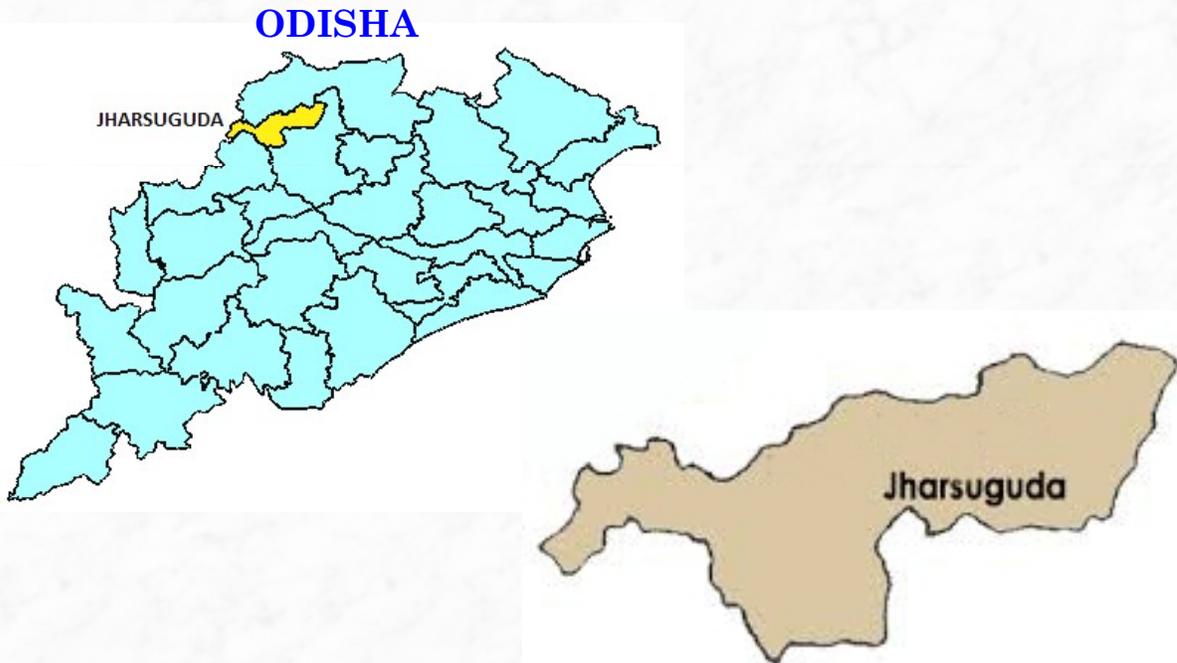




DRAFT DISTRICT SURVEY REPORT (DSR)
OF
JHARSUGUDA DISTRICT, ODISHA
FOR
MORRUM

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



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

COLLECTORATE, JHARSUGUDA

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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 district survey report of morrum mining has been prepared in accordance with Clause II of Appendix- X of the notification.. Every effort has been made to cover morrum mining locations, future potential areas and overview of morrum 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, environmentalprotection ecological set up,community engagement and regulatory compliance of the district and is based on data of various departments like Revenue, Water Resources, Forest, Geology and Mining in the district as well as statistical data of different departments of the State Government uploaded by the Directorate of Economics and Statistics,Government of Odisha in their official website.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:

Jharsuguda is a district located in the western part of Odisha bordering Chhatisgarh State,India with Jharsuguda town as its headquarters. Besides being rich in mineral resources, Jharsuguda is one of the most industrially developed districts of Odisha. Jharsuguda district was established on 1st January, 1994, before which it was a part of Sambalpur district. It was created by amalgamation of the erstwhile Jamindars of Rampur, Kolabira, Padampur and Kudabaga. The district is surrounded by Sundargarh district in the North, Sambalpur district in the East, Bargarh district in the South and Chattisgarh state in the West. It is situated at a distance of 515 km from Kolkata, 616 km from Nagpur, 48 km from Sambalpur and 372 km from state capital Bhubaneswar. Jharsuguda district covers a total area of 2, 081 sq km. The district once had an airport base during World War-II which has now been revived as a domestic commercial airport . This region is rich in coal and other mineral reserves.like fire clay,quartz etc. Of late, many small and medium scale iron and steel units have been set up in the vicinity of Jharsuguda town, giving impetus to the industrial growth of the district.

2.Overview of Mining Activities in the District:.

Coal : Coal, the major mineral resources of the district are confined to Ib-river coal field which was brought to light towards the later part of the last century and now it turns out to be one of the major coal fields in India. Both Barakar and Karharbari formations of this coal field are major coal bearing horizons. Surface and sub-surface data reveal one coal seam in Karharbari and four coal seams in Barakar with a number of local seams. The coal seams are highly inter-banded with high moisture and ash content. A total reserve of 9361.26 million tonnes of thermal power grade coal has been estimated in the district.

In Jharsuguda district, coal extraction is done by Mahanadi Coalfields Limited (MCL.) a subsidiary of Coal India Limited. There are five numbers of Opencast Projects and nine numbers of underground leases in operation by MCL. The total area held under Mining Leases in the district is 9,361.323 hectares out of which area held under leases for coal alone by MCL is 9,254.303 hectares. Major Consumers of the IB Valley Area Coal across the Country are like NALCO, NTPC, Tamilnadu Electricity Board (TNEB), West Bengal Power Development Corporation (WPDCL), Aravali Power Co.(P) Ltd. T.P.P. Haryana, Talwandi Saboo Power Ltd. Punjab, Tata Electric Power, Jharkhand, Vendanta Pvt. Ltd., OPGC Odisha, Mahagenco Akola, Maharashtra, Gopani Iron & Power, Chandrapura, Maharashtra, etc. The royalty and DMF collected from the district during F.Y. 2023-24 are Rs. 67,690/- and Rs.1,725/- respectively. Recently, one Mining Lease for coal has been granted in favour of Vedanta Ltd.

Fire Clay: Several occurrences of fire clay are encountered within the Kamthi and Barakar formations of Ib-river coal field associated with coal seams. The important occurrences are located around Belpahar, Jurabaga, Darliapali, Lakhampur Lilari and Lajkura. A total reserve of 0.674 million tonnes of fire clay has been estimated for the district but unfortunately can not be exploited due to its occurrence over coal horizon acquired by MCL. TataKroshaki Refractories Ltd. (TRL) is a major refractory plant in the state which was commissioned eyeing these resources. Other occurrences are reported in the village Chandli, Soldia, Ganga, Belout, Bhatlaida, Bonaroi, Khinda & Talabira.

Quartz & Quartzite: The quartz deposit of Bhatlaira, Bonereai & quartzite of Kanjhaharan are amongst the notable ones. Besides, refractory / glass grade quartz occurs around Laikera, Pandrimal, Jhargaon – Kadamghat, Kolabira, Jangapera, Bhikhampur, Beldungri & Harpidungri.

Two numbers of Quartzite mines are operating in the district. One is Chuinpali Quartzite mines of M/s TRL Kroshaki Refractories Limited over 102.123 Hectare area situated near Chuinpali Village of Lakhanpur Tahasil and the other is Bhikampali Quartzite Mines of M/s OCL India Ltd. over 4.897 Hectare in Bhikamplai Village also of Lakhanpur Tahasil of Jharsuguda District.

Red Oxide / Red Ochre: An important deposit of red oxide occurring within Gondwanas is located in Patrapali – Malda..

Gemstone: Gem quality green tourmaline occurrences in zoned pegmatites have been encountered in porphyritic granite gneiss, amphibolite & schists around Bagdihi. Incidences of semi-transparent aquamarines have also been reported from colluvial zone of the pegmatite body, located east of Pandrimal village.

Dolomite: River Sapai, flowing along the boundary of Sundargarh and Jharsuguda districts exposes sporadic occurrences of dolomite. These occurrences appear to be extension of limestone and dolomite deposits of Gangpur Synclitorium. The estimated reserve of dolomite along the Sapai river section in both Jharsuguda and Sundergarh district is 5.4 million tonnes.

Other Minerals: Minor occurrences of minerals like kyanite of Titheimal, sillimanite of Bhuliadihi, opaque beryl of Pandrimal and Kolabira, tourmaline of Kolabira, columbite –tantalite of Kolabira, feldspar of Bhatlaira and the Pyroxene granulites of Pandrimal areas for dimension morrum etc, have also been reported.

Over and above, minor minerals such as river sand, laterite , building stone/black road metals, morrum, brick earth etc. are also available in the district.

3.General Profile:

a. Administrative set up:

SI No	Item	Unit	Magnitude
1	Location		Elevation: 700 to 750 ft aMSL
	Longitude	Degree	83 ° 27' to 84 24' East
	Latitude	Degree	21°31 to 22 33' North
2	Geographical area	Sq.Km.	2,081 sq. Km.
3	Sub-division	Numbers	1
4	Tahasils	Numbers	5
5	C D Blocks	Numbers	5
6	Municipalities	Numbers	3
7	NACs	Numbers	-
8	Police Stations	Numbers	11
9	Gram Panchayats	Numbers	78
10	Villages	Numbers	351
	Inhabited	Numbers	347
	Uninhabited	Numbers	4
11	Assembly constituencies	Numbers	2

a.Area and Population:

Jharsuguda district covers a total area of 2,081 sq km. The district lies between 21.31 to 22.33 degree north latitude and 83.27 to 84.24 degree east longitude.

As per 2011 census. the total population of the District is 5,80,000 consisting of 351 villages. Urban Population is 2,31,000 and rural population is 3,49,000. Total male population of the District is 2,97,000 and female population is 2,83,,000. The District consists of total 1,04,620 SC population and 1,76,758 ST population. The average literacy rate of the District is 78.86% comprising 86.61% male and 70.73% female literacy rate.

c.Climate :

The district of Jharsuguda is characterized by a hot and dry climate. The temperature is extreme ranging from 11.8 degree C in winter to 42 degree C in summer and the highest temperature recorded ever is 48 degree C. The average relative humidity is 65% but can range from 37% in March to 89% in July. The average rainfall of the district is 1362.8 millimeter. From April to August, the wind blows from south and southwest whereas from September onwards it blows from North West.

d.Economy:

The economy of the Jharsuguda district can be judged through its natural resources. The District is rich in minerals like coals, quartzite and fire clay. Besides, deposits of limestone, granite, white sand, laterite, road metal and morrum are also found in several places of Jharsuguda district that add to economy of the District. Several industrial units like Vendanta Alumina, Bhusan Steel and Power, TATA Kroschaki Refractories operating in the district contribute to its economic growth. There are also some major forest produce like Kendu leaves, wood, rice and leather which also add significantly to the economy of Jharsuguda district.

e.Industry:

No. of MSME units set up	Investment (In Rs. Lakh)	Employment Generated
1794(Micro& small)	17836.59	7614
18(Large)	630222	7905
21(Medium)		
7999(Regd Industrial units)	45046.79	31915

f.Agriculture:

During the year 2022-23, the net area sown was 86,000 hectares against 53,56,000 hectares of the state. The production of crops during 2019-20 was as below:(State Focus Paper,NABARD)

Production	Paddy	Wheat	Maize	Mung	Biri	Kulthi	Til	Ground nut	Mustard	Potato	Jute	Sugar cane
In '000 t.	46.94	0.15	4.46	1.20	0.51	0.68	1.02	3.06	0.72	9.85	-	4.71-

g. Fertiliser consumption: During 2021-22, the total fertilizers used in the district was about 5,350 M.T. Quantity of consumption of various fertilisers are as below;

Type of fertiliser	Nitrogenous	Phosphatic	Pottasic	Total	Consumption Kg/per Ha
Quantity in MT	3180	1470	700	5350	65.05

h.Power:

The current consumption of electricity in the district varies between 300-500 million units per month and almost all the villages have been electrified as on as on date..

i.Transport&Communication: 2021-22

Source:DE&S.govt. of Odisha,Dist at a glance,2023,

Railway route length km	94
No of Rly stations and PH	13
Forest road	23.00
National Highway	105.45
State Highway	26.75
Major district road	4
Other dist road	1007.81
Rural road	749.44

Rural Surface Road	1286.19
Rural Unsurface Road	853.19

j.Health:

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

Allopathic Govt medical institutions	DHH-1,PHCs-19,CHCs-6
Beds facilities	DHH-beds-234, CHCs-60 beds- 6 Nos OH- 10 beds- 1No
Homoeopathic dispensaries	8 Nos
Ayurvedic dispensaries	9 Nos
Private hospitals	13 Nos.
Health Subocenter	66
Mobile Health unit	1

k.Tourist places:

Jharsuguda is one of the popular tourist destinations. The district is decorated with many tourist places. Koilighugar waterfall (Lakhanpur) and Adyaswambhu are the picnic spots that attract lots of tourists every year. Likewise there are several places of historical importance like ruins of Hill Forts of Ulapgarh, rock painting and lithography of Bikramkhol, Ushakothi cave and Kolabira Fort. The district has number of temples namely Padmasini Temple of Padampur, Ancient Shiva Shrine of Jhadeswar Temple, Ramchandi, an ancient Shaktipitha, Shree Pahadeswar Temple, Shiva Shrine of Mahadebpali

l.Forest areas:

Category of forest	Area in sq km
Reserve Forest	35.5
Unclassified Forest	0.1
Demarcated Protected Forest (DRF)	28.7
Undemarcated Protected Forest	0
Other forest under	289.1

Revenue Dept	
Proposed Reserve Forest	96.4
Protected Forest	0.5
Total	450.3
Total Geographical area	2081
Percentage of Forest Area	21.64

m.Education: As in 2021-22

Primary School	No. of Schools	311
	Enrolment (No)	12,628
	Pupil Teacher Ratio	14.32
Upper Primary School	No. of Schools	283
	Enrolment (No)	31,359
	Pupil Teacher Ratio	17.79
General College	Junior	23
	Degree	10
Secondary School	No. of Schools	146
	Enrolment (No)	45,003
	Pupil Teacher Ratio	22.51
Literacy Rate, 2011	Male	86.6
	Female	70.7
	Total	78.9

n.Culture & Heritage:

Jharsuguda district is very rich in its cultural heritage. Various fairs and festivals are celebrated round the year that indicates its richness in culture and religion. There are many common fairs and festivals that are celebrated in the state. But there are few distinct and special festivals that are celebrated in the District like Ranjta Festival, Ratha Jatra of Kukurjunga, Famous Gokulastami Jatra of Rajpur and Makar Ratha Jatra of Belpahar.

The District is a beautiful diaspora of different origins of people from across India which makes it unique & different from other cities in Odisha. Sambalpuri is the mother tongue of the district. Besides some ethnic groups have their own languages like Agrias, Lairias, Mundas, Kishans, Khadis and Turis.

4.Geology:

The district exposes a wide spectrum of rock types. The Peninsular Gneiss comprising augen gneiss and migmatite represent the oldest rocks belonging to Archaean

Supergroup of Lower Proterozoic age in the area. They occupy a gently undulating terrain east of Jharsuguda. A small body of massive granite, the Tamparkola granite, of Lower Proterozoic age occurs as an isolated exposure near Dulesra. A narrow linear strip of meta-sedimentary rocks consisting of quartzite, quartz-sericite schist, phyllite and mica schist occurring near Laikera belongs to Upper Bonai Group of Lower Proterozoic age. Well consolidated, soft and foliated rocks of Gangpur Group of Lower Proterozoic age comprising phyllite and mica schist are well exposed here. An un-metamorphosed sedimentary sequence of rocks occur near the western corner of the district. This sedimentary sequence can be broadly divisible into a sequence of shale, calcareous shale and quartzite forming the Raipur Group and coarse sand, morrum and quartzite forming the Chandarpur Group of the Chattisgarh Super Group. The Gondwana Super Group of sedimentary rocks are confined to fault bounded basin and occur in the central part of the district around Belpahar, Brajarajnagar areas. Among Talchir and Barakar Formations of Lower Gondwanas, the latter is the store house of 'bituminous coal' in the region. Kamthi Formation consisting of conglomerate, sandstone, shale, red clay etc. represents the Upper Gondwanas in the area. Soil, alluvium and laterite are the younger formations in the area. Laterite occurs in small, isolated, irregular outcrops, spread almost all over the above rock types. The unclassified soil/alluvium of the Quaternary era occupies large area in the Mahanadi river valley and over the gneissic country, east of Jharsuguda.

STRATIGRAPHY:

The geological succession in the district is as follows:

AGE	GEOLOGICAL UNIT	LITHOLOGY
Pleistocene to Recent	Quaternary	Soil and alluvium
Cainozoic		Laterite
Permian to Triassic	Gondwana Super Group	Kamthi Formation Conglomerate, sandstone, shale, red clay
Permian		Barakar Formation Sandstone, shale with coal seams

Carboniferous (?) Permian		Talchir Formation	Green sandstone, needle shale, boulder bed
Upper Proterozoic			Gangpur granite
Middle to Upper Proterozoic Lower Proterozoic	} Chattisgarh Super Group	Raipur Group	Shale, calcareous shale, quartzite
		Chandarpur Group	Coarse quartzite, sandstone
		Gangpur Group	Phyllite, mica schist
Lower Proterozoic			Tamparkola granite
		Upper Bonai Group	} Shale, phyllite, mica schist Quartzite, quartz-sericite schist
		Lower Bonai Group	
Archaean to Lower Proterozoic		} Peninsular Gneiss (Younger phase) Peninsular Gneiss (Older phase)	Augen gneiss and migmatite
Archaean			Medium grained biotite granite gneiss

5. Drainage and Irrigation Pattern:

The drainage of the district is mainly controlled by rivers like IB & Bheden. Detail of the river system is narrated below.

Sl.no	Name of the River	Place of origin	Altitude at origin	Total length in the district (in km)	Area drained (sq km)	% area drained in the district
A	B	C	D	E	F	G
1	IB	Pandarapat Raigarh	21°51'N 83°56'E	52Km	12447sq km	14Km
2	Bheden	Bamara	21°46'7" N 84°14' 40"E	50Km	2120 sq km	50Km

6.Land utilisation Pattern:

SI No	Landuse	Area in '000Ha
1	Forest Area	20
2	Misc. trees & Grooves	6
3	Permanent Pasture	20
4	Culturable Waste	15
5	Land put to Non Agril Use	39
6	Barren & Unculturable Land	17
7	Current Fallow	25
8	Other Fallow	3
9	Net Area Sown	63
10	Mining	10
	Total	211

7.Surface and Groundwater Scenario:

The drainage systems i.e. rivers of the district get filled with water during the monsoon and gradually decrease from the month of January to June of each year. In the summer season, all the rivers become almost dry excepting flow of water in a few narrow channels within the basin.

The variation of ground water table in the district is as follows:

Depth of water level (mbgl)/ Period	April	August	November	January
Minimum	2.25	0.85	1.35	2.2
Maximum	7.75	6.35	5.85	8.2

8.Rainfall:

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	MARC H	TOTAL
20-21	93.4	72.82	393.42	297.02	586.86	214.2	44.5	9.98	0	11.14	10	6.76	1740.1
21-22	9.9	154.56	215.84	227.6	145.46	203.9	27.96	21.94	64.3	69.6	36.36	0	1177.7
22-23	0	46.46	101.96	366.76	502.36	115.64	84.66	0	0	0	0	31.86	1249.7
23-24	34.96	26.04	244.82	335.28	450.26	377.76	130.66	21.56	62.24	10.06	8.32	65.08	1757.04
NORM AL	14.88	29.9	205	362.7	395	233.3	0.6	11.22	9.6	11.33	14	13.88	1301.41

9.Details of Quarry Leases: (Morrum)

Attached vide **Annexure I**

10.Details of Royalty Collected From Morrum: (in Rs)

Sl.No	Category	2020-21	2021-22	2022-23	2023-24	2024- 25(Up to Aug'24)
1.	Royalty	62895	317126	393538	67590	255481
2.	DMF	6054	31297	36831	1725	12164
3.	EMF	3027	15649	18416	863	3965
	Total	71976	364072	448785	70278	275250

11..Details of Production of Morrurum:

Yearwise Production in cum

Year wise production of Morrurum of Jharsuguda District							
Sl No	Name of Tahasil	Name of the Source	2020-21	2021-22	2022-23	2023-24	2024-25
1	Jharsuguda	LOISINGH MORRUM QUARRY	0	0	1000	0	0
2	Kolabira	SODAMAL MORRUM QUARRY	500	1000	1000	126	0
3		JHIRLAPALI MORRUM QUARRY	0	250	500	0	0
4		PAIKPADA MORRUM QUARRY	0	0	0	0	0
5	Lakhanpur	LAKHANPUR MORRUM QUARRY	0	2016	2016	198	288
6		BELPAHAR MORRUM QUARRY	0	0	0	0	0
7		RENGALI MORRUM QUARRY	0	0	0	0	0
8		PIPILIMAL MORRUM QUARRY	2001	0	0	0	0
9		PITHINDA MORRUM QUARRY	2079	0	0	0	0
10	Laikera	AITAPALI MORRUM QUARRY	808	1920	1920	0	0
11	Kirmira	GURLABAHAL MORRUM QUARRY	0	0	0	99	0
12		ARDA MORRUM QUARRY	0	0	0	112	0
Total			5388	5186	6436	535	288

12.Mineral Map of the District:

Attached as Plate No 4.

13.List of LOI Holders along with Validity:

Not applicable

14.Total Mineral Resource Available in the District:

Total resource of morrum is approximately **1,02,327 Cum** which may increase after detail investigation.

Details of the potential areas are submitted as Annexure II.

15.Quality/Grade of Mineral:

Morrurum of the district is very much suitable for filling purposes particularly of road.

16.Use of Mineral: Morrurum is used mainly in the road construction purpose apart from some domestic constructions.

17.Demand & Supply of the Mineral:

The tentative annual demand of morrum will be approximately in the region of **30,000 Cum** which are mostly quarried in Lakhanpur tahasil of the district and adjoining districts of Sundargarh and Sambalpur.

18. Mining Leases marked on the map of the District:

Attached as Plate No 5.

19. Details of Areas Having Cluster of Mining Leases:

Not applicable

20. Details of Eco-Sensitive Area:

Part of Eco-Sensitive Zone of Debrigarh wildlife Sanctuary is located adjoining the district.

21. Impact of Mining on the Environment (Air & Water quality,, Noise level, Soil, Flora, Fauna, Land, Agriculture, Forest etc.) attributed to Mining Activities:-

Generally, the impact of mining activities on environment can be categorized as either primary or secondary. Primary Impacts are those, which are caused directly during operation of various existing projects. Secondary impacts are induced by expansion of project area, enhancement in production or addition of ancillary units by the project proponents themselves or dependent secondary and tertiary units

Impact on Ambient Air Quality:

Mining operation in the district is carried out mostly by opencast semimechanized/ mechanized methods and rarely by manual methods generating huge volume of dust particles. Such generation is the result of various activities like blasting, excavation and loading by heavy machineries ,(power shovels, surface miners, haul packs etc.), processing of minerals in crushers, coal handling plants and transportation by large dumpers and trucks. The air quality in the mining areas depends upon the nature and concentration of emissions and meteorological conditions.

The major air pollutants due to mining activities include:-

i Suspended Particulate matter (dust) of various sizes.

ii Gases, such as sulphur dioxide, oxides of nitrogen, carbon monoxide etc emitted from heavy mining machineries & waste and mineral transporting vehicles.

Impact on Water Quality:

Sometimes, mining particularly in underground operations lead to interception with the water table causing lowering of ground water table. Due to the interference with surface water sources like river, nallah etc and the entire drainage system down stream of the area is adversely affected. Oil, grease and other lubricants are also carried by surface run off to natural water courses polluting water quality.

Impact on Noise Level:

Noise pollution is mainly caused due to blasting, operation of heavy machineries and plying of transporting vehicles.

Land degradation:

Since winning of minerals involves huge volume of excavation of earth's surface, land degradation can not be dispensed with. Similarly, dumping of solid waste also creates problem. But, lot of remedial measures are in the statute to prevent such degradation.

Impact on Flora & Fauna

Impact on biodiversity is difficult to quantify because of its diverse and dynamic characteristics. Mining activities in forest area also cause deforestation, land degradation, water, air and noise pollution which directly or indirectly affect the fauna and flora status of the project area and its ambience.

22. Remedial Measures to mitigate the Impact of Mining on the Environment-

Air:

Mitigation measures suggested for air pollution controls are to be based on the baseline ambient air quality of the project/cluster area and would include measures such as:

- Water spraying on haul roads, service roads and overburden dumps .
- Proper and regular maintenance of mining equipments
- Transport of materials in trucks are to be covered with tarpaulin.
- The mine pit water, if any can be utilized for dust suppression in and around mine area.

- Information on wind direction and meteorological factors are to be considered during planning, so that pollutants, which cannot be fully suppressed by engineering techniques, can be prevented from reaching the nearby human habitat.
- Comprehensive greenbelt around overburden dumps and periphery of the mining projects/clusters has to be developed and monitored to reduce to fugitive dust transmission from the project.
- Compaction of terraces, coir mat geo textiling along dump slopes followed by plantation.

Water

- Construction of garland drains and settling tanks to divert surface run –off of the mining area to the natural drainage.
- Construction of checks dams/ gully plugs at strategic places to arrest silt wash off from broken up area, if required.
- Retaining walls with weep hole are to be constructed around the mine boundaries to arrest silt wash off in case of big quarries.
- The mined out pits can be converted in to the water reservoir after reaching ultimate pit limit. This will help in recharging ground water table by acting as a water harvesting structure.
- Periodic analysis of mine pit water and ground water quality in nearby villages are to be undertaken.
- Domestic sewage from site office & urinals/latrines, if any provided within ML/QL areas is to be discharged in septic tank followed by soak pits.

Noise:

- Periodic maintenance of machineries, equipments shall be ensured to keep the noise generated within acceptable limit.
- Development of thick green belt around mining/cluster area, avenue plantation along haul roads to reduce the noise.
- Conducting periodical medical check up of all workers for any noise related health problems.
- Proper training to personnel to create awareness about adverse noise related effects.

- Periodic noise monitoring at locations within the mining area and nearby habitations are to be undertaken for big QL areas to assess efficacy of adopted control measures.

Biological Environment:

- Development of green belt/gap filling saplings in the safety barrier left around the quarry area/ cluster area, if the safety zone areas are barren.
- Carrying out thick greenbelt with local flora species predominantly with long canopy laves on the inactive mined out upper benches.
- Development of dense poly culture plantation using local floral species in the mining areas at conceptual stage if the mine is not continued much below the general ground level.
- Adoption of suitable air pollution control measures as suggested above.
- Transport of materials in trucks covered with tarpaulin.

23. Reclamation of Mined out Area (Best Practice already implemented in the district, Requirement as per Rules and Regulations, Proposed Reclamation Plan) :-

As per statute, all mines/quarries are to be properly reclaimed before final closure of the mine. Reclamation of exhausted mines are planned to be undertaken in three possible means depicted below;

1. If, substantial quantity of waste is there, the exhausted quarry can be fully or partly backfilled using the stored waste. The backfilled areas are to be brought under plantation of local species.
2. If the generation of waste is much less as in the case of minor mineral mining, the exhausted quarries can be reclaimed by
 - a. Plantation on the broken up surface if the depth of quarry is not much below the surrounding surface level.
 - b. Conversion to water reservoir after stabilization of the slopes if the exhausted quarry continues much below the surrounding surface level. It is preferred to cordon the water reservoir either through wire fencing or retaining wall with plantation from the safety point of view.

Most of the quarry/mining lease areas are yet to be exhausted from ore point of view. Hence, reclamation would be taken up only after exhaustion of the ore/mineral

content from these areas. The exhausted minor mineral quarries of the district have been converted to water reservoirs.

24. Risk Assessment & Disaster Management Plan:

The only risk involved relating to mining of minor mineral excepting natural calamities is slope failure and probable accidents due to high and ill maintained bench walls. This can only be addressed through making of regular benches and undertaking mining in benching pattern.

The disaster management plan (DMP) is supposed to be a dynamic, changing, document focusing on continual improvement of emergency response planning and arrangements.

The disaster management plan is to be aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities. For effective implementation of the disaster management plan, it should be widely circulated through rehearsal/induction conducted by the respective department from time to time.

General responsibilities of employees' during an emergency:

During an emergency, it becomes more enhanced and pronounced when an emergency warning is raised, the worker in charge, should adopt safe and emergency shut down and attend to any prescribed duty. If no such responsibility is assigned, the workers should adopt a safe course to assemble at a specified point and wait for instructions. He should not resort to spread panic. On the other hand, he must assist emergency personnel towards objectives of DMP.

Co-ordination with local authorities:

The Mine Manager who is responsible for emergency will always keep a vehicle ready at site. In case of any eventuality, the victim will be taken to the nearby hospitals after carrying out the first aid at the site. The Manager should collect and store adequate information of the nearby hospitals, fire station, police station, village panchayat heads, taxi stands, medical shops, district revenue authorities etc. and use them efficiently during the case of emergency.

25. Details of the Occupational Health Issues in the District. (Last Five- Year Data of number of Patients of Silicosis& Tuberculosis Need to be submitted):-

As per the guidelines of the Mine Rules 1995, occupational health safety has been stipulated by the ILO/WHO. The proponent's will take necessary precautions to fulfil the stipulations. Normal sanitary facilities have to be provided within the lease area. The management will carry out periodic health checkup of workers.

Occupational hazards involved in mines are related to dust pollution, noise pollution, blasting and injuries from moving machineries & equipment and fall from high places. DGMS has given necessary guidelines for safety against these occupational hazards. The management has to strictly follow these guidelines.

All necessary first aid and medical facilities are to be provided to the workers. The mine shall be well equipped with personal protective equipment (PPE). Further, all the necessary ported equipment such as helmet, safety goggles, earplugs, earmuffs etc are to be provided to mine workers as per Mines Rules. All operators and mechanics are to be trained to handle fire fighting equipment.

Tuberculosis Data RNTCP Jharsuguda

YEAR	No of Tuberculosis patients
2019	632
2020	613
2021	656
2022	661
2023	750
2024 (Jan to July)	424

There is no case of Silicosis found in Jharsuguda within the time frame mentioned above.

26. Plantation of Green Belt Development in respect of Leases already granted in the District:

As most of the minor mineral mines/quarries of the district are yet to be exhausted of their mineral content no sort of reclamation measures including plantation has been undertaken excluding gap plantation of local species in the peripheral safety zones of the quarries/ clusters and in some of the haul roads.

27. Any other Information:

Nil

INDEX MAP



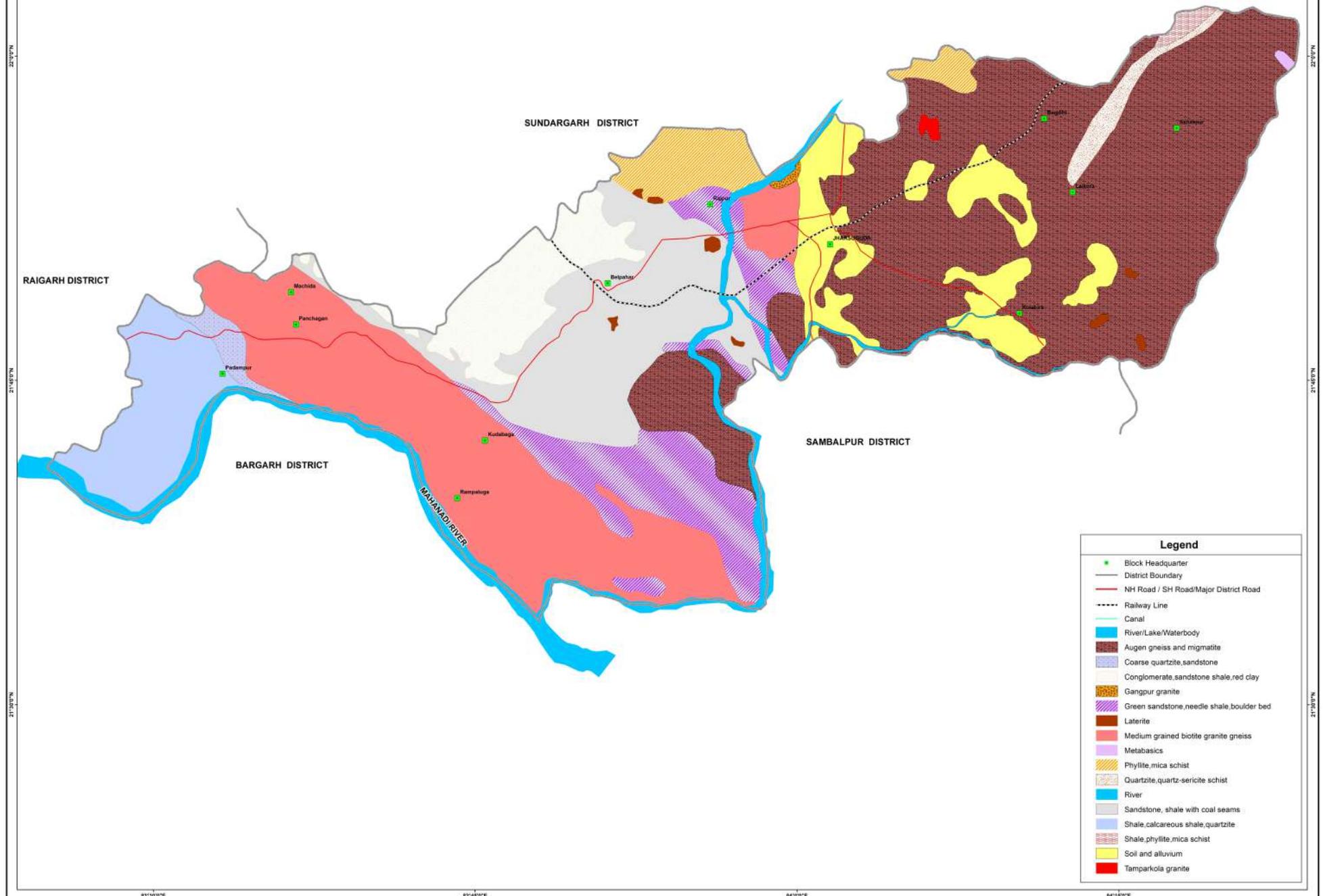
ODISHA



MAP SHOWING THE TAHASILS OF JHARSUGUDA DISTRICT



MINERAL MAP OF JHARSUGUDA DISTRICT



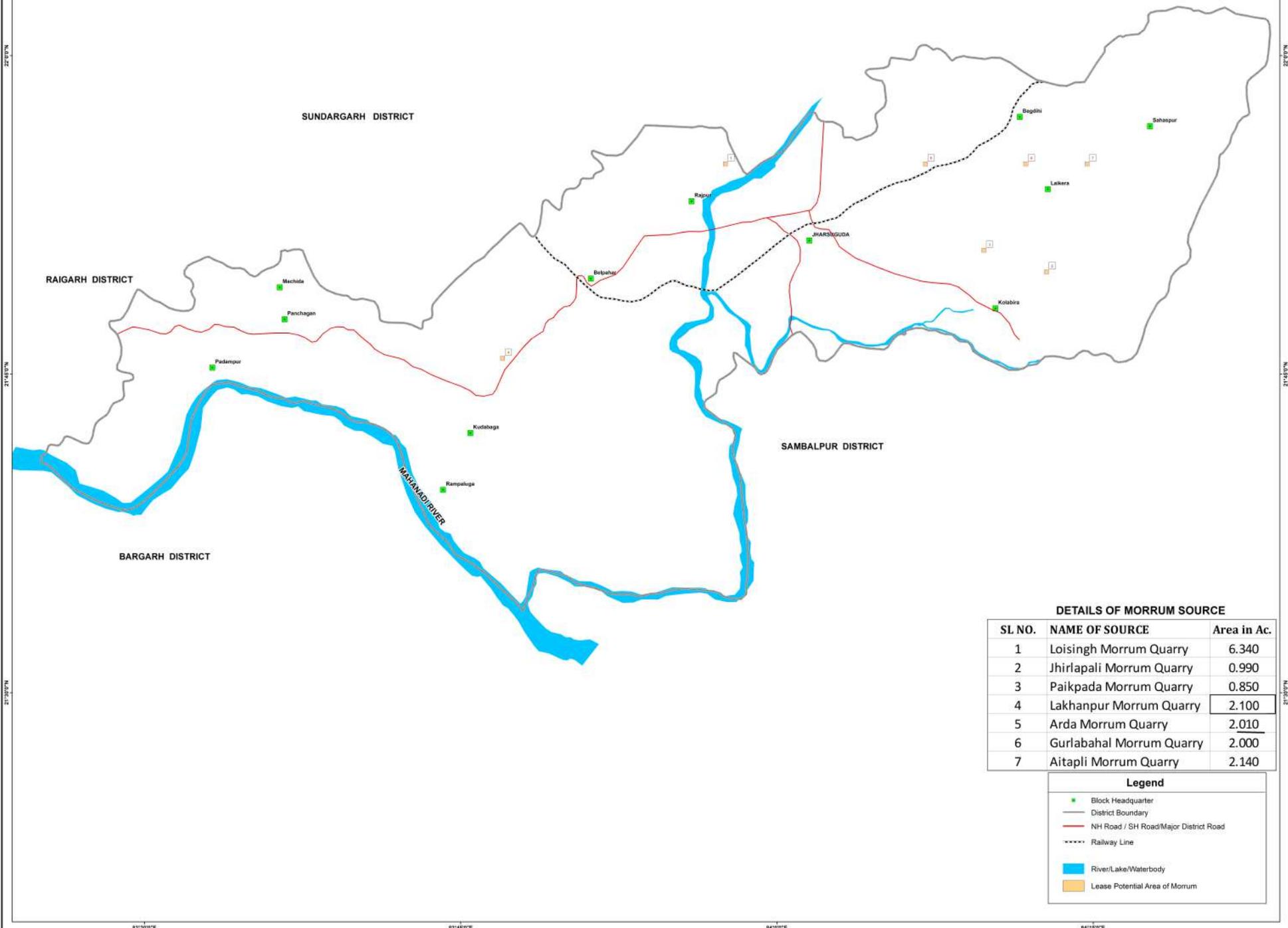
Legend	
	Block Headquarter
	District Boundary
	NH Road / SH Road/Major District Road
	Railway Line
	Canal
	River/Lake/Waterbody
	Augen gneiss and migmatite
	Coarse quartzite, sandstone
	Conglomerate, sandstone, shale, red clay
	Gangpur granite
	Green sandstone, needle shale, boulder bed
	Laterite
	Medium grained biotite granite gneiss
	Metabasics
	Phyllite, mica schist
	Quartzite, quartz-sericite schist
	River
	Sandstone, shale with coal seams
	Shale, calcareous shale, quartzite
	Shale, phyllite, mica schist
	Soil and alluvium
	Tamparkola granite

LEASE/ POTENTIAL MAP OF MORRUM IN JHARSUGUDA DISTRICT

SCALE :- 1:110,000



PLATE NO-4



DETAILS OF MORRUM SOURCE

SL NO.	NAME OF SOURCE	Area in Ac.
1	Loisingh Morrur Quarry	6.340
2	Jhirlapali Morrur Quarry	0.990
3	Paikpada Morrur Quarry	0.850
4	Lakhanpur Morrur Quarry	2.100
5	Arda Morrur Quarry	2.010
6	Gurlabahal Morrur Quarry	2.000
7	Aitapli Morrur Quarry	2.140

Legend

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

ANNEXURE – I

List of Potential Lease Areas

S L N O	NAME OF TAHA SIL	ST AT US	MI NE RA L TY PE	NA ME OF SO UR CE	LAND SCHEDULE							NA ME OF LE SS EE	AD DR ESS & CO NT AC T NO OF LES SEE	DAT E OF REG ISTR ATION OF LEA SE DEE D	No. & DATE OF GRANT OF ENV CLEARAN CE		NA ME OF SU CC ESF UL BI DD ER	AD DR ESS & CO NT AC T NO OF SU CC ESF UL BI DD ER	P il l o r n o	LATITUDE			LONGITUDE			TE NT ATI VE RE SO UR CE IN CU M.
					Vil lag e /M ou za	K h a t a n o	Plo t No	A r e a i n A c .	A r e a i n H e c t .	K i s s a m	N a d i N a m e				13	14				15	16	17	18	19	20	
1	Jha rsu gu da	Op era tio nal	M or ru m	Loi sin gh Mo rru m Qu arr y	Loi sin gh	6 2	90 (P)	6 . 3 4	2 . 5 7	P a t i t a	-	Su ku ma r Pa nd a	At - Pat rap ada , P.O . - Sun der gar h tow n, P.S. / Dist -	28- 07- 202 2	EC22B 0010 R1121 69	1 1 - 0 5 - 2 0 2 2	-	-	1	21	54	56 .4 48 00	83	57	33 .4 80 00	224 20
																		2	21	54	58 .4 64 00	83	57	32 .2 92 00		
																		3	21	55	0 .8 0 40 0	83	57	30 .7 08 00		
																		4	21	55	2 .4 9 60 0	83	57	28 .8 00 00		
																		5	21	55	2 .	83	57	28		

