



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

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

ODISHA



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

COLLECTORATE, NABARANGPUR

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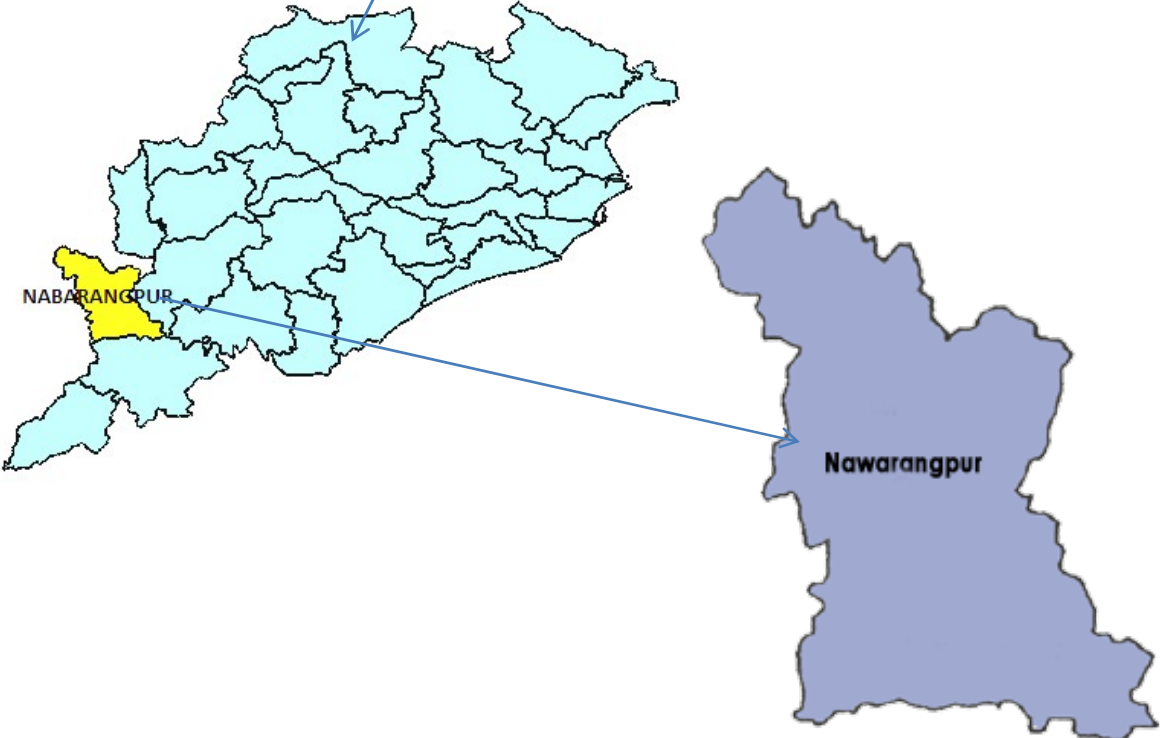
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INDEX MAP



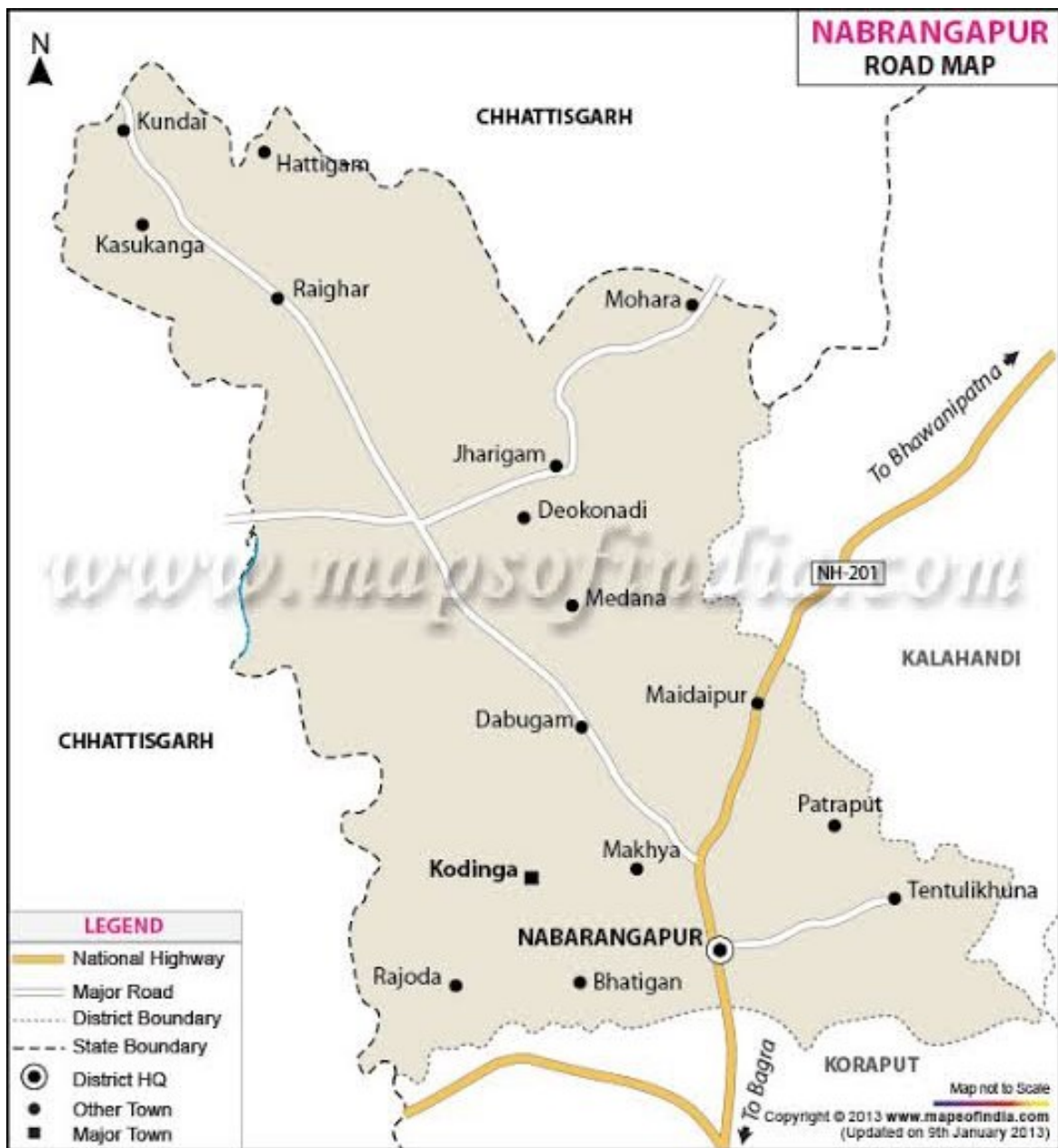
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MAP SHOWING THE TAHASILS OF NABARANGPUR DISTRICT



MAP SHOWING THE MAJOR ROADS OF NABARANGPUR 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 road metal/building stone 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

Situated in the greeneries of south-western Odisha, Nabarangpur district is a very spectacular one, functioning since 02.10.1992 (State Government Notification No.DRC- (44/93/14218/R). Prior to that, it was a vast sub-division of the erstwhile Koraput district. Its boundary stretches in the north to Raipur and west to Bastar district of Chhatisgarh. The east side of Nabarangpur touches Kalahandi and Rayagada districts and south to the Koraput district. The river Indravati forms the border between Nabarangpur and Koraput Districts. Nabarangpur District covers an area of 5294 sq km. The district is situated at 81⁰52' to 82⁰53' East longitudes and 19⁰09' to 20⁰05' North latitudes. The city of Nabarangpur is the district headquarters. Most of its population is tribal, and most of the land is forested and is located in the southwest corner of Odisha.

2. OVERVIEW OF MINING ACTIVITIES IN THE DISTRICT.

Iron ore: Iron ore occurrence of the district is reported near Hirapur, in the Podagad hill range. The occurrence has Fe₂O₃ content varying from 55.80% to 66.72%. It is a deposit with 6 nos. of Banded Iron Formations (BIF) with possible reserve of 2.65 Million tonnes.

Limestone: Lime stone occurrences in the district of Nabarangpur are found at Teliguda, Binsuli Dongariguda, Kakadaguda, Siraguda, Chittabeda etc. These are mostly stromatolitic limestones with a resource of about 2.28 million tonne. The CaO content varies from 21.01 % to 45.13 %, MgO content 0.94 % to 19.72 %.

Quartz vein: Quartz vein occurrences have been reported from Debadhara, Pandaripakna, Sanakarka, Valiapada, Amadhara. The SiO₂ content varies from 94.46 % to 99.84 %. Five million tonne of Quartzite have also been reported from the area.

Chinaclay: Chinaclay occurrences have been located around Tangini, Debadhara, Chandandhara, etc. with a resource of about 1.33 million tonne. The Al₂O₃ content ranges between 21.74% to 29.22%. However, it is highly siliceous with SiO₂ content of 25.45% to 67.06%.

Calc tufa: Calc tufa occurrences have been reported from Jalaguda. The dimension is 40 m x 20 m x 15 m with a probable reserve of 0.018 million tonne. The CaO content varies from 47.60 % to 55.44%. SiO₂ content varies from 0.14 % to 4.34% MgO content of the occurrence is 0.26 % to 0.56%.

Gemstones: Transparent almandine and rhodolite garnets are recovered from the gravel beds encountered around Petfulla & Hatibadi localities. Green coloured beryl is found in the zoned pegmatites around Kendumunda . Agate is found in the form of bands around Kenduguda.

Copper: Incidence of copper mineralization in the form of veinlets varying in thickness from 0.2 cm to 1 cm is noticed in the calcareous rocks encountered around Teliguda and Varhaiguda. Copper mineralisations are identified as Malachite and Azurite.

Dimension / Decorative stones: Nabarangpur district has a rich store house of dimension / decorative stone occurrences. The most important locations are Tohra, Cheptiamba, Jamranda, Bhalujharan, Keopani, Kandasara, Samarchachara and Chacha. About 2,38,000 million tonne of dimension / decorative stone have also been reported from the district. Lithologically they are granites, amphibolite, dolerite, meta-basics & pink granites.

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 (Rs)

Sl.No	Name Of Tahasil	2015-16	2016-17	2017-18	2018-19
1	Kodinga	3128177	1092283	1015283	987306
2	Dabugam	0	0	0	0
3	Nabarangpur	408520	395200	574698	512468
4	Nandahandi	0	0	0	0
5	Jharigam	0	0	126000	79800
6	Tentulikhunti	0	0	0	0
7	Ghodakhuntia	0	0	0	0
8	Umerkote	0	0	103881	70000
TOTAL		3536697	1487483	1819862	1649574

5. DETAILS OF PRODUCTION OF SAND

Sl.No	Name Of Tahasil	2015-16	2016-17	2017-18	2018-19
1	Kodinga	27642	32542	32542	32542
2	Dabugam	0	0	0	0
3	Nabarangpur	10400	10400	18813	18813
4	Nandahandi	0	0	0	0
5	Jharigam	7500	7500	7500	1900
6	Tentulikhunti	0	0	0	0
7	Ghodakhuntia	0	0	0	0
8	Umerkote	3012	3012	3012	3012
TOTAL		48554	53454	61867	56267

6. PROCESS OF DEPOSIT OF SEDIMENTS IN THE RIVERS

The drainage of the district is mainly controlled by the river Indravati and its tributaries. 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:

Sl No	Item	Unit	Magnitude
1	Location		
	Longitude	Degree	81 ^o 52' to 82 ^o 53' East
	Latitude	Degree	19 ^o 09' to 20 ^o 05' North
2	Geographical area	Sq.Km.	5291
3	Sub-division	Numbers	1
4	Tahasils	Numbers	10
5	C D Blocks	Numbers	10
6	Municipalities	Numbers	2
7	NACs	Numbers	-
8	Police Stations	Numbers	13
9	Gram Panchayats	Numbers	189
10	Villages	Numbers	891
	Inhabited	Numbers	868
	Uninhabited	Numbers	23
11	Assembly constituencies	Numbers	4

b. Area and Population:

As per 2011 census, the total population of Nabarangpur district is 12,20,946 comprising above 11,33,321 rural and 87,625 urban population. The SC and ST population works out to 14.5 % and 55.8 % respectively. The district is predominantly inhabited by tribals like Kandha, Paraja, Soura etc. The density of population per sq.km is 231 with decadal growth of 19.0 for the district, as against population density of 270 person per sq.km and decadal growth of 14.0 for the state. It has 901 census villages (including 25 un-inhabited villages) covering 10 Blocks and 10 Tahasils. The literacy percentage of the district is 46.4 against 72.9 of the state.

c. Climate :

Nabarangpur district falls under East Coast Plains and Hills as per the GOI's Agro-Climatic Zonal Planning. Entire district except Dabugan block, falls under 'Eastern Ghat High lands'. Dabugan block falls under 'Western undulating lands'. The climate is subtropical to temperate. It is characterized by hot and dry summer, cool and humid monsoon and cold and dry winter. The district has different types of soils like red and laterite. The soil PH is neutral to alkaline and its salinity is normal. In 2011 Normal rainfall of the district was 1569.5 mm and the actual rainfall was 1432.8 mm.

d. Economy:

Predominantly an agricultural District, Nawarangpur has more than 90 per cent of its inhabitants depending on farming for their livelihood. The farming community largely depends on rains due to lack of irrigation facility. National Horticulture Mission is taking lots of steps to improve the cultivation of many fruits and vegetables in the district. Nabarangpur District is a treasure of many natural resources like iron, chlorite, mica, quartz etc. Heeraput village near Umerkote contains a fair deposit of hematite and limonite, each of which possesses about 60% iron. Similarly, Tentulikhunti area of Nabarangpur has fairly large deposits of granite. The north of Nabarangpur District, up to the boarder of Kalahandi, has rock beds covering layers of coarse white quartz. Tough industrially this district is not that developed, all these minerals found in the District sustains the various industries in other parts of the country.

e. Industry:

No. of MSME units set up	Investment (In Rs. crores)	Employment Generated				Employment of women
		SC	ST	General	Total	
1321	6819.08	1633	1512	1117	4262	20

f. Agriculture:

During the year 2017-18 the net area sown was 186 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	466.14	0.23	219.94	4.06	3.00	0.05	0.21	11.42	0.46	0.00	6.00	295.19

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	26515	7369	4614	38498	151.03

g. Power:

consumption of electricity in Nawarangapur district upto 31st March 2011 was 65.341 Million Units & So far only 458 revenue villages are electrified as on February' 2011 which constitutes 52.3% to the total villages of the district.

h. Transport & Communication:

Railway route length (14-15) km	-
No of Rly stations and PH(14-15)	-
Forest road (17-18) km	136.46
National Highway (16-17) km	42.00
State Highway (17-18) km	122.59
Major district road (17-18) km	63.80
Other dist road (17-18) km	420.95
Rural road(17-18) km	1904.60
Inter village road (16-17) km	3822.17
Intra village road (16-17) km	2351.57

i. Health:

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

Sub divisional hospitals including mobile	13 No
Beds facilities	360 No
Homoeopathic dispensaries	22 No
Ayurvedic dispensaries	16 No

j. Tourist places:

There are 18 nos. of tourist spots in this district, out of which 5 nos. of tourist centre such as Kelia Lord Siva Temple, Nabarangpur, Papdahandi, Podagada and Umerkote has been identified by Department of Tourism and Culture, Odisha. During 2011 the numbers of Domestic tourists were 364145 who visited the tourist spots of the district.

k. Forest areas:

Category of forest	Area in sq km
Reserve Forest	535.34
Unclassified Forest	0.07
Demarcated Protected Forest (DRF)	685.77
Undemarcated Protected Forest	0
Other forest under Revenue Dept	1241.55
Total	2462.73

l. Education:

Primary School (2017-18)	No. of Schools	1224
	Enrolment (No)	146516
	Pupil Teacher Ratio	30.11
Upper Primary School 2017-18	No. of Schools	624
	Enrolment (No)	77431
	Pupil Teacher Ratio	29.50
General College 2017-18	Junior	26
	Degree	8
Secondary School	No. of Schools	235
	Enrolment (No)	28916
	Pupil Teacher Ratio	34.22
Literacy Rate, 2011	Male	57.3
	Female	35.8
	Total	46.4

m. Culture & Heritage:

Mondei is the widely celebrated festival of Nabarangpur district. This festival is usually celebrated after the harvesting of crops. Most areas of Nabarangpur

District experience the first arrival of monsoon much before the rest of the state. While the rest of Orissa gets rain due to monsoon from the Bay of Bengal, the whole of Nabarangpur gets it straight from the Arabian Sea, through the Southwest direction.

8. LAND UTILISATION PATTERN

SI No	Landuse	Area in '000Ha
1	Forest Area	246
2	Misc. trees & Grooves	13
3	Permanent Pasture	8
4	Culturable Waste	15
5	Land put to Non Agril Use	43
6	Barren & Unculturable Land	9
7	Current Fallow	0
8	Other Fallow	8
9	Net Area Sown	186
10	Mining	1
	Geographical Area	529

9. PHYSIOGRAPHY

The khondalite-charnockite association is exposed only along the eastern part of the district. Both basic as well as acid to intermediate charnockite are present in the area. Peninsular gneiss is found mainly in the eastern part of the area. Major rock of the area is unclassified granite and Tel granite of Palaeo Proterozoic age. The granites cover the entire pediplain and peneplain region of the northern part of the district while in the southern part these occur as high hills. Intrusives like pegmatite, quartz vein and dolerite dykes are present in the western and southwestern part of the area. The Indravati Group belonging to Chattishgarh Supergroup of rocks is composed of Tirathgarh and Jagdalpur Formation. Tirathgarh Formation consists of sandstone and

conglomerate and Jagdalpur Formation is composed of grey purple shale and shale with limestone. Few occurrences of laterite of Cainozoic age have been observed in the area.

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	August	Sept	Oct	Nov	Dec	Jan	Feb	March	Total
15-16	37.04	39.93	218.86	343.29	224.64	142.20	16.38	0.23	31.85	0.63	24.98	42.59	1122.62
16-17	1.93	44.25	126.63	267.16	389.86	143.23	98.26	4.90	NIL	8.43	NIL	22.44	1107.09
17-18	1.23	35.76	201.05	213.38	213.05	143.69	109.87	16.90	NIL	NIL	NIL	0.10	935.03
18-19	74.34	80.10	123.42	333.20	299.31	295.03	114.29	2.70	50.95	0.40	27.00	24.60	1425.34
Avg.	28.63	50.01	167.49	289.25	281.72	181.04	84.70	6.18	20.70	2.36	13.00	22.43	1147.52

11. GEOLOGY AND MINERAL WALTH

Geologically the district exposes various lithostratigraphic unit having varied litho assemblages. The oldest unit is Bengpal Group, followed by khondalite Group, charnockite Group, lithounits and Indravati Group of Archaean to Neoproterozoic in age. Rocks of Bengpal Group consisting of quartz-mica schist, anthophyllite-grunerite schist, quartzite, banded magnetite quartzite, amphibolites and hornblende schist and pillowed metabasalt crop out over the western and southern part of the area. These rocks occur as small bands and lenses or as linear bands within granite. Quartzite belonging to khondalite Group of Eastern Ghat Supergroup occurs in the form of hills and ridges as well as low mounds amidst granite gneisses in the south eastern part of the area.

The geological succession in the district is as follows:

Age	Super Group	Group	Litho units
Cainozoic			Laterite
Meso to Neo Proterozoic	Chattishgarh Super Group	Indravati Group	<ul style="list-style-type: none"> Limestone stone with shale Grey purple shale Sandstone with conglomerate
Paleo- proterozoic			<ul style="list-style-type: none"> Dolerite/Gabbro Pegmatite/ vein quartz Unclassified granite
Archaean to Proterozoic	Eastern Ghat Supergroup	Migmatite Group	Granite gneiss
		Charnockite Group	<ul style="list-style-type: none"> Acid to intermediate charnockite Pyroxene granulite/basic charnockite
		Khondalite Group	Quartzite
Archaean		Bengpal Group	<ul style="list-style-type: none"> Quartz-mica schist; Anthophyllite- grunerite, schist; Quartzite; Dolerite/gabbro; Banded magnetite quartzite; Amphibolites/hornblende schist; Pillowed meta basalt

- a. Detail of river/stream/other sand source- Sand mining in the district is confined to the tributaries of the river Indravati.
- b. Availability of sand or gravel or aggregate resources- sand- 4,44,530 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**

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

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 (GPS co-ordinates or Khata & Plot No) (Sketch map to be attached)	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)
1	2	3	4	5	6	7	8	9
1	Kodinga	Aunli Dated.01.10.20 15	Running	Khata no.335 Plot no.1174	---	---	---	3935
2	Kodinga	Gojagam Dated. 21.09.2015	Running	Khata No.185 Plot No-1/1	---	---	---	2565
3	Kodinga	Bhainsabeda Dated.30.09.15	Running	Khata No-386 Plot No-492/1	---	---	---	5000
4	Kodinga	Majhguda Dated.21.09.15	Running	Khata No-185 Plot No-17/1	---	---	---	2550
5	Kodinga	Balenga Dated.25.04.16	Running	Khata No.391 Plot No-1096 272	---	---	---	69600
6	Kodinga	Paidapali Maliattigam Dated.03.07.20 19	Running	Khata No-129 422 Plot No-726 665	---	---	---	74160
7	NGPUR	Badamasigam, River-Turi,	Running	Khata No.570, Plot No. 696,		1 Meter height	6000 Sq.M.	15000 cum

		03.11.2015		Ext.Ha.1.295				
8	NGPUR	Ambadolla, River- Turi, 13.12.2017	Running	Khata No.363,Plot No. 01, Ext.Ha.0.242		1.5 Mtr height	581 Sq.M	2614.5 cum`
9	NGPUR	Deula, River- Guntat, 13.12.17	Running	Khata No.348,Plot No. 01, Ext.Ha.1.813		1 Metre thickness,	6439 Sq.M	3000 cum
10	NGPUR	Gumaguda, River-Guntat, 09.10.15	Running	Khata No.132, Plot No. 146, Ext. Ha.2.169		1 Metre height	3200 Sq.M	8000 cum
11	NGPUR	Sankumuli, River-Guntat, 13.12.17	Running	Khata No.275, Plot No.147, Ext. Hac.1.375		1 Metre thickness,	1579 Sq.M	4737 cum
12	NGPUR	Saranpur, River- Guntat, 09.10.2015	Running	Khata No.292, Plot No.975, Ext. Hac.0.405		1.5 mtr. Height	4047 Sq.M	11000 cum
13	NGPUR	Seuni, River- Turi, 18.07.14	Running	Khata No.594, Plot NO.1318, Ext. Hac.0.502		2.5 Mtr thickness	1985 Sq.M	14887.5 cum
14	NGPUR	Chatahandi, River-Turi, 06.10.15	Running	Khata No. 1711, Plot No.6986 & 5357, Ext. Hac.4.35		1 Mtr height	35109 Sq.M	18000 cum
15	JHARIGAM	Amali river,Belgam village/Reg. Date 25.08.15	Running	Khata No. 222, Plot No. 450, AC. 4.25	1.680 Km.	1Km.	1.7206 Ha.	Yes
16	TENTULIKHU NTI	River Indravati Vill: Bariaghat	Running	Khata No.60 Plot NO.04	---	---	18.75 Acrs/ 7.588 Hc or 75878 Sq.M	5000 m3
17	UMERKOTE	ATTACHED			0.809 Hc.	0.8m.	8090	2368
18	UMERKOTE	ATTACHED			2.679 Hc.	0.8m.	26790	3376
19	UMERKOTE	ATTACHED			1.012 Hc.	0.6m.	10120	1476
20	UMERKOTE	ATTACHED			2..918 Hc.	0.8m.	29180	2288
21	UMERKOTE	ATTACHED			1.376 Hc.	0.6m.	13760	2076

22	UMERKOTE	ATTACHED			1.862 Hc.	0.6m.	18620	1704
23	UMERKOTE							
24	UMERKOTE							
25	UMERKOTE	ATTACHED			3.517 Hc.	0.5m.	35170	1030
26	UMERKOTE							

ANNEXURE II

SAND SOURCES ALREADY AUCTIONED BUT NOT EXECUTED (LOI ISSUED)

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	Location of the Source recommended for mineral concession (GPS co-ordinates or Khata & Plot No) (Sketch map to be attached)
1	2	3	4	5	6	7
1	Kodinga	Aunli	Aunli sand bed	B.N.Singh	Kodinga	Khata No-335 Plot no.1174
2	Kodinga	Gojagam	Gajagama Sand bed	Amjad Khan	Kosagumuda	Khata No-185 Plot No-1/1
3	Kodinga	Bhainsabeda	Bhainsabeda Sand bed	B.N.Singh	Kodinga	Khata No-386 Plot no-492/1
4	Kodinga	Majhiguda	Majhiguda Sand bed	Amjad Khan	Kosagumuda	Khata No-185 Plot No-17/1
5	Kodinga	Balenga	Balenga Sand bed	Abhiman yu singh	Kodinga	Khata No.391 Plot No-1096 272
6	Kodinga	Paidapali Maliattigam	Paidapali Maliattigam Sand bed	Dibakar Bissoi	Kerla	Khata No-129 422 Plot No-726 665
7	Jharigam	Kodabhatta	Sand bed	Raju Das	Umerkote	Khata No-61/2 Plot No-21

ANNEXURE III

POTENTIAL SAND SOURCES OF 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)	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)
1	2	3	4	5	6	7	8	9	10
1	Dabugam	New Source	---	K.no 111 and plot no- 1	Kamta	---	---	17600	18463
2	Dabugam	New Source	---	K.no 70 and plot no 589 and 591/2	Dargula	---	---	25040	26274
3	Dabugam (2)	New Source	---	K.no 29 and plot no 126	Sandhidan gariguda	---	---	38000	39873
4	Dabugam (3)	New Source	---	K.no 108 and plot no 197	Koilari	---	---	18400	19304
5	Kodinga	Running	River	Khata no.335 Plot no.1174	Aunli	---	---	---	3935
6	Kodinga	Running	River	Khata No.185 Plot No-1/1	Gajagam	---	---	---	2565
7	Kodinga	Running	River	Khata No-386 Plot No-492/1	Bhainsabeda	---	---	---	5000
8	Kodinga	Running	River	Khata No-185 Plot No-17/1	Majhiguda	---	---	---	2550
9	Kodinga	Running	River	Khata No.391 Plot No-1096 272	Balenga	---	---	---	69600
10	Kodinga	New Source	River	Khata No-89 Plot No-639/1100	Gotibeda H/O-Sanattigam	---	---	---	---
11	Kodinga	New Source	River	Khata No-305 Plot No-1766	Ghatguda	---	---	---	---
12	Kodinga	New	River	Khata No-426 Plot No-1, 2	Kerandim	---	---	---	---

		Source			al				
13	Kodinga	New Source	River	Khata No-294 Plot No-1	Nunpani	---	---	---	---
14	NGPUR	Running	River	KNo.570, PNo. 696 (Sketch map attached)	Badasigam			6000 Sqm.	
15	NGPUR	Running	River	KNo.363, P No. 01, (Sketch map attached)	Ambadolla,			581 Sq.M	
16	NGPUR	Running	River	KNo.348 P No. 01(Sketch map attached)	Deula			6439 Sqm	
17	NGPUR	Running	River	KNo.132, P No. 146(Sketch map attached)	Gumaguda			3200 Sqm	
18	NGPUR	Running	River	KNo.275 P No.147	Sankumuli,			1579 Sqm	
19	NGPUR	Running	River	KNo.292, P No.975(Sketch map attached)	Saranpur			4047 Sqm	
20	NGPUR	Running	River	K No.594, P No.1318(Sketch map attached)	Siuni			1985 Sqm	
21	NGPUR	Running	River	K No. 1711, PNo.6986 & 5357(Sketch map attached)	Chatahan di,			35109 Sqm	
22	NGPUR	New sources	River	K No. 594 PNo.168 (A)& 168 (B) (Sketch map attached)	Siuni			7400 Sqm	
23	NGPUR	New sources	River	K No. 363 PNo.01 (Sketch map attached)	Ambadolla,			5200 Sqm	
24	Nandahan di	New sources	Indrav ati	Khata No.109 & 109(AAA), Plot No.680 & 613/706(P)	Ghataguda	0.820	0.061		
25	Nandahan di	New sources	Indrav ati	Khata No.321(AAA) Plot No.922	Paikaminigud a	0.244	0.054		
26	Nandahan di	New sources	Indrav ati	Khata No.455 Plot No.1111	Bania	0.244	0.052		

27	Ghodakhu nta	New sources	---	K.no 44 and plot no 1004/1137	Dangara			10000	8298
28	Ghodakhu nta	New sources	---	K.no 111and plot no- 1	Kamta				
29	Ghodakhu nta	New sources	---	K.no 108 and plot no 197	Koilari				
30	Ghodakhu nta	New sources	---	K.no 29 and plot no 126	Sandhida ngarigud a				
31	Ghodakhu nta	New sources	---	K.no 70 and plot no 589 and 591/2	Dargula				
32	Umerkote	New sources	NANGI	Attached	BADAKUMARI	0.8 KM	0.036	8090	1800
33	Umerkote	New sources	NANGI	Attached	Badabharandi	06 KM	0.036	13395	750
34	Umerkote	New sources	NANGI	Attached	Khutuguda2	0.6 KM	0.015	13395	750
35	Umerkote	New sources	NANGI	Attached	Khutuguda-1	0.5 KM	0.015	10120	1260
36	Umerkote	New sources	UMARLY	Attached	Sanabasini	1.5 KM	0.036	29180	1200
37	Umerkote	New sources	VASKEL	Attached	Umarkote	0.4 KM	0.015	13760	1800
38	Umerkote	New sources	TEL	Attached	Beheda -1	0.5 KM	0.018	6206	500
39	Umerkote	New sources	TEL	Attached	Beheda -2	0.7 KM	0.018	6206	500
40	Umerkote	New sources	TEL	Attached	Kurshi	0.4 KM	0.018	6206	500
41	Umerkote	New sources	NMARKANDI	Attached	Deogam	0.5 KM	0.012	17585	500
42	Umerkote	New sources	NMARKANDI	Attached	Sankarada	0.6KM	0.009	17585	500

MINERAL MAP OF NABARANGAPUR DISTRICT

SCALE :- 1:150,000



PLATE NO-4

20°0'0"N

19°45'0"N

19°30'0"N

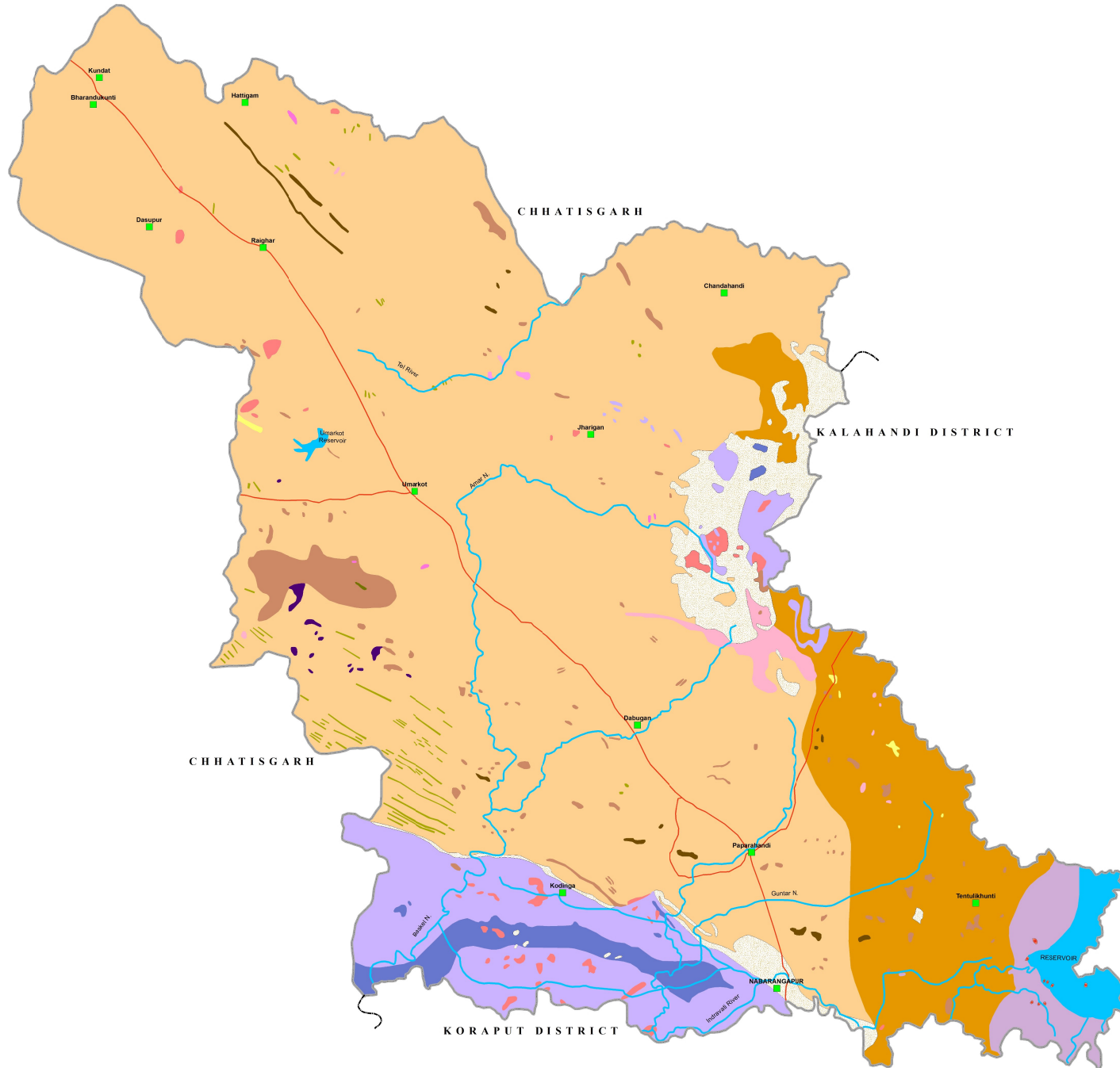
19°15'0"N

20°0'0"E

82°30'0"E

82°45'0"E

83°0'0"E



Legend

- Block Headquarter
- District Boundary
- NH Road / SH Road/Major District Road
- Railway Line
- River/Lake/Waterbody
- Acid to intermediate charnockite
- Amphibolite/hornblende schist
- Anthophyllite-grunerite schist
- Banded magnetite quartzite
- Dolerite / Gabbro
- Dolerite/Gabbro
- Granite gneiss
- Grey purple shale
- Laterite
- Limestone with shale
- Pegmatite/Vein quartz
- Pillowed metabasalt
- Pyroxene granulite/basic charnockite
- Quartz-mica schist
- Quartzite
- Sandstone with conglomerate
- Tel Granite
- Unclassified granite

82°0'0"E

82°15'0"E

82°30'0"E

82°45'0"E

83°0'0"E

LEASE/POTENTIAL MAP OF SAND IN NABARANGAPUR DISTRICT

SCALE :- 1:1,50,000
0 2.5 5 10 15 20 25
Kilometers



PLATE NO-5

20°0'0"N

19°45'0"N

19°30'0"N

19°15'0"N

20°0'0"E

82°30'0"E

82°45'0"E

83°0'0"E



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

82°0'0"E

82°15'0"E

82°30'0"E

82°45'0"E

83°0'0"E