DISTRICT SURVEY REPORT (DSR)

OF

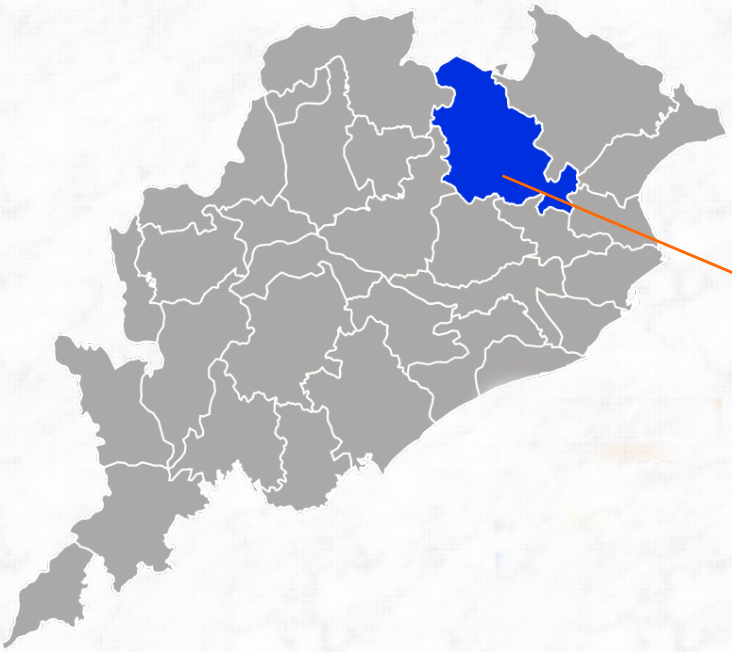
KEONJHAR DISTRICT, ODISHA

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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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 synclinorium 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, Khandbhanda, Sidhmath, 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 partial 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 Phuinjhorhuli 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, serpentinised 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 Cr_2O_3 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 Kodalia, 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 ultabasic 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-Balabhadrapurr 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 veiw 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 have 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. Lateritite 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 due to drop in energy.

7. GENERAL PROFILE

a. Administrative set up:

Sl No	Item	Unit	Magnitude
1	Location		
	Longitude	Degree	85° 11' E to 86° 22' E
	Latitude	Degree	21° 1' N to 22° 10' N
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 state's 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 last four years in the district was 1489.69 mm during 2017, which is slightly more 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	Paddy	Wheat	Maize	Mung	Biri	Kulthi	TilL	Groundnut	Mustard	Potatoes	Jute	Sugarcane
Production 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 the district during the year 2018-19 covers 136.03 million units and villages so far electrified as on 30.09.2019, 2067 revenue villages which constitute 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	249.88
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.

No of Hospitals	21 No
Beds facilities	550 No
Homoeopathic dispensaries	48 No
Ayurvedic dispensaries	34 No

Detail of the Allopathic hospitals is as below:

Sl. No	Name of the Institutions	Bed Position	
		Sanctioned Strength	In-position
1	DHH Keonjhar	162	162
2	SDH Anandapur	88	88
3	SDH Champua	72	72
4	CHC Fakirpur	6	6
5	CHC Banspal	16	16
6	CHC Jhumpura	16	16
7	CHC Bhanda	16	16
8	CHC Siankul	16	16
9	CHC Ghatgaon	30	30
10	CHC Harichandanpur	16	16
11	CHC Salania	16	16
12	CHC Basudevpur	6	6
13	CHC Padampur	16	16
14	CHC Patna	16	16
15	CHC Udaypur	6	6
16	CHC Telkoi	16	16
17	CHC Barbil	16	16
18	CHC Joda	6	6
19	CHC Kesudurapal	6	6
20	CHC Bhagamunda	6	6
21	Urban PHC Keonjhar	2	2
		Total-	550

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	1888.9
Protected Reserve Forest	150.00
Demarcated Forest	235.53
Village Forest (Notified)	30.79
Unclassified Forest	0.29
DLC Area	374.67
Total	**2680.18**

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
Gerneral 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

Sl 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 41.8^{0}C in the summer and up to 6.4^0 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 WEALTH

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
		Ferrugineous 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- 83,41,866 cum (Annexure II), Gravel- Nil, Aggregate- Nil.
   This is the maximum volume of sand which can be quarried out from the sources of the district and has been calculated as 60% of the quantity derived by multiplying the area of the source with 3m thickness as the exact resource of sand is not possible to calculate due to flowing water of last monsoon.
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 infiltratation. 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.

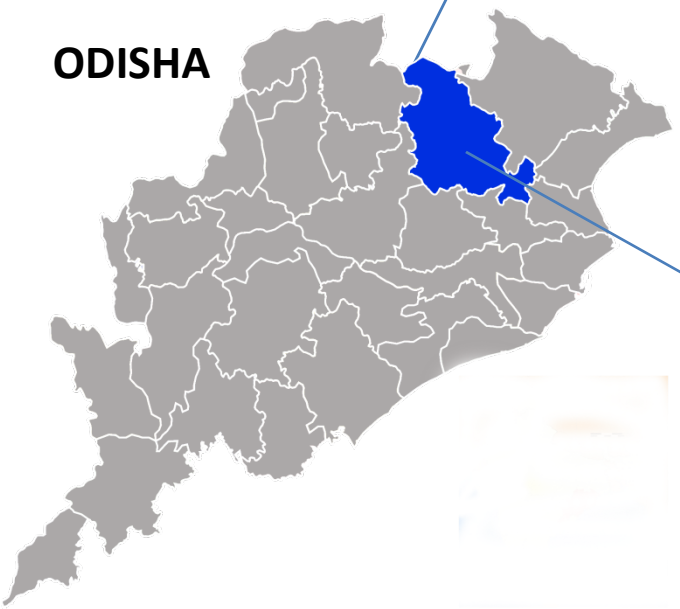
Sl. No.	**Name of the River**	**Place of Origin**	**Altitude at Origin**	**Total length in the district (in Km) (Total length)**
1	2	3	4	5
1	Baitarani	Gonasika	Longitude- 21^0-31'-00" N Longitude- 85^0-33'-00"E	240Km upto Anandapur
2	Kangira	Haladi Pokhari		40Km
3	Ardei	Sidha Matha	Longitude- 22^0-009'-00" 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.

PLATE NO- 1

INDEX MAP

ODISHA



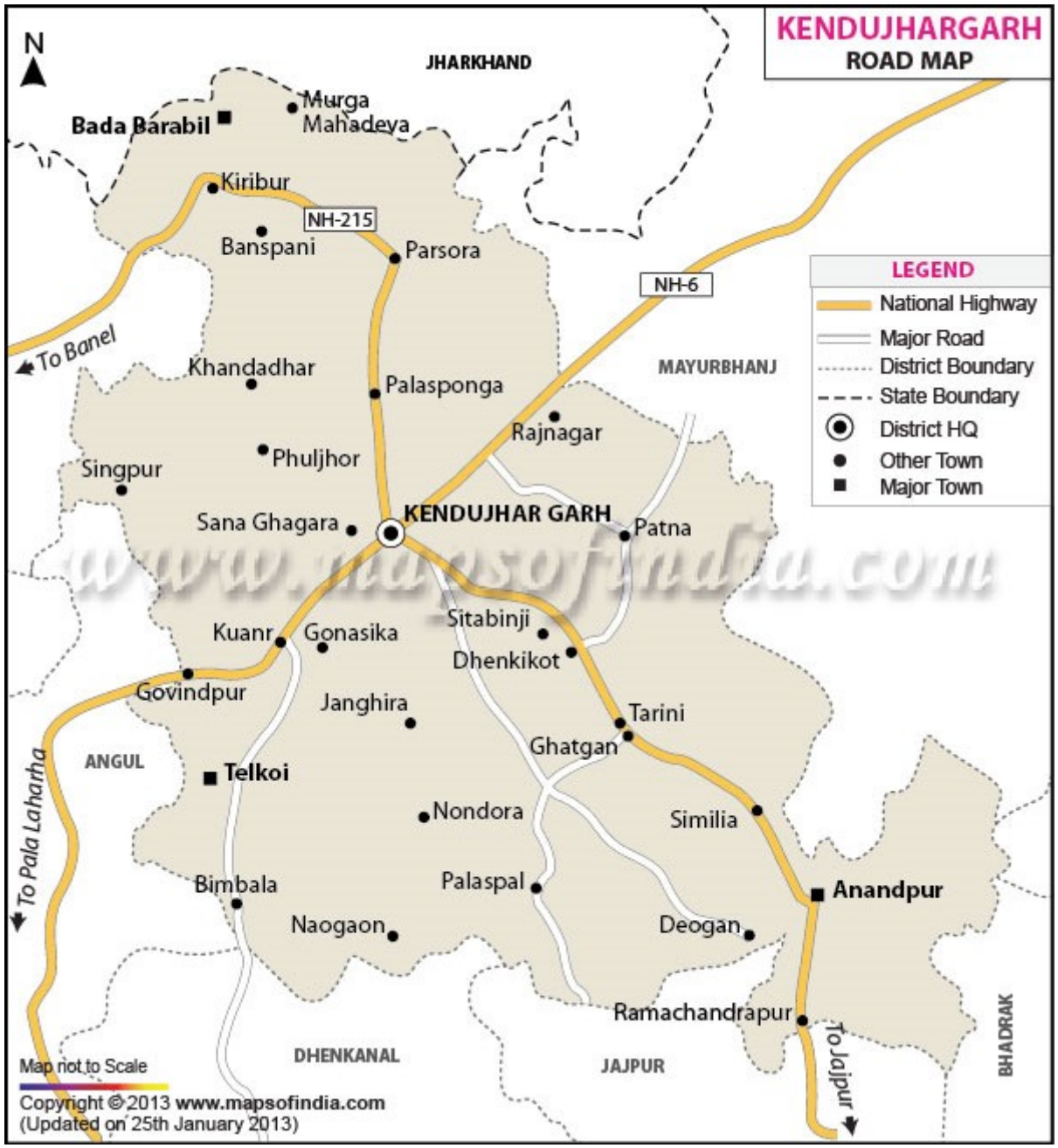
KEONJHAR

PLATE NO- 2

MAP SHOWING THE TAHASILS OF KEONJHAR DISTRICT

PLATE NO- 3

MAP SHOWING THE MAJOR ROADS OF KEONJHAR DISTRICT



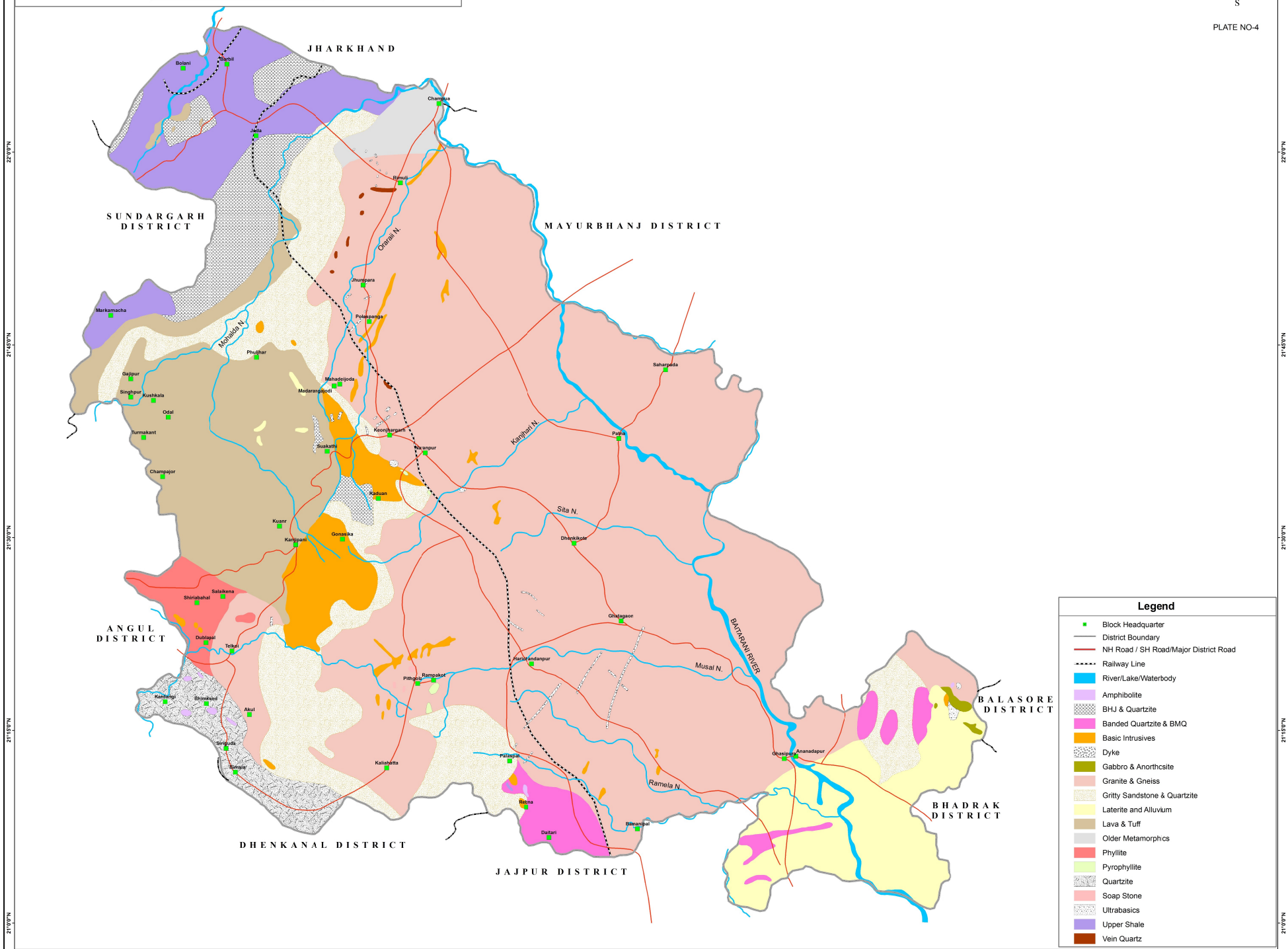
MINERAL MAP OF KEONJHAR DISTRICT

SCALE :- 1:180,000

Kilometers

0 2.5 5 10 15 20 25

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 & Anorthcsite
- 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

Kilometers

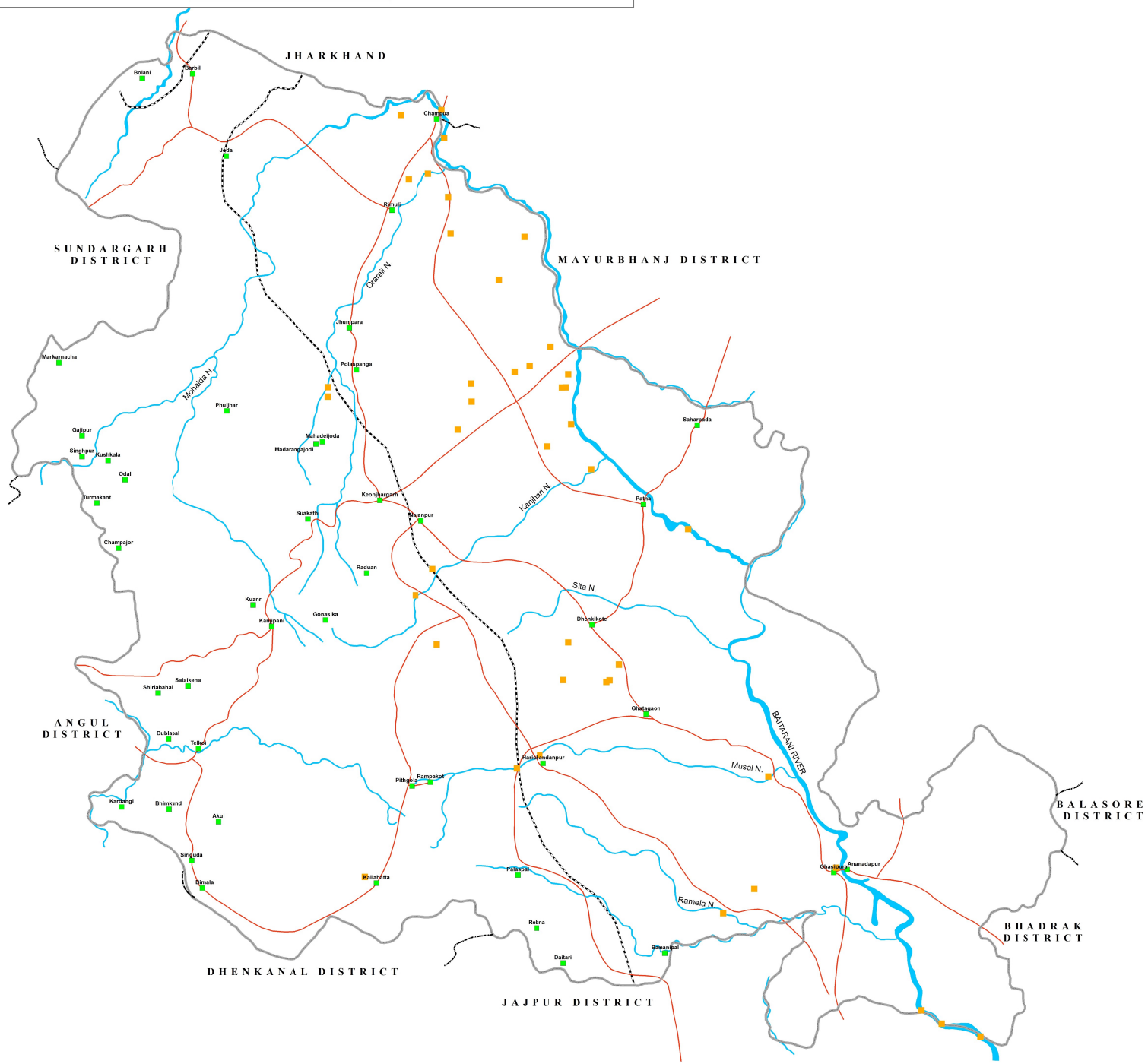
0 2.5 5 10 15 20 25

N

W E

S

PLATE NO-5



Legend

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

ANNEXURE I

SAND SAIRATS ALREADY LEASED OUT AND EXECUTED

Sl. No.	Name of Tahasil	River or stream and Name of Village & date of Registration of lease deed	Status	Portion of the River or Stream leased for mineral concession (Khata & Plot No)	Longitude			Latitude			Length of area leased for mineral concession (in km)	Average width of area leased for mineral concession (in km)	Area leased for mineral concession (in sq m)	Mineable mineral potential as per approved mining plan (in cum)
					Degree	Minute	Second	Degree	Minute	Second				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Patna	Baitarani, Dumurigoda, 20.10.2016	Running	GPS-Lat-21°48'43"N to 21°49'13.8"N Long-85°47'53.2"E to85°48'34.1"E Khata No:42 Plot No:1,2 & 336/1 Kissam: Nadi	21	48	43	85	47	53.2	1.966km	0.05 km	98340	7350
2	Patna	Baitarani, Durgadeipur, 24.09.2015	Running	GPS-Lat-21°38'09"N to 21°38'26.5"N Long-85°54'10"E to85°54'28.9"E Khata No:45 Plot No:1 Kissam: Nadi	21	38	09	85	54	10	0.975 km	0.170 km	190760	39750
3	Patna	Baitarani, Tando, 17.05.2017	Running	GPS-Lat-21°34'9"N to 21°34'31.7"N Long-85°59'30.5"E to 86°00'3.5"E Khata No:178 Plot No:184/2887 Kissam: Nadi	21	34	9	85	59	30.5	0.919 km	0.230 km	211500	6607
4	Patna	Sitanadi, Ketang, Lease deed not done so far	Running	GPS-Lat-21°30'50.9"N to 21°31'14.8"N Long-85°52'2.5"E to 85°52'25.1"E Khata No:109 Plot No:360 Kissam: Nadi	21	30	50.9	85	52	2.5	0.627 km	0.100 km	62720	6267

5	Patna	Baitarani, Raikala, 28.12.2018	Running	GPS-Lat-21°44'54.1"N to 21°45'12.2"N Long-85°49'1.3"E to 85°49'10.9"E Khata No:177 Plot No:598/1366 Kissam: Nadi	21	44	54.1	85	49	1.3	0.553 km	0.150 km	82960	24405
6	Saharapada	Baitarani River, Udayapur date. 06.03.2017	Running	Khata No.696, Plot No-6087	20	41	22.81	85	50	59.20	0.725	80 Mtrs	5.26 Hct	1500
7	Saharapada	Baitarani River,Moudipa date. 06.03.2017	Running	Khata No.94, Plot No-1076	21	42	48.23	85	49	22.78	0.610	95 Mtrs	5.26 Hcts	16243.3
8	Saharapada	Baitarani River, Mayurpankha date. 06.02.2017	Running	Khata No.57, Plot No-594	22	43	52.33	85	48	21.98	0.812	75 Mtrs	5.2 Hcts	18972
9	Anandpur	Baitarani River/ Anandapur/ 15.09.2015	Running	Khata No.- 1281 Plot No- 3377 Area-Ac.20.47 Kissam-Nadi	21	12	48.02	86	6	55.7	0.56	0.16	82834.14	80150
10	Anandpur	Baitarani River / Goudadiha/ 08.06.2016	Running	Khata No.- 217 Plot No-1 Area- Ac.12.50 Kissam-Nadi	21	17	10.2	86	5	4.0	0.29	0.17	50586.5	47402
11	Anandpur	Baitarani River/ Amarang/ 03.03.2016	Running	Khata No.- 240 Plot No-1315 Area-Ac.32.00 Kissam-Nadi	21	18	34.5	86	04	27.0	0.563	0.23	129502.23	73869
12	Anandpur	Kusei River/ Belabahali & Bhatasira/ 04.06.2016	Running	Khata No.- 607 & 231 Plot No- 1288 & 1671 Area- Ac.18.50 Kissam- Nadi	21	9	21.8	86	06	57.7	0.8	0.10	74867	39969

13	Anandpur	Baitarani river / Tukuna/ 16.02.2016	Running	Khata No.- 111 Plot No- 1455 Area- Ac.17.68 out of Ac.17.68 Kissam- Nadi	21	11	40.2	85	8	34.8	0.37	0.19	71548	50720
14	Champua	Aradei River, Krushnapur sand quarry -1 & dt. 09.02.2016	Running	85°38'15" to 85°38'30" and 21°58'45" to 21°59'15" Khata-72 & plot no. 495, Area Ac 9.000, Kisam- Nadi	21	58	45	85	38	15	0.885139	0.41179	36421.7078	3000
15	Champua	Aradei River, Krushnapur sand quarry-2 & dt. 09.02.2016	Running	85°38'15" to 85°38'30" and 21°58'45" to 21°59'15" Khata-72 , plot no. 327, Area 3.32, Kisam- Nadi	21	58	45	85	38	15	0.148864	0.090264	13435.5633	3000
16	Champua	Aradei River, Kalikaprasad sand quarry & dt. 09.02.2016	Running	85°37'30" to 85°38'15" and 21°58'00" to 21°58'30" Khata-327 , plot no. 2451, Area- 9.20, Kisam- Nadi	21	58	00	85	37	30	0.663854	0.056086	37231.0791	3000
17	Champua	Aradei River & Mahisapat matial Ghat sand quarry, Kalikaprasad & dt. 09.02.2016	Running	85°37'30" to 85°38'15" and 21°58'00" to 21°58'30" Khata-327 & plot no. 2344, Area-5.85, Kisam- Nadi	21	58	00	85	37	30	0.390266	0.060652	23674.1101	3000
18	Champua	Baitarani River & Sarei sand quarry & dt. 07.05.2016	Running	22°00'19.8"N to 22°00'29.5 N" and 85°41'46.6" E to 85°42'4.2"E Khata- 238 , plot no. 1/1646 & Area Ac.11.00	22	00	19.8	85	41	46.6	0.523037	0.085114	44515.4206	18750

19	Champua	Kanjiasula Nala & Kanjiasula sand quarry, dt. 07.05.2016	Running	21°55'48.7N" to 21°55'55.5 N" and 85°40'55.9"E TO 85°41'1.4 E Khata-252 , plot no. 1302 & Area Ac 1.27 , Kisam- Nala	21	55	48.7	85	40	55.9	0.0523037	0.085114	5139.50766	6180
20	Champua	Janhei Nala , Fulkanlei sand quarry & dt. 07.05.2016	Running	21°52'1.5."N to 21°52'3.7 N" and 85°47'1.8.E" to 85°47'5.4"E Khata-207 , plot no. 727 Area- Ac 0.50 Kisam- Nala	21	52	1.5	85	47	1.8	0.100584	0.020117	2023.42821	3300
21	Ghasipura	Baitarni Sand Bed, Talagaon. Vill-Talagaon. Dt. 20.12.2016	Running	Mouza- Talagaon Khata No. 269 Plot No. 1 Area-13.00 Kissam- Nadi	21	15	43.58	86	5	56.31	0.28	0.18	5.261 ha	62400
22	Ghasipura	Baitarini Sand Bed, Saladei Vill- Saladei Dt. 03.03.2016	Running	Mouza- Saladei Khata No. 420 Plot No. 2000 Area- 13.00 Kissam- Nadi	21	4	20.3	86	12	9.1	0.22	0.22	5.261 ha	79440
23	Ghasipura	Baitarni Sand Bed,Napanga Vill-Napagaon Dt.09.11.2018	Running	Mouza- Napanga Khata No. 232 Plot No.219/894 Area-14.00 Kissam- Nadi	21	5	11.5	86	11	2.9	0.2	0.31	5.665 ha	10000
24	Ghasipura	Papudia Nala Sand Bed, Sarein Vill-Sarein Dt.29.02.2016	Running	Mouza- Sarein Khata No. 228 Plot No. 818,1393,1394 ,2865 Area-12.50 Kissam- Nala	21	10	12	86	5	2	2.0	0.03	5.058 ha	15048

25	Ghasipura	Kusei Sand Bed,Deogaon Vill-Deogaon Dt.24.04.2017		Mouza- Deogaon Khata No. 352 Plot No. 1297 Area-14.50 Kissam- Nadi	21	9	26.4	86	2	32.3	2.1	0.026	5.868 ha	31543
26	Ghatgaon	Sita nadi Sand Bed, Kundapitha Date of Regd. :	Running	N21.3036 E85.5414	21	30	36	85	54	14	0.600	0.140	84000	10120
27	Harichandanpur	Village:Raghunathpur Musal Nadi 04.07.2016 and 09.03.2018	Running	Khata No 49 Plot No 223/1 kissam Nala	21	21	31.28	85	47	50.64	0.3	0.03	0.793 ha	2717
28	Hatadihi	Baitarani Sand Bed, Habaleswar, L.D. date: 13.10.15	Running	Khata No-16 Plot no- 1225/1240	21	02	08.05	86	16	02.01	0.24	0.22	52610	17929
29	Hatadihi	Baitarani River Sand bed, Girigaon, L.D. date: 15.02.16	Running	Khata No-242 Plot no- 1126	21	05	11.04	86	12	07.08	0.26	0.2	52610	72000
30	Hatadihi	Baitarani River Sand bed, Ambo-Karagola, L.D. date: 07.04.17	Running	Khata No-619, 613 Plot no- 1636/2666/1, 100/2957/1	21	06	45.10	86	11	34.00	0.32	0.16	52610	4750
31	Hatadihi	Baitarani River Sand bed, Bancho, L.D. date: 17.06.15	Running	Khata No-1039 Plot no- 5224/5444	21	10	16.18	86	11	13.08	0.22	0.18	60704	49962
32	Hatadihi	Baitarani River Sand bed, Dimiria, L.D. date: 17.10.15	Running	Khata No-218 Plot no- 1698	21	02	28.3	86	15	04.90	0.26	0.2	52610	35008.8

33	Jhumpura	River Aradei Katalposi Sand Quarry, Village Katalposi	Running	Khata- 111 Plot- 1209 Area- 6.80	21	52	30	85	34	30	0.74	0.05	27518.6	6000
34		River aradei Parbatipur Sand Quarry, Village Parbatipur		Khata- 100 Plot- 1 Area- 4.80	21	53	30	85	35	30	0.95	0.02	19424.9	5250
35	Keonjhar	Aradei Nala , Vill-Bistapal -Date of Regd of Deed- 19.02.2016	Running	Village-Bistapal Khata No-172, Plot No.751 Area-Ac6.25, Kissam-Nadi	21	45	0	85	32	30	1.16 K.M	22.00 Mtrs	25287.00Sq. Mtrs	2650
36	Keonjhar	Aradei Nala, Vill-Patung, Date of Regd.of Deed- 19.03.2016	Running	Village- Patung Khata No-150, Plot No.-217 Area-Ac 12.10 , Kissam-Nadi	21	45	38.6	85	32	30.6	0.800 K.M	60.00 Mtrs	48956.00 Sq.Mtrs	19900.00
37	Keonjhar	Aradei Nala ,Vill-Deuladiha ,Date of Regd. Of Deed- 26th March, 2016	Running	Village- Deuladiha Khata No- 45 , Plot No.- 73 Area-Ac 10.75 , Kissam-Nadi	21	47	42.2	85	32	30.5	1.04 K.M	42.00 Mtrs	43494 Sq.Mtrs	5514.00
38	Telkoi	Samakloi river sand quarry Village Telkoi 9.6.2016	Running	GPS:- Latitudes(21deg 21' 28.0" & 21deg 21'57.8"N) Longitudes(85deg 22' 47.8" & 85deg 24'30" E) Vill.-Telkoi, Khata No.329, Plot No.205, 2608,1257, Kisam-Nadi	21	28	0	85	22	47.8	1200 mtrs	30 mtrs	32000 sqmtr	4680 cum

39	Telkoi	Samakoi river sand quarry vill. Dabalapal 9.6.2016	Running	GPS:- Latitudes(21deg 21' 31.2" & 21deg 21'39.3"N) Longitudes(85deg 21' 06" & 85deg 21'04" E) Vill.-Telkoi, Khata No.214, Plot No.1500, Kisam-Nadi	21	31	2	85	21	06	137 mtrs	200 mtrs	25940 sq.mtr	2244 cum
40	Telkoi	Ramial River sand quarry vill. Purujoda, Brahmanikansa and Benamunda 17.3.2017	Running	GPS:- Latitudes(21deg 12' 33.0" & 21deg 12'51"N) Longitudes(82deg 22' 48" & 82deg 24'30.0" E) Vill.-Telkoi, Khata Nos.155,184,62 Plot Nos.1039,75,335,337 ,338,362 Kisam-Nadi	21	12	33.0	82	22	48	80 mtrs	0.50 mtrs	33000 Sq.mtrs	4800 cum

ANNEXTURE-II

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 (Khata & Plot No) (Sketch map to be attached)	Longitude			Latitude			Name of village	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
1	Patna	LOI	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	43900	79020
2	Patna	LOI	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	17190	30942
3	Patna	LOI	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	10110	18198
4	Patna	LOI	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	8300	14940
5	Patna	LOI	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	Bhimapada	6960	12528
6	Patna	LOI	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	18210	32778

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	10720	19296
8	Patna	New	Jhalara 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	Bhanarpur	9220	16596
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	Nuagaon balabhadrapur	10480	18864
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°36'09"N Long-85°55'30"E to 85°55'50"E	21	36	2	85	56	54	Erendei	11700	21060
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	Changuapada	32370	58266
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	Patanali	101770	183186
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:500/1 Kissam: Nadi	21	45	37.2	85	48	21.38	Deogaon	71380	128484
14	Patna	Running	Baitarani,	GPS-Lat-21°48'43"N to 21°49'13.8"N Long-85°47'53.2"E to85°48'34.1"E Khata No:42 Plot No:1,2 & 336/1 Kissam: Nadi	21	48	43	85	47	53.2	Dumurigoda	98340	177012

15	Patna	Running	Baitarani	GPS-Lat-21°38'09"N to 21°38'26.5"N Long-85°54'10"E to85°54'28.9"E Khata No:45 Plot No:1 Kissam: Nadi	21	38	09	85	54	10	Durgadeipur	100800	181440
16	Patna	Running	Baitarani,	GPS-Lat-21°34'9"N to 21°34'31.7"N Long-85°59'30.5"E to 86°00'3.5"E Khata No:178 Plot No:184/2887 Kissam: Nadi	21	34	9	85	59	30.5	Tando	211500	380700
17	Patna	Running	Sitanadi,	GPS-Lat-21°30'50.9"N to 21°31'14.8"N Long-85°52'2.5"E to 85°52'25.1"E Khata No:109 Plot No:360 Kissam: Nadi	21	30	50.9	85	52	2.5	Ketang,	62720	112896
18	Patna	Running	Baitarani,	GPS-Lat-21°44'54.1"N to 21°45'12.2"N Long-85°49'1.3"E to 85°49'10.9"E Khata No:177 Plot No:598/1366 Kissam: Nadi	21	44	54.1	85	49	1.3	Raikala	82960	149328
19	Patna	New	Silida Sand	Khata No:159 Plot No:1019 Kissam: Nadi							Silida Sand	80938.89	145690
21	Patna	New	Kiapada Sand	Khata No:100 Plot No:1Kissam: Nadi							Kiapada	98947.79	178106
21	Patna	New	Anladiha Sand	Khata No:39 Plot No:1 Kissam: Nadi							Anladiha	50020.23	90036
22	Patna	New	Tribindha Sand	Khata No:226 Plot No:2107, 1740 Kissam: Nadi							Tribindha	91177.66	164120
23	Patna	New	Tentala Sand	Khata No:141 Plot No:392 Kissam: Nadi							Tentala	104006.5	187212
24	Patna	New	Kainda Sand	Khata No:245 Plot No:2321Kissam: Nadi							Kainda	108255.8	194860
25	Patna	New	Bhaliadal Sand	Khata No:83 Plot No:858 Kissam: Nadi							Bhaliadal	101173.6	182112
26	Patna	New	Nuapada Sand	Khata No:103 Plot No:1 Kissam: Nadi							Nuapada	50586.81	91056
27	Patna	New	Mahisamundi Sand	Khata No:154 Plot No:3048Kissam: Nadi							Mahisamundi	24281.67	43707
28	Saharapada	Running	Baitarani River,	Khata No.94, Plot No-1076	21	42	48.23	85	49	22.78	Moudipa	52600	94680
29	Saharapada	Running	Baitarani River,	Khata No.57, Plot No-594	22	43	52.33	85	48	21.98	Mayurpankha	52000	93600
30	Saharapada	Running	Baitarani River,	Khata No.696, Plot No-6087	20	41	22.81	85	50	59.20	Udayapur	52600	94680

31	Anandpur	New	Musala River	Khata No.- 183 Plot No- 112 & 122 Area- Ac.15.35 Kissam- Nadi	21	19	17.4	86	2	18.2	Kanto	62120.59	111817
32	Anandpur	New	Baitarani River	Khata No.- 1115 Plot No- 6203 Area-Ac.12.50 Kissam- Nadi	21	13	7.5	86	6	55.3	Panchupally	50586	91055
33	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- NalaChhatrakana Khata No.- 242 Plot No- 40 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							Baladuan, Khadipal, Chhatrakana, Dudugaon	35329.05	63592
34	Anandpur	Running	Baitarani River/	Khata No.- 1281 Plot No- 3377 Area-Ac.20.47 Kissam-Nadi	21	12	48.02	86	6	55.7	Anandapur	82834.14	149101
35	Anandpur	Running	Baitarani River /	Khata No.- 217 Plot No-1 Area- Ac.12.50 Kissam-Nadi	21	17	10.2	86	5	4.0	Goudadiha	50586.5	91056
36	Anandpur	Running	Baitarani River/	Khata No.- 240 Plot No-1315 Area-Ac.32.00 Kissam-Nadi	21	18	34.5	86	04	27.0	Amarang	129502.23	233104
37	Anandpur	Running	Kusei River/	Khata No.- 607 & 231 Plot No- 1288 & 1671 Area- Ac.18.50 Kissam- Nadi	21	9	21.8	86	06	57.7	Belabahali & Bhatasira	74867	134761
38	Anandpur	Running	Baitarani river /	Khata No.- 111 Plot No- 1455 Area- Ac.17.68 out of Ac.17.68 Kissam- Nadi	21	11	40.2	85	8	34.8	Tukuna	71548	128786
39	Anandpur	New	Sand 5.00 Ha.	Khata No - 113 Plot No- 1132 Area - Ac.12.50 out of 89.00							Budhikud	50000	90000
40	Anandpur	New	Sand 5.026Ha.	Khata No -657 Plot No- 4295							Padmapur	52609	94696

				Area - Ac.8.00 out of 49.45 Khata No - 657 Plot No- 172/4293 Area - Ac.5.00out of 5.50									
41	Champua	New	Karanjia sand quarry & Karanjia Nala	Khata No. 324 , Plot No. 127 & Area-4.00	21	58	30.4	85	40	38.9	Karanjia	16187.43	29137
42	Champua	New	Champua Sand quarry & Baitarani River	Khata No. 548 , Plot No. 1103& Area-12.63	22	4	23.6	85	40	11.6	Champua	51111.8	92001
43	Champua	New	Ramla Sand Quarry & Baitarani River	Khata No. 261 , Plot No. 1371/1, & Area- 3.00	22	2	31.1	85	40	22.9	Ramla	12140.5692	21853
44	Champua	New	Sankarpur sand quarry & Sankarpur Nala	Khata No. 32 , Plot No. 1 & Area 0.48	22	4	3	85	37	25.6	Sankarpur	1942.49	3496
45	Champua	New	Rimuli Sand Quarry & Aradei River	21°57’52.2”N to 21°58’9.2”N” and 85°37’7.9”E to 85°37’15”E Khata No. 534 , Plot No. 2773& Area 4.950							Rimuli	20031.94	36057
46	Champua	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	22	00	5.2	85	39	17	Sasanga	24685.82	44434
47	Champua	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	21	59	42	85	37	57.2	Kalikaprasad	12626.19	22727
48	Champua	New	Bhimpur Sand quarryNala	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	21	52	53.9	85	44	04	Bhimpur	2023.43	3642
49	Champua	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	21	55	48.9	85	45	47.2	Bhanda	5463.26	9834
50	Champua	New	Karanjia Bhalukanala Sand Quarry (Nala)	Khata No. 324 & Plot No. 876/1 & 876/2 Area-Ac. 2.24	21	56	2	85	40	49.1	Karanjia	9064.96	16317
51	Champua	Running	Aradei River ,	85°38’15” to 85°38’30” and 21°58’45” to 21°59’15” Khata-72 & plot no. 495, Area Ac 9.000, Kisam- Nadi	21	58	45	85	38	15	Krushnapur	36421.708	65559
52	Champua	Running	Aradei River ,	85°38’15” to 85°38’30” and 21°58’45” to 21°59’15” Khata-72 , plot no. 327, Area 3.32, Kisam- Nadi	21	58	45	85	38	15	Krushnapur	13435.563	24184

53	Champua	Running	Aradei River ,	85°37'30" to 85°38'15" and 21°58'00" to 21°58'30" Khata-327 , plot no. 2451, Area- 9.20, Kisam- Nadi	21	58	00	85	37	30	Kalikaprasad	37231.079	67016
54	Champua	Running	Aradei River	85°37'30" to 85°38'15" and 21°58'00" to 21°58'30" Khata-327 & plot no. 2344, Area-5.85, Kisam- Nadi	21	58	00	85	37	30	Kalikaprasad Mahisapat matial,	23674.11	42613
55	Champua	Running	Baitarani River	22°00'19.8"N to 22°00'29.5 N" and 85°41'46.6" E to 85°42'4.2"E Khata-238 , plot no. 1/1646 & Area Ac.11.00	22	00	19.8	85	41	46.6	Sarei	44515.421	80128
56	Champua	Running	Kanjiasula Nala	21°55'48.7N" to 21°55'55.5 N" and 85°40'55.9"E TO 85°41'1.4 E Khata-252 , plot no. 1302 & Area Ac 1.27 , Kisam- Nala	21	55	48.7	85	40	55.9	Kanjiasula	5139.5077	9251
57	Champua	Running	Janhei Nala ,	21°52'1.5."N to 21°52'3.7 N" and 85°47'1.8.E" to 85°47'5.4"E Khata-207 , plot no. 727 Area- Ac 0.50 Kisam- Nala	21	52	1.5	85	47	1.8	Fulkanlei	2023.4282	3642
58	Ghasipura	Exiting / Not Operational	Baitarani sand Bed Tampo	Village- Tampo, Khata No. 221, Plot No. 705,706 Area- Ac.12.50, Kissam - Nadi	-	-	-	-	-	-	Tampo	50586.81	91056
59	Ghasipura	Exiting / Not Operational	Sendhei Sand bed Basantapura	Village- Basantapura ,Khata No.620, Plot No. 4051 Area- Ac.9.98, Kissam - Nadi	-	-	-	-	-	-	Basantapura	40388.51	72699
60	Ghasipura	Exiting / Not Operational	Remal Sand Bed,Anlapal	Village- Anlapal, Khata No. 155, Plot No. 229 Area- Ac.2.00, Kissam - Nala	-	-	-	-	-	-	Anlapal	8093.89	14569
61	Ghasipura	Exiting / Not Operational	Remal Sand Bed, Khailo	Village- Khailo, Khata No. 216, Plot No. 358,420 Area- Ac.12.50, Kissam - Nadi	-	-	-	-	-	-	Khailo	50586.81	91056
62	Ghasipura	Exiting / Not Operational	Kathapal to Daradipal	Village- Kathapal, Khata No. 335,504, Plot No. 245,892/1,550 Area- Ac.12.50, Kissam - Nala	-	-	-	-	-	-	Kathapal	50586.81	91056
63	Ghasipura	Running	Baitarni Sand Bed, .	Village- Talagaon, Khata No. 269, Plot No. 1 Area- Ac.13.00, Kissam - Nadi	21	15	43.58	86	5	56.31	Talagaon.	52610	94698
64	Ghasipura	Running	Baitarini Sand Bed,	Village-Saladei, Khata No.420, Plot No.2000 Area- Ac.13.00, Kissam -Nadi	21	4	20.3	86	12	9.1	Saladei	52610	94698
65	Ghasipura	Running	Baitarni Sand Bed,	Village-Napanga, Khata No.232, Plot No. 219/894 Area- Ac.14.00, Kissam - Nadi	21	5	11.5	86	11	2.9	Napanga	56650	101970
66	Ghasipura	Running	Papudia Nala Sand Bed,	Village-Sarein, Khata No. 228, Plot No.818, 1393,1394,2865 Area- Ac.12.50, Kissam - Nadi	21	10	12	86	5	2	Sarein	50580	91044

67	Ghasipura	Running	Kusei Sand Bed,	Village-Deogaon, Khata No.352, Plot No.1297 Area- Ac.14.50, Kissam - Nadi	21	9	26.4	86	2	32.3	Deogaon	58680	105624
68	Ghatagaon	New	River	Khata-116, Plot- 902,936	21	33	19.9	85	39	34.8	Ukuchabeda	18750	33750
69	Ghatagaon	New	River	Khata-147, Plot- 55	21	26	52.8	85	52	11.7	Gadadharpur	30000	54000
70	Ghatagaon	New	River	Khata-157, Plot- 01/1216	21	26	51.7	85	52	11.5	Bataharichandanpur	22400	40320
71	Ghatagaon	New	River	Khata-109, Plot- 02	21	25	48.1	85	51	33.7	Khunta	24800	44640
72	Ghatagaon	New	River	Khata-249, Plot- 189	21	25	41.6	85	51	20.8	Tara	126000	226800
73	Ghatagaon	New	River	Khata-171, Plot- 1074	21	28	22.3	85	48	47	Chhatia	9450	17010
74	Ghatagaon	New	River	Khata-80, Plot- 628	21	25	49.4	85	48	26.7	Dehurypada	47500	85500
75	Ghatagaon	New	River	Khata-471, Plot- 855	21	28	14	85	39	52.7	Santarapur	20080	36144
76	Ghatagaon	Running	Sitanadi Sand Bed,		21	30	36	85	54	14	Kundapitha	84000	151200
77	Harichandanpur	New	Musal Nadi	Khata No 74 Plot No 1097	21	20	43.7	85	46	50.3	Akhupal	13350	24030
78	Harichandanpur	New	Laxmipur Nala	Khata No 18 Plot No 30, 139							Tangarposi	7240	13032
79	Harichandanpur	New	Kureijodi Nala	Khata No 207 Plot No 5							Jamujodi	22702	40864
80	Harichandanpur	New	Musal Nadi	Khata No 91 Plot No 1250/1	21	19	50.8	85	45	16.4	Satyapal	4040	7272
81	Harichandanpur	New	Kusei Nadi	Khata No 17 Plot No 112							Tentulipal	92632	166738
82	Harichandanpur	New	Remal Nadi	Khata No 55 Plot No 306							Tangiriapal	32374	58273
83	Harichandanpur	New	Kanijhari Nadi	Khata No 195 Plot No 1851	21	31	32.2	85	38	25.9	Bolaniposi	8093	14567
84	Harichandanpur	Running	Musal Nadi	Khata No 49 Plot No 223/1 kissam Nala	21	21	31.28	85	47	50.64	Village: Raghunathpur	7930	14274
85	Hatadihi	New	BaitaranI Sand Bed Amrutpur	Khata No-162 Plot No-938/989	21	1	41.1	86	16	40.2	Amrutpur	60704	109267
86	Hatadihi	New	BaitaranI Sand Bed Govindapur	Khata No-156 Plot No-494/1	21	3	28.2	86	12	41.9	Govindapur	52610	94698
87	Hatadihi	New	BaitaranI Sand Bed Jambhara	Khata No-237 Plot No-1689/2080	21	2	34	86	14	3.9	Jambhara	86200	155160
88	Hatadihi	Running	Baitarani Sand Bed,	Khata No-16 Plot no-1225/1240	21	02	08.05	86	16	02.01	Habaleswar,	52610	94698
89	Hatadihi	Running	Baitarani River Sand bed,	Khata No-242 Plot no-1126	21	05	11.04	86	12	07.08	Girigaon,	52610	94698
90	Hatadihi	Running	Baitarani River Sand bed,	Khata No-619, 613 Plot no-1636/2666/1, 100/2957/1	21	06	45.10	86	11	34.00	Ambo-Karagola,	52610	94698
91	Hatadihi	Running	Baitarani River Sand bed,	Khata No-1039 Plot no-5224/5444	21	10	16.18	86	11	13.08	Bancho,	60704	109267
92	Hatadihi	Running	Baitarani River Sand bed,	Khata No-218 Plot no-1698	21	02	28.3	86	15	04.90	Dimiria,	52610	94698

93	Hatadihi	New	Baitarani River Sand bed,	Khata No-234 Plot no- 1/1056							Tarava	48563	87413
94	Hatadihi	New	Baitarani River Sand bed,	Khata No-162, 142 Plot no- 983, 3							Amrutpur, Nuagaon	20234.7	36422
95	Telkoi	New	DUDHAJHORI 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) Kisam-Nadi & Nala	21	12	30	85	35	00	Sarupat, Kaliahata, Tigiria	43660	78588
96	Telkoi	Running	Samakloi river sand quarry Village	GPS:- Latitudes(21deg 21' 28.0" & 21deg 21'57.8"N) Longitudes(85deg 22' 47.8" & 85deg 24'30" E) Vill.-Telkoi, Khata No.329, Plot No.205, 2608,1257, Kisam-Nadi	21	28	0	85	22	47.8	Telkoi	32000	57600
97	Telkoi	Running	Samakoi river sand quarry	GPS:- Latitudes(21deg 21' 31.2" & 21deg 21'39.3"N) Longitudes(85deg 21' 06" & 85deg 21'04" E) Vill.-Telkoi, Khata No.214, Plot No.1500, Kisam-Nadi	21	31	2	85	21	06	vill. Dabalapal	25940	46692
98	Telkoi	Running	Ramial River sand quarry	GPS:- Latitudes (21deg 12' 33.0" & 21deg 12'51"N) Longitudes(82deg 22' 48" & 82deg 24'30.0" E) Vill.-Telkoi, Khata Nos.155,184,62 Plot Nos.1039,75,335,337,338,362 Kisam-Nadi	21	12	33.0	82	22	48	Purujoda, Brahmanikansa and Benamunda	33000	59400
99	Jhumpura	Running	River Aradei	Khata- 111 Plot- 1209 Area- 6.80	21	52	30	85	34	30	Katalposi	27518.6	49533
100	Jhumpura	Running	River aradei	Khata- 100 Plot- 1 Area- 4.80	21	53	30	85	35	30	Parbatipur	19424.9	34965
101	Keonjhar	Running	Aradei Nala ,	Village-Bistapal Khata No-172, Plot No.751 Area-Ac6.25, Kissam-Nadi	21	45	0	85	32	30	Bistapal -	25287	45517
102	Keonjhar	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,	48956	88121
103	Keonjhar	Running	Aradei Nala ,	Village- Deuladiha Khata No-45 , Plot No.- 73 Area-Ac 10.75 , Kissam-Nadi	21	47	42.2	85	32	30.5	Deuladiha	43494	78289

DISTRICT SURVEY REPORT (DSR)

The District Survey Report for River Sand (Minor Mineral) in respect of Keonjhar District in accordance with Appendix-X, Para-7 (iii) (a) of S.O. No.3611(E), dtd.25.07.2018 of Ministry of Environment, Forest and Climate Change, New Delhi is hereby approved for final publication.

Sub-Collector, Sadar,
Member Secretary,
DEIAA, Keonjhar

Dr. Banabehari Mishra,
Expert Member,
DEIAA, Keonjhar

DFO, Keonjhar,
Member,
DIEAA, Keonjhar

Collector & District Magistrate,
Chair Person,
DEIAA, Keonjhar