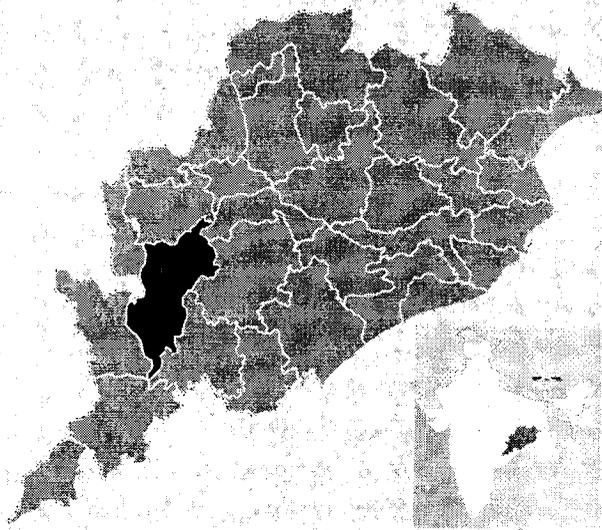




REVISED DISTRICT SURVEY REPORT (DSR) OF KALAHANDI DISTRICT ODISHA ON STONE (ROAD METAL) MINING

As per Notification No. S.O. 141(E), 15th January, 2016 & S.O. 3611(E),
25th July, 2018, New Delhi, Ministry Of Environment, Forest & Climate
Change (MoEF & CC)



COLLECTORATE OF KALAHANDI, ODISHA
FEBRUARY- 2022

10/2/22
Asst. Collector
Touzi Section
Collectorate, Kalahandi

11-2-22
Addl. District Magistrate
Kalahandi

11/2/22
Mining Officer,
Kalahandi

11/2/2022

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A survey has been carried out by the **District Level Environment Impact Assessment Authority (DEIAA), Kalahandi** with the assistance of Geology Department or Irrigation Department or Forest Department or Public Works Department or Mining Department etc. in the district as per the *MoEF, New Delhi, notification S.O. 141(E) dated 15th January 2016* to prepare the District survey Report (DSR) of Kalahandi District (For Stone) in the year 2019. Further, it is modified in the year 2021.

Forwarded by:

i. Sub-Collector cum SDM, Bhawanipatna.

ii. Sub-Collector cum SDM, Dharmagarh.

iii. CDMO, Kalahandi.

iv. Deputy Director Geology, ZS Balangir

v. Deputy Director Agriculture, Kalahandi.

vi. Deputy Director Horticulture, Kalahandi.

vii. SDO Irrigation Division, Kalahandi, Bhawanipatna.

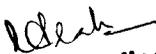
viii. ACF North & South Division, Kalahandi.

ix. Asst. Engineer (R & B), Kalahandi, Bhawanipatna.

x. RO State Pollution Control Board, Rayagada.

xi. Mining Officer, Kalahandi.

xii. Tahasildar of concern Tahasil.


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0. PREFACE

The main objective of the preparation of District Survey Report (DSR) as per the notification issued by the *Ministry of Environment and Forest and Climate Change Notification No.S.O. 141(E) dated 15/01/2016&S.O.3611 (E) New Delhi dated 25/07/2018* is for identification of areas of aggradations or deposition & areas of erosion to ensure the mining potential of the District. District Survey Report of Stone mining has been prepared in accordance with *Clause-II of Appendix X* of the said notification.

01. INTRODUCTION:-

The first gazetteer (15 August 1980) of Kalahandi District says that the district comprised of the ex-State Kalahandi minus Kashipur Police Station (the Zamizari of Khariar as Nuapada Sub-division, now Nuapada District). With the merger of princely States with province of Odisha 1948, the ex-State of Kalahandi together with ex-State Patna and Sonapur formed the District of Kalahandi with headquarters at Balangir. On 1st November 1949 Patna and Sonapur areas were separated to form District Balangir; Patna (later Bolangir) Sonapur (later Subarnapur district). And ex-State of Kalahandi, together with Nuapada sub-division which formed a part of Sambalpur district since 1st April 1936, was reconstituted a separate District Kalahandi with Headquarters at Bhawanipatna. As the area comprising Kashipur Police station posed administrative difficulties due to lack of direct communications with the district headquarters, it was separated from Kalahandi on 1st August 1962. Further Nuapada Subdivision was separated on 27 March 1993 from Kalahandi to form new District as Nuapada.

On the basis of Administration Kalahandi District has been divided into 2 Sub-Divisions named as Bhawanipatna & Dharmagarh. As Per the Blocks & Tahasils are concerned the District is divided into 13 Blocks & Tahasils namely Kalahandi, Kesinga, Karlamunda, M.Rampur, Narla, Th.Rampur, Lanjigarh belongs to Bhawanipatna Sub-Division and Jaipatna, Junagarh, Koksara, Golamunda, Kalampur and Dharmagarh

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belongs to Dharmagarh Sub-Division. There are 310 Gram Panchayat in the District.

Kalahandi situated at a distance about 400Km from the state capital & international airport Bhubaneswar and at a distance about 500 Km from the shore line of Bay of Bengal.

Highways like NH-26, SH-16, SH-06, SH-06A, SH44 etc. passes within the district.

2. OVERVIEW OF MINING ACTIVITY IN THE DISTRICT.

A great variety of major mineral potential like Bauxite, Graphite, Galena, Ruby & Iolite and Specified Minor Minerals like Quartz, Feldspar & Decorative Stone (Granite) are available in the district.

Bauxite occurs in Karlapat-Pollingpadar, Kutrumali-Tangridongar, Lanjigarh -Niyamgiri, Keluamali, Krishanmali.

Graphite occurs in Sargipada, Gaidar, Singjharan, Lamer&Badibahal.

Galena occurs in Sisakhal.

Precious Stone (Ruby) occurs in Jhillingdhar, Hinjlibahal, Kerumurda, Sirja, Tandla, Banjipadar, Sargiguda.

Semi-Precious Stone (Iolite) occurs in Dedar, Labanyasar, Bondoguda, Kutingpadar, Ghatpada, Rengali, Dharmagarh, Golamunda and Th.Rampur Tahasils.

Quartz and Quartzite occurs in Kalahandi, Kesinga, Jaipatna, Junagarh, Dharmagarh, M.Rampur, Narla, Koksara, Golamunda, Kalampur Tahasils.

Feldspar occurs in Bhikajharan of Kalahandi Tahasil.

Decorative Stone (Granite) occurs in Lanjigarh & Kalahandi Tahasil.

(a) Major Mineral:-

In Kalahandi district, presently there are eight nos. of mining leases of semiprecious stone out of which only two nos. of mining leases are working i.e. Labanyasar Iolite Mines over an area of 2.505 hectares of Sri Debraj Meher & Bondoguda Iolite Mines over an area of 2.023 hectares of M/s Manikeswari Gems Pvt. Ltd.

(b) Specified Minor Minerals:-

(i) One Quarry lease for decorative stone (Granite) has been granted in favour of Sri Harendra Kumar Patnaik in village-Nuapada under Kalahandi Tahasil over an area of 8.575 hectares for decorative stone. Now the lease is non-working and the lessee has applied for Renewal of Mining Lease, which is under consideration of the Govt.

Besides this, three nos. of prospecting licenses for decorative stone (Granite) have been granted i.e. Karlasoda Decorative Stone (Granite) Quarry over an area of 13.464 hectares in village-Karlasoda

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under Kalahandi Tahasil in favour of Smt. P.Ramadevi, Chandanpur Decorative Stone (Granite) Quarry over an area of 3.602 hectares & Chandanpur Decorative Stone (Granite) Quarry over an area of 9.696 hectares in village-Chandanpur under Lanjigarh Tahasil in favour of Jay Minerals Prop. Ajay Agrawal.

(ii) There are six nos. of non-working Quartz mines in the district. Out of six, two mining leases had been granted in favour of Shreedhar Minerals, Proprietor Sri M.N. Pattjoshi at village Patharla over an area of 3.864 hectares under Kesinga Tahasil and at village Santemri over an area of 3.148 hectares under Jaipatna Tahasil.

Quartz Mines in village Sidingpadar over an area of 18.818 hectares under M-Rampur Tahasil has been granted in favour of Sri Samarendra Pratap Singh Deo. Quartz mines in village Beherakuni over an area of 3.318 hectares under Kalahandi Tahasil has been granted in favour of Sri S.K.Mund. Other two Quartz mines leases have been granted in favour of M/s Parvathi Impex , the leases are in village-Bhejiguda over an area of 22.048 hectares under Jaipatna Tahasil and at village-Karlaguda over an area of 7.292 hectares under Koksara Tahasil .

The above six Quartz Mining leases are under consideration for extension of Mining Lease by Government.

(iii) One Mining lease for Quartz and Feldspar has been granted in favour of M/s Shreedhar Minerals, Proprietor Sri M.N. Pattjoshi over an area of 5.147 hectares on Dt. 14.06.1982. Now the lease is non-working and the lessee has applied for Renewal of Mining Lease which is under consideration of Govt.

(iv) Three nos. of Prospecting Licenses (PL) have been granted for Quartz, one in favour of Sri Rabindra Kumar Lal at village-Dulkibandha under Jaipatna Tahasil over an area of 4.945 hectares and other two PLs have been granted in favour of M/s Shreedhar Minerals Proprietor Sri M.N.patjoshi at village Khinbahali over an area of 2.428 hectares under Junagarh Tahasil and at village Bhalubutra over an area of 2.873 hectares under Jaipatna Tahasil.

(v) One Prospecting License has been granted for Quartz and Feldspar in favour of M/s Shreedhar Minerals Proprietor Sri M.N.patjoshi at village Bhikajharan under Kalahandi Tahasil over an area of 12.638 hectares.

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Deals

(b)Other than specified minor mineral:-

Other than specified minor minerals such as riverbed sand and ordinary stone (road metal) are also available in the district.

03. GENERAL PROFILE OF THE DISTRICT:-

Present Kalahandi District covering a geographical area of 7920 sq km lies in between 19.175489⁰ to 20.454517⁰ North Latitude and 82.617767⁰ to 83.794874⁰ East Longitude having a population of total population of 1,576,869 as per the Census 2011. Out of which 787,101 are males while 789,768 are females. In 2011 there were total 401,251 families residing in Kalahandi district. The District occupies the South Western portion of Odisha, bordered to the North by the Balangir District and Nuapada District, to the South by the Nabarangpur District, Koraput District and Rayagada District, and to the East by the Rayagada, Kandhamal District and Boudh District.

The climate of the Kalahandi District is of extreme type. It is dry except during monsoon. The maximum temperature of the District is 45+ degree Celsius, whereas the minimum temperature recorded is 4⁰Celsius. The District experiences the average annual rainfall as 1378.20 mm. The monsoon starts late in June and generally lasts up to September.

Kalahandi District is largely an agriculture based Economy. The District is rich with agriculture. Dharamgarh sub division was historical known for rice production in Odisha. Since 2000s the Indravati Water Project, second biggest in the state has changed the landscape of southern Kalahandi, leading to two crops in a year. Because of this, blocks like Kalampur, Junagarh, Jaipatna, Dharamgarh are the leading producer of paddy in district. Cotton is widely cultivated in areas of Kesinga, Bhawanipatna, Golamunda blocks.

Forest based products like Mahua, Kendu-Leaf, Wood, Timber and Bamboos also contribute to local economy largely. Kalahandi District supply substantial raw materials to paper mills in neighbouring Rayagada District.

Kalahandi District celebrates many festivals round the year.

District Survey Report (Stone) Kalahandi, Odisha

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ChhatraJatra in Bhawanipatna, Deepawali, Rathajatra, Shivaratri, Holi, Janmastami, Ramanabami are the famous festivals celebrated by local people with fun and fair. There are also some other local festivals like Khandabasa, Nuakhai, Amnuan, Kandulnuan, Seminuan, Dumernuan, Kalahandi Utsav, GhantaJatra that are celebrated in the District.

Many eminent personalities have taken birth on the soil of Kalahandi District. RindoMajhi (freedom fighter in Odisha), PratabKesariDeo (former MP and ex- Maharaja of Kalahandi), Chakra Bisoi (freedom fighter), Ram Chandra Patra (bureaucrat, social worker, administrator), NatyarashmiPrafullaRatha, DayanidhiNayak (former minister), Jayanta Kumar Behera (social activist and artist) and mountaineer JogabyasaBhoi (first from district to climb Mount Everest) are a few among them.

The district Kalahandi is situated at the south western part of Odisha constituting part of Western Ghat Mobile Belt normally a rugged hilly terrain. The district covers a number of new series Topo Sheets i.e. F44W16, E44E9, E44E10, E44E11, E44E13, E44E14, E44E15, E44E16, F44X3, F44X4, F44X7, F44X8, F44X11, F44X12, F44X16, E44F1, E44F2, E44F3, E44F5 & E44F6.

Kalahandi district is physiologically a complex terrain having numerous numbers of hills, moulds, plane lands, river beds, agricultural lands, forest growth areas etc. In the southern most part of the district there is Indravati Reservoir catchment area which is also shared by Nawarangpur district. Adjacent to reservoir catchment area hilly terrain present which have an elevation range from mean sea level about 700m to 1000m. Hills and mounts are more common in the south to Bhawanipatna where as in the north part the is less hills compered to southern part possesses an elevation range between 250m to 800m from MSL. As the district is a part of Eastern Ghat Mobile Belt so the rock types are mostly homogeneous in nature, so the drainage pattern developed in the region is dendritic pattern. The main drainage trend flows from the south-west to north-east direction within the district. There are several seasonal nala / dry nala & a few perineal natural

District Survey Report (Stone) Kalahandi, Odisha

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drainage exists within the district. Main river that touches the district is *Tel River*, in addition to that a few other small rivers present within the district namely *HatiNadi, UdantiNadi, SagadaNadi, Kamal Nadi, Ret Nadi, UtteiNadi* etc.

The main township that is developed in the district is *Bhawanipatna* also is the district head quarter, which is present in the central part of the district and connect to all parts of the district through road ways.

There are a number of reserve forests present within the district a few major RF are namely *Benakhmar RF, Udaygiri RF, Singari RF, Gopalpur RF, Indravati RF, Phatadhara RF, Machul RF, Hatisal RF, Kiding RF, Bazargarh RF, Benagurha RF, Urladani RF, Taprang RF, Telan RF, Satami RF, Sulia Block A RF* etc. In addition to the reserve forests there is a wild life sanctuary present in the district namely *Karlapat Wild life sanctuary*.

04. GEOLOGY OF THE DISTRICT.

Kalahandi District is part of Eastern Ghat Super Group, the Eastern Ghats are a discontinuous range of mountains along India's eastern coast. The Eastern Ghats run from the northern Odisha through Andhra Pradesh to Tamil Nadu in the south passing some parts of Karnataka and in the Wayanad district of Kerala. They are eroded and cut through by four major rivers of peninsular India, viz. Godavari, Mahanadi, Krishna, and Kaveri.

The mountain ranges run parallel to the Bay of Bengal. The Deccan Plateau lies to the west of the range, between the Eastern Ghats and Western Ghats. The coastal plains, including the Coromandel Coast region, lie between the Eastern Ghats and the Bay of Bengal. The Eastern Ghats are not as high as the Western Ghats. The Eastern Ghats are older than the Western Ghats, and have a complex geologic history related to the assembly and breakup of the ancient supercontinent of Rodinia and the assembly of the Gondwana supercontinent.

The Eastern Ghats on the east coast of India is a largely granulite terrain but also exposes granites, migmatites, anorthosites and alkaline rocks. This granulite belt has had a prolonged history of mountain building from late Archaean to late Proterozoic. During this long period the

Eastern Ghats mobile belt witnessed repeated folding and possibly polycyclic metamorphism. Some recent findings suggest breaks between orogenic cycles and a proterozoic reworking of Archaean granulites. Extreme-temperature crustal metamorphism under fluid-absent conditions and crustal anataxis in huge thickness of pelitic to psammitic protoliths producing leptynites are some of the important results of recent investigations of the Eastern Ghats mobile belt. Different generations of charnockites are present in the Eastern Ghats belt, but charnockitisation of granitic gneisses is yet to be documented. Some apparently nascent growths, the patchy charnockites in the Chilka areas are shown to be relict of older charnockitic rocks that suffered granulite-facies metamorphism and attendant migmatization.

Event Stratigraphy of the Eastern Ghat Mobile Belt is as follows;

| Age (Ma) | Event |
|----------|-------|
|----------|-------|

| | |
|---------|--|
| 550-650 | Exhumation & Stabilisation (Pan-African) |
|---------|--|

| | |
|---------|--|
| 800-850 | Emplacement of Anorthosite Massifs, Some Alkaline Rocks(?) Younger Granitoids are charnokites |
|---------|--|

| | |
|----------|--|
| 950-1100 | Main Eastern Ghat Orogeny (=Grenville) |
|----------|--|

Garnet-Sillimanite- Graphite Gneiss (Khondalite) with Khondalite minor cordierite-Saphrine-Spinel Gneiss (Mg-Al)

Group Calc- Silicate rocks & rare Marbles

Quartzite (Garnet ± Sillimanite)

| | |
|-------|--|
| ~1500 | Emplacement of Alkaline rocks along with the rift Margin |
|-------|--|

Evolution of platform (Purana) basins like Cuddahpah, Chhatishgarh, Indravati etc.

| | |
|-----------|--|
| 1800-1600 | Evolution of Nellore-Khemmam schist belt in Dharwar Craton |
|-----------|--|

| | |
|-----------|--|
| 2600-2800 | Charnokite & Gneisses of the basement (WCZ). |
|-----------|--|

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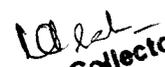
Asst. Collector

05. DRAINAGE AND IRRIGATION PATTERN.

Kalahandi district is a physically hilly terrain having majorly dendritic drainage pattern, there is only one main river named *Tel River* flows in the district in the northern part of district, in addition to that several immature rivers namely *Hati Nadi*, *Udanti Nadi*, *Sagada Nadi*, *Kamal Nadi*, *Ret Nadi*, *Uttei Nadi* etc. Originate & flows in the district also few of them act as the tributary to *Tel River*. The distance of the sources from the river origin is geologically very short, hence this can be concluded that the rate of deposition of sand in *Tel River* is moderate, while in *Rest Rivers* within the district the rate of deposit is slow.

Additional river source details are given in the following table

| Sl no. | Name of river | Area (sq. km drained) | % area drained in the District |
|--------|---------------|-----------------------|--------------------------------|
| 01 | Tel River | 2850 | 60% |
| 02 | Hati River | 735 | 100% |
| 03 | Udanti River | 1800 | 100% |
| 04 | Sagada River | 360 | 100% |
| 05 | Kamal River | 350 | 100% |
| 06 | Ret River | 810 | 100% |
| 07 | Uttei River | 420 | 100% |


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06. LAND UTILISATION PATTERN IN THE DISTRICT: FOREST, AGRICULTURAL, HORTICULTURAL, MINING ETC.

General land information of Kalahandi district is as follows;

| Sl. No | | | | High | Med. | Low | |
|--------|----------------------------------|--------------|------|--------|-------|-------|--------|
| 1 | Geographical area | | Ha. | | | | 792000 |
| 2 | Cultivable area | | Ha. | 237856 | 85279 | 67865 | 391000 |
| 3 | Forest area | | Ha. | | | | 314000 |
| 4 | Misc. Tree & Grooves | | Ha. | | | | 8000 |
| 5 | Permanent Pasture | | Ha. | | | | 23000 |
| 6 | Culturable Waste | | Ha. | | | | 21000 |
| 7 | Land put to non agriculture. Use | | Ha. | | | | 35000 |
| 8 | Net shown area | Kharif-2018 | Ha. | | | | 383721 |
| 9 | Gross crop area | 2018-19 | Ha. | | | | 600030 |
| 10 | Cropping intensity | 2018-19 | Ha. | | | | 156% |
| 11 | Irrigated area | Kharif-2018 | Ha. | | | | 143688 |
| 12 | | Rabi 2018-19 | Ha. | | | | 84721 |
| 13 | Cultivated area | For 2019 | Ha. | 217139 | 90962 | 75620 | 383721 |
| 14 | Paddy area | For 2019 | Ha. | 46976 | 79261 | 75620 | 201857 |
| 15 | Non paddy area | For 2019 | Ha. | 170163 | 11701 | 0 | 181865 |
| 16 | DAO Circle | | Nos. | | | | 4 |
| 17 | AAO Circle | | Nos. | | | | 26 |
| 18 | AC/VAW Circle | | Nos. | | | | 310 |

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Forest:

Forest land use as per the concern authority is as follows;

Abstract of area statement of Kalahandi North Division

| S/No | Legal status of the forest Blocks | Name of the Range | | | | | | | | | | Total | |
|----------------|---|-------------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|------------------|
| | | Bhawanipatna | | M.Rampur | | Narla | | Kesinga | | Kegaon | | No. of Bloc ks | Area inHa. |
| | | No. of Blo cks | Area in Ha. | No. of Blo cks | Area in Ha. | No. of Blo cks | Area in Ha. | No. of Blo cks | Area in Ha. | No. of Blo cks | Area in Ha. | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 1 | Reserve Forest | 12 | 15653.00 | 11 | 21475.00 | 7 | 15141.00 | 3 | 9824.00 | 10 | 20521.00 | 43 | 82614.00 |
| 2 | P.F. | - | - | - | - | - | - | - | - | - | - | - | - |
| 3 | PRF notified u/s-4 | 1 | 6720.20 | 11 | 15174.98 | 6 | 4469.44 | - | - | - | - | 18 | 26364.62 |
| 4 | PRF not notified u/s-4 | 2 | 9255.70 | 9 | 2551.08 | 5 | 4787.93 | 6 | 727.14 | 16 | 1285.75 | 38 | 18607.60 |
| 5 | Village Forest | 14 | 89.524 | 3 | 12.638 | - | - | 12 | 77.76 | 1 | 20.00 | 30 | 199.65 |
| 6 | Non Forest land mutated in favour of FD | 1 | 436.00 | - | - | - | - | - | - | - | - | 1 | 436.00 |
| Total = | | 30 | 32154.42 | 34 | 39213.43 | 18 | 24398.37 | 21 | 10628.90 | 27 | 21826.75 | 130 | 128221.87 |

W. S. S.
Asst. Collector
 Touzi Section
 Collectorate, Kalahandi

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Abstract of area statement of Kalahandi South Division

| SL No | Legal status of the forest Blocks | Name of the Range | | | | | | | | | | | | | | Total | |
|----------------|---|--------------------------|-----------------|--------------------------|-----------------|--------------------------|----------------|--------------------------|----------------|--------------------------|-----------------|--------------------------|----------------|----------|----------------|--------------------------|-----------------|
| | | Biswanathpu r | | Dharmagar h | | Jaipatna | | Junagarh | | Th.Rampur North | | Th.Rampur South | | Karlapat | | No. of Bloc cks | Area in Ha. |
| | | No. of Bloc cks | Area in Ha. | No. of Bloc cks | Area in Ha. | No. of Bloc cks | Area in Ha. | No. of Bloc cks | Area in Ha. | No. of Bloc cks | Area in Ha. | No. of Bloc cks | Area in Ha. | | | | |
| 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | | |
| 1 | Reserve Forest | 16 | 17139.00 | 5 | 13083.00 | 8 | 2992.00 | 7 | 5239.00 | 9 | 717.00 | 4 | 6086.00 | - | - | 49 | 45256.00 |
| 2 | P.F. | 1 | 17.483 | - | - | - | - | - | - | - | - | - | - | - | - | 1 | 17.483 |
| 3 | PRF notified u/s-4 | 9 | 11349.02 | - | - | - | - | 2 | 327.10 | 7 | 9288.59 | 3 | 756.19 | 1 | 462.00 | 22 | 22182.90 |
| 4 | PRF not notified u/s-4 | 10 | 1480.32 | - | - | - | - | 6 | 3453.02 | 1 | 346.00 | - | - | 1 | 760.17 | 18 | 6039.51 |
| 5 | Village Forest | - | - | 1 | 20.00 | - | - | - | - | 3 | 20.00 | 6 | 60.00 | - | - | 10 | 100.00 |
| 6 | Non Forest land mutated in favour of FD | 2 | 43.261 | - | - | 1 | 25.40 | - | - | 1 | 22.416 | 5 | 322.953 | - | - | 9 | 414.03 |
| Total = | | 38 | 30029.08 | 6 | 13103.00 | 9 | 3017.40 | 15 | 9019.21 | 21 | 10394.01 | 18 | 7225.14 | 2 | 1222.17 | 109 | 74009.92 |

Agriculture:

Please refer general information table above.

Horticulture:

A detail of the land use given by concern authority is as follows;

| Sl. No | Crop | Area (in Hects) |
|----------------|------------------|-----------------|
| 1 | Fruits | 17944.00 |
| 2 | Plantation Crops | 2100.00 |
| 3 | Spices | 5389.00 |
| 4 | Vegetables | 23300.00 |
| 5 | Flowers | 269.00 |
| Total = | | 49002.00 |

Mining:

The total area considered for mining activity for all minerals shall be the mining area within the district.

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07. SURFACE WATER AND GROUND WATER SCENARIO OF THE DISTRICT.

Please refer Plate-V for details.

08. RAINFALL OF THE DISTRICT AND CLIMATIC CONDITION.

The climate of the Kalahandi District is of extreme type. It is dry except during monsoon. The maximum temperature of the District is 45+ degree Celsius, whereas the minimum temperature recorded as 4°Celsius. The District experiences the average annual rainfall as 1664.633 mm. The monsoon starts late in June and generally lasts up to September.

MONTH WISE RAINFALL DATA OF KALAHANDI DISTRICT

| Year | 2017 | 2018 | 2019 |
|--------------|------------------------|------------------------|------------------------|
| MONTH | AVERAGE RAINFALL in mm | AVERAGE RAINFALL in mm | AVERAGE RAINFALL in mm |
| January | 0 | 0 | 1.82 |
| February | 0 | 0 | 6.2 |
| March | 15.52 | 0 | 8.63 |
| April | 2.46 | 14.52 | 10.54 |
| May | 16.5 | 40.12 | 23.48 |
| June | 209.64 | 106.44 | 156.98 |
| July | 511.85 | 652.15 | 454.07 |
| August | 342.65 | 815.76 | 657.01 |
| September | 208.94 | 231.42 | 253.3 |
| October | 116.66 | 59.88 | -- |
| November | 1.16 | 0 | -- |
| December | 0 | 76.18 | -- |
| Total | 1425.38 | 1996.47 | 1572.05 |

09. DETAILS OF THE MINING LEASES IN THE DISTRICT AS PER THE FOLLOWING FORMAT.

Please refer Table in Annexure-I

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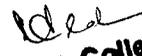
10. DETAILS OF ROYALTY OR REVENUE RECEIVED IN LAST THREE YEARS
Revenue collected for Stone/Road metal.

| SI No. | Name of Tahasil | Name of Source | Revenue collected in last three years in INR(Rs) | | |
|--------|-----------------|----------------------------|--|------------|------------|
| | | | 2016-2017 | 2017-2018 | 2018-2019 |
| 01 | Kalahandi | Kerandihapar Stone Quarry | 245784.00 | 213864.00 | 210672.00 |
| 02 | | Turpi Stone Quarry | 179550.00 | 179550.00 | 163248.00 |
| 03 | | Ghusrigudi-I Stone Quarry | 0.00 | 359100.00 | 359100.00 |
| 04 | | Bhikajharan Stone Quarry | 105840.00 | 0.00 | 0.00 |
| 05 | | Gajkhola Stone Quarry | 140490.00 | 153720.00 | 153720.00 |
| 06 | | Tentulichuan Stone Quarry | 554400.00 | 623700.00 | 693000.00 |
| 07 | | Ghusrigudi-II Stone Quarry | 0.00 | 1143450.00 | 1257718.00 |
| 08 | | Jamunabahal Stone Quarry | 147000.00 | 0.00 | 161000.00 |
| 09 | | Karlasoda Stone Quarry | 556374.00 | 379260.00 | 379260.00 |
| 10 | | Mankdipada Stone Quarry | 0.00 | 35457.00 | 454920.00 |
| 11 | Golamunda | Sargiguda Stone Quarry | 0.00 | 118291.00 | 128521.00 |
| 12 | | Baijalpur Stone Quarry | 346661.00 | 359381.00 | 452317.00 |
| 13 | Dharamgarh | Gadiajore Stone Quarry | 175824.00 | 175824.00 | 199800.00 |
| 14 | | Turihaldi Stone Quarry | 68670.00 | 73575.00 | 83385.00 |
| 15 | | Gadiajore Stone Quarry | 0.00 | 0.00 | 0.00 |
| 16 | Lanjigarh | Benipokhari-4 Stone Quarry | 0.00 | 779160.00 | 797280.00 |
| 17 | | Tadabala-1 Stone Quarry | 0.00 | 797280.00 | 815400.00 |
| 18 | | Tadabala-2 Stone Quarry | 0.00 | 243600.00 | 261000.00 |
| 19 | | Benipokhari-4 Stone Quarry | 0.00 | 188832.00 | 206816.00 |
| 20 | | Tadabala-1 Stone Quarry | 0.00 | 174220.00 | 196700.00 |

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|--------------|---------|------------------------------|-----------------------|---------------------|-----------------------|
| 21 | Koksara | Sarasmal Stone Quarry | 0.00 | 209682.00 | 222032.00 |
| 22 | | Jaltamunda Stone Quarry | 295595.00 | 0.00 | 0.00 |
| 23 | Kesinga | Baramuni Dangar Stone Quarry | 109000.00 | 57000.00 | 333000.00 |
| 24 | | Subendangar-1 Stone Quarry | 252000.00 | 253000.00 | 261000.00 |
| 25 | | Subendangar-2 Stone Quarry | 0.00 | 254000.00 | 478000.00 |
| 26 | | Subendangar-3 Stone Quarry | 254000.00 | 254000.00 | 261000.00 |
| 27 | | Subendangar-4A Stone Quarry | 258000.00 | 254000.00 | 967000.00 |
| 28 | | Subendangar-4B Stone Quarry | | | |
| 29 | | Kurlupada Stone Quarry | 488000.00 | 0.00 | 1791000.00 |
| 30 | | Kantesir Stone Quarry | | | |
| 31 | | Kinerkela Stone Quarry | | | |
| 32 | | Junagarh | Kalopala Stone Quarry | 0.00 | 0.00 |
| Total | | | 41,77,188.00 | 72,79,946.00 | 1,17,33,889.00 |


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11. DETAILS OF PRODUCTION OF MINOR MINERAL IN LAST THREE YEARS.

| SI No. | Name of Tahasil | Name of Source | Production Of Minor Mineral stone In Last Three Years in Cum. | | |
|--------|-----------------|----------------------------|---|--------------|--------------|
| | | | FY 2016-2017 | FY 2017-2018 | FY 2018-2019 |
| 01 | Kalahandi | Kerandihapar Stone Quarry | 1756 | 1527.6 | 1504.8 |
| 02 | | Turpi Stone Quarry | 1283 | 1282.5 | 1168.5 |
| 03 | | Ghusrigudi-I Stone Quarry | 0 | 2565 | 2565 |
| 04 | | Bhikajharan Stone Quarry | 756 | 0 | 0 |
| 05 | | Gajkhola Stone Quarry | 1004 | 1098 | 1098 |
| 06 | | Tentulichuan Stone Quarry | 3960 | 4455 | 4950 |
| 07 | | Ghusrigudi-II Stone Quarry | 0 | 7425 | 8167 |
| 08 | | Jamunabahal Stone Quarry | 1050 | 0 | 1150 |
| 09 | | Karlasoda Stone Quarry | 0 | 1260 | 1260 |
| 10 | | Mankdipada Stone Quarry | 0 | 1912 | 2040 |
| 11 | Golamunda | Sargiguda Stone Quarry | 0 | 616 | 227 |
| 12 | | Baijalpur Stone Quarry | 2052 | 2160 | 2268 |
| 13 | Dharamgarh | Gadiajore Stone Quarry | 1584 | 1584 | 1800 |
| 14 | | Turihaldi Stone Quarry | 630 | 630 | 630 |
| 15 | | Gadiajore Stone Quarry | 0 | 0 | 0 |
| 16 | Lanjigarh | Benipokhari-1 Stone Quarry | 0 | 5160 | 5280 |
| 17 | | Benipokhari-2 Stone Quarry | 0 | 5280 | 5400 |
| 18 | | Benipokhari-4 Stone Quarry | 0 | 1680 | 1800 |
| 19 | | Tadabala-1 Stone Quarry | 0 | 1344 | 1472 |
| 20 | | Tadabala-2 Stone Quarry | 0 | 1240 | 1400 |
| 21 | Koksara | Sarasmal Stone Quarry | 0 | 1235 | 1330 |
| 22 | | Jaltamunda Stone Quarry | 2619 | 0 | 0 |

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|--------------|----------------|--------------------------------|--------------------------|-----------------|-----------------|
| 23 | Kesinga | BaramuniDangar Stone Quarry | 1199 | 1275 | 1377 |
| 24 | | Subendangar-1 Stone Quarry | 1500 | 1500 | 1500 |
| 25 | | Subendangar-2 Stone Quarry | 1500 | 1500 | 1500 |
| 26 | | Subendangar-3 Stone Quarry | 1500 | 1500 | 1500 |
| 27 | | Subendangar-4A Stone Quarry | 1500 | 1500 | 1500 |
| 28 | | Subendangar-4B Stone Quarry | 600 | 600 | 600 |
| 29 | | Kurlupada Stone Quarry | 1100 | 1100 | 1100 |
| 30 | | KantesirStrone Quarry | 1500.8 | 1500.8 | 1500.8 |
| 31 | | Kinerkela Stone Quarry | 1446 | 1512 | 1512 |
| 32 | | Junagarh | Kalopala Stone Quarry | 0 | 0 |
| Total | | | 28539.80 | 44837.90 | 48758.10 |

Production of Stone/Road metal.

12. MINERAL MAP OF THE DISTRICT.

Please refer Plate-IV.

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13. LIST OF LETTER OF INTENT (LOI) HOLDERS IN THE DISTRICT ALONG WITH ITS VALIDITY AS PER THE FOLLOWING FORMAT.

| Sl. No | Name of the Tahasil | Name of the Mineral | Name of the Lessee | Address & Contact No. of Letter of Intent Holder | Letter of Intent Grant Order No. & date | Area of Mining lease to be allotted (ha.) | Validity of LOI | Location of the Mining lease (Latitude & Longitude) |
|--------|---------------------|--------------------------------------|------------------------|--|---|---|-----------------|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 |
| 1 | Karlamunda | Abujbahal-I Stone Quarry | Bijaya Kumar Sharma | At-Ladugaon, Dist-Kalahandi | XXVI-1/2020/Touzi/ 969, Dt.04.07.2020 | 4.856 | 05 Years | Abujbahal, Khata No. 255, Plot No.3, Ac.-12.00 |
| 2 | Karlamunda | Abujbahal-II Stone Quarry | Prasanta Kumar Das | At-Chachiguda, Tehsil-Jaipatna, Dist-Kalahandi | XXVI-1/2020/Touzi/968, Dt.03.07.2020 | 1.214 | 05 Years | Abujbahal, Khata No.255, Plot No.3, Ac.-3.00 |
| 3 | Karlamunda | Bhatapala Stone Quarry | Vivek Kumar Agrawal | At-Teresinga, Tehsil-Karlamunda, Dist-Kalahandi | XXVI-1/2020/TZ/1279, Dt.25.09.2020 | 0.437 | 05 Years | Bhatapala, Khata No-395, Plot No-1759, Ac.-1.08 |
| 4 | M. Rampur | Pandapadar & Dalabahali Stone Quarry | Sri KamdebSahu | At-Tujung Po-M.Rampur Dist.-Kalahandi | No.01 Dt. 11.01.12 | 5.40 | 05 Years | Pandapadar, Khata No.76, Plot No. 20,132, 251,306, 332 & Dalabahali Khata No.123. Plot No. 625. |
| 5 | M. Rampur | Sidingpadar Stone Quarry | Sri Sudhakar Sahu | At-Tujung Po-M.Rampur Dist.-Kalahandi | - | 4.40 | - | Sidingpadar, Khata No.36 & Plot No. 164 N 20° 30' 51.76" E 83° 33' 36.21" |
| 6 | Lanjigarh | Benipokhari-5 Stone Quarry | Smt. Shantipriya Sahoo | C/o- Ramesh Ch. Sahoo At/Po/PS-Biswanathpur 9937993191 | No. 629 Dt. 30.06.16 | 4.69 | 05 Years | Benipokhari, Khata No. 18 & Plot No. 30 & 57. N 19° 52' 53.37" E 83° 24' 48.62" |
| 7 | Lanjigarh | Talipada-1 Stone Quarry | Sri Sanda Majhi | S/o - Madan Majhi At-Talipada, Po-Pokharibandha | No. 630 Dt. 30.06.16 | 1.01 | 05 Years | Talipada, Khata No. 108 & Plot No 246. N 19° 52' 42.31" E 83° 24' 36.89" |
| 8 | Dharmagarh | Kankeri Stone Quarry | Sri Narayan Mohanty | Dharmagarh Dist. Kalahandi | - | 4.706 | - | Kankeri Khata No. 9 & Plot No. 124/1829 Lat.-19° 54' 51.6" N Long.- 82° 42' 37.20" E |

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14. TOTAL MINERAL RESERVE AVAILABLE IN THE DISTRICT.

Reserve & Resource potential Evaluation;

As per UNFC (*United Nations Framework Classification*) of potentials of minerals, A '**Mineral Reserve**' is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses which may occur when the material is mined. Appropriate assessments, which may include feasibility studies, have been carried out, and include consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting that extraction is justified.

The mineability (Economic Viability) is demonstrated in consecutive Feasibility Assessment stages which may be, in order of increasing detail, Prefeasibility Study and Feasibility Study/Mining Report. A Probable Mineral Reserve may derive from a Prefeasibility study and a Proved Mineral Reserve from a Feasibility Study or mining activity documentation. Hence for the Reserve Potential estimation of the Kalahandi district, the approved Mining Plans of each existing Quarry has been referred as it provides details of the Mineable & Geological Reserve potentials of the Quarry lease.

As per the approved Mining Plans of the quarry leases till *September-2019* in Kalahandi District the Total mineral potential are as follows;


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joint field survey has been done and sources have been identified. At this stage of survey, a detail study of each source is not feasible, hence the area of proposed quarry lease has been multiplied with the average height of the respective source to obtain the tentative Geological resources whereas for Mineable resources has been considered about 60% of geological Resources.

Potential Resources of New Sairat Sources for Stone

| SI No | Name of Tahasil | Name of Proposed source with area in acre. (Location in Latitude & Longitude) | Proposed source area in (Hectares) | Tentative geological Resource of Proposed Source in m ³ | Tentative Mineable Resource of Proposed Source i.e. 60% of geological Resources in m ³ |
|-------|-----------------|--|------------------------------------|--|---|
| 01 | Kalahandi | Barbhata Stone Quarry, Khata No. 118, Plot No. 932, 2.55 Ac | 1.031 | 123720 | 74232 |
| 02 | Kalahandi | Kandhabandopala Stone Quarry, Khata No. 1157, 738, Plot No. 2636, 01, 3.50Ac | 1.416 | 169920 | 101952 |
| 03 | Kalahandi | Borda-1 Stone Quarry, Khata No. 527, Plot No. 915, 10.00 Ac Lat. - 20° 10' 16.10" N Long.-82° 58' 34.21" E | 4.046 | 687820 | 412692 |
| 04 | Kalahandi | Borda-2 Stone Quarry, Khata No. 527 Plot No. 09 , 09.00 Ac Lat. - 20° 10' 34.26" N Long.-82° 58' 47.41" E | 3.642 | 582720 | 349632 |
| 05 | Kalahandi | Jojana Nuapada- 2 Stone Quarry, Khata No. 04 Plot No. 34, 2.00 Ac | 0.809 | 113260 | 67956 |
| 06 | Kalahandi | Kutenpadar Stone Quarry, Khata No. 79 Plot No. 109, 10.05 Ac | 4.067 | 691390 | 414834 |
| 07 | Kalahandi | Borguda- 1 Stone Quarry, Khata No. 178 Plot No. 932, 3.00 Ac Lat. - 20° 01' 10.35" N Long.-83° 08' 20.19" E | 1.214 | 163890 | 98334 |
| 08 | Kalahandi | Haldigarh Stone Quarry, Khata No. 423 Plot No. 1718, 1.74 Ac Lat. - 20° 04' 25.87" N Long.-83° 07' 47.64"E | 0.704 | 112640 | 67584 |
| 09 | Kalahandi | Kendugupka-1 Stone Quarry, Khata No. 86, Plot No. 48, 3.00 Ac Lat. - 20° 04' 17.48" N Long.-83° 08' 09.68" E | 1.214 | 194240 | 116544 |

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|----|----------------|---|-------|---------|--------|
| 10 | Kalahandi | Kendugupka-2 Stone Quarry, Khata No. 86 Plot No. 83, 3.00 Ac | 1.214 | 194240 | 116544 |
| 11 | Kalahandi | Rojnaguda Stone Quarry, Khata No.108 Plot No.286, 318, 1.83 Ac | 0.740 | 103600 | 62160 |
| 12 | Kalahandi | Tiljudi Stone Quarry, Khata No.182 Plot No. 877, 878, 5.17 Ac | 2.092 | 313800 | 188280 |
| 13 | Kalahandi | Kurumachuan Stone Quarry, Khata No. 54 Plot No. 343, 460, 294 , 10.01 Ac | 4.050 | 150000 | 90000 |
| 14 | Kalahandi | Beherakuni Stone Quarry, Khata No. 34 Plot No.57, 1.38 Ac | 0.558 | 66960 | 40176 |
| 15 | Kalahandi | Bileikuni Stone Quarry, Khata No. 168 Plot No. 1207, 3.00 Ac. | 1.214 | 182100 | 109260 |
| 16 | Kalahandi | Karlasoda Stone Quarry, Khata No. 413 Plot No. 137, 3.00 Ac. | 1.214 | 169960 | 101976 |
| 17 | Kalahandi | Bargaon Stone Quarry, KhataNo. 278 Plot No. 147, 5.35 Ac. | 2.165 | 324750 | 194850 |
| 18 | Kalahandi | Jojana Nuapada- 1 Stone Quarry, Khata No. 04 Plot No. 02, 3.00 Ac. | 1.214 | 157820 | 94692 |
| 19 | Kalahandi | Podmundi Stone Quarry, Khata No. 95 Plot No. 1003, 8.47 Ac. | 3.427 | 685400 | 411240 |
| 20 | Kalahandi | Barguda-2 Stone Quarry, Khata No. 178 Plot No. 932, 3.00Ac | 1.214 | 169960 | 101976 |
| 21 | Kalahandi | Bhikajharan Stone Quarry, Khata No. 214 Plot No. 609, 0.71 Ac. | 0.287 | 34440 | 20664 |
| 22 | Kalahandi | Mankidipada-1 Stone Quarry, Khata No.158, Plot No.62, 4.35 Ac | 1.760 | 266667 | 160000 |
| 23 | Dharamgar h | Ainlajore Stone Quarry, Khata No-394, Plot No-2497, 10.00 Ac | 4.046 | 1444500 | 866700 |
| 24 | Dharamgar h | Kankeri Stone Quarry, Khata No-09, Plot No-595, 9.65 Ac. Lat.-19° 55' 02.26" N Long.-82° 43' 37.87" E | 4.957 | 842690 | 505614 |
| 25 | Dharamgar h | Beheraguda-1 Stone Quarry, Khata No-11, Plot No-2122, 1.58 Ac. Lat. - 19° 47' 24.92" N Long.-82° 38' 57.34" E | 0.639 | 134190 | 80514 |
| 26 | Dharamgar h | Behera Stone Quarry, Khata No. 178, Plot No-771, 2.34 Ac Lat. - 19° 44' 01.51" N Long.-82° 39' 56.50" E | 0.946 | 138400 | 83040 |
| 27 | Dharamgar h | Beheraguda-2 Stone Quarry, Khata No.11 Plot No. 904, 1.87 Ac | 0.756 | 121408 | 72845 |

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(Signature)

| | | | | | |
|----|------------|--|-------|--------|--------|
| 28 | Dharamgarh | Kirkakani Stone Quarry, Khata No. 5, Plot No. 11, 3.00 Ac | 1.214 | 134000 | 80400 |
| 29 | Dharamgarh | Chhatagohira Stone Quarry, Khata No.166, Plot No.286,3.44 Ac | 1.392 | 123000 | 73800 |
| 30 | Dharamgarh | Gadiajore Stone Quarry-I, Khata No.461, Plot No.2394, 12.30Ac. | 4.977 | 240000 | 144000 |
| 31 | Dharamgarh | Gadiajore Stone Quarry-II, Khata No.461, Plot No.69, 08.38Ac. | 3.391 | 160000 | 96000 |
| 32 | Koksara | Kashibahal Stone Quarry-C, Khata No-577, Plot No-31, | 1.852 | 555600 | 333360 |
| 33 | Koksara | Kashibahal Stone Quarry-D, Khata No-577, Plot No-23, Lat. - 19° 39' 51.20" N Long.- 82° 46' 33.26" E | 1.852 | 555600 | 333360 |
| 34 | Koksara | Kashibahal Stone Quarry-E, Khata No-577, Plot No-1353, | 1.852 | 555600 | 333360 |
| 35 | Junagarh | Tentulikhunti Stone Quarry, Khata No.213, Plot No.86 & 87, 2.00 Ac. Lat. - 19° 49' 8.714" N Long.- 82° 58' 45.571" E | 0.809 | 121350 | 72810 |
| 36 | Junagarh | Kalopala Stone Quarry, Khata No. 9, Plot No. 1054, 3.17 Ac | 1.282 | 123000 | 86100 |
| 37 | Junagarh | Ratanpala Stone Quarry, Khata No. 245, Plot No. 860, 0.40 Ac | 0.161 | 38000 | 26600 |
| 38 | Junagarh | Dundelmal Stone Quarry, Khata No. 219, Plot No. 733, 0.20 Ac | 0.080 | 35000 | 24500 |
| 39 | Narla | Mursing Stone Quarry, Khata No.196, Plot No.250, 1.00 Ac. | 0.404 | 56560 | 33936 |
| 40 | Narla | Gumapadar Stone Quarry, Khata No. 32 & Plot No.39, 7.28 Ac. | 2.946 | 530280 | 318168 |
| 41 | Narla | Sudingpadar Stone Quarry, Khata No.34, Plot No. 141, 0.30 Ac. | 0.121 | 15730 | 9438 |
| 42 | Jaipatna | Lakhabahali Stone Quarry Khata No. 349, Plot No. 601, 8.00 Ac. | 3.230 | 481037 | 288623 |
| 43 | Jaipatna | Matualguda-1 Stone Quarry, Khata No. 322, Plot No. 499, 12.00 Ac. | 4.856 | 160000 | 96000 |
| 44 | Jaipatna | Matualguda-2 Stone Quarry Khata No. 322 Plot No. 337, 10.50 Ac. | 4.249 | 145000 | 87000 |
| 45 | Jaipatna | Amjore Stone Quarry, Khata No. 8, Plot No. 210, 7.00 Ac | 2.832 | 445000 | 267000 |
| 46 | Jaipatna | Umer Stone Quarry, Khata No. 239, Plot No.333, 2.00 Ac. | 0.809 | 20000 | 12000 |

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|--------------|-----------|--|-------|-----------------|----------------|
| 47 | Jaipatna | Lakhabhali Stone Quarry-II, Khata No.349, Plot No.601, 4.20 Ac. | 1.699 | 304696 | 258992 |
| 48 | Lanjigarh | Talipada-2 Stone Quarry, KhataNo. 10, Plot No. 246, 2.27 Ac | 0.918 | 132000 | 79200 |
| 49 | Lanjigarh | Bairikupli Stone Quarry, Khata No. 16, Plot No. 25, 4.10 Ac | 1.659 | 143000 | 85800 |
| 50 | Golamunda | Sargiguda-1 Stone Quarry, Khata No. 267, Plot No. 2156, 4.94 Ac. | 2.000 | 140000 | 84000 |
| 51 | Golamunda | Sargiguda-2 Stone Quarry, Khata No. 267, Plot No. 824, 2.84 Ac. | 1.150 | 125000 | 75000 |
| 52 | Golamunda | Baijalpur Stone Quarry-II Khata No.389, Plot No.1274, 4.00 Ac | 1.618 | 440000 | 264000 |
| 53 | Kesinga | Subendangar-I Stone Quarry, Khata No.2, Plot No.1, 9.00Ac. | 3.642 | 210000 | 126000 |
| 54 | Kesinga | Subendangar-II Stone Quarry, Khata No.2, Plot No.4, 9.00Ac. | 3.642 | 182000 | 109200 |
| Total | | | | 14511938 | 8802938 |

The total Tentative Geological & Mineable stone potential of the district shall be the sum of existing Reserve and the proposed Resource calculated in the above tables, the potentials are as follows;

| Category | Tentative Geological potential in m ³ | Tentative Mineable Potential in m ³ |
|------------------|--|--|
| Existing sources | 25193699.20 | 16418381.90 |
| Proposed sources | 14511938 | 8802938 |
| Total potential | 39705637.20 | 25221319.90 |

15. QUALITY/GRADE OF MINERAL AVAILABLE IN THE DISTRICT.

We know Kalahandi district is part of Eastern Ghat Province, hence the area is rich in hilly terrains composed of various meta-igneous group of rocks like Granite gneiss, charnokite, Khondalite etc. the colour of the rocks exposures within the district varies from light grey to dark grey, grain size of the rocks varies from medium to coarse. The rocks are

normally composed of mainly feldspar, quartz, and mild amphibole, pyroxene, olivine, biotite etc all these physical properties signifies its good cementing property and higher resistance which indicate its suitability for construction stone as the source areas have numerous fractures & joints. A very few areas are there which are devoid of fractures & joints, those can be suggested as decorative stone.

16. USE OF MINERAL.

Stone Aggregates represent about 98% of quarry output, most of which is used in road construction, maintenance and repair. Much of this goes to the production of road metal, to provide a sturdy base for roads. Only the harder more resilient rocks can be employed for most road surfacing requirements. Apart from road usage, substantial amounts are mixed (coarse gravel sized stone with finer stone particles or sand) with cement and water to make concrete. This may be carried out at the quarry or materials supplied to truck-mixers (for mixing en route) or to remote plants. An important local 'downstream' industry is that of concrete product (blocks, pipes, kerbs, pavers, etc). Not only do these produce 'added value' to the raw aggregate, they often make use of 'fines' which are a by-product of general aggregate processing, and without this market would often have to be dumped.

17. DEMAND AND SUPPLY OF THE MINERAL IN THE LAST THREE YEARS.

As such there are huge infrastructural activities such as road, building, railways are coming up by state Govt & Govt. of India.

The road metals are the main raw materials for the above activities and considering the last three years actual production of Kalahandi with respect to the requirement of the state has a huge gap.

It is proposed to start the road metal production from larger block/area to at least double the production of the district which will enhance the revenue of the district and also support the livelihood of the local people.

18. MINING LEASES MARKED ON THE MAP OF THE DISTRICT.

Please refer Plate-VI



**19. DETAILS OF THE AREA OF WHERE THERE IS A CLUSTER OF MINING LEASES
VIZ. NUMBER OF MINING LEASES, LOCATION (LATITUDE AND LONGITUDE).**

Quarries existing within 500m radius are considered as cluster of Mining Leases as per the MoEF guide lines.

| Tahasil | Mouza& Number of Mining leases | Details of the area | Location |
|----------------|---|---|--|
| Kalahandi | Kendugupka 2 no of quarries | Kendugupka- 1 Stone Quarry, Khata No. 86 Plot No. 48, 3.00 Ac | Untouched forest |
| | | Kendugupka- 2 Stone Quarry, Khata No. 86 Plot No. 83, 3.00 Ac | Untouched forest |
| | JojanaNuapada 2 no of quarries | JojanaNuapada- 2 Stone Quarry, Khata No. 04 Plot No. 34, 2.00 Ac | Lat. - 20° 01' 07.77" N Long.- 83° 13' 37.62" E |
| | | JojanaNuapada- 1 Stone Quarry, Khata No. 04 Plot No. 02, 3.00 Ac. | Lat. - 20° 01' 07.77" N Long.- 83° 13' 37.62" E |
| | Bhikajharan 2 no of quarries | Bhikajharan Stone Quarry, Khata No. 214 Plot No. 609, 0.71 Ac. | Lat. - 20° 02' 02.49" N Long.- 83° 03' 26.51" E |
| | | Bhikajharan-2 Stone Quarry, Khata no- 214, Plot no- 160, 167, 171 Area- Ac. 03.02 | Lat. - 20° 02' 02.49" N Long.- 83° 03' 26.51" E |
| | Ghusurigudi 2 no of quarries | Ghusurigudi-1 Stone Quarry, Khata no- 125, Plot no- 922, Area-2.99 Acre | Lat. - 19° 59' 28.03" N Long.- 83° 06' 05.00" E |
| | | Ghusurigudi-2 Stone Quarry Khata no- 125, Plot no- 361, Area-10.00 Ac | Lat. - 19° 58' 15.54" N Long.- 83° 05' 14.40" E |

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|------------|----------------------------------|---|--|
| Lanjhigarh | Benipokhaori 4 no of quarries | Benipakhari-1 Stone Quarry Khata no- 18, Plot no- 30 & 57, Area-12.33Ac | Lat. - 19° 52' 54.20" N Long.- 83° 24' 54.80" E |
| | | Benipakhari-2 Stone Quarry Khata no- 18, Plot no- 57 & 57, Area-12.00Ac | Lat. - 19° 52' 51.70" N Long.- 83° 24' 52.70" E |
| | | Benipakhari-4 Stone Quarry Khata no- 18, Plot no- 57, Area-10.30Ac | Lat. - 19° 52' 54.50" N Long.- 83° 24' 58.90" E |
| | | Benipakhari-5 Stone Quarry Khata no- 18, Plot no- 30 & 57, Area-11.60Ac | Lat. - 19° 52' 54.30" N Long.- 83° 24' 48.50" E |
| | Tadabala 2 no of quarries | Tadabala-1 Stone Quarry Khata no- 32, Plot no- 78 Area-5.00Ac | Lat. - 19° 58' 08.10" N Long.- 83° 25' 48.20" E |
| | | Tadabala-2 Stone Quarry Khata no- 32, Plot no- 78 Area-5.00Ac | Lat. - 19° 58' 07.50" N Long.- 83° 25' 48.20" E |
| Dharmagarh | Gadiagore 2 no of quarries | Gadiajore Stone Quarry Khata no- 8, Plot no- 1368, Area-31.04 Acre | Lat. - 19° 50' 13.00" N Long.- 83° 43' 44.00" E |
| | | Gadiajore Stone Quarry Khata no- 8, Plot no- 330, 314, Area-10.78 Acre | Lat. - 19° 51' 22.35" N Long.- 83° 43' 47.65" E |

20. DETAILS OF ECO-SENSITIVE AREA, IF ANY, IN THE DISTRICT.

The Karlapat sanctuary over a notified area 147.66 sq.km is located in Kalahandi South Division which is 12km from Bhawanipatna in Kalahandi district covering a dense patch of lush green dry deciduous forest. A beautiful waterfall, 'Phurlijharan' has been developed as a picnic spot for the local visitors and draws large number of visitors from far off places in and around Kalahandi District. Karlapat Wildlife Sanctuary is home to a plethora wildlife animals and birds. The sanctuary is rich in wildlife such as leopard, gaur, sambar, nilgai, barking deer, mouse deer, soft claws ottawa, a wide variety of birds and reptiles.

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21. IMPACT ON THE ENVIRONMENT (AIR, WATER, NOISE, SOIL, FLORA & FAUNA, LAND USE, AGRICULTURE, FOREST ETC.) DUE TO MINING ACTIVITY.

Mining is the extraction of minerals and other geological materials of economic value from deposits on the Earth. Mining adversely affects the environment by inducing loss of biodiversity, soil erosion, and contamination of surface water, groundwater, and soil. Mining can also trigger the formation of sinkholes. The leakage of chemicals from mining sites can also have detrimental effects on the health of the population living at or around the mining site.

As mentioned above, mining activities can harm the environment in several ways.

Impacts on Air

Air quality is adversely affected by mining operations. Unrefined materials are released when mineral deposits are exposed on the surface through mining. Wind erosion and nearby vehicular traffic cause such materials to become airborne. Lead, arsenic, cadmium, and other toxic elements are often present in such particles. These pollutants can damage the health of people living near the mining site. Diseases of the respiratory system and allergies can be triggered by the inhalation of such airborne particles.

Impacts on Water

Mining also causes water pollution which includes metal contamination, increased sediment levels in streams, and acid mine drainage. Pollutants released from processing plants, tailing ponds, underground mines, waste-disposal areas, active or abandoned surface or haulage roads, etc., act as the top sources of water pollution. Sediments released through soil erosion cause siltation or the smothering of stream beds. It adversely impacts irrigation, swimming,

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fishing, domestic water supply, and other activities dependent on such water bodies.

High concentrations of toxic chemicals in water bodies pose a survival threat to aquatic flora and fauna and terrestrial species dependent on them for food. The acidic water released from metal mines or coal mines also drains into surface water or seeps below ground to acidify groundwater. The loss of normal pH of water can have disastrous effects on life sustained by such water.

Noise impacts

Noise pollution mainly due to operation of machineries, occasional plying of machineries and drilling & blasting. These activities will create noise pollution in the surrounding area that affects the life of the nearby habitats.

Impact on Soil

Soil disruptions can contribute to the deterioration of the area's flora and fauna. There is also a huge possibility that many of the surface features that were present before mining activities cannot be replaced after the process has ended. The removal of soil layers and deep underground digging can destabilize the ground which threatens the future of roads and buildings in the area.

Impacts on Flora & Fauna

Often, the worst effects of mining activities are observed after the mining process has ceased. The destruction or drastic modification of the pre-mined landscape can have a catastrophic impact on the biodiversity of that area. Mining leads to a massive habitat loss for a diversity of flora and fauna ranging from soil microorganisms to large mammals. Endemic species are most severely affected since even the slightest disruptions in their habitat can result in extinction or put them at high risk of being wiped out. Toxins released through mining can wipe out entire populations of sensitive species.

22. REMEDIAL MEASURES TO MITIGATE THE IMPACT OF MINING ON THE ENVIRONMENT.

The major potential environmental impacts associated with mining and associated mineral processing operations are related to erosion-prone landscapes, soil and water quality, and air quality. These potential impacts are recognized and addressed in current mining operations as well as in some former mining operations by reclaiming areas of physical disturbance to prevent erosion, stabilizing soils containing metals or chemicals to prevent unwanted metal releases into the environment, preventing and/or treating water contamination, and controlling air emissions.

Mine closure and a number of activities to mitigate the impacts of mining are an integral part of all mine planning and mineral development from the discovery phase through to closure:

Reclamation

Soil treatment

Water treatment

Preventing acid rock drainage

Controlling gas emissions

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:

- Dust generation shall be reduced by using sharp teeth of shovels.
- Wet drilling shall be carried out to contain the dust particles.
- Controlled blasting techniques shall be adopted.
- Water sprinkling on haul roads, service roads and overburden dumps will help in reducing considerable dust pollution.
- Proper and regular maintenance of mining equipment's have to be undertaken.
- The materials are transported in trucks are to be covered with tarpaulin.

- The mine pit water can be utilized for dust suppression in and around mine area.
- Information on wind direction and meteorology are to be considered during planning, so that pollutants, which cannot be fully suppressed by engineering techniques, will be prevented from reaching the nearby agricultural land, if any.
- Comprehensive greenbelt around overburden dumps and periphery of the mining projects/clusters has to be carried out to reduce to fugitive dust transmission from the project area in order to create clean & healthy environment.

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.
- Retaining walls with weep hole are to be constructed around the mine boundaries to arrest silt wash off.
- The mined out pits shall be converted in to the water reservoir at the end of mine life. 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 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, haul roads to reduce the noise.
- Provision of earplugs to workers exposed to high noise generating activities like blasting, excavation site etc. Worker and operators at work sites will be provided with earmuffs.

- Conducting periodical medical checkup 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 to assess efficacy of adopted control measures.
- During blasting optimum spacing, burden and charging of holes will be made under the supervision of competent qualified mines foreman, mate etc.

Biological Environment

- Development of green belt/gap filling saplings in the safety barrier left around the quarry area/ cluster area.
- 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 REGULATION, PROPOSED RECLAMATION PLAN).

Mine reclamation is the process of restoring land that has been mined to a natural or economically usable state. Although the process of mine reclamation occurs once mining is completed, the planning of mine reclamation activities occurs prior to a mine being permitted or started. Mine reclamation creates useful landscapes that meet a variety of goals ranging from the restoration of productive ecosystems to the creation of industrial and municipal resources. Modern mine

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Potential Reserve as per Approved Mining plan of Existing Sources of Stone

| SI No. | Name of Tahasil | Name of Source | Geological reserve as per approved Mining Plan of existing quarries (in m ³) | Mineable reserve as per approved Mining Plan of existing quarries (in m ³) |
|--------|-----------------|---|--|--|
| 01 | M-Rampur | Pandapadar & Dalabahali Stone Quarry | 648277 | 390079 |
| 02 | M-Rampur | Sidingpadar Stone Quarry | 648277 | 390079 |
| 03 | Lanjigarh | Benipakhari-1 Stone Quarry | 627745 | 349002 |
| 04 | Lanjigarh | Benipakhari-2 Stone Quarry | 612390 | 282360 |
| 05 | Lanjigarh | Benipakhari-4 Stone Quarry | 980427 | 566138 |
| 06 | Lanjigarh | Benipakhari-5 Stone Quarry | 898434 | 524286 |
| 07 | Lanjigarh | Tadabala-1 Stone Quarry | 245584 | 124709 |
| 08 | Lanjigarh | Tadabala-2 Stone Quarry | 259638 | 136653 |
| 09 | Lanjigarh | Talipada Stone Quarry | 136974 | 61553 |
| 10 | Junagarh | Kalopala Stone Quarry | 134485 | 56524 |
| 11 | Karlamunda | Abujbahal-1 Stone Quarry | 996588 | 581040 |
| 12 | Kalahandi | Bhikajharan-2 Stone Quarry, Ac. 03.02 | 221769 | 68364 |
| 13 | Kalahandi | Gajkhola Stone Quarry | 125695 | 84940 |
| 14 | Kalahandi | Tentulichuan Stone Quarry | 119520 | 77850 |
| 15 | Kalahandi | Ghusurigudi-1 Stone Quarry 2.99 Acre | 256710 | 159000 |
| 16 | Kalahandi | Ghusurigudi-2 Stone Quarry 10.00 Acre | 1139333 | 803803 |
| 17 | Kalahandi | Jamunabahal Stone Quarry | 469000 | 248068 |
| 18 | Kalahandi | Karlasoda Stone Quarry | 925200 | 373576 |
| 19 | Kalahandi | Kerandihapar Stone Quarry | 96691.6 | 483876 |
| 20 | Kalahandi | Mankadipada Stone Quarry 8.00 Acre | 567374 | 363822 |
| 21 | Kalahandi | Turpi Stone Quarry | 479617 | 312950 |
| 22 | Dharamgarh | Gadijore Stone Quarry of JibanJyoti Panda 31.04Acre | 2524248 | 1594844 |

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| | | | | |
|--------------|------------|---|-------------------|-------------------|
| 23 | Dharamgarh | Gadiajore Stone Quarry of Rasmiranjanjena 10.78 Acre | 676531 | 420304 |
| 24 | Dharamgarh | Turihaldi Stone Quarry | 424166 | 49820 |
| 25 | Dharamgarh | Kankeri Stone Quarry | 823080 | 525668.30 |
| 26 | Koksara | Jaltamunda Stone Quarry of Subash Chandra Mund 7.00 Acre | 652548 | 328174 |
| | | Jaltamunda Stone Quarry of Subash Chandra Mund 6.00 Acre | 365603 | 137590 |
| 27 | Koksara | Sarasmal Stone Quarry | 3935898 | 3124560 |
| 28 | Kesinga | Baramuni Dangar Stone Quarry | 1244570 | 624272 |
| 29 | Kesinga | Kurlupada Stone Quarry | 1127814 | 302348 |
| 30 | Kesinga | Kantesir Stone Quarry | 147052.6 | 970431.6 |
| 31 | Kesinga | Kinerkela Stone Quarry | 660442 | 461201 |
| 32 | Golamunda | Sargiguda Stone Quarry | 70773 | 32177 |
| 33 | Golamunda | Baijalpur Stone Quarry | 1951245 | 1408320 |
| Total | | | 25193699.2 | 16418381.9 |

Similarly, as per UNFC (*United Nations Framework Classification*) of potentials of minerals A '**Mineral Resource**' is a concentration or occurrence of material of intrinsic economic interest in or on the Earth's crust in such form, quality and quantity that these are reasonable prospects for eventual economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge.

The resource figures are quoted as being of intrinsic economic interest, depending on the results of a Prefeasibility Study and feasibility Study. Generally, only in-situ resource figures are reported at this stage of geological assessment. Mineral Resources are subdivided, in order of increasing geological confidence, into inferred, indicated and measured categories. Portions of a deposit that do not have reasonable prospects for eventual economic extraction must not be included in a Mineral Resource.

For assessment of potential resources of *new sairat sources of Stone*, a

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reclamation minimizes and mitigates the environmental effects of mining.

In Kalahandi district no stone Quarry has been reported as exhausted of mineral, hence no reclamation approach has been implemented in present date. Mainly two types of reclamation proposal are normally proposed i.e. Firstly Back filling of the exhausted mine by mine generated waste and capping of top soil for forest plantation and growth. Secondly proper fencing of quarried area and can be developed as water reservoir, fishery development or tourist attraction points after the life of the mine.

24. RISK ASSESSMENT & DISASTER MANAGEMENT PLAN.

Risk assessment is the determination of quantitative or qualitative value of risk related to a concrete situation and a recognized threat. Activities requiring assessment of risk due to occurrence of most probable instances of hazard and accident are both onsite and off-site. It must be realized that any incident may develop into a major emergency even with the best safety measures and programmes in any industry. Hence, an Emergency procedure will be planned properly and documented to help in reducing time loss, chaos and confusion at the hour of need by assigning person who will engage in meeting emergency smoothly and effectively. Any accident which has potential to develop into a major emergency can threaten large number of person or large area of the industries on the site may affect safety of the public, property and environment. Hence, it is absolutely essential that emergency procedures will be properly planned and documented.

Stone quarry mining is an opencast practice in the district, hardly cause disastrous situation except bench failure if the slope of the benches are not well maintained and height of the benches are exceptionally high not executed as per the approved Plan. Any disastrous situation raised in the mining area must be reported to the concern authorities as soon as possible.

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25. DETAILS OF THE OCCUPATIONAL HEALTH ISSUES IN THE DISTRICT. (LAST FIVE-YEAR DATA OF NUMBER OF PATIENTS OF SILICOSIS & TUBERCULOSIS IS ALSO NEEDS TO BE SUBMITTED).

As per the data provided by CDMO, Kalahandi *Tuberculosis* patients cases of last 5 years is as follows;

| SI No | Year | TB Cases |
|-------|------|--------------------|
| 01 | 2014 | 1633 |
| 02 | 2015 | 1703 |
| 03 | 2016 | 1629 |
| 04 | 2017 | 1411 |
| 05 | 2018 | 1427 |
| 06 | 2019 | 1224 till 14.10.19 |

No case of Silicosis recorded in the district.

26. PLANTATION AND GREEN BELT DEVELOPMENT IN RESPECT OF LEASES ALREADY GRANTED IN THE DISTRICT.

As the stone quarry lease within the district are non-forest lands rather revenue lands. As per the guidelines prescribed by OMMCR-2016 a safety zone of 7.5m has been considered for all quarry leases all along the inside of boundary line. Plantation proposal has been usually stated in the approved Mining Plans for all quarry leases. Saplings of local plants have been proposed to be planted in the safety zone area of quarries.

27. ANY OTHER INFORMATION.

Kalahandi district has a glorious rich cultural past, rich in agriculture. It is at the northern marginal area of Eastern Ghat Province having potential of several valuable minerals like Bauxite, gem stones, dimension stones, ordinary stones, sand etc. Systematic & scientific application of technologies in all fields will definitely enhance the livelihood of the common man of the area and the district can contribute a major part in thriving of the state as well as the nation.

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As per Point-09 of notification the details of the leases in the district as per the following format are:

ANNEXURE-I

In this case only **Stone/Road metal** has been considered.

| Sl. No | Name of the Tahasil | Name of the Mineral | Name of the Lessee | Address & Contact No. of Lessee | Mining lease Grant Order No. & date | Area of Mining lease (ha) | Period of Mining lease (Initial) | | Date of commencement of Mining Operation | Status (Working/Non Working/Temp. Working for dispatch etc.) | Obtained Environmental Clearance (Yes/No), If Yes Letter No with date of grant of EC | Location of the Mining lease (Latitude & Longitude) |
|--------|---------------------|--------------------------------|--------------------|---|-------------------------------------|---------------------------|----------------------------------|---------|--|--|--|---|
| | | | | | | | 8 From | 9 To | | | | |
| 1. | Lanjigarh | Benipokhari -1 Stone Quarry | Sri Jagdeep Bansal | At/Po/PS-Kantabanji, Dist-Bolangir 9556159744 | No.119 Dt. 13.01.18 | 4.989 | 13.1.18 | 31.3.21 | 30.01.18 | Working | No. 72/DEIAA Dt. 23.12.17 | Benipokhari-1 Khata No. 18. Plot No. 57 Lat.-19 ⁰ 52' 55.38"N Long.- 83 ⁰ 24' 54.92"E |
| 2. | Lanjigarh | Benipokhari -2 Stone Quarry | Sri Niraj Agrawal | Club Pada, Bolangir 9438002222 | No. 153 Dt. 24.01.18 | 4.856 | 24.1.18 | 31.3.21 | 30.01.18 | Working | No. 74/DEIAA Dt. 23.12.17 | Benipokhari-2 Khata No. 18. Plot No. 57 Lat.-19 ⁰ 52' 53.71"N Long.- 83 ⁰ 24' 54.96"E |

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| 3 | Lanjigarh | Benipokhari-4 Stone Quarry | Sri AnandBharati | 14-1-Nanraji Road, 135/10 Visakhapatnam 9966110933 | No. 169 Dt. 27.01.18 | 4.168 | 27.1.18 | 31.3.21 | 30.01.18 | Working | No. 76/DEIAA Dt. 23.12.17 | Benipokhari-4 Khata No.18. Plot No. 57 Lat.- 19 ⁰ 52'5.16"N Long.- 83 ⁰ 25' 04.96"E |
| 4 | Lanjigarh | Tadabala-1 Stone Quarry | Sri P.K. Agrawal | At/Po-Lanjigarh Dist.-Kalahandi 9861655618 | No.134 Dt. 15.01.18 | 2.023 | 15.1.18 | 31.3.21 | 30.01.18 | Working | No 68/DEIAA Dt. 23.12.17 | Tadabala-1Khata No. 32. Plot No. 78 Lat.- 19 ⁰ 58' 22.18"N Long.- 83 ⁰ 25' 57.41"E |
| 5 | Lanjigarh | Tadabala-2 Stone Quarry | Sri Sameer Kumar Budhia | Mundagoan Narla, Dist-Kalahandi 9668244555 | No. 147 Dt. 19.01.18 | 2.023 | 19.1.18 | 31.3.21 | 30.01.18 | Working | No. 70/DEIAA Dt. 23.12.17 | Tadabala-2 Khata No. 32. Plot No. 78 |
| 6 | Koksara | Sarasmal Stone Quarry | Sri Kishor ChandranNaik | At-Sarasmal Po-Dangriguda PS- Koksara Dist-Kalahandi | No. 1850 Dt. 22.09.15 | 11.33 | 29.8.17 | 28.8.20 | 29.08.17 | Working | No. 3168/SEIAA Dt. 21.06.17 | Sarasmal Khata No. 8 & Plot No. 39 |

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| | | | | | | | | | | | | |
|----|-----------|----------------------------|-------------------------|-----------------------------------|-----------------------|-------|----------|----------|------------|---------|-----------------------------|--|
| 7 | Koksara | Jaltamunda Stone Quarry | Sri Subash Chandra Mund | At/Po/PS-Jaipatna Dist-Kalahandi | No. 1421 Dt. 06.07.15 | 5.26 | 01.7.16 | 30.06.21 | 01.07.2016 | Working | No. 1616/SEIAA Dt. 21.06.16 | Jaltamunda Khata No. 156. Plot No. 1101 & 1191 |
| 8 | Kalahandi | Keran dihapar stone Quarry | Sri B.K. Behera | Bhawanipatna Dist-Kalahandi | Dt.16.03.15 | 0.809 | 01.07.16 | 30.06.21 | 01.07.2016 | Working | No. 34/DEIAA Dt.20.05.16 | Lat.- 19 ⁰ 49'34.50 0"N Long.- 83 ⁰ 11'54.10 "E |
| 9 | Kalahandi | Turpi Stone Quarry | Sri Jadumani Sahoo | Turpi Bhawanipatna Dist-Kalahandi | Dt.23.03.15 | 2.023 | 01.07.16 | 30.06.21 | 01.07.2016 | Working | No. 50/DEIAA Dt.20.05.16 | Lat.- 20 ⁰ 01'32.60 "N Long.- 83 ⁰ 04'26.400 "E |
| 10 | Kalahandi | Ghusrigudi-1 stone Quarry | Sri B.P. Das | Bhawanipatna Dist-Kalahandi | Dt.16.03.15 | 1.21 | 01.07.16 | 30.06.21 | 01.07.2016 | Working | No. 48/DEIAA Dt.20.05.16 | Lat.- 19 ⁰ 59'28.30 "N Long.- 83 ⁰ 06'05.00 " E |
| 11 | Kalahandi | Bhikajharan Stone Quarry | Sri A. Pradhan | Bhawanipatna Kalahandi | Dt.16.03.15 | 1.222 | 17.07.16 | 16.07.21 | 17.07.2016 | Working | No. 36/DEIAA Dt.20.05.16 | Lat.- 20 ⁰ 02'2.49" N Long.- 83 ⁰ 05'26.51 " E |

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|----|-----------|---------------------------|--------------------|------------------------|-------------|-------|----------|----------|------------|---------|-------------------------------|---|
| 12 | Kalahandi | Gajkhola Stone Quarry | Sri U.C. Panda | Bhawanipatna Kalahandi | Dt.16.03.15 | 0.809 | 11.08.16 | 10.08.21 | 11.08.2016 | Working | No. 44/DEIAA Dt.20.05.16 | Lat.- 20°39'54.63"N Long.- 82°38'52.60"E |
| 13 | Kalahandi | Tentulichuan Stone Quarry | Sri Rajesh Thakur | Bhawanipatna Kalahandi | Dt.18.03.15 | 1.375 | 31.12.15 | 30.12.20 | 31.12.2015 | Working | No. 3899/SEIAA Dt.14.08.15 | Lat.- 19°58'39.10"N Long.-83° 06'00.10"E |
| 14 | Kalahandi | Ghusrigudi-2 Stone Quarry | Sri Rajesh Thakur | Bhawanipatna Kalahandi | Dt.30.05.16 | 4.046 | 09.06.17 | 08.06.22 | 09.06.2017 | Working | No. 38/DEIAA Dt.24.04.17 | Lat.- 19°58'15.54"N Long.-83° 05'14.40"E |
| 15 | Kalahandi | Jamunabahal Stone Quarry | PrabeenKu. Khamari | Bhawanipatna Kalahandi | Dt.23.03.15 | 4.37 | 19.07.16 | 18.07.21 | 19.07.2017 | Working | No. 46/DEIAA Dt.20.05.16 | Lat.- 19°58'09.20"N Long.- 83°12'59.00"E |
| 16 | Kalahandi | Karlasoda Stone Quarry | Ashish Ku. Agrawal | Kesinga Kalahandi | Dt.22.05.17 | 5.000 | 16.04.18 | 15.04.23 | 16.04.2018 | Working | No. 85/DEIAA Dt.26.02.18 | Lat.- 20°11'50.02"N Long.- 82°04'12.48"E |

Collector, Kalahandi
Asst. Collector
Touzi Section

[Signature]

| | | | | | | | | | | | | |
|----|------------|---------------------------|----------------------|---------------------------------|-----------------------|-------|----------|----------|------------|---------|--------------------------|---|
| 17 | Kalahandi | Manki dipada Stone Quarry | B.S. Sandhu | Bhawanipatna Kalahandi | Dt.30.05.16 | 3.23 | 20.03.18 | 19.03.23 | 20.03.2018 | Working | No.83/DEIAA Dt. 26.02.18 | Lat.- 20°08'09.65"N Long.- 83°07'18.69"E |
| 18 | Dharmagarh | Turihaldi Stone Quarry | Dinesh Kumar Agrawal | Dharmagarh Kalahandi 9437076928 | No. 1658 Dt. 30.07.15 | 4.957 | 2015-16 | 2019-20 | 26.06.2015 | Working | No.66/DEIAA Dt. 20.05.16 | Turihaldi Khata No. 275 Plot No. 1576, 1578, 1127, 1587, 1591, 1129 Lat.- 19°50'15.52"N Long.- 82°43'32.68"E |

Asst. Collector
Touzi Section
Kalahandi

(Signature)

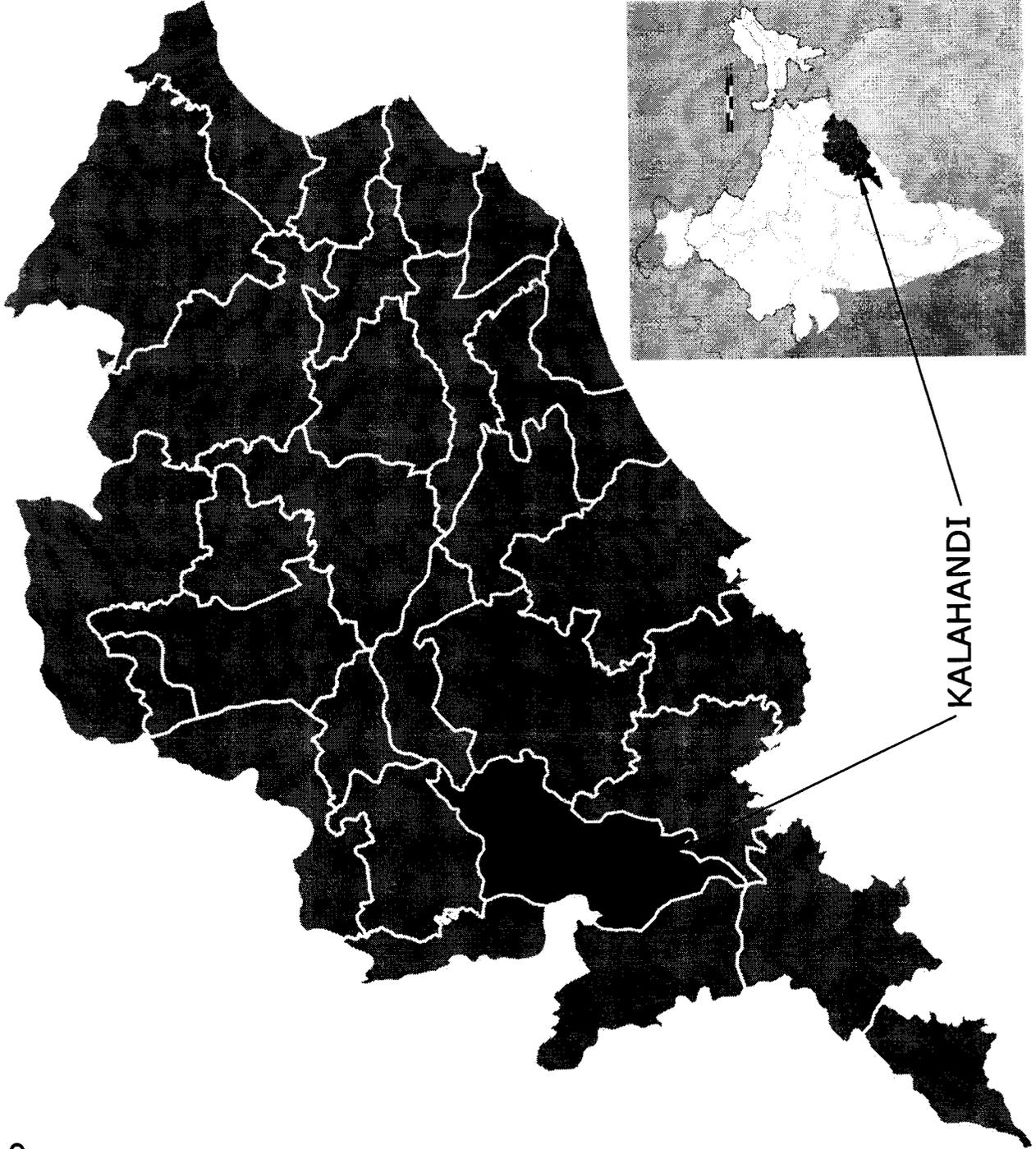
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|----|--------------|--|--------------------|-----------------------------------|--------------|-------|-------|-------|----------|---------|---|--|
| 19 | Junagar h | Kalop ala Stone Quarry | Brajendra Meher | Chichaiguda Dist- Kalahandi | - | 0.809 | 2018 | 2021 | 11.7.18 | Working | No.87/ DEIAA Dt. 26.12.18 | Khata No.9, Plot No.1452 &1 Lat.- 19 ⁰ 45'57.307 "N Long.- 82 ⁰ 49'41.739 "E |
| 20 | Kesinga | Bara muni D angar Stone Quarry | Seikh Rahim | Kesinga, Dist- Kalahandi | 23.12.1 6 | 5.665 | 16-17 | 20-21 | 23.12.16 | Working | No. 1647/ SEIAA, Dt. 01.06.16 | Lat.- 20 ⁰ 06'02.04 "N Long.- 83 ⁰ 14'22.88" E |
| 21 | Kesinga | Kurlupad a Stone Quarry | Raj Ku. Agrawal | Kesinga, Dist- Kalahandi | 30.05.16 | 2.205 | 16-17 | 20-21 | 30.05.16 | Working | No. 40/ DEIAA 20.05.16 | Lat.-20 ⁰ 11'38.20"N Long.-83 ⁰ 15'3.80"E |
| 22 | Kesinga | Kantesir Stone Quarry | Raj Ku. Agrawal | Kesinga, Dist- Kalahandi | 30.05.17 | 2.751 | 17-18 | 21-22 | 30.05.17 | Working | No. 38/DEIAA 20.05.16 | Lat.-20 ⁰ 12'48.10"N Long.-83 ⁰ 16'12.30"E |

Asst. Collector
 Touzi Section
 Kalahandi



| | | | | | | | | | | | | |
|----|---------------|--------------------------------------|--------------------|---------------------------------|----------|-------|----------|----------|----------|---------|--|---|
| 23 | Kesinga | Kinerkel a Stone Quarry | Raj Ku. Agrawal | Kesinga, Dist- Kalahandi | 30.05.18 | 2.326 | 18-19 | 22-23 | 30.05.18 | Working | No. 42/DEIAA 20.05.16 | Lat.-20 ⁰ 15'36.50"N Long.-83 ⁰ 16'33.20"E |
| 24 | Golamu nda | Sargig uda Stone Quarr y | Sanjib Ku. Dash | Kandamal, Dist- Kalahandi | - | 0.473 | 17-18 | 21-22 | - | Working | - | Lat. 19 ⁰ 59'22.77"N Long.-82 ⁰ 46'50.08"E |
| 25 | Golamu nda | Baijal pur Stone Quarr y | Niraj Agrawal | At/Po- Bolangir | - | 2.630 | 11.01.21 | 11.01.25 | - | Working | No.10161 /SEIAA, dt. 17.12.20 | Lat.20 ⁰ 01'21.07"N Long.-82 ⁰ 48'55.08"E |

NB: in the above table omitted Columns are,
 Column **10&11** Period of Mining lease (1st/2nd...renewal)-**NA**
 Column **14** Captive/ Non Captive- **All Non Captive**
 Column **16** Method of Mining (Opencast/Underground)- **All Open cast**



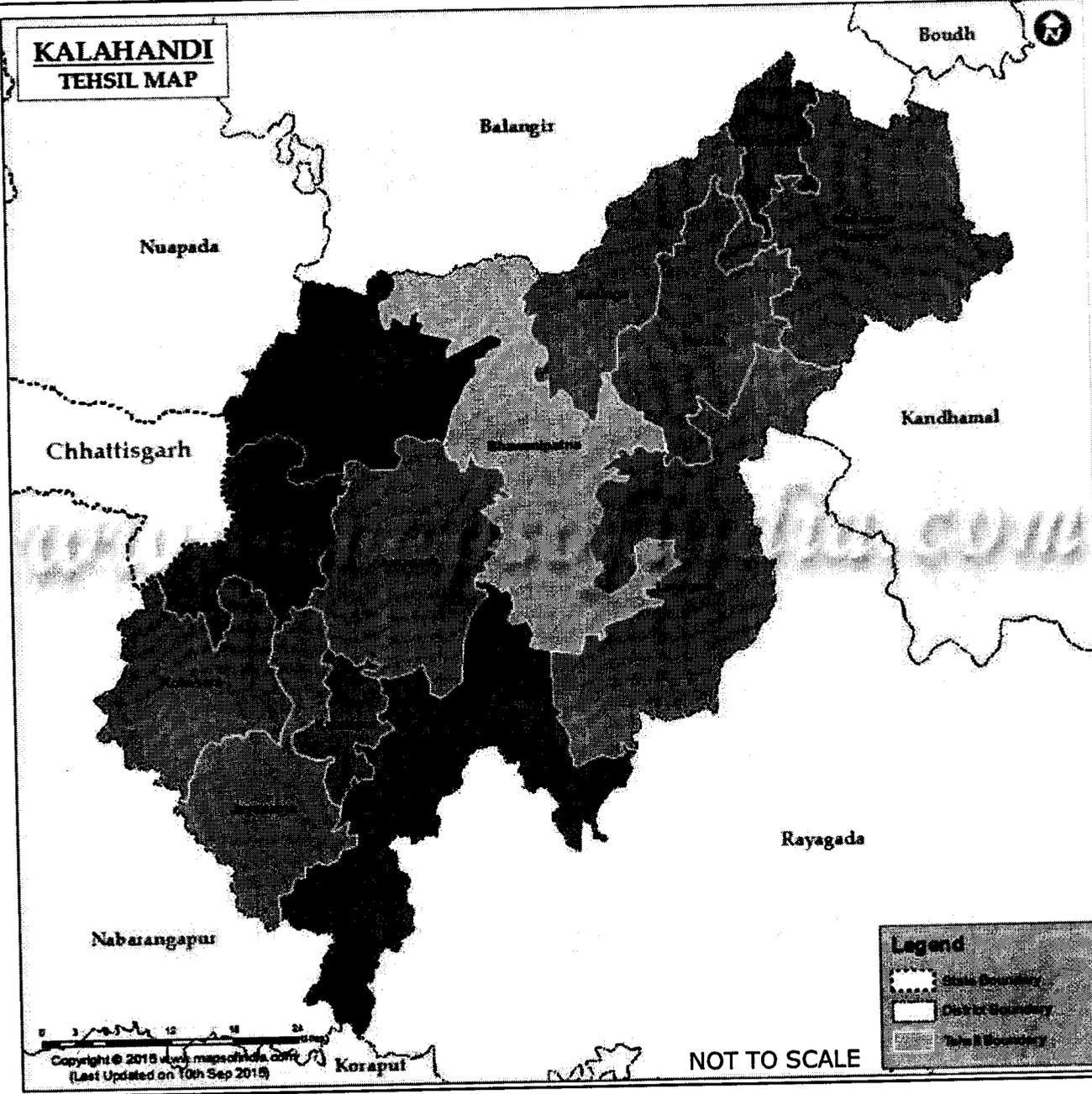
KALAHANDI

INDEX MAP

Devi
Asst. Collector
Touzi Section
Collectorate, Kalahandi

Devi

**KALAHANDI
TEHSIL MAP**



Collectorate, Kalahandi
Asst. Collector
Touzi Section

[Handwritten Signature]

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(Last Updated on 10th Sep 2015)

HYDROGEOLOGICAL MAP OF KALAHANDI DISTRICT, ORISSA



20°
15'

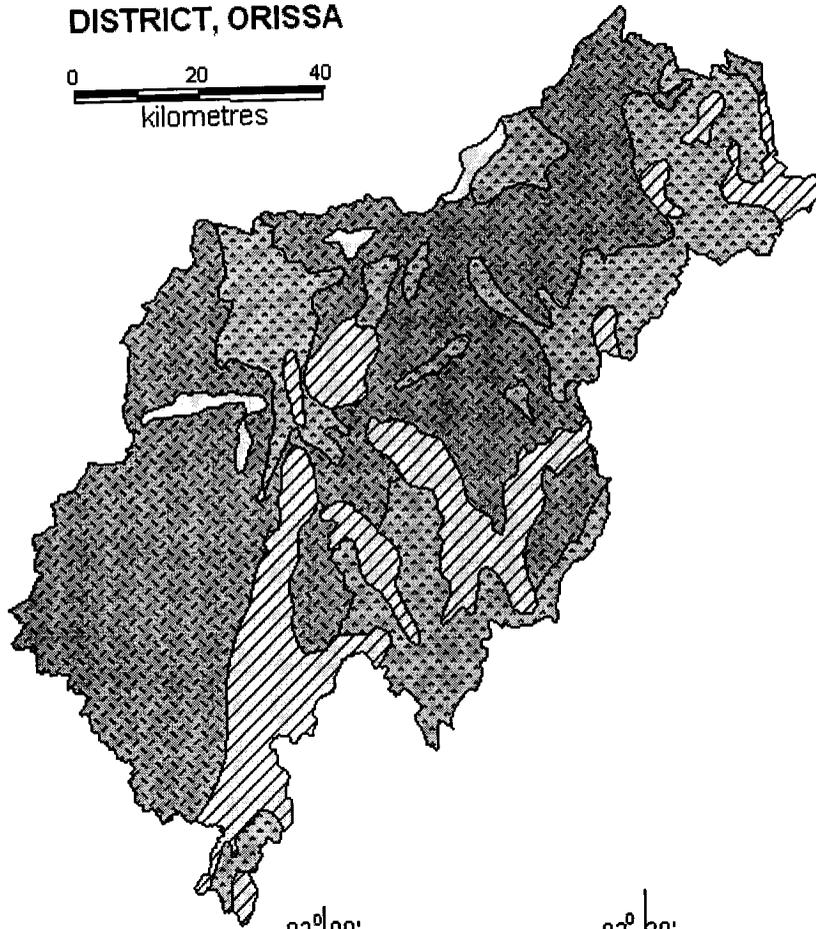
19°
45'

19°
15'

82° 30'

83° 00'

83° 30'



LEGEND

UNCONSOLIDATED FORMATIONS
 CONSOLIDATED FORMATIONS

| AGE GROUP | LITHOLOGY | HYDROGEOLOGICAL CONDITIONS | GROUND WATER POTENTIAL |
|------------|--|--|--|
| QUATERNARY | RECENT ALLUVIUM, LATERITES & LATERITIC GRAVELS |  THIN DISCONTINUOUS PATCHES FORMING SHALLOW AQUIFERS | LIMITED TO MODERATE YIELD PROSPECTS BELOW 20m ³ /Hr. |
| ARCHEAN | GRANITE & ITS VARIANTS |  FISSURED FORMATION GROUND WATER RESTRICTED TO RESIDUUM AND FRACTURE ZONE HAVING SECONDARY POROSITY | LIMITED TO MODERATE YIELD PROSPECTS BELOW 30 m ³ /Hr. |
| | CHARNOCKITES |  | |
| | KHONDALITES |  | |

Kalab
 Asst. Collector
 Touzi Section
 Collectorate, Kalahandi

BA
 11.2.22
 Addl. District Magistrate
 Kalahandi


 11/2/2022