_NH-63
6	GOPINATHPUR SAND QUARRY	6	15	15	2.3	BLACK TOPPED	BLACK TOPPED	GOVT.	Gopinathpur-Talcher Town NH149
7	HATURIPAL SAND QUARRY	7	10	10	4.2	BLACK TOPPED	BLACK TOPPED	GOVT.	Haturipal_Sand-KRUTIBASPUR-NH149
8	NIZGARHZAMI SAND QUARRY	8	12	12	0.6	BLACK TOPPED	BLACK TOPPED	GOVT.	Nijigarh-Balhar - NH-200
9	SANTHAPADA-A SAND QUARRY	9	12	16	1.1	BLACK TOPPED	BLACK TOPPED	GOVT.	Santhapada-Balhar -NH-200
10	SANTHAPADA-B SAND QUARRY	10	4	16	1.1	BLACK TOPPED	BLACK TOPPED	GOVT.	Santhapada-Balhar -NH-200
11	SIRIGIDA SAND QUARRY	11	14	14	5.59	BLACK TOPPED	BLACK TOPPED	GOVT.	Sirigida_Sand-NANDININAGAR-GOBIBANDHA-NH149
12	KANKILI SAND QUARRY	12	16	20	8.5	BLACK TOPPED	BLACK TOPPED	GOVT.	KANKILI_MITUANI_TALABEDA_NH-149
13	KANKILI SAND QUARRY A	13	17	20	6	BLACK TOPPED	BLACK TOPPED	GOVT.	KANKILI_MITUANI_TALABEDA_NH-149
14	KANKILI SAND QUARRY B	14	12	20	8.5	BLACK TOPPED	BLACK TOPPED	GOVT.	KANKILI_MITUANI_TALABEDA_NH-149
15	GURUJANG SAND QUARRY 1	15	10	10	4.9	BLACK TOPPED	BLACK TOPPED	GOVT.	NANDININAGAR_G ODABANDHA_NH-149

16	GURUJANG SAND QUARRY 2	16	12	12	4.1	BLACK TOPPED	BLACK TOPPED	GOVT.	NANDININAGAR_G ODABANDHA_NH-149
17	BURUKUNA SAND QUARRY	17	5	5	10.8	BLACK TOPPED	BLACK TOPPED	GOVT.	Burukuna-Sradhapur-Karanda-NH-149
18	DENALI SAND QUARRY	18	9	9	0.7	BLACK TOPPED	BLACK TOPPED	GOVT.	DENALI-NH200
19	DERANG SAND QUARRY	19	11	11	2.7	BLACK TOPPED	BLACK TOPPED	GOVT.	DERANGA-KHAJURIA-NH200
20	KHAJURIA SAND QUARRY	20	21	21	2.6	BLACK TOPPED	BLACK TOPPED	GOVT.	DERANGA-KHAJURIA-NH200
21	TAKUA SAND QUARRY	21	6	6	0.3	BLACK TOPPED	BLACK TOPPED	GOVT.	TAKUA-NH53
22	BAJRAKOTE SAND QUARRY	22	2	2	1.7	BLACK TOPPED	BLACK TOPPED	GOVT.	BAJRAKOT ROAD-NH200
23	BAJRAKOTE SAND QUARRY A	23	19	19	1.6	BLACK TOPPED	BLACK TOPPED	GOVT.	BAJRAKOTE_ROAD_NH-200
24	UCHABALI SAND QUARRY	24	2	2	6.4	BLACK TOPPED	BLACK TOPPED	GOVT.	UCHABALI_DERANG_TAKUA_NH-53
25	GHODAMARA GHAT RIVER SAND QUARRY	25	11	11	5	BLACK TOPPED	BLACK TOPPED	GOVT.	GHODAMARA-MAHANADI BRIDGE-ATHAMALLIK-SH62
26	GHODAMARA GHAT RIVER SAND QUARRY- A	26	16	16	3.3	BLACK TOPPED	BLACK TOPPED	GOVT.	CHARIGHARIA_ATHAMALLICK_ROAD
27	KEUTABHUIN SAND QUARRY	27	14	14	1.1	BLACK TOPPED	BLACK TOPPED	GOVT.	PURUNA MANATIRI-DEULAJHAR-SH62
28	KHADARAPADA SAND QUARRY	28	9	9	1.15	BLACK TOPPED	BLACK TOPPED	GOVT.	KHADARPADA-SH62
29	NILAKANTHAPADA SAND QUARRY	29	9	9	1.1	BLACK TOPPED	BLACK TOPPED	GOVT.	LAUPAL-SH62
30	ODASINGA SAND QUARRY	30	16	16	3.39	BLACK TOPPED	BLACK TOPPED	GOVT.	KEUTABHUIN-PURUNAMANATRI-SH62
31	TAIN SAR SAND QUARRY	31	17	17	4.34	BLACK TOPPED	BLACK TOPPED	GOVT.	BANDHUPALI-TITIRKATA-SH62
32	NAIKPADA SAND QUARRY	32	8	8	6.56	BLACK TOPPED	BLACK TOPPED	GOVT.	JHURIKATA-DHULIAPADA-JHATIMUNDA-SH62
33	NAIKPADA SAND QUARRY- A	33	4	11	4.9	BLACK TOPPED	BLACK TOPPED	GOVT.	KUMBHIA_JHATIMUNDA_NH-153B
34	NAIKPADA SAND QUARRY- B	34	7	11	4.7	BLACK TOPPED	BLACK TOPPED	GOVT.	KUMBHIA_JHATIMUNDA_NH-153B
35	DHULIAPADA SAND QUARRY- A	35	8	15	4.1	BLACK TOPPED	BLACK TOPPED	GOVT.	JHATIMUNDA_NH_153B
36	DHULIAPADA SAND QUARRY- B	36	9	15	4.1	BLACK TOPPED	BLACK TOPPED	GOVT.	JHATIMUNDA_NH_153B
37	HATUAPADA SAND QUARRY A	37	4	10	3.2	BLACK TOPPED	BLACK TOPPED	GOVT.	KUMBHIA_JHATIMUNDA_NH-153B

38	HATUAPADA SAND QUARRY B	38	6	10	3.6	BLACK TOPPED	BLACK TOPPED	GOVT.	KUMBHIA_JHATIM UNDA_NH-153B
39	HINSEI SAND QUARRY	39	4	4	1.5	BLACK TOPPED	BLACK TOPPED	GOVT.	LAUPAL-SH62
40	LIPILEI SAND QUARRY A	40	6	14	4.1	BLACK TOPPED	BLACK TOPPED	GOVT.	LIPILEI_KAINTRAGA RH_NH-62
41	LIPILEI SAND QUARRY B	41	8	14	4.9	BLACK TOPPED	BLACK TOPPED	GOVT.	LIPILEI_KAINTRAGA RH_NH-62
42	HARIDAKOTHA SAND QUARRY	42	9	9	7.9	BLACK TOPPED	BLACK TOPPED	GOVT.	HARIDAKOTHA_NA GAON_KAINTRAGA RH_NH-62
43	KUTESWAR SAND QUARRY	43	6	6	8	BLACK TOPPED	BLACK TOPPED	GOVT.	HARIDAKOTHA_NA GAON_KAINTRAGA RH_NH-62
44	SATBANDHALI SAND QUARRY	44	10	10	8.3	BLACK TOPPED	BLACK TOPPED	GOVT.	HARIDAKOTHA_NA GAON_KAINTRAGA RH_NH-62
45	KUNJAM SAND QUARRY	45	1	1	10.2	BLACK TOPPED	BLACK TOPPED	GOVT.	KUNJAM-SANDHAURAGOTH A-DANGAMANGA-NH149

SAND QUARRY MINING LEASES MARKED ON DISTRICT SATELLITE MAP



TRANSPORTING ROUTE OF SAND QUARRY LEASES MARKED ON DISTRICT SATELITE MAP

