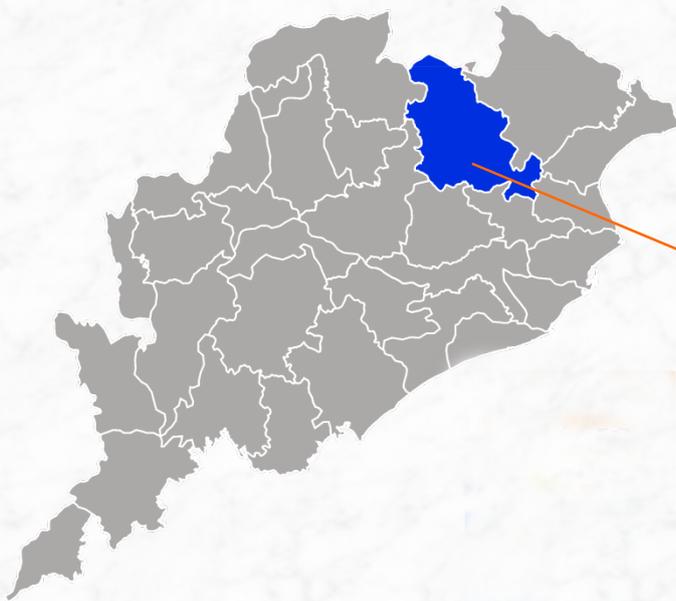




DRAFT DISTRICT SURVEY REPORT (DSR)
OF
KEONJHAR DISTRICT, ODISHA
FOR
RIVER SAND

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

ODISHA

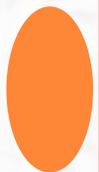


KEONJHAR



As per Notification No. S.O. 3611(E) New Delhi,
25th July, 2018
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE
(MoEF & CC)

COLLECTORATE, KEONJHAR



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ODISHA



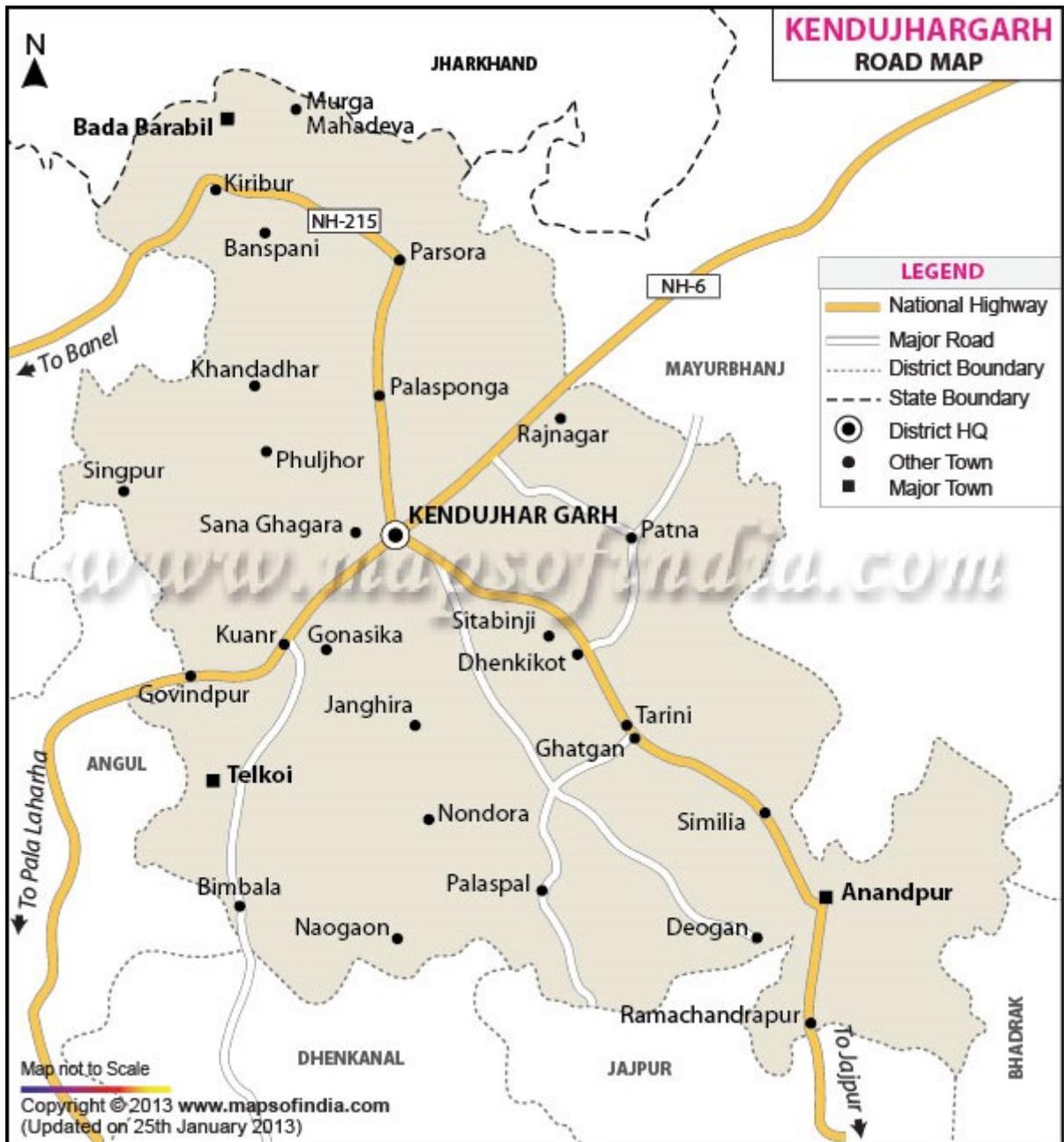
KEONJHAR



MAP SHOWING THE TAHASILS OF KEONJHAR DISTRICT



MAP SHOWING THE MAJOR ROADS OF KEONJHAR DISTRICT



PREFACE

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.

1. INTRODUCTION

The Keonjhar district emerged as one of the districts of Odisha on 1st January, 1948. The district is bounded by Mayurbhanj district and Bhadrak district to the east, Jajpur district to the south, dhenkanal district and Sundargarh district to the west and West Singhbhum district of Jharkhand State to the north. Covering a geographical area of 8303 sq km, the Keonjhar district lies between 21° 1' N to 22° 10' N latitude and 85° 11' E to 86° 22' E longitude.

The whole District of Keonjhar was a princely state before its merger with Odisha. From the history it reveals that a part of the old Khijjinga territory with headquarters at Khijjinga Kota, identified with modern Khiching. It became a separate state with Jyoti Bhanja as its ruling chief sometime during the first half of the 12th century A.D.

The then State of Keonjhar comprised only the northern half of the modern district for a long time prior to the incarnation of Jyoti Bhanja as King. During the latter part of the 15th century the southern half of the district was occupied by King Govinda Bhanja under whose rule Keonjhar was extended

from Singbhum in the north to Sukinda in the South and from Mayurbhanj in the East to the borders of the States of Bonai, Pallahara and Anugul in the West.

During the rule of Pratap Balabhadra Bhanja (1764–1792 A.D.) two small areas of Tillo and Jujhpada were purchased from the Zamindar of Kantajhari and were added to the district. These were recognised as parts of Keonjhar in the Sanad granted by the East India Company to Raja Janardan Bhanja in 1804. Since then there had been no territorial changes of the district till its merger with the Province of Odisha. But after merger largely for the reasons of administrative expediency the areas of Tillo (7.51 sq.km) and Jujhpada (9.06sq.km.) were transferred to the districts of Balasore and Cuttack respectively, while a number of villages called Ambo group (14.84 sq.km.) of Balasore district were added to Keonjhar District.

Keonjhar is one of the major mineral producing districts of Odisha. Iron ore, Manganese ore, Chromite, Quartzite, Bauxite, Gold and Pyrophyllite are the major minerals found in this district.

2. OVERVIEW OF MINING ACTIVITIES IN THE DISTRICT.

Minerals:

IRON ORE:

The main iron ore deposits are found along the classic Bonai-Keonjhar Horse Shoe shaped synclinerium which spared over an area of about 60KmX25Km.

Hematite is the chief mineral resource of this district. Important deposits were found in Thakurani, Bolani, Joda east, Khandbhandra, Sidhmata, Belkundi, Kasia-Barapada, Bolani, Kiribura, Gurudia, Jharibahal, Dubuna, Bamebari, Murga, Palsa, Jajang, Malangtoli, Chamakpura, Gandhamardhan, Daitari, Tomka, Inganijaran, Horomoto Guali and Uliburu. Iron ore bands occur in layered BIF bands along with volcano-sedimentary rock piles known as Iron Ore Super Group. Usually four types of ore are seen i.e. hard massive, laminated, lateritic and blue dust.

A total of 3142.70 million tonnes of iron ore resource of all categories have been assessed with 64-68% Fe in massive, 62-65% Fe in laminated, 65-68% Fe in powdery blue dust type of ore.

Besides, investigation of iron ore by the Directorate in Horomoto-Guali area has established a possible reserve of 46.75 million tonnes of iron ore of grade varying from 51.20% to 65.24% Fe.

MANGANESE: The Keonjhar manganese belt is a part and parcel of Singhbhum Bonai belt and one of the most important manganese ore producing regions of India. This is confined to shale formation of Pre-Cambrian Iron Ore Super Group as stratiform, stratabound and lateritoid types.

Important deposits in the Keonjhar district are located in the areas of Roida-Bhadrasahi, Silijhora-Kalimati, Guruda, Chormalda, Sarkunda, Dubna Kolarudkela, Podadihi-Langini-Jharan, Lasarda, Pacheri, Balani, Baneikala, Kendudihi-Purulipada, Horomoto-Jajang, Katasahi, Joribahal, Joda west and Belkundi etc.

The reserve of manganese ore is estimated as 127.27 million tonnes.

The grade of the ore is variable from deposit to deposit as also from body to body within the same deposit. Out of the total production, about 10% to 15% forms the High Grade (more than 46% Mn), 25% to 30% Medium Grade (36-45% Mn) and the rest Low (less than 30-35% Mn) and still lower (less than 30% on Mn)

CHROMITE: The chromite deposits of the district are associated with the ultramafic rocks of Nuasahi, Boula and Phuijhorhuli area. The body extends for about 3Kms in an N-S direction. It is a dyke like body dipping steeply to the east and is widest in the centre and gradually tapering towards north and south. The ultrabasic occurs as intrusive in Precambrian metamorphites as well as differentiated layered igneous complex. It has a peridotite core with subordinate amount of chromite, peripheral pyroxenite and enstatite. The ultramafites include enstatite, bonzite, pyroxenite, serpentinitised dunites, talc schist, silicified dunites and chromitites with chromite loads. The chrome ore available are mostly of lumpy type.

The estimated reserve is 11.43 million tonnes with Cr₂O₃ content varies from 40% to 45%.

BAUXITE: Industrial and chemical grade Bauxite occurs on Dholkata pahar area of the district. The area is represented by metavolcanites characterized by

metatholeiitic basalt. The different flows are separated by tuffaceous shale. Outcrops of metagabbro have been noticed to the east and south east of Dholkata pahar. Apart from these minor occurrences of bauxite in pockety or poddy nature has been reported along Keonjhar-Banai belt. The occurrences has been located around Kodalía, Khajurdi Pahar, east of Kasiara and Jaladihi area.

The Dholkata Bauxite is of high alumina, high iron, low silica and low titanium grade having 60 to 70% tri-hydrated as gibbsite and rest bohemite. the predominant iron minerals are goethite and hematite occurring as colloidal bands.

A total of 5.986 million tonnes of bauxite reserve has been estimated around Dholkata pahar area of the district.

VANADIFEROUS MANGANESE: Deposits of vanadiferous magnetite occur in association with gabbro-anorthosite suite of rocks in the Precambrian metamorphic. A deposit of vanadiferous magnetite is seen near Phulinjhorhuli in Anandapur subdivision. The mineral occurs in a band of ultrabasic rocks about 4Km long.

GOLD: The occurrence of gold is reported in Telkoi and Banspal block of Keonjhar district. Several old workings of the gold in the shape of elongated trenches, deep circular pits, wells and tunnels have been recognised around Saleikena, Sirisbahal, Dublapal, Bangadiha, Odal, Gopur, Gajipur and Kusuguda etc. The area covering the gold deposits constitute the rock units belonging to Iron Ore Super Group comprising of basic lava, tuffites, basic intrusive, metagabbro, metadiorite, amphibolites, quartzite and chlorite schist. The granitic suites of rocks are intrusive into the above rock types and are represented by micro granites, fracture, shear zone and faults might have acted both as channel ways and receptacles for gold deposition in the vein quartz bodies.

Few important fire assay result done by Hutti Gold Mines shows gold values ranging from 1.8gm/tonne to 18.68gm/tonne in Gopur, traces to 5.3gm/tonne in Odal, traces to 2gm/tonne in Gajipur.

PYROPHYLLITE: The occurrences of pyrophyllite are stretched over a 90Km long belt extending from Rebna-Palasbahal in the south to Dhobakuchuda-Balabhadrapur in the north. These are associated with the border area of Singhbhum Granite and quartzite hills such as Madrangajori, Macchakandana, Jodiaghat and south of Uchakabeda, eastern slope of Chantrabhangapahar, Dalimpur and Sidhamath area. The Pyrophyllite occurrences mentioned above are in the form of very fine

flakes, typically soapy feel and associated with pyrophyllite quartz schist, quartz tourmaline pyrophyllite rocks and quartz tourmaline pyrophyllite schist as irregular patches.

A total reserve of 12.28 million tonnes have been assessed in Keonjhar district. The average percentage of Al_2O_3 is 20-23%, SiO_2 -65-75%, Fe_2O_3 - 0.77% and LOI-3-4%.

QUARTZITE: High grade quartzite mining activities are continuing near Barapada, Barang, Paharpur, Parsala area of the district. Besides, cherty and massive quartzite with 99% SiO_2 are marked intermittently in the iron ore series near Rebna-Palaspal, Magarmuhan, Jaypur, Dalmaposi, Chauthia and Nawabeda area.

A total reserve of 45.68 million tonnes of quartzite has been estimated in the district. the average SiO_2 content varies from 95 to 99.66%.

CHINA CLAY: Pockets of china clay are encountered near Judiapahar, Tarreni pokhari, Aupura, Fakirpur, Padmakesharpur, Jaypur, Kankadajodi, Adakata, Govindpur area of the district. The clay is yellowish white, gritty and occurs as pocket type.

The reserve of china clay has been estimated as 1.41 million tonnes in the area. The Al_2O_3 content varies from 18.25% to 22.77%.

DIMENSION STONE: Singhbhum granite, dolerite dykes and ultrabasic rocks of the district are suitable for dimension stone/ decorative stones. The 150Km long Palaspanga dyke from Keonjhar to Chainbasa, the longest dyke in Asia is being used for the above purpose in view of its colour, texture, composition and hardness. These are quarried at number of places around Dhurpada and Keonjhar. A part of dyke to the east of Kaliaprasad village has been estimated to contain 500Cu.m. of dimension stone of block size 0.5mx0.5mx0.5m. Lower shale formations found near village Lunagothani was found to be suitable for decorative purpose. However 1606900Cu.m. of black granite, 18044200Cu.m. of Grey granite and 8379000Cu.m. of Green granite has been reported in the district.

TALC-SOAPSTONE: This is reported from the northern slope of hill ranges immediately south and west of Kendujhargarh and Dalimpur. The talc-schist occurs as gently undulating slabby layers underlying the Kolhan sandstone. The highly foliated talc-schist are traversed by veins of quartz as impurities. Besides these, soapstone occurrence is encountered near Dholkata, Dalangpur, NE of Sayedmulia,

Suramundi, Kuladhamkuni, Sapghosara, Pithagola, Alanga area. These are locally utilized for preparation of stone ware and statues. The MgO content varies from 11.397 to 22%.

PYRITE: Pyrite crystals have been recorded in dark grey shaly formation underlying the Kolhan sandstone west of Balibandha on the Keonjhar-Chainbasa road. The occurrence is of no economic importance.

GLASS SAND: Some of the Kolhan sandstones in the northern portion of the district(near Barangam) is suitable for glass industry.

BUILDING STONE & ROAD MATERIAL: Granite gneisses, aplites, dolerites and quartzite are being used as road metal and in concrete mixtures. Laterite blocks are extensively used as a very common building material. All these materials are found in plenty.

OTHER MINERALS: A few occurrences of asbestos are encountered near Gopalpur and Ranki. Thin bands of slip fibres were marked in the peridotite body, but the economic aspect of this occurrence appears not to be viable. A patch of travertine limestone is also encountered near Asurkhol area.

The district is the major producer of iron and manganese ore of the state. 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.

3. LIST OF LEASES WITH LOCATION, AREA AND PERIOD OF VALIDITY

Enclosed as Annexure I

4. DETAILS OF ROYALTY COLLECTED

Sl.No	Name Of Tahasil	2015-16	2016-17	2017-18	2018-19
1	Barbil	0	0	0	0
2	Patna	301000	1127000	1073015	711520
3	Saharapada	0	1248628	1248628	1248628
4	Anandpur	2144000	5204325	5128384	5220270
5	Banspal	0	0	0	0
6	Champua	0	740616	740616	740616
7	Ghasipura	580734	1983129	1915326	2145764
8	Ghatagaon	0	0	0	77000
9	Harichandanpur	0	19110	36855	36855
10	Hatadihi	2410533	3138893	2145186	1095904
11	Jhumpura	0	821138	821138	821138

12	Keonjhar	133000	527489	256655	236130
13	Telkoi	726000	896000	896000	896000
	TOTAL	6295267	15706328	14261803	13229825

5. DETAILS OF PRODUCTION OF SAND

Sl.No	Name Of Tahasil	2015-16	2016-17	2017-18	2018-19
1	Barbil	0	0	0	0
2	Patna	9450	21067	32378	32378
3	Saharapada	0	12238.5	12238.5	12228.5
4	Anandpur	28668.8	53372.1	53710.5	55902
5	Banspal	0	0	0	0
6	Champua	6933.6	6933.6	6933.6	6933.6
7	Ghasipura	18232	38335	37386	39285
8	Ghatagaon	2200	1800	2200	1800
9	Harichandanpur	0	637	637	637
10	Hatadihi	31932.6	34013	35965	37899
11	Jhumpura	2250	2250	2250	2250
12	Keonjhar	5249	5349	5249	5349
13	Telkoi	5892	10142	10142	10142
	TOTAL	110808	186137.2	199089.6	204804.1

6. PROCESS OF DEPOSIT OF SEDIMENTS IN THE RIVERS

The drainage of the district is mainly controlled by rivers like Baitarani, Kangira, Ardei, Khairibandhan, Kanjhari, Sita, Kusei, Salandi etc. During rainy season the river water carries sand which is formed due to disintegration of rock bodies along with other suspensions. After recession of the water flow the sand gets deposited in the locations where there is less energy.

7. GENERAL PROFILE

a. Administrative set up:

SI No	Item	Unit	Magnitude
1	Location		
	Longitude	Degree	85° 11' E to 86° 22' E
	Latitude	Degree	21° 1' N to 22° 10' N I
2	Geographical area	Sq.Km.	8303
3	Sub-division	Numbers	3
4	Tahasils	Numbers	13

5	C D Blocks	Numbers	13
6	Municipalities	Numbers	4
7	NACs	Numbers	1
8	Police Stations	Numbers	25
9	Gram Panchayats	Numbers	297
10	Villages	Numbers	2123
	Inhabited	Numbers	2064
	Uninhabited	Numbers	59
11	Assembly constituencies	Numbers	6

b. Area and Population:

The district has an area of 8303 sq. km and 18.02 lakh of population as per 2011 census. The district accounts for 4.09 percent of the states territory and shares 3.03 percent of the states population. The density population of the district is 217. per sq. kms. as against 270 person per sq. km. of the state.

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 1228.4 mm during 2017, which is lower than the normal rainfall 1487.7 mm.

d. Agriculture:

During the year 2017-18 the net area sown was 288 thousand hectares against 5356 thousand hectares of the state. The production of was as below:

Name	Pad dy	Whe at	Maiz e	Mun g	Biri	Kulth i	Till	Grou ndnu t	Musta rd	Potato es	Jute	Suga rcan e
Producti on in 000 MT	598.55	0.58	69.40	7.72	9.90	7.79	2.72	15.23	3.33	23.82	16.78	13.22

During 2017-18, the total fertilizers used in the district was about

Type of fertiliser	Nitrogenous	Phosphatic	Pottasic	Total	Consumption per Ha
Quantity in MT	9185	3701	1725	14611	38.73

e. Power:

Consumption of electricity in Angul district during the year 2013-14 covers 136.03 million units and villages so far electrified as on 30.09.2019, 2067 revenue villages which constitutes 97.4% to the total revenue villages of the district.

f. Transport & Communication:

Railway route length (14-15) km	158.06
No of Rly stations and PH(14-15)	16
Forest road (17-18) km	249.98
National Highway (16-17) km	341.30
State Highway (17-18) km	52.74
Major district road (17-18) km	34.29
Other dist road (17-18) km	885.98
Rural road(17-18) km	1945.90
Inter village road (16-17) km	3912.49
Intra village road (16-17) km	3143.74

g. Health:

The medical facilities are provided by different agencies like Govt., Private individuals and voluntary organizations in the district.

Sub divisional hospitals including mobile	8 No
Beds facilities	593 No
Homoeopathic dispensaries	48 No
Ayurvedic dispensaries	34 No

h. Tourist places:

Kushaleswar Temple, Kanjipani Ghati, Keshari Kunda, Murga Mahadev Temple, Gonasika Temple, Hadagada Reservoir, Handibhanaga, Ghagra & Gundichaghagi waterfalls are the tourist spots of the district.

i. Forest areas:

Category of forest	Area in sq km
Reserve Forest	1834.09
Unclassified Forest	0.26
Demarcated Protected Forest (DRF)	273.64
Undemarcated Protected Forest	220.79
Other forest under Revenue Dept	768.40
Total	3097.18

j. Education:

Primary School (2017-18)	No. of Schools	1779
	Enrolment (No)	187984
	Pupil Teacher Ratio	24.37
Upper Primary School 2017-18	No. of Schools	1040
	Enrolment (No)	100645
	Pupil Teacher Ratio	21.01
General College 2017-18	Junior	54
	Degree	34
Secondary School	No. of Schools	520
	Enrolment (No)	53393
	Pupil Teacher Ratio	20.93
Literacy Rate, 2011	Male	78.1
	Female	58.3
	Total	68.2

k. Culture & Heritage:

Keonjhar district is very much rich in its fairs and festivals like Sarhul, Sohrai, Karmapuja, Bodam, Chaitra parab or Uda parab, Makara sankranti, Nuakhai, Raja parab, Baruni jatra, Ratha jatra, Sivaratri etc. Famous folk dances are CHANGU, CHHAU, JUANG, HO etc.

8. LAND UTILISATION PATTERN

SI No	Landuse	Area in '000Ha
1	Forest Area	310
2	Misc. trees & Grooves	6
3	Permanent Pasture	20
4	Culturable Waste	26
5	Land put to Non Agril Use	70
6	Barren & Unculturable Land	93
7	Current Fallow	10
8	Other Fallow	0
9	Net Area Sown	288
10	Mining	7
	Geographical Area	830

9. PHYSIOGRAPHY

The Keonjhar district shows conspicuous physiographic variations and mainly represented by high hills/ isolated hillocks/ domal granitic outcrops, vast undulating plains and alluvial tract.

High hills/ Isolated hillocks/ Domal Granitic outcrops : Highly resistant rocks like quartzites, B.H.J. and B.H.Q bearing iron ore group of rocks, proterozoic volcanics and Kolhan sedimentaries constitute these outcrops rising to maximum height of 1062 meters above msl in Sukati and Banspal sector. The Tomka-Daitari Iron ore range exposed in the southwestern part of the district encompasses high hills of Maghananda parbat rising to a height of 1055 meters above msl.

Undulating plains: The undulating terrain stretching from north to the southeast is reversed by numerous isolated hillocks and granitic domes. The height varies from 100m to 602 m.

Alluvial tract: Flat alluvial tract made up of late Pleistocene to recent sediments and occurs in the flood plain of Baitarani river in the south eastern part of the district and is located at a height of about 20-35 meters above msl.

10. RAINFALL

The district is generally hot with high humidity during April and May and cold during December and January. The monsoon generally breaks during the month of July and continues till end of October. The temperature goes as high as up to 45°C in the summer and up to 7^o-8^o C during peak winter.

The rainfall statistics of the district for last four years is given below:

YEAR /MONTH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MARCH	TOTAL
2015	64.40	52.92	197.56	319.21	167.32	114.26	27.14	0.16	22.71	20.72	14.58	8.52	1009.5
2016	2.34	137.14	145.02	270.37	348.52	166.20	58.26	4.03	0.00	1.69	53.95	23.71	1211.23
2017	15.13	117.45	162.00	320.52	230.52	161.25	160.06	24.98	0.09	0.92	0.0	35.42	1228.34
2018	133.26	95.75	185.79	360.55	375.08	351.53	113.38	0.25	49.55	0.0	0.0	0.83	1665.97
2019	59.64	116.61	143.27	232.23	327.32	353.60	161.64	-	-	-	55.20	40.18	1489.69

11. GEOLOGY AND MINERAL WALTH

The district can be broadly divided into seven geological units viz.: (i) The patchy occurrences of metamorphites belonging to older metamorphics of Archaean age (ii) Huge batholiths of Singhbhum Granite with swarms of newer dolerites dykes in the eastern part of the district, (iii) Metasedimentaries belonging to Gorumahisani Group of rocks of Archean age in the southwestern part of the district (iv) Volcano-sedimentary sequence intruded by Bonai granite belonging to Lower Bonai group of age ranging between Archean and Paleo Proterozoic in the southwest and on the north-west (v) Intrusives like chromiferous ultramafics, gabbro-anorthosite, dolerite and quartz veins of Archaean to Proterozoic age (vi) Sedimentaries and metasedimentaries belonging to Kolhan Group ranging in age from lower to middle Proterozoic (vii) Lateries of Cenozoic age and (viii) Quaternaries represented by Kaimundi formation and un classified alluvium.

The Singhbhum granite shows wide variation from highly foliated biotite-epidote granodiorite to grayish white medium grained weakly foliated to nearly massive muscovite-biotite granodiorite. It contains enclaves of older metamorphics represented by hornblende schist, chlorite schist and meta gabbros. Gorumahisani Group consists of sheared pebbly quartzite, hornblende schist and BHQ. The Volcano-sedimentary rocks of lower Bonai Group comprises Basic Volcanic, BHQ, BHJ, ferruginous shale, quartzite, iron ore bodies and tuff with or without manganese. The chromiferous ultra-basics of Nuasahi and the mafic-ultramafic complex of Baula are rich in Cr-Fe-Ni and is probable locale for PGE. This is followed by late magmatic gabbro-anorthosite suite of rocks. The dolerite and gabbro occur as the younger intrusive. The Kolhan Group of rocks comprises conglomerate, sandstone, shale and quartzite. The insitu laterites are wide spread in the area. the Quaternaries are represented by Kaimundi formation consisting of sandy sticky clay impregnated with caliche and unclassified Quaternaries represented by black to brown clay and coarse to fine sand.

STRATIGRAPHY:

The geological succession in the district is as follows:

Age	Formation/Group	Lithology
Holocene		Alluvium
Late Pleistocene to Early Holocene	Kaimundi Formation	Clay with Calcareous concentration
Cainozoic		Laterite and lateritic bauxite (Lbx)
Palaeo to Meso Proterozoic	Kolhan Group	Conglomerate, sandstone and shale
Palaeo Proterozoic		Dangoaposi lava
Proterozoic (Undifferentiated)		Granophyre/ gabbro/anorthosite

Archaean to Proterozoic		Newer Ddolerite
		Ultramafic rocks+Chromite
Archaean to Palaeo Proterozoic	Lower Bonai Group	Basalt, tuff, meta gabbro
		Granite
		Shale, tuff and manganese
		BHQ, BHJ, ferruginous shale and quartzite
		Gritty sandstone, orthoquartzite, conglomerate
Archaean	Gorumahishani Group	Hornblende schist, chlorite schist, amphibolite and meta-gabbro
		Quartzite, quartz sericite schist, cherty quartzite, fuchsite quartzite and black chert
		Quartzite, chert
		BHQ, BMQ, BCQ, BJQ
		Ferruginous shale, carbonaceous shale phyllite and mica schist
		Pebbly quartzite, gritty quartzite and quartzite
	Older Metamorphic Group	Singhbhum granite/ Hornblende Granite
		Pellitic schist, quartzite and amphibolite

The district has various mining leases of iron and manganese ore and cater to the need of various steel plants of the state and the nation. Iron ore fines of the district are also exported to various nations particularly China. Also, minor minerals like sand, laterite, morrum and specified mineral like pyrophyllite and quartz/quartzite are available and mined out in the district for excavation.

- a. Detail of river/stream/other sand source- Sand mining in the district is confined to rivers like Baitarani, Kangira, Ardei, Khairibandhan, Kanjhari, Sita, Kusei, Salandi etc.

- b. Availability of sand or gravel or aggregate resources- sand- 31,09,989 cum (Annexure II), Gravel- Nil, Aggregate- Nil
- c. Detail of existing mining leases of sand and aggregates- For sand pl refer Annexure I. Aggregate- Nil

DRAINAGE SYSTEM AND DESCRIPTION OF SALIENT FEATURES OF MAIN RIVERS AND STREAMS

The district is mainly drained by the river Baitarani and its tributaries barring a very small patch in the extreme south-western part, falling in Brahmani basin. The major tributaries are Kanjhari, Sitanadi, Salandi, Musal nadi, Orarai nadi, Remal, Kasai and Deo nadi etc. and these are mostly perennial. The drainage pattern is mostly dendritic in nature. Sub-parallel drainage pattern is well developed in the south-eastern part of the district. The drainage density is moderately high in western part of the district representing high hill ranges constituted mostly by Iron ore group of rocks and volcanics which suggest high run off and low infiltration. Hydrogeological surveys and remote sensing studies have revealed that the drainage pattern in the district is controlled by the fracture system which is developed due to tectonic deformation occurred in the area in several phases.

Sl. No.	Name of the River	Place of Origin	Altitude at Origin	Total length in the district (in Km) (Total length)
1	2	3	4	5
1	Baitarani	Gonasika	Longitude- 21 ⁰ -31'-00" N Longitude- 85 ⁰ -33'-00"E	240Km upto Anandapur
2	Kangira	Haladi Pokhari		40Km
3	Ardei	Sidha Matha	Longitude- 22 ⁰ -009'-00" N Longitude- 85 ⁰ -68'-00"E	72.40Km
4	Khairibandhan	Smimlipal R.F.	Longitude- 21 ⁰ -924'-00" N Longitude- 85 ⁰ -794'-00"E	152Km
5	Deo	Sidha Matha	Longitude- 21 ⁰ -804'-00" N Longitude- 85 ⁰ -826'-00"E	80Km
6	Kanjhari	Kanjharibani Pira	Longitude- 21 ⁰ -685'-00" N Longitude- 85 ⁰ -851'-00"E	60Km
7	Sita	Barabanki Hill	Longitude- 21 ⁰ -497'-00" N Longitude- 86 ⁰ -017'-00"E	26Km

8	Musal	Rebana R.F.	Longitude- 21 ⁰ -32'-00" N Longitude- 86 ⁰ -066'-00"E	60Km
9	Kusei	R. Bera R.F.	Longitude- 21 ⁰ -139'-00" N Longitude- 86 ⁰ -178'-00"E	80Km
10	Salandi	Banjhi Kusaghat R.F.	Longitude- 20 ⁰ -79'-00" N Longitude- 86 ⁰ -678'-00"E	144Km
11	Bhirol		Longitude- 21 ⁰ -606'-00" N Longitude- 85 ⁰ -945'-00"E	
12	Mermenda		Longitude- 21 ⁰ -958'-00" N Longitude- 85 ⁰ -775'-00"E	

Detail of the potential of river sand of the district is submitted as Annexure III.

		dt. 07.05.2016		Khata-207 , plot no. 727 Area- Ac 0.50 Kisam- Nala																		0	0	0				
																						.	.	.				
																						0	0	0				
																						0	0	0				
21	Gha sipu ra	Baitarni Sand Bed, Talagaon. Vill- Talagaon. Dt. 20.12.2016		-----	2 1	1 5	4 3	8 6	5 6	5 6	0.24	0.18	5.261	62400	-	1 2	1 2	1 2	1 2	-	1 2	1 2	1 2	-	9 9	8 7	8 7	
							.	5 8	.	3 1						4 8	4 8	4 8	4 8	-	4 8	4 8	4 8	-	1 4	3 6	3 6	
																0 0	0 0	0 0	0 0		0 0	0 0	0 0		0 0	0 0	0 0	
22	Gha sipu ra	Baitarni Sand Bed, Saladei Vill- Saladei Dt. 03.03.2016		-----	2 1	4 0	2 6	8 2	1 2	9 1	0.2	0.22	5.261	79440	1 5	1 6	1 5	4 8	5 2	5 8	5 7							
							.	3 N	.	1 E					2 3	5 1	6 0	8 8	2 3	5 1	6 0	8 8	6 8	6 4	7 9	3 5	3 3	
															2 2	0 0	0 0	2 2	0 0	2 2	0 0	0 0	0 0	8 6	2 0	9 0	0 0	
23	Gha sipu ra	Baitarni Sand Bed,Napan ga Vill- Napagaon Dt.09.11.20 18		-----	2 1	5 1	1 6	8 1	1 2	2 9	0.2	0.39	5.665	10000	-	-	-	1 0	-	-	-	1 0	-	-	-	2 4	0 0	0 0
							.	5 N	.	9 E																		
24	Gha sipu ra	Papudia Nala Sand Bed, Sarein Vill-Sarein Dt.29.02.20 16		-----	2 1	1 0	1 2	8 6	5 2	2 2	2.0	0.20	5.058	15048	3 0	3 4	3 0	3 6	3 0	3 0	3 0	3 0	3 0	3 0	9 4	1 1	1 0	1 0
25	Gha sipu ra	Kusei Sand Bed,Deoga on Vill- Deogaon Dt.24.04.20 17		-----	2 1	9 6	2 6	8 6	2 2	3 2	3.0	0.40	5.868	31543	-	6 3	6 3	6 3	-	-	-	6 0	6 0	6 0	-	3 5	3 2	3 3
							.	4 N	.	3 E																		

26	Ghatagon	Sita nadi Sand Bed, Kundapitha Date of Regd. :	N21.3036 E85.5414	211	306	385	854	514	0.600	0.140	84000	10120	22000	18200	22800	11000	000	22000	0000	0000	0000
27	Hari chanda npur	Village:Rag hunathpur Musal Nadi 04.07.2016 and 09.03.2018	Khata No 49 Plot No 223/1 kissam Nala	2211	221	858	474	5064	0.3	0.105	0.793 ha	2717	0	6370	6370	6370	6370	6370	6370	6370	6370
28	Hat adih i	Baitarani Sand Bed, Habaleswar , L.D. date: 13.10.15	Khata No-16 Plot no- 1225/1240	N-2210	0210	8860	1610	0210	0.24	0.22	52610	17929	3231	3420	3564	3782	3231	3420	3564	3782	3231
29	Hat adih i	Baitarani River Sand bed, Girigaon, L.D. date: 15.02.16	Khata No-242 Plot no- 1126	N-2210	0510	1860	1210	0708	0.26	0.2	52610	72000	12000	14000	16000	11000	12400	14600	16400	11000	12400
30	Hat adih i	Baitarani River Sand bed, Ambo-Karagola,	Khata No-619, 613 Plot no- 1636/2666/1, 100/2957/1	N-2211	0611	486	116	340	0.32	0.16	52610	4750	5000	8000	11000	15000	18000	11000	15000	18000	11000

34	Jhumpura	River aradei Parbatipur Sand Quarry, Village Parbatipur		Khata- 100 Plot- 1 Area- 4.80	85	35	30	21	53	30	0.95	0.02	19424.9	5250	105000	105000	105000	105000	0000	1000	1000	1000	0333	333	333
35	Keonjhar	Aradei Nala , Vill- Bistapal - Date of Regd of Deed- 19.02.2016		Village-Bistapal Khata No-172, Plot No.751 Area- Ac6.25, Kissam-Nadi	21	45	08	32	30		1.16 K.M	22.00 Mtrs	25287.00 Sq.Mtrs	2650	1649	1649	1649	1649	465000	1669	1669	1669	0847	1824	1956
36	Keonjhar	Aradei Nala, Vill- Patung, Date of Regd.of Deed- 19.03.2016		Village- Patung Khata No-150, Plot No.-217 Area-Ac 12.10 , Kissam-Nadi	21	45	38	85	30		0.800 K.M	60.00 Mtrs	48956.00 Sq.Mtrs	19900.00	2100	2100	2100	2100	815000	2200	2200	2200	0572	1935	1140
37	Keonjhar	Aradei Nala ,Vill- Deuladiha ,Date of Regd. Of Deed- 26th March, 2016		Village- Deuladiha Khata No- 45 , Plot No.- 73 Area-Ac 10.75 , Kissam-Nadi	21	47	42	85	30		1.04K.M	42.00 Mtrs	43494 Sq.Mtrs	5514.00	1000	1000	1000	1000	469000	1500	1500	1500	0447	1000	0000
38	Telkoi	Samakloi river sand quarry Village Telkoi		GPS:- Latitudes(21deg 21' 28.0" & 21deg 21'57.8"N) Longitudes(85deg							150mtrs	0.30mtrs	32000sq mtr	4680 cum	435000	435000	435000	435000	435000	435000	435000	5555	5555	5555	5555

ANNEXURE II

SAND SOURCES ALREADY AUCTIONED BUT NOT EXECUTED (LOI ISSUED) IN THE DISTRICT

Sl. No.	Name of Tahasil	Name of village	Name of Minor Mineral	Name of the Successful auction holder	Address & Contact No of Letter of Intent Holder	Letter of Intent Grant Order No. & date	Validity of Lol	Use (Captive/Non-Captive)	Location of the Source recommended for mineral concession (GPS co-ordinates or Khata & Plot No) (Sketch map to be attached)	Area of the mineral potential patch (in sq m)	Average height of potential patch (in m)	Mineable mineral potential (in cum)
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Kodinda	Aunli	Aunli sand bed	B.N.Singh	Kodinda	---	Aunli		Khata No-335 Plot no.1174			
2	Kodinda	Gojagam	Gajagama Sand bed	Amjad Khan	Kosagumuda	---	Gajagam		Khata No-185 Plot No-1/1			
3	Kodinda	Bhainsabeda	Bhainsabeda Sand bed	B.N.Singh	Kodinda	---	Bhainsabeda		Khata No-386 Plot no-492/1			
4	Kodinda	Majhiguda	Majhiguda Sand bed	Amjad Khan	Kosagumuda	---	Majhiguda		Khata No-185 Plot No-17/1			
5	Kodinda	Balanga	Balanga Sand bed	Abhimanyu Singh	Kodinda	---	Balanga		Khata No.391 Plot No-1096 272			
6	Kodinda	Paidapali Maliattigam	Paidapali Maliattigam Sand bed	Dibakar Bissoi	Kerala	---	Paidapali Maliattigam		Khata No-129 422 Plot No- 726 665			
7	Jharigam	Kodabhata	Sand bed	Raju Das	Umerkote	L.No 1889/ Dt.29. 09.18	---	Non - Captive	Khata No-61/2 Plot No-21	2.260Km	---	15000Cu m.

ANNEXURE III

POTENTIAL OF SAND IN THE DISTRICT

Sl. No.	Name of Tahasil	Status	River or stream	Portion of the River or Stream recommended for mineral concession (GPS co-ordinates or Khata & Plot No) (Sketch map to be attached)	Longitude			Latitude			Name of village	Length of area recommended for mineral concession (in km)	Average width of area recommended for mineral concession (in km)	Area recommended for mineral concession (in sq m)	Maximum Mineable sand (in cum) (60% of total potential)
					Degree	Minute	Second	Degree	Minute	Second					
1	2	3	4	5	6	7	8	9	10		11	12	13	14	15
1	Patna	New	Neulijodi Nala	GPS-Lat-21°45'53"N to 21°45'57"N Long-85°42'12"E to 85°42'50"E Khata No:317 Plot No:675 Kissam:Nadi	21	45	53	85	42	12	Baunsuli	0.731 km	0.060km	43900	nil
2	Patna	New	Neulijodi Nala	GPS-Lat-21°47'5"N to 21°46'56"N Long-85°46'8"E to 85°46'59"E Khata No:229 Plot No:01 Kissam:Nala	21	47	5	85	46	8	Chemana	0.213km	0.080km	17190	nil
3	Patna	New	Neulijodi Nala	GPS-Lat-21°41'38"N to 21°41'48"N Long-85°47'22"E to 85°47'34"E Khata No:153 Plot No:1763 Kissam:Balichar	21	41	38	85	47	22	Manpur	0.126 km	0.080km	10110	nil

4	Patna	New	Nakhi Nala	GPS-Lat-21°46'31"N to 21°46'29"N Long-85°48'47"E to 85°48'58"E Khata No:245 Plot No:2403 Kissam:Nala	21	46	31	85	48	47	Kainda	0.130km	0.080km	10724	nil
5	Patna	New	Kanjhari	GPS-Lat-21°40'05"N to 21°40'06"N Long-85°50'20"E to 85°50'22"E Khata No:42 Plot No:44 Kissam:Nadi	21	40	5	85	50	20	Bhima pada	0.348km	0.020km	6960	nil
6	Patna	New	Neulijodi Nala	GPS-Lat-21°48'23"N to 21°48'30"N Long-85°47'35"E to 85°47'43"E Khata No: 60 Plot No:272 Kissam:Nadi	21	48	23	85	47	35	Jharbeda	0.364km	0.050km	18210	nil
7	Patna	New	Neulijodi Nala	GPS-Lat-21°46'41"N to 21°46'43"N Long-85°45'8"E to 85°45'10"E Khata No:128 Plot No:01 Kissam:Nala	21	46	41	85	45	8	Dasarathipur	0.268km	0.040km	10720	nil
8	Patna	New	Jhalaria Nala	GPS-Lat-21°44'40"N to 21°44'41"N Long-85°42'14"E to 85°42'25"E Khata No: 97 Plot No:1097 Kissam:Nala	21	44	40	85	42	14	Bhanarapur	0.230km	0.040km	9220	no
9	Patna	New	Nakhi Nala	Khata No: 148 Plot No:288 & 299 Kissam: Nala Plot:288 GPS-Lat-21°45'38"N to 21°45'39"N Long-85°48'37"E to 85°48'38"E Plot:299 GPS-Lat-21°45'38.17"N to 21°45'38.23"N Long-85°48'37.10"E to 85°48'37.14"E	21	45	38	85	48	37	Nuaga onbala bhadrapur	0.262km	0.040km	10480	nil
10	Patna	New	Baitarani	Khata No: 356 Plot No: 167,172,1513 Kissam: Balichar, Balichar, Nadi Plot:1513 GPS-Lat-21°36'07"N to	21	36	2	85	56	54	Erendei	0.222km	0.040km	11700	nil

				21°36'09"N Long- 85°55'30"E to 85°55'50"E											
11	Patna	New	Baitarani	GPS-Lat-21°42'46"N to 21°42'54.3"N Long- 85°49'18"E to 85°49'26.4"E Khata No:31 Plot No:125/1 Kissam: Nadi	21	42	46	85	41	18	Chang uapad a	0.190k m	0.170km	32370	nil
12	Patna	New	Baitarani	GPS-Lat-21°43'8"N to 21°43'24.3"N Long- 85°48'58.5"E to 85°49'18.4"E Khata No:61 Plot No:583/653 Kissam: Nadi	21	43	8	85	48	58. 5	Patan ali	0.636k m	0.160km	101770	11330
13	Patna	New	Baitarani	GPS-Lat-21°45'37.20"N to 21°45'39"N Long- 85°48'21.38"E to 85°48'24.0"E Khata No:48 Plot No:500 Kissam: Nadi	21	45	37 .2	85	48	21. 38	Deoga on	0.594k m	0.120km	71380	nil
14	Anandpur	New	Musala River	Khata No.- 183 Plot No- 112 & 122 Area- Ac.15.35 Kissam- Nadi	21	19	17 .4 N	86	2	18.2 E	Kanto	0.73	0.085	62120.59	----
15	Anandpur	New	Baitarani River	Khata No.- 1115 Plot No- 6203 Area-Ac.12.50 Kissam- Nadi							Panch upally	0.25	0.2	50586	----
16	Anandpur	New	Ghagra River	Baladuan Khata No.-232 Plot No-38 Area-3.22 Kissam- Nala, Khadipal Khata No.-290 Plot No-376 & 392 Area- Ac.1.39 & Ac.1.16 Kissam- Nala Chhatrakana Khata No.- 242 Plot No- 40								0.9	0.03	35329.05	—

				Area- 2.96 Kissam- Ghagra Nala Dudugaon Khata No.- 296 Plot No- 309- Ac.2.52 324- Ac.2.28 349- 0.86 470-Ac.0.34 Kissam- Nala										
17	Champa	New	Karanjia sand quarry & Karanjia Nala	Khata No. 324 , Plot No. 127 & Area-4.00						Karanjia	0.44257	0.036512	16187.4257	
18	Champa	New	Champa Sand quarry & Baitarani River	Khata No. 548 , Plot No. 1103& Area-12.63						Champa	0.56327	0.090727	51111.7966	
19	Champa	New	Ramla Sand Quarry & Baitarani River	Khata No. 261 , Plot No. 1371/1, & Area- 3.00						Ramla	0.543154	0.156106	84793.7826	
21	Champa	New	Sankarpur sand quarry & Sankarpur Nala	Khata No. 32 , Plot No. 1 & Area 0.48						Sankarpur	0.241402	0.008047	1942.49108	
21	Champa	New	Rimuli Sand Quarry &	21°57'52.2"N to 21°58'9.2"N" and 85°37'7.9"E to 85°37'15"E Khata No.						Rimuli	0.56327	0.035727	20031.9393	

			Aradei River	534 , Plot No. 2773& Area 4.950										
22	Champa	New	Sasanga Sand Quarry & Aradei River	22°00'5.2"N to 22°00'10.2"N" and 85°39'17"E to 85°40'06"E Khata No. 147 , Plot No. 1765 & Area 6.10						Sasanga	0.341986	0.072159	24685.8242	
23	Champa	New	Chengajoda sand quarry (Nala)	21°59'42"N to 21°59'51"N" and 85°37'42.9"E to 85°37'57.2"E Khata No. 327 , Plot No. 51& Area-Ac. 3.120						Kalika prasad	0.50292	0.025146	12626.192	
24	Champa	New	Bhimpur Sand quarry Nala	21°52'53.9"N to 21°52'57.2"N" and 85°44'04"E to 85°44'6.1"E Khata No. 244 , Plot No. 4121 & Area-0.50						Bhimpur	0.090526	0.022531	2023.42821	
25	Champa	New	Bhanda Sand quarry (Nala)	21°55'48.9"N to 21°55'55"N" and 85°45'37.5"E to 85°45'47.2"E Khata No. 181 , Plot No. 940 & Area 1.35						Bhanda	0.140818	0.038825	5463.25617	
26	Champa	New	Karanji Bhalukanala Sand Quarry (Nala)	Khata No. 324 & Plot No. 876/1 & 876/2 Area-Ac. 2.24						Karanji	0.422453	0.021485	9064.95839	
27	Ghasipura	New	Baitarani sand Bed Tampo							Tampo	0.30	0.16	Ac.12.50	
28	Ghasipura	New	Sendhei Sand bed							Basantapura	1.5	0.05	Ac.9.98	

			Basant apura											
29	Ghas ipura	New	Remal Sand Bed, A nlapal							Anlap al	2	0.015	Ac. 2.00	
30	Ghas ipura	New	Remal Sand Bed, Khailo							Khailo	3	0.2	Ac.12.50	
31	Ghas ipura	New	Katha pal to Daradi pal							Katha pal	3	0.25	Ac12.50	
32	Ghat agao n	New	River	Khata-116, Plot- 902,936						Ukuch abeda	0.750	0.025	18750	
33	Ghat agao n	New	River	Khata-147, Plot- 55						Gada dharp ur	0.500	0.060	30000	
34	Ghat agao n	New	River	Khata-157, Plot- 01/1216						Batah aricha ndanp ur	0.560	0.040	22400	
35	Ghat agao n	New	River	Khata-109, Plot- 02						Khunta	0.620	0.040	24800	
36	Ghat agao n	New	River	Khata-249, Plot- 189						Tara	2.100	0.060	126000	
37	Ghat agao n	New	River	Khata-171, Plot- 1074						Chhati a	0.270	0.035	9450	
38	Ghat agao n	New	River	Khata-80, Plot- 628						Dehury pada	0.950	0.050	47500	
39	Ghat agao n	New	River	Khata-471, Plot- 855						Santar apur	0.502	0.040	20080	
40	Haric hand anpu	New	Musal Nadi	Khata No 74 Plot No 1097						Akhup al	0.2133	0.051	1.335 ha	

	r														
41	Haric hand anpu r	New	Laxmipur Nala	Khata No 18 Plot No 30, 139							Tangar posi	0.35	0.3	0.724 ha	
42	Haric hand anpu r	New	Kurejodi Nala	Khata No 207 Plot No 5							Jamujodi	0.522	0.03	2.2702 ha	
43	Haric hand anpu r	New	Musal Nadi	Khata No 91 Plot No 1250/1							Satyapal	0.1584	0.0304	0.404 ha	
44	Haric hand anpu r	New	Kusei Nadi	Khata No 17 Plot No 112							Tentulipal	4.1544	0.06		
45	Haric hand anpu r	New	Remal Nadi	Khata No 55 Plot No 306							Tangiripal	0.1005	0.0649	3.2374 ha	
46	Haric hand anpu r	New	Kanijhari Nadi	Khata No 195 Plot No 1851							Bolani posi	0.4023	0.05	0.8093	
47	Hata dihi	New	Baitarani Sand Bed Amrutpur	Khata No-162 Plot No-938/989							Amrutpur	0.060	0.04	60704	
48	Hata dihi	New	Baitarani Sand Bed Govindapur	Khata No-156 Plot No-494/1							Govindapur	0.052	0.035	52610	
49	Hata dihi	New	Baitarani Sand Bed Jambh	Khata No-237 Plot No-1689/2080							Jambhara	0.086	0.062	86200	

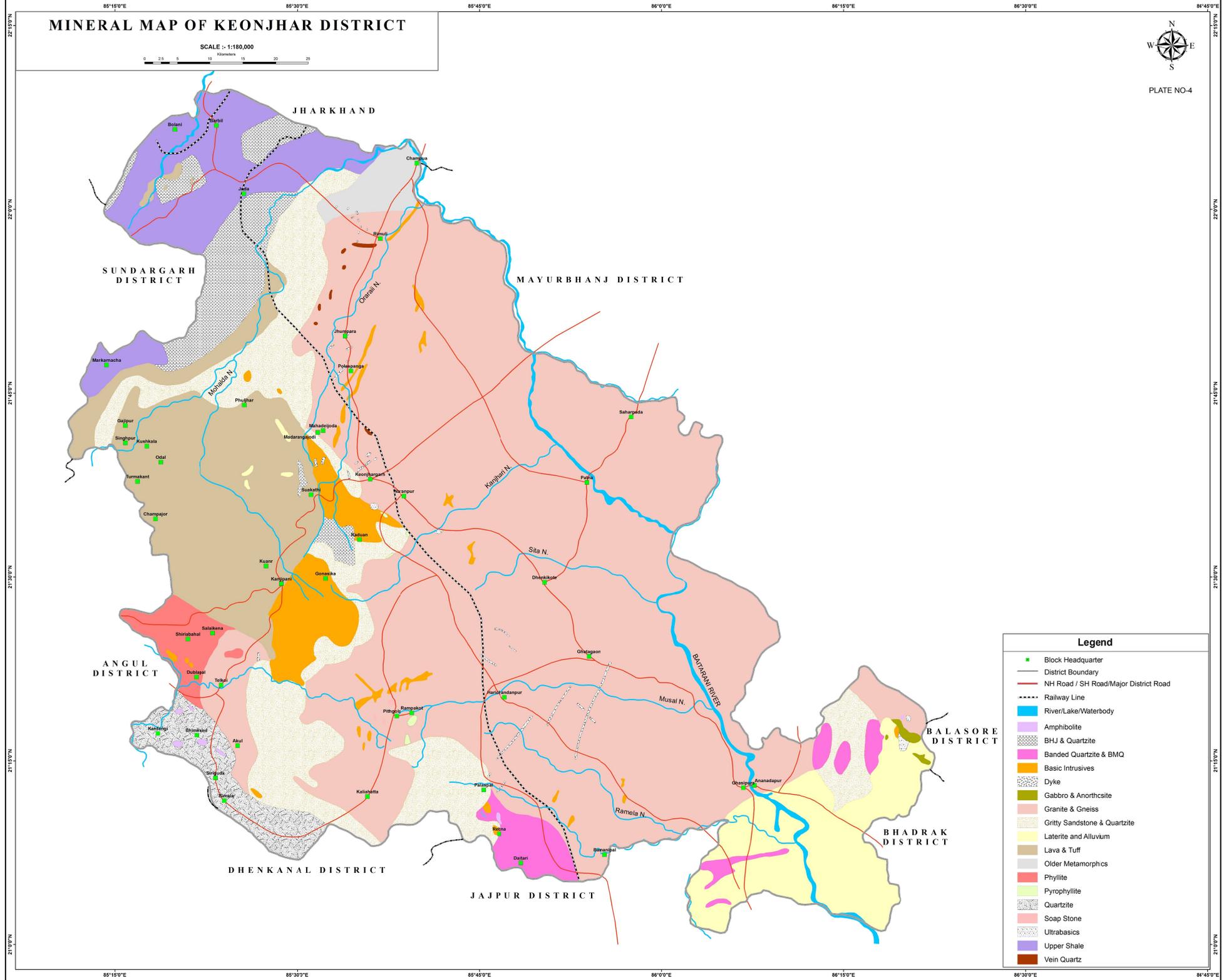
			ara												
50	Champa	Running	Aradei Nala	Village-Bistapal Khata No-172, Plot No.751 Area-Ac6.25, Kissam-Nadi	21	45	0	85	32	30	Bistapal	1.16 K.M	22.00 Mtrs	25287.00 Sq.Mtrs or Hc 2.53	
51	Champa	Running	Aradei Nala	Village- Patung Khata No-150, Plot No.-217 Area-Ac 12.10 , Kissam-Nadi	21	45	38.6	85	32	30.6	Patung	0.800 K.M	60.00Mtrs	48956.00 Sq.Mtrs of Hc4.90	
52	Telkoi	New	DUDH AJHORI RIVER	GPS:- Latitudes(21deg 12' 30.0" & 21deg 14'30"N) Longitudes(85deg 35' 00" & 85deg 36'15" E) Vill.- Khata No.54(Sarupat) Plot Nos.103(part), 121 Khata No.-33(Tigiria) Plot No.97,260 Khata No.193(Kaliahata) Kissam-Nadi & Nala	21	12	30	85	35	00	Sarupat, Kaliahata, Tigiria	12.35	0.30mtrs	43660sqm	10902Cum

MINERAL MAP OF KEONJHAR DISTRICT

SCALE :- 1:1,80,000



PLATE NO-4



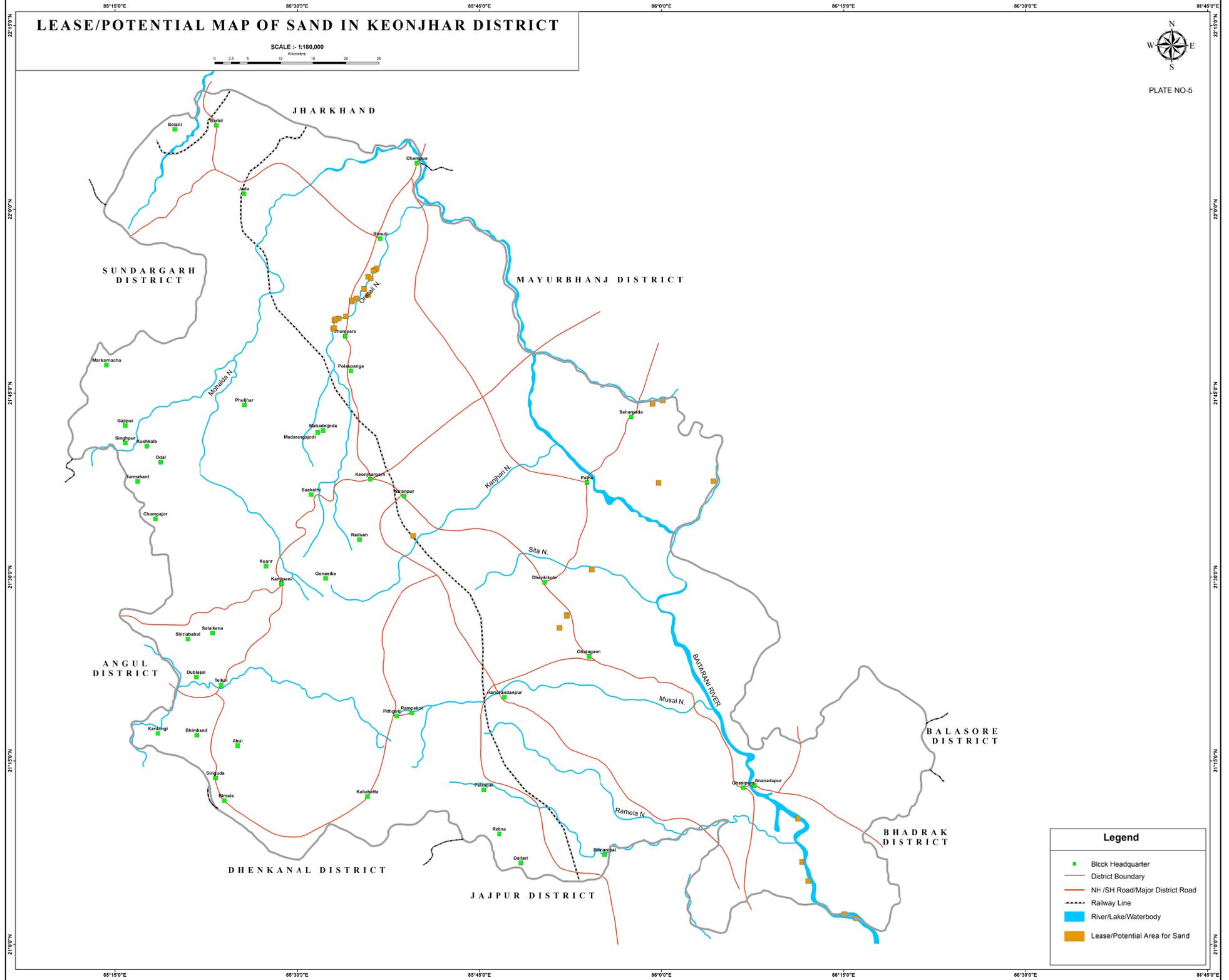
Legend	
	Block Headquarter
	District Boundary
	NH Road / SH Road/Major District Road
	Railway Line
	River/Lake/Waterbody
	Amphibolite
	BHJ & Quartzite
	Banded Quartzite & BMQ
	Basic Intrusives
	Dyke
	Gabbro & Anorthosite
	Granite & Gneiss
	Gritty Sandstone & Quartzite
	Laterite and Alluvium
	Lava & Tuff
	Older Metamorphics
	Phyllite
	Pyrophyllite
	Quartzite
	Soap Stone
	Ultrabasics
	Upper Shale
	Vein Quartz

LEASE/POTENTIAL MAP OF SAND IN KEONJHAR DISTRICT

SCALE :- 1:180,000



PLATE NO-5



Legend

- █ Block Headquarter
- District Boundary
- NH /SH Road/Major District Road
- - - Railway Line
- ▬ River/Lake/Waterbody
- Lease/Potential Area for Sand