



SEIAA File No. SIA/OR/MIN/426984/2023

Subject: Proposal of Collector & DM, Balasore for approval of District Survey Report for Mining of Sand, Stone, Morrum, Brick Earth located in District-Balasore, State-Odisha for the period 2023-2028 - reg.

This has reference to your online proposal No. SIA/OR/MIN/426984/2023 dated 24.04.2023, submitted to SEIAA, Odisha for approval of District Survey Report of District Balasore for Mining of Sand, Stone, Morrum, Brick Earth for the period 2023-2028 located in District-Balasore, State-Odisha in terms of the provisions of the Environment Impact Assessment (EIA) Notification, 2006 under the Environment (Protection) Act, 1986 and subsequent amendments thereto, i.e. the SSMMG-2016 and EMGSM-2020 and in pursuance of MoEF & CC, GoI Notification dated 15.01.2016 & 25.07.2018.

2. Proposal in Brief:-

Proposal No.	SIA/OR/MIN/426984/2023
Date of Application	24.04.2023
File No.	SIA/OR/MIN-DSR-BLS/426984/2023
Project	DSR of Minor Mineral
Category	Minor Minerals
Name of the Project	Proposal of Collector & District Magistrate, Balasore for approval of District Survey Report of District Balasore for Mining of Sand, Stone, Morrum, Brick Earth for the period 2023-2028 located in District-Balasore, State-Odisha.
Name of the company/Organization	Applicant: Collector & District Magistrate, Balasore
Location of Project	District-Balasore, State-Odisha

3. District Survey Report (DSR) Details: The highlights of the DSR as ascertained from the application as submitted by PP and as revealed from proceedings/discussion held during the meeting of SEAC/SEIAA, are given as under.

- (i) This is a proposal for approval of District Survey Report (DSR) of District Balasore for Mining of Sand, Stone, Morrum, Brick Earth located in District-Balasore, State-Odisha for a period of 5 years i.e from 2023-2028 .

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- (ii) Project in Brief: The District Survey Report (DSR) has identified 238 Nos. of sairat source with quantification and feasibility for mining considering various environmental proximity of protected area, infrastructure, forest, important structures, habitation, prohibited area etc. The detailed list of sairat sources in various Tahasil is mentioned below.

List of Sairat Sources of Balasore District at a glance

Sl. No	Name of the Tahasil	Sand	Stone	Brick Earth / Soil	Morrum	Grand Total
1.	Remuna	10		05		15
2.	Jaleswar	19		02	05	26
3.	Basta	07		03		10
4.	Baliapal	02				02
5.	Nilgiri	08	09	03	02	22
6.	Khaira		97			97
7.	Soro		63			63
8.	Aupada				02	02
9.	Balasore	01				01
		47	169	13	09	238

4. The Hon'ble Supreme Court in its Order dated 10.11.2021 in Civil appeal No-3661-3662 of 2020 in the matter of State of Bihar & others Vs Pawan Kumar & Others have directed that the draft DSRs shall be prepared by the Sub-Divisional Magistrate, Officers from Irrigation Department, State Pollution Control Board or Committee, Forest Department, Geological or mining officer. The same shall be prepared by undertaking site visits and also by using modern technology. The draft DSRs prepared shall be forwarded by the District Magistrate of the concerned District for examination and evaluation by the SEAC. After examine, the report shall be forwarded to the SEIAA and the SEIAA will thereafter consider the grant of approval to such DSRs. The appraisal thereof by SEAC & SEIAA should ensure that a strict adherence to the procedure and parameters laid down in the MoEF&CC Policy of January 2020 should be followed.
5. Further in a specific case, the Hon'ble NGT, EZ Bench Kolkata in its order dated 08.02.2022 in OA No. 63/2020/EZ in the matter of Haripada Manna Vs District Collect, Balasore has directed the State Environment Impact Assessment Authority (SEIAA), Odisha in coordination with State Expert Appraisal Committee (SEAC), Odisha, to examine the DSR for Balasore district, Odisha as submitted by the Additional District Magistrate, Balasore, vide his letter no. 449 dated 15.01.2022 & the Environmental Scientist, SEIAA, Odisha vide letter no. 3943/SEIAA dated 28.01.2022 & pass appropriate orders in accordance with law within a period of one month.

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6. The draft DSR of Balasore for Sand, Stone, Morrum, Brick Earth was examined by SEAC in its meeting held on 13.05.2022, 20.08.2022, 14.10.2022 & 12.04.2023. The SEAC has recommended the DSR with the following observations :-

General:

- This DSR is stated to have been examined by DEIAA, but the agency/ expert (s) prepared the same is not made known.
- It is stated to be an Interim report.
- In fact, it needs to be prepared by agency accredited by QCI/NABET
- This report has no back up any scientific basis.
- However, this DSR contains 04 minor minerals namely, Morrum, Brick earth / ordinary soil, road metals and river sand.
- The report contains information for three financial years, 2016-17, 2017-18 & 2018-19 and not the latest years like 2019-20 to 2021 2022.

DSR for Morrum:

- 12 Tahasils have been identified through field observations and no quarry lease has been granted.
- No Production and hence, no royalty / revenue in these three years.
- Information of Geological reserve, mineable reserve, location of the mining lease etc. are stated to be not applicable/ not available.

DSR for Brick Earth / Ordinary Soil:

- No quarry lease has been granted and no royalty/ revenue received during the above three years.
- production in these three years.
- It is stated that mineral reserve of brick earth will be assessed after detail study or grant of potential area.
- Potential sources of Brick manufacturers in respect of 4 Tahasils covering 13 villages having 23 manufacturers have been mentioned.

DSR for Road Metals:

- Royalty/ Revenue received from 3 Tahasils for the year 2016-17 2018-19 with corresponding production figures are furnished including clusters.
- It is NIL in case of rest of the Tahasils.

DSR for River Sand:

- Statistics on Royalty/ Revenue received from 5 Tahasils out of 12 stated to have been identified are available and so also corresponding volumetric production quantity.

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- It is stated that process of deposition of sediments is moderate/ slow and volume of deposition in these above 3 years is Blank.
 - No replenishment study is found to be carried out and no recovery factor is determined.
 - No mention about MOEF guidelines 2020 and therefore, compliance of the same on the rivers is absent in any of the important rivers like Subarnar Rekha, Budha Balanga, Jalaka, Sona and Kasbans.
 - Replenishment Study Methodology decided by SEAC may be adopted.
7. The DSR Balasore was deliberated by SEIAA in its meeting held on 25.05.2022 and 17.10.2022. The Authority observed that the DSR has not been prepared in accordance with the MoEF & CC Guidelines in the matter. Further, SEIAA in its meeting held on 16.12.2022 directed that the draft DSR be placed in public domain inviting comments / suggestions and the comments/suggestions are required to be considered and incorporated as deemed appropriate.
8. The final DSR of Balasore was submitted to SEIAA on 05.04.2023. Since, all approval of SEIAA is now carried out through the online Parivesh portal, the Authority decided to process the DSR through online Parivesh portal of MoEF & CC,GoI.
9. The matter was examined in the State Environment Impact Assessment Authority (SEIAA), Odisha in its 115th meeting held on 24.04.2023, with recommendation of SEAC for approval of DSRs for Sand, Stone, Morrum and Brick Earth of Balasore District in accordance with the EIA Notification, 2006 and further amendments thereto ensuring strict adherence to terms of the SSMMG-2016 and EMGSM-2020 of MoEF & CC, Govt. of India. The Authority observed the following:
- (i) The District Survey Report has been prepared afresh and it has been signed by the Collector & District Magistrate, Balasore along with members of designated Sub-Committee consisting of Sub-Divisional Magistrate and District Level Officers from Irrigation Department, State Pollution Control Board, Forest Department and Mining Department.
 - (ii) A certificate has been endorsed on the body of DSR for each category of mineral stating that a survey has been carried out by the District Environment Impact Assessment Authority (DEIAA) with the assistance of Geology Department Irrigation Department, Forest Department, Public Works Department, Ground Water Boards, Remote Sensing Department in the District by site visit using Modern Technology and the recommendation are made on the suitability of site for mining or prohibition thereof.

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- (iii) The District Administration had requested the I & PR Department, Government of Odisha for publication of advertisement in a daily local and National News paper seeking comments of the General Public on the list of Mining Lease included in DSR. The I&PR Department has given advertisement on 01.03.2023 vide advertisement No. 24167IPR. The Draft DSR has been placed in the public domain i.e. in the District web portal for 30 days from 01.03.2023 to 30.03.2023 as well as in local newspaper "Samaj" dated 03.03.2023.
- (iv) The comments received have been considered and incorporated as deemed appropriate. Further, the ADM, Balasore, duly authorized by Collector & District Magistrate, Balasore held a public consultation on 31.03.2023 at 4.00 PM in the Office Chamber of the ADM, Revenue, Balasore. The views expressed by the public were heard before finalizing the DSR.
- (v) The mandatory Replenishment Study report is under progress and ADM, Balasore informed that one more season will be required for completion of study, after which it will be incorporated in the DSR.
- (vi) The Authority also noted that the total number of sairat sources were 249 nos. in the last DSR & the present DSR 238 nos. of sairat sources have been identified after a survey has been conducted by the DEIAA with the assistance of Irrigation Deptt, Forest Deptt, PWD, Mining Deptt, Ground Water Board & Remote Sensing Deptt. The DSR has been duly signed by the concerned District Level Officers.
- 10. Approval is conveyed under the provision of EIA Notification, 2006, as amended from time to time, for the DSR of Balasore comprising of 238 nos. of sairat sources for a period of 5 years (2023-2028) with the following conditions.**
- (i) The DSR shall form the basis for application for environmental clearance, preparation of reports & appraisal of projects.
- (ii) The DSR, Balasore shall have a validity of five years from the date of issue of this order. Report shall be updated once every 5 years.
- (iii) The final list of potential mining leases (existing & proposed) along with lease details, lease area, cluster or no cluster, total mineral reserve and maximum annual extractable limit for River Sand, Road Metal /Building Stone/ Black Stone, Brick Earth/Ordinary Soil and Morrum is enclosed at Annexure-I,II,III and IV respectively. Any alteration/modification in the parameters mentioned in the Annexures shall require prior approval of SEIAA, Odisha.
- (iv) The approval is granted on the basis of undertaking that the annual replenishment study shall be completed within a period of one year. The approval of DSR will be liable for revocation if no replenishment study is submitted by 31st May 2024.

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STATE ENVIRONMENT IMPACT ASSESSMENT AUTHORITY, ODISHA
SRF-2/1, Unit-IX, Bhubaneswar-751022, Tel: 0674-3510075, Email: seiaaodisha@gmail.com
statutory body constituted by Ministry of Environment, Forest & Climate Change under Environment
(Protection) Act, 1986

- (v) The Mining Plan shall be prepared for the sairat sources in accordance with the EMGSM-2020 and approved by Competent Authority before seeking Environmental Clearance.
- (vi) The District Authority shall put in place a monitoring mechanism as prescribed in Para 9.4 of the EMGSM-2020.
- (vii) The SEIAA Odisha reserve the right to alter / modify the above conditions or stipulate any further condition in the interest of environment protection.
11. This approval is subject to orders/judgment of Hon'ble Supreme Court of India, Hon'ble High Court and Hon'ble NGT as may be applicable.
12. Any appeal against this approval shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under section 16 of the National Green Tribunal Act, 2010.

Yours faithfully,


26/04/23
Member Secretary

Copy to

1. **Additional Chief Secretary**, Forests & Environment Dept., Government of Odisha for information.
2. **Member Secretary**, State Pollution Control Board, Odisha, Paribesh Bhawan, A/118, Nilakantha Nagar, Unit-8, Bhubaneswar for information.
3. **Additional Principal Conservator** of Forests, Integrated Regional Office (IRO), Ministry of Environment & Forests, A-31, Chandrasekharpur, Bhubaneswar for information.
4. **Collector, District Magistrate**, Balasore, Dist-Balasore, for kind information and necessary action.
5. **Secretary**, SEAC, Paribesh Bhawan, A/118, Nilakantha Nagar, Unit-VIII, Bhubaneswar for kind information.
6. Guard file for record/Website/Parivesh Portal.

SM


26/04/23
Member Secretary



Annexure-I

Minor Mineral Sources under Sadar Sub-Division.

Sand sources under Jaleswar Tahasil

Sl No	Name of the Teshil	Name of the Source	Type of Quarry	Mouza	Khata No	Plot No	Area	
1.	Jaleswar	Chalanti Sand Source	sand	Chalantai	384	738	Ac14.00 dec.	Govt.
2.	Jaleswar	Sikharpur Sand Source	sand	Sikharpur	496	1910, 1900	Ac9.00 dec. Ac3.00 dec	Govt.
3.	Jaleswar	River Block Sand Source (Ka)	sand	River Block	175	01	Ac14.00 dec	Govt.
4.	Jaleswar	River Block Sand Source (Kha)	sand	River Block	175	01	Ac13.00 dec	Govt.
5.	Jaleswar	Balikbad Sand Source	sand	Balikband	399	49	Ac14.85 dec	Govt.
6.	Jaleswar	Praharajpur Sand Source (ka)	sand	Praharajpur	466	1923	Ac13.00 dec	Govt.
7.	Jaleswar	Gobarghata Sand Source nearest to Dakhinapraharajpur	sand	Gobarghata	1414	3236	Ac17.50 dec	Govt.
8.	Jaleswar	Makrampur sand source	sand	Makrampur	01	06	Ac15.00 dec	Govt.
9.	Jaleswar	Sekhsarai sand source (Kha)	sand	Sekhsarai	142	02	Ac15.00 dec	Govt.
10.	Jaleswar	Sekhsarai sand source (Ka)	sand	Sekhsarai	142	02	Ac14.00 dec	Govt.
11.	Jaleswar	Mankidia Sand Source (Ka)	sand	Mankidia	818	01	Ac20.00 dec	Govt.
12.	Jaleswar	Bilaspur Sand Source	sand	Bilaspur	53	120	Ac80.20 dec	Govt.
13.	Jaleswar	Praharajpur sand source (Kha)	sand	Praharajpur	466	1923	Ac15.00 dec	Govt.
14.	Jaleswar	Mankidia Sand Source (Kha)	sand	Mankidia	818	1677	Ac.40.00 dec	Govt.
15.	Jaleswar	Mankidia Sand Source (Ga)	Sand	Mankidia	818	1677	Ac.35.00 dec	Govt.
16.	Jaleswar	Rajnagar Sand Source	Sand	Rajnagar	377	1295/1300	Ac.13.55 dec	Govt.
17.	Jaleswar	Gobardhanpur sand source	sand	Gobardhanpur	358	1094	Ac12.00 dec	Govt.
18.	Jaleswar	Chandibasti sand source	sand	Chormara	692	182	Ac10.00 dec	Govt.
19.	Jaleswar	Baliapal sand source	sand	Baliapal	578	2949	Ac12.00 dec	Govt.
20.	Basta	Benapura-II	Sand	Benapura	152	285	Ac14.52 dec	Govt.
21.	Basta	Dhitpura	Sand	Dhitpura	97	214	Ac12.35 dec	Govt.
22.	Basta	Kadarayan	Sand	Kadarayan	257	01	Ac12.35 dec	Govt.



23.	Basta	Devog	Sand	Devog	392	1178	Ac12.35 dec	Govt.
24.	Basta	Ambakuruchi	Sand	Ambakuruchi	304	1450	Ac7.40 dec	Govt.
25.	Basta	Benapura-I	Sand	Benapura	152	282 284	Ac3.72 dec Ac9.10 dec	Govt.
26.	Basta	MathaniPunsita	Sand	Mathani Punsita	143 227	37 25	Ac0.72 dec Ac2.36 dec	Govt.
27.	Baliapal	Badhapal Sand Source	Sand	Badhapal	717 & 718	973& 973/2548 989, 955, 956, 969, 990,1193, 11, 94, 1198, 1199, 1200, 1201, 1205, 1498,	Ac8.36 dec	Govt.
28.	Baliapal	Palabegunia Sand Sources	Sand	Palabegunia	470	270, 377, 378, 786, 793, 799,	Ac8.88 dec	Govt.
29.	Balsore	Kasaba Dahapada sand source	sand		653 143	209,210, 1429, 1483, 837	Ac101.35 dec	Govt.
30.	Remuna	Purukhi Sand Source	Sand	Purukhi	420	1340	Ac12.30 dec	Govt.
31.	Remuna	Sahupada&DumudaSand source	Sand	Sahupada& Dumuda	223 281	237, 238, 239, 240& 15	Ac7.50 dec Ac4.85 dec	Govt.
32.	Remuna	Ambulakuda	Sand	Ambulakuda	133	531	Ac12.30 dec	Govt.
33.	Remuna	Baitabanka	Sand	Ghungi	261	338 440	Ac12.20 dec	Govt.
34.	Remuna	Kathasangada-I	Sand	Kathasangad a and Haladia	286 458	123&145 1952	Ac9.75 dec	Govt.
35.	Remuna	Kathasangada-II	Sand	Kathasangad a	286	106	Ac2.60 dec	Govt.
36.	Remuna	Udambar	Sand	Udambar	211	01	Ac8.20 dec	Govt.
37.	Remuna	Makanda	Sand	Makanda	337	691, 692	Ac12.22 dec	Govt.
38.	Remuna	Hatiagand, Mukundapur& Patripal	Sand	Hatiagand, Mukundapu r &Patripal	313, 197 &69	223 & 1121, 3, 1	Ac2.75 dec Ac4.25 dec Ac1.35 dec Ac4.00 dec	Govt.
39.	Remuna	GambariaRudragopalpur	Sand	Gambharia	430, 236	574, 722,	Ac35.93 dec	Govt.



		SamilNaharapatna		Rudragopal purSamilNa harapatna		1 &510	Ac59.06 dec	
40.	Nilgiri	Pundal-I sand bed	sand	Pundal	556	1347	Ac12.35 dec.	Govt.
41.	Nilgiri	Pundal-II sand bed	sand	Pundal	556	1347	Ac 3.40 dec.	Govt.
42.	Nilgiri	Dumagandira- Laichhanpur sand source	sand	Laichhanpur	157 155	385 36	Ac12.35 dec	Govt.
43.	Nilgiri	Prtap pur sand bed	sand	Ajodhya	814	388	Ac12.25 dec	Govt.
44.	Nilgiri	Baincha-Naranpur-1 sand source	sand	Baincha- Naranpur	266	383, 384	Ac12.35 dec	Govt.
45.	Nilgiri	Balipal sand source	sand	Balipal	156	7, 495	Ac12.30 dec	Govt.
46.	Nilgiri	Ajodhya sand bed	sand	Ajodhya	814	1412	Ac12.25 dec	Govt.
47.	Nilgiri	Baincha Naranpur-3 sand bed	sand	Baincha Naranpur	266	516	Ac8.70 dec	Govt.



Annexure-II

Minor Mineral Sources under Sadar Sub-Division.

Stone Quarries under Soro Tahasil

Sl No	Name of the Teshil	Name of the Source	Type of Quarry	Mouza	Khata No	Plot No	Area	
1.	Soro	Mahumuhan Stone Quarry No-4	Stone	Mahumuhan	744	297	A2.00	Govt.
2.	Soro	Mahumuhan Stone Quarry No-6	Stone	Mahumuhan	746	297	A 0.50	
3.	Soro	Khanjamahal Sone Quarry No- 34	Stone	Khanjamahal	144	161	A 1.50	Govt.
4.	Soro	Khanjamahal Sone Quarry No- 35	Stone	Khanjamahal	144	161	A 1.50	Govt.
5.	Soro	Khanjamahal Sone Quarry No- 36	Stone	Khanjamahal	144	161	Ac 1.00	Govt.
6.	Soro	Khanjamahal Sone Quarry No- 37	Stone	Khanjamahal	144	161	A 2.00	Govt.
7.	Soro	Khanjamahal Sone Quarry No- 38	Stone	Khanjamahal	144	161	Ac 1.00	Govt.
8.	Soro	Khanjamahal Sone Quarry No- 39	Stone	Khanjamahal	144	161	A 2.00	Govt.
9.	Soro	Khanjamahal Sone Quarry No- 41	Stone	Khanjamahal	144	161	A 2.50	Govt.
10.	Soro	Khanjamahal Sone Quarry No-42	Stone	Khanjamahal	144	161	A 2.50	Govt.
11.	Soro	Khanjamahal Sone Quarry No-43	Stone	Khanjamahal	144	160	A 1.00	Govt.
12.	Soro	Khanjamahal Sone Quarry No-44	Stone	Khanjamahal	144	168	A2.00	Govt.
13.	Soro	Khanjamahal Sone Quarry No-45	Stone	Khanjamahal	144	168	A 2.00	Govt.
14.	Soro	Khanjamahal Sone Quarry No-46	Stone	Khanjamahal	144	168	A 2.00	Govt.
15.	Soro	Khanjamahal Sone Quarry No-47	Stone	Khanjamahal	144	168	A0 .50	Govt.
16.	Soro	Khanjamahal Sone Quarry No-48	Stone	Khanjamahal	144	168	A 2.00	Govt.
17.	Soro	Khanjamahal Sone Quarry No-49	Stone	Khanjamahal	144	168	A2.00	Govt.
18.	Soro	Khanjamahal Sone Quarry No- 50	Stone	Khanjamahal	144	168	A 0.50	Govt.
19.	Soro	Khanjamahal Sone Quarry No- 51	Stone	Khanjamahal	144	168	A 2.50	Govt.
20.	Soro	Khanjamahal Sone Quarry No- 55	Stone	Khanjamahal	144	264	A 3.00	Govt.
21.	Soro	Khanjamahal Sone Quarry No- 56	Stone	Khanjamahal	144	264	A 2.00	Govt.
22.	Soro	Khanjamahal Sone Quarry No- 57	Stone	Khanjamahal	144	263	A 3.00	Govt.
23.	Soro	Khanjamahal Sone Quarry No- 59	Stone	Khanjamahal	144	263	A 1.00	Govt.
24.	Soro	Khanjamahal Sone Quarry No- 60	Stone	Khanjamahal	144	263	A 0.50	Govt.
25.	Soro	Khanjamahal Sone Quarry No- 66	Stone	Khanjamahal	144	318	A 2.00	Govt.
26.	Soro	Khanjamahal Sone Quarry No- 67	Stone	Khanjamahal	144	318	A 2.00	Govt.
27.	Soro	Khanjamahal Sone Quarry No- 68	Stone	Khanjamahal	144	318	A 2.00	Govt.
28.	Soro	Khanjamahal Sone Quarry No- 71	Stone	Khanjamahal	144	287 & 266	A 1.50	Govt.



29.	Soro	Khanjamahal Sone Quarry No- 72	Stone	Khanjamahal	144	287 & 266	A 1.50	Govt.
30.	Soro	Khanjamahal Sone Quarry No- 73	Stone	Khanjamahal	144	266	A 1.50	Govt.
31.	Soro	Khanjamahal Sone Quarry No- 74	Stone	Khanjamahal	144	266	A 2.00	Govt.
32.	Soro	Khanjamahal Sone Quarry No- 75	Stone	Khanjamahal	144	266	A 1.50	Govt.
33.	Soro	Khanjamahal Sone Quarry No- 76	Stone	Khanjamahal	144	266	A 2.50	Govt.
34.	Soro	Khanjamahal Sone Quarry No- 79	Stone	Khanjamahal	144	266	A 1.20	Govt.
35.	Soro	Khanjamahal Sone Quarry No- 80	Stone	Khanjamahal	144	266	A 1.00	Govt.
36.	Soro	Khanjamahal Sone Quarry No- 81	Stone	Khanjamahal	144	266	A 2.00	Govt.
37.	Soro	Khanjamahal Sone Quarry No- 82	Stone	Khanjamahal	144	266	A 2.50	Govt.
38.	Soro	Khanjamahal Sone Quarry No- 83	Stone	Khanjamahal	144	265	A 2.50	Govt.
39.	Soro	Khanjamahal Sone Quarry No- 84	Stone	Khanjamahal	144	265	A 2.50	Govt.
40.	Soro	Khanjamahal Sone Quarry No- 85	Stone	Khanjamahal	144	265	A 2.00	Govt.
41.	Soro	Khanjamahal Sone Quarry No- 86	Stone	Khanjamahal	144	265 & 263	A 2.00	Govt.
42.	Soro	Khanjamahal Sone Quarry No- 87	Stone	Khanjamahal	144	263	A 2.50	Govt.
43.	Soro	Khanjamahal Sone Quarry No- 88	Stone	Khanjamahal	144	263	A 2.50	Govt.
44.	Soro	Khanjamahal Sone Quarry No- 89	Stone	Khanjamahal	144	263	A 1.50	Govt.
45.	Soro	Khanjamahal Sone Quarry No- 90	Stone	Khanjamahal	144	263	A 1.50	Govt.
46.	Soro	Khanjamahal Sone Quarry No- 91	Stone	Khanjamahal	144	263	A 2.00	Govt.
47.	Soro	Khanjamahal Sone Quarry No- 96	Stone	Khanjamahal	144	167	A2.50	Govt.
48.	Soro	Khanjamahal Sone Quarry No- 97	Stone	Khanjamahal	144	264	Ac.5.00 dec	Govt.
49.	Soro	Quarry No-1	Stone Quarry	Mahumuhan & Khanjamahala	144	161 165	Ac3.45 dec Ac6.60 dec	Govt.
50.	Soro	Quarry No-2	Stone Quarry	Mahumuhan & Khanjamahala	144	161 165 167 166	Ac2.27 dec Ac5.84 dec Ac0.50 dec Ac1.52 dec	Govt.
51.	Soro	Quarry No-3	Stone Quarry	Mahumuhan & Khanjamahala	144	167 166	Ac2.55 dec Ac7.48 dec	Govt.
52.	Soro	Quarry No-4	Stone Quarry	Mahumuhan & Khanjamahala	144	167 166	Ac2.99 dec Ac6.95 dec	Govt.
53.	Soro	Quarry No-5	Stone Quarry	Mahumuhan & Khanjamahala	144	165 164	Ac3.87 dec Ac6.26 dec	Govt.
54.	Soro	Quarry No-6	Stone Quarry	Mahumuhan & Khanjamahala	144	165 164 166 266	Ac2.07 dec Ac2.07 dec Ac3.88 dec Ac1.90 dec	Govt.
55.	Soro	Quarry No-7	Stone Quarry	Mahumuhan & Khanjamahala	144	166 266	Ac9.53 dec Ac0.47 dec	Govt.



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56.	Soro	Quarry No-8	Stone Quarry	Mahumuhan &Khanjamahala	144	166 265 264	Ac3.84 dec Ac4.17 dec Ac1.71 dec	Govt.
57.	Soro	Quarry No-9	Stone Quarry	Mahumuhan &Khanjamahala	144	265 264	Ac5.67 dec Ac6.39 dec	Govt.
58.	Soro	Quarry No-10	Stone Quarry	Mahumuhan &Khanjamahala	144	264 263	Ac9.37 dec Ac1.82 dec	Govt.
59.	Soro	Quarry No-11	Stone Quarry	Mahumuhan &Khanjamahala	144	164 318 266 287	Ac2.42 dec Ac0.95 dec Ac4.59 dec Ac0.47 dec	Govt.
60.	Soro	Quarry No-12	Stone Quarry	Mahumuhan &Khanjamahala	144	266 287	Ac9.91 dec Ac0.09 dec	Govt.
61.	Soro	Quarry No-13	Stone Quarry	Mahumuhan &Khanjamahala	144	166 266 287	Ac0.97 dec Ac8.87 dec Ac0.17 dec	Govt.
62.	Soro	Quarry No-14	Stone Quarry	Mahumuhan &Khanjamahala	144	166 265 266	Ac0.84 dec Ac2.51 dec Ac6.69 dec	Govt.
63.	Soro	Quarry No-15	Stone Quarry	Mahumuhan & Khanjamahala	144	265 266	Ac5.09 dec Ac5.76 dec	Govt.
64.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 1	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	1	Ac. 0.50	Govt.
65.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 2	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	1	Ac. 1.00	Govt.
66.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 3	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 0.50	Govt.
67.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 4	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 1.00	Govt.
68.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 10	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 2.00	Govt.
69.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 11	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 2.00	Govt.
70.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 12	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 5.00	Govt.
71.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 13	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 1.00	Govt.
72.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 14	Stone Quarry	Sarisua Kapilajhari	245	95	Ac. 2.00	Govt.



				Bandhanata				
73.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 15	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 1.00	Govt.
74.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 16	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 1.00	Govt.
75.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 17	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 1.00	Govt.
76.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 18	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 7.00	Govt.
77.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 19	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 8.00	Govt.
78.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 20	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 9.00	Govt.
79.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 21	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 1.00	Govt.
80.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 22	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 1.00	Govt.
81.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 23	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac.1.00	Govt.
82.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 24	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 0.50	Govt.
83.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 25	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 0.50	Govt.
84.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 26	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95, 112	Ac. 0.50	Govt.
85.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 27	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95, 112	Ac. 5.00	Govt.
86.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 28	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 2.00	Govt.
87.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 29	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 1.00	Govt.
88.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 30	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 1.00	Govt.
89.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 31	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 2.00	Govt.
90.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 32	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 0.50	Govt.



91.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 33	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 2.50	Govt.
92.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No.34	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 0.50	Govt.
93.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No.35	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 1.00	Govt.
94.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No.36	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 0.50	Govt.
95.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 37	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 1.00	Govt.
96.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 38	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 0.50	Govt.
97.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 39	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 5.00	Govt.
98.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 40	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 3.00	Govt.
99.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No.41	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 1.50	Govt.
100.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 42	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 2.00	Govt.
101.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 43	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 0.50	Govt.
102.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 44	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 0.50	Govt.
103.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 51	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac.1.50	Govt.
104.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No.100	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	95	Ac. 0.50	Govt.
105.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No.101	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	1	Ac. 0.50	Govt.
106.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No 45	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	1	Ac. 0.50	Govt.
107.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 46	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 1.00	Govt.
108.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 47	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 1.00	Govt.



109.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 48	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 0.50	Govt.
110.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 49	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 1.00	Govt.
111.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 50	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 1.00	Govt.
112.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 52	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 5.00	Govt.
113.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No.53	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 1.00	Govt.
114.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 54	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 3.00	Govt.
115.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 55	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 4.00	Govt.
116.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 56	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 0.50	Govt.
117.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 57	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 1.00	Govt.
118.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 58	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 1.00	Govt.
119.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 59	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 1.50	Govt.
120.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 60	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 1.50	Govt.
121.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 61	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 0.50	Govt.
122.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 62	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 2.00	Govt.
123.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 63	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 3.00	Govt.
124.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 64	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 4.00	Govt.
125.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 65	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 5.00	Govt.
126.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 67	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 3.00	Govt.



127.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 68	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 3.00	Govt.
128.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 69	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 1.50	Govt.
129.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 102	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 0.50	Govt.
130.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 103	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 0.50	Govt.
131.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 70	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 7.00	Govt.
132.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 71	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 1.00	Govt.
133.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 72	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 1.00	Govt.
134.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 73	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 3.00	Govt.
135.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 74	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 0.50	Govt.
136.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 75	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	314	Ac. 1.50	Govt.
137.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 76	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 1.00	Govt.
138.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 77	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 1.00	Govt.
139.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 78	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 0.50	Govt.
140.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 79	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 0.50	Govt.
141.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 80	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 1.00	Govt.
142.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 81	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 1.00	Govt.
143.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 82	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 0.50	Govt.
144.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 83	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 1.00	Govt.



145.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 84	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 2.00	Govt.
146.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 85	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 1.00	Govt.
147.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 86	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 2.00	Govt.
148.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 87	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 2.00	Govt.
149.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 88	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 2.00	Govt.
150.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 89	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 2.00	Govt.
151.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 90	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 1.00	Govt.
152.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 91	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 1.00	Govt.
153.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 92	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 2.50	Govt.
154.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No.93	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 1.00	Govt.
155.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 94	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 1.00	Govt.
156.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 95	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 4.00	Govt.
157.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 96	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 1.50	Govt.
158.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 97	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 2.50	Govt.
159.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 98	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 0.50	Govt.
160.	Khaira	Sarisua Kapilajhari Bandhanata Stone Quarry No. 99	Stone Quarry	Sarisua Kapilajhari Bandhanata	245	520	Ac. 2.00	Govt.
161.	Nilgiri	Kathagochhi Stone Quarry	Stone	Kathagochhi	284	135, 136, 137, 138,139, 140, 148,	Ac 26.40 dec	Govt.



					264 572	294 147 295, 296, 306, 736		
162.	Nilgiri	Mirigini Stone Quarry No. 1	Stone	Mirigini	453	572	Ac 6.30 dec	Govt.
163.	Nilgiri	Mahisapatta Stone Quarry	Stone	Mahisapatta	300	644, 640	Ac 0.98 dec	Govt.
164.	Nilgiri	K.P Mahal Stone Quarry	Stone	K.P Mahal	394/105	11/1594/ 1693, 11/1594	Ac 0.74 dec	Pvt.
165.	Nilgiri	K.P Mahal Stone Quarry	Stone	K.P Mahal	273 10	12,11/1593, 9,36/1592	Ac 1.97 dec	Pvt.
166.	Nilgiri	Mahisapatta Stone Quarry	Stone	Mahisapatta	294/185	1593 1594 1596	Ac 0.92 dec	Pvt.
167.	Nilgiri	Jamudiha Stone Quarry	Stone	Jamudiha	1066/ 1391, 1066/ 1160	3937 3939/ 5651	Ac 1.16 dec	Pvt.
168.	Nilgiri	Jamudiha Stone Quarry	Stone	Jamudiha	1066 /1270, 1066/ 1160	3553 3551	Ac 1.49 dec	Pvt.
169.	Nilgiri	Jamudiha Stone Quarry No. 3	Stone	Jamudiha	475	3109	Ac 0.79 dec	Pvt.



Annexure-III

Minor Mineral Sources under Sadar Sub-Division.

Brick Earth of Jaleswar Tahasil								
Sl No	Name of the Teshil	Name of the Source	Type of Quarry	Mouza	Khata No	Plot No	Area	
1.	Jaleswar	M/S Sathi Brick Earth Quarry	Brick Klin	Mahammad Nagarpatna	420/73	295 358/1623	Ac.1.04 d	Pvt.
2.	Jaleswar	M/S Sita Brick Earth Quarry	Brick Klin	Sekh sarai	63	269 & 266	Ac.1.58 dec.	Pvt.
3.	Basta	M/S Santi Brick Earth Quarry	Brick	Tenguria	213/80 213/81 213/135	576, 584/1034 583 578/987	Ac.1.11 dec	Pvt.
4.	Basta	M/S Usha-I Brick Earth Quarry	Brick	Gangadharpur	260/46 & 43	441/778, 442, 443 & 444	Ac.0.85 dec	Pvt.
5.	Basta	M/S Heera Brick Earth Quarry	Brick	Asti	206 302	1901 1880 1895	Ac.0.48 dec Ac.0.25 dec Ac.0.14 dec	Pvt.
6.	Remuna	M/S Mita Bricks Earth Quarry	Brick	Gambharia	428/20	584, 584/1377 584/1378 584/1401	Ac.0.99 dec	Pvt.
7.	Remuna	M/S BLS Bricks Earth Quarry	Brick	Gambharia	428/121	1245	Ac.1.12 dec	Pvt.
8.	Remuna	Gold Bricks Earth Quarry	Brick	Haripur	220/98	222/990, 222, 165, 174	Ac.1.09 dec	Pvt.
9.	Remuna	Hira Bricks Earth Quarry	Brick	Bindha	109/30	79, 97, 113	Ac.1.00 dec	Pvt.
10.	Remuna	Raja Bricks Earth Quarry	Brick	Rudragopalpur Sambil Naharapatna	227/144	567	Ac.1.74 dec	Pvt.
11.	Nilgiri	Brick earth quarry for Shakti Brick Kiln Unit	Brick Earth	Gopalpur	260	1682	Ac 1.27 dec	Pvt.
12.	Nilgiri	Brick earth quarry for J.D Brick Kiln Unit	Brick Earth	Jadibali	201	1729, 1731, 1732,	Ac 2.37 dec	Pvt.



						1745, 1746,1739 , 1740, 1741, 1795, 1794		
13.	Nilgiri	Brick earth quarry for Shakti Brick Kiln Unit	Brick Earth	Jamudiha	195 196	717,926,5 40,711,16 95,1731, 1695/4486 ,1720	Ac 3.83 dec	Pvt.



Annexure-IV

Minor Mineral Sources under Sadar Sub-Division.

Murrom sources under Jaleswar Tahasil

Sl No	Name of the Teshil	Name of the Source	Type of Quarry	Mouza	Khata No	Plot No	Area	
1.	Jaleswar	BaradihaMurrom Quarry	Murrom	Baradiha	266	1608	Ac.1.96 dec.	Pvt.
2.	Jaleswar	BaradihaMurrom Quarry	Murrom	Baradiha	495	1081, 1093 & 1100	Ac.2.47 dec	Pvt.
3.	Jaleswar	BaradihaMurrom Quarry	Murrom	Baradiha	495	1330	Ac.2.27 dec	Pvt.
4.	Jaleswar	BaradihaMurrom Quarry	Murrom	Baradiha	1173/774	3812	Ac.0.56 dec	Pvt.
5.	Jaleswar	BaradihaMurrom Quarry	Murrom	Baradiha	1173/516	3760/7363 3761/7364	Ac.0.34 dec	Pvt.
6.	Nilgiri	Jamudiha Murrom Quarry	Murrom	Jamudiha	1066/627	4108/4903	Ac 1.50 dec	Pvt.
7.	Nilgiri	Bholadanga Murrom Quarry	Murrom	Bholadanga	45/12	1,2,5,6,7, 8,9,10,11, 14,18,19, 20, 21,26,27,3 0,31,32, 33,34, 35,36,37, 41, 42, 43, 44,45	Ac 11.73 dec	Pvt.
8.	Oupada	Garuda Hata Murrom Quarry	Murrom	Garuda Hata	81	2158, 286	-	Pvt.
9.	Oupada	Aghasul Murrom Quarry	Murrom	Aghasul	23	291	-	Pvt.

Signature Not Verified

Digitally signed by Dr. K. Murugesan, IFS,
Member Secretary

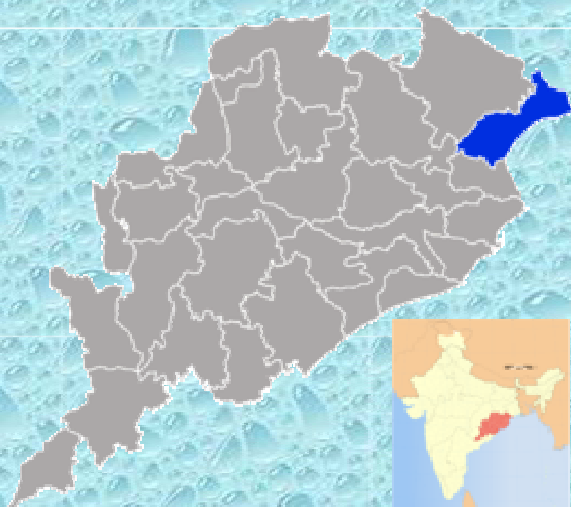
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DISTRICT SURVEY REPORT (DSR)
OF
BALASORE DISTRICT, ODISHA.
FOR
MORRUM
(FOR PLANNING & EXPLOITATION OF MINOR MINERAL RESOURCES)

ODISHA

BALASORE



As per Notification No. S.O. 3611(E) New Delhi
dated 25th July 2018 of
Ministry of Environment, Forest & Climate Change
(MoEF & CC)

COLLECTORATE BALASORE.

CONTENT

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PREAMBLE

Odisha is one of the Major Mineral rich State in India. Balasore is a unique District in Odisha lies on the Northern most part of the State with rich and varied mineral resource. It is a paradise for Geoscientists of India and abroad. It has preserved many important rock groups from the earliest of crust formation to the geologically recent times. The landmass constituting the Balasore District, explorers to many Entrepreneurs on account of its diverse geological setting and rich and varied mineral resources.

In pursuance of MoEF & CC Notification S.O. 141(E) dated 15th Jan. 2016, District Environment Impact Assessment Authority (DEIAA) & District level Expert Appraisal Committee (DEAC) has been formed for Category –B2 Minor Minerals having area less than or equal to 5 ha. Prior to the formation of Odisha Minor Mineral Concession Rule 2004, (OMMCR -2004) the mining operation for minor mineral were carried out in unscientific manner. Identifying this fact in exercise of power, Conferred by Section 15 by Mines and Minerals (Development and Regulation) Act 1957 as amended in 2015 and all other powers enabling it in that behalf, the industry Mines & Geology Department, Govt. of Odisha framed the aforementioned rule, which has been amended with period of times in the year 2014, 2015 and 2016.

Keeping in view of experience gained in period of decade, the MoEF & CC came out with Environmental Impact Assessment Notification S.O.-1533(E) dated 14th Sept. 2006. It has been made mandatory to obtain environmental clearance for different kinds of development projects as listed in Scheduled -I of notification. Further, pursuance of the order of Hon' ble Supreme Court Petition (C) No. 19628-19629 of 2009, dated 27th Feb. 2012 In the matter of Deepak Kumar etc., Vs State of Haryana and others etc., Prior Environmental Clearance has now become mandatory for mining of Minor Minerals irrespective of the area of Mining Lease. And also in view of the Hon' ble National Green Tribunal, order dated the 13th Jan. 2015 the matter regarding Sand, Brick Earth, & Burrowed Earth cutting for Road Construction has to take prior E.C. for Mining Lease irrespective of the fact that whether the area involved is more or less than 5 hectares. They also suggested to

make a policy on E.C for minor minerals lease in cluster.

MoEF & CC in consultation with State Government has prepared Guidelines on Sustainable Sand Mining & Minor minerals other than sand mining in 2016, detailing the provisions on Environmental Clearance for cluster. Creation of District Environmental Impact Assessment Authority (DEIAA) & proper monitoring of Minor Minerals. Mining, using Information Technology to track the mineral out material from source to destination.

DEAC will scrutinize and recommend the prior environmental clearance of mining of minor mineral to DEIAA on basis of District Survey Report. This will model and guiding document which is a compendium of available mineral resources, geographical setup, Environmental and Ecological set up of the District and replenishment of minerals and is based on data of various departments, published reports, Journal and websites. Subsequently, Hon'ble Supreme Court vide their order dt. 18.01.2022 in connection with Civil Appeal Nos. 3661-3662 of 2020, the State of Bihar and others Vrs- Pawan Kumar and others at Paragraph 14 " We therefore find it appropriate to substitute the directions issued by Tribunal vide judgment and order dated 14th October-2020 with the following directions,

- (i) The exercise of preparation of DSR for the purpose of mining of the State of Bihar in all the Districts shall be under taken afresh. The Draft DSRs shall be prepared by the Sub-Divisional Committees consisting of the Sub-Divisional Magistrate, Officers from Irrigation Department, State Pollution Control Board or Committee, Forest Department, Geological or Mining Officer. The same shall be prepared by undertaking site visits and also using by modern technology. After the Draft DSRs are prepared the District Magistrate of the concerned District shall forward the same for examination and evaluation by the SEAC. The same shall be examined by the SEAC and its report shall be forwarded to SEIAA. The SEIAA will thereafter consider the grant of approval such DSRs.
- (ii) Needless to state that while preparing DSRs and appraisal thereof by SEAC and SEAI. It should be ensured that a strict adherence

to the procedure and parameters laid down in the policy of January-2020 should be followed.

The District Survey Report will form the basis for application for Environmental Clearance, preparation of reports and appraisal of projects. District Survey Reports are to be reviewed once in every five years as per statute.

In lieu of above guideline and orders of Hon'ble Supreme Court and in compliance to the orders of Hon'ble NGT, EZ, Kolkata, in connection with O.A No. 63/2020, the Member Secretary, SEIAA, Bhubaneswar issued a Letter on 27th December, 2022 to Collector & District Magistrate, Balasore with a direction " the DSR is to be signed afresh by the Collector and District Magistrate, along with members of the designated sub-committee consisting of Sub-Divisional Magistrate, and District Level Officers from Irrigation Department, State Pollution Control Board, Forest Department, Geology and /or Mining Department. Keeping in view of the orders of Hon'ble Supreme Court, Hon'ble NGT and directions of SEIAA, Bhubaneswar a fresh DSR has been prepared observing all formalities in the year,2023

The Main objective of the preparation of District Survey Report is to ensure the following:-

1. Identification of Mineral Resources in the District.
2. Identification of areas of minor minerals having the potentiality where mining can be allowed.
3. Identification of area and proximity to infrastructure and installations where mining should be prohibited.

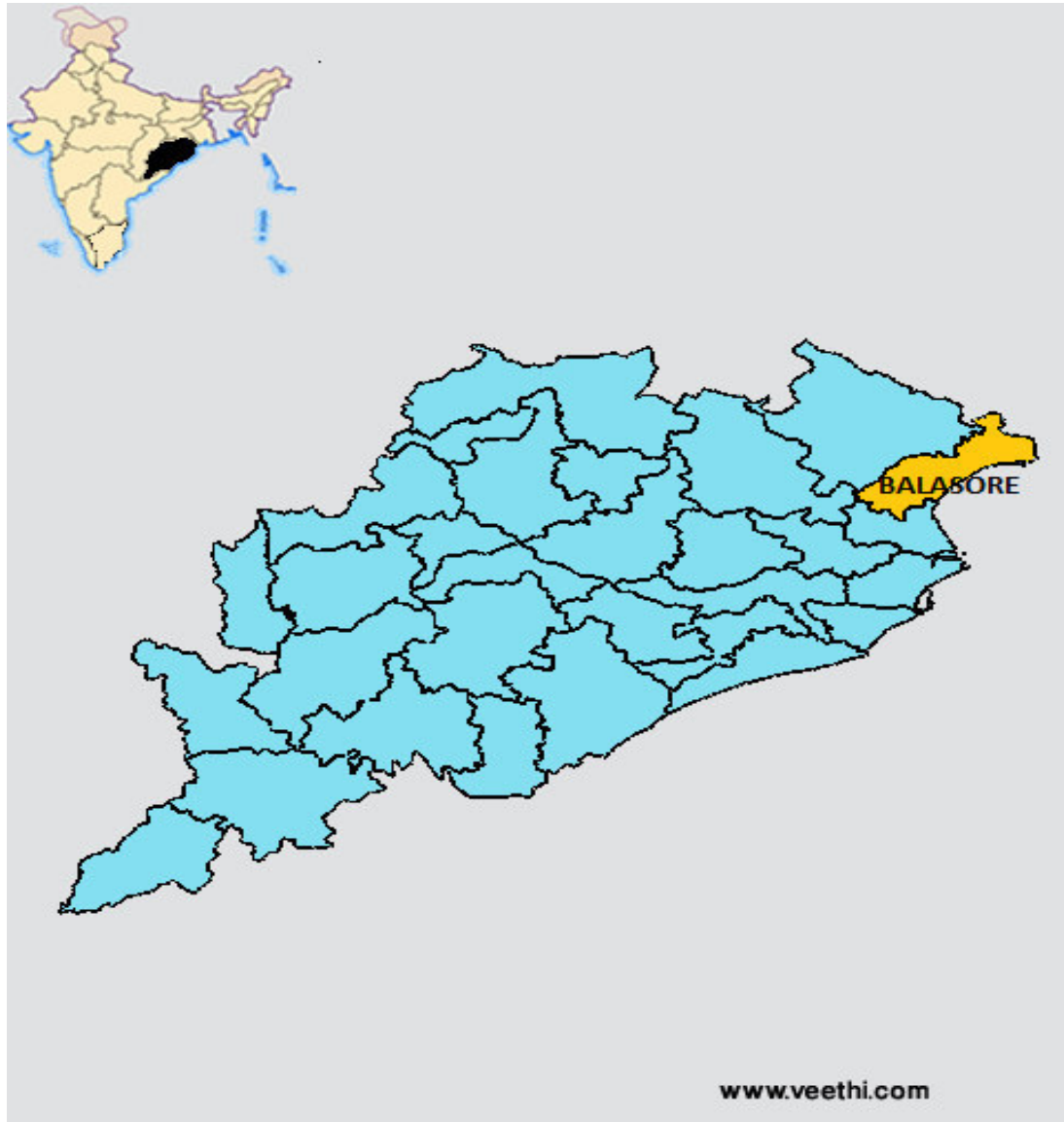
1. INTRODUCTION

Balasore at a Glance:

1.1 Location and Geographical Area:

Balasore is one of the coastal Districts of Odisha. Balasore is the District Head Quarter, spreading over an area of 3634 sq.km lies between 20° 48' North and 21° 59' North latitudes and 86°16' and 87°29' East longitudes. The District is surrounded by Medinipur District of West Bengal in its Northern side, Bay of Bengal in its East, Bhadrak District in its South and Mayurbhanj & Keonjhar Districts lies on its Western side. It is best known for Chandipur Beach. The Indian Ballistic Missile Defense Program's Integrated Test Range is located 18 km south of Balasore. It is the largest city of North Odisha. This District consists of two Sub-Divisions namely Balasore and Nilagiri. There are 12 Tahasils for 12 Blocks of the District. Balasore is the main town of the District and is also its centre of economic growth. The primary occupation of people in the District is cultivation. This District is mainly known for cultivation of paddy, because rice is the staple cereal of the local people. Hybrid varieties of seeds are being developed and land reform programs are being planned for the maximum usage of the wastelands, promising to enhance the District's economic stability in the near future. Industries, Agriculture, Fishing and Tourism are the four major revenue sources of Balasore District. Birla Tyres, Balasore Alloys Limited, Emami Paper Mills Limited and Polar Pharma India Limited are some of the large-scale industries functioning in this District. Balasore occupies a unique position being endowed with lush green vegetation, different fauna & flora and rich cultural heritage. Being an agrarian economy, agriculture is the main stay of the people of Balasore District. It is in the coastal section of Odisha blessed with hot and humid climate, with alluvium soil and intersected by the perennial rivers, which collectively provides conducive infrastructure for the growth of agriculture in the region. Rice, Pulses, oil seeds like Groundnut, Mustard, Castor and Linseed are grown in the District of Balasore. The District has a rich mineral base of soft stones, limestone, stone chips are available in the District, which are mainly used in industrial units in

the District. The huge deposits of granite stones at Nilgiri, Khaira, Oupada regions provides tremendous scope for development of few more Industries based on this resources. Except these, no minerals in large quantity which can be explored for commercial purpose found in the District.

**1.2 Administrative Units:-**

Balasore is the administrative headquarter of Balasore District. It is located at a distance of 194 km from Bhubaneswar, state capital of Odisha. In order of size, the

Morum Mining

DSRof Balasore District.

District is the one of the 2nd largest costal Districts of Odisha. It has 3049 villages covering 12 Blocks, 12 tahasils and 2 sub-divisions. The District is divided into 2 sub-divisions namely 1) Balasore, 2) Nilagiri. And into 12 Blocks & Tehasils, namely i) Bahanaga ii) Balasore iii) Baliapal iv) Basta v) Bhogarai vi) Jaleswar vii) Khaira viii) Nilgiri, ix) Oupada, x) Remuna xi) Simulia xii) Soro. The population of the District 23,17,419 according to the 2011 Census. The District accounts for 5.53% of the state's territory and about 5.50% of state's population. The density of population of the District is 532 per square km as against 610 per square km of the state. As per 2011 census, the population of Scheduled Caste is 1,84,682 (7.30%), and Scheduled Tribe is 14,79,576 (58.7%). The literacy percentage of the District covers 79.18 against 84.67 of the state.



1.3 Connectivity facilities:-

Road Network

The District is well served by a network of good roads and has been called the motorists paradise. The chief roads emanating from Balasore town are NH-16 and NH-60 passes the District. Balasore is 60 Kms from Baripada, 122 Kms from Kharagpur, 199 Kms from Jamshedpur, 177 Kms from Cuttack, 199 Kms from Bhubaneswar and 226 Kms from Rourkela. It is also connected with other cities such as Sambalpur, Puri, Bolangir, Bhadrak, Jhargram, Angul, Ranchi and Kolkata via Odisha State Road Transport Corporation and some private transport services.



RailNetwork

Balasore District is well connected by Rail link to different places, Balasore Railway Station is an important station on the Howrah-Chennai main line of the South Eastern Railway. The distance to Kolkata is approximately 232 km, while the distance to Bhubaneswar is about 206 km; the city of Balasore is well connected to many places in India like Baripada, Bhubaneswar, Kolkata, Jamshedpur and Cuttack.



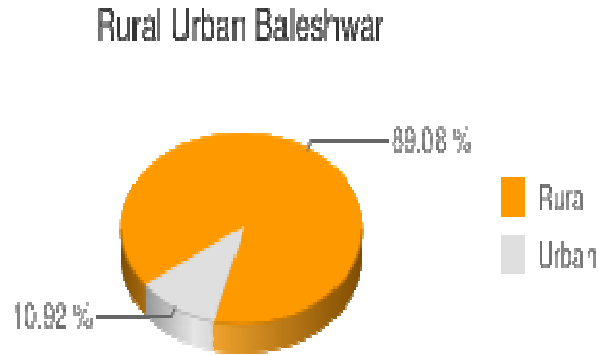
Air Network

2. OVERVIEW OF MINING ACTIVITY IN THE DISTRICT:

Balasore District has transitional landform featuring from hilly region to coastal plain. Most of the mineralized area coming under Eco-Sensitive Zone, mining activity only confined out of safety zone of Eco-Sensitive Zone. The mining activity in the District is only restricted to minor minerals i.e. of sand, stone, granite and brick earth. Altogether there are leases of stone, granite and sand which has been granted to the District is regulated as per minerals concession rules of Odisha, there is no lease of major mineral in the District. At present Leases of stone, sand and bricks making units are operational in the District. Stone chips, granite stones, ordinary sand constitute the principal mining activity of Soro, Khaira, Jaleswar, Nilagiri area etc. of Balasore District. Out of these huge granite stones deposits are available near Khaira, Nilgiri, Soro area and major potential sand in Jaleswar, Remuna and Nilagiri area of the District, which have been providing tremendous scope for development of few more industries based on these resources.

3.0 GENERAL PROFILE OF THE DISTRICT:**3.1 Demography:**

Census - 2011	
Geographical Area	3806 Sq. Km.
Total population	23,17,419
Male Population	11,84,371
Female Population	11,33,048
Male Literacy	9,18,417
Female Literacy	7,29,488
SC Male	NA
SC Female	NA
ST Male	NA
ST Female	NA
OBC	855,480
Illiterate Male	9,18,407
Illiterate Female	7,29,488



4.0 GEOLOGY OF THE DISTRICT:

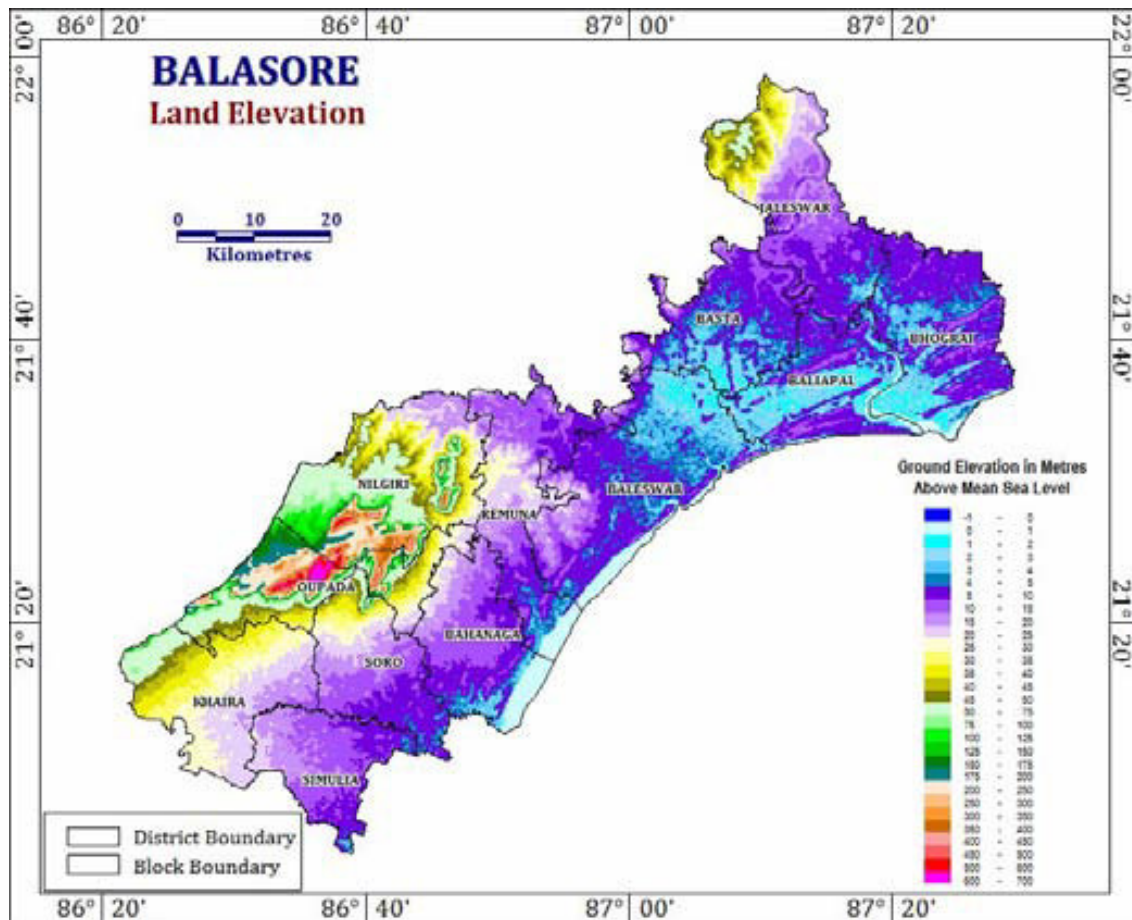
The coastal tract of Orissa is underlain by the Tertiary and Quaternary Formations. Balasore is a unique District in Odisha with varied Geology. The tertiary rocks are least exposed on the surface, whereas the Quaternaries are extensively developed along the coast and further inland. The Quaternary Formations cover almost the entire study area while the Tertiaries are exposed near Baripada town at about 28 km. NNW of the northern boundary of the area. The Pre-Cambrian crystallines occur as hills and mounds in the west just outside the present area. Chatterji and Raghava Rao (1960) made studies on the sub-surface geology and tectonic framework of sedimentation in the crescentic coastline of Balasore on the basis of the data obtained from the exploratory drilling operations. Exploratory drilling reveals that in the subsurface the warped Pre-Cambrian basement is overlain by Miocene marine sediments, Mio-Pliocene estuarine sediments, laterites and alluvium. The Mio-Pliocene sediments and alluvial sections contain the principal ground water reservoirs. The marine sediments are dominantly composed of finer elastics and non-clastic (Bhatnagar *et al*, 1970). Small outcrops of ultramafic rocks are exposed in and around Bhalukasoni (21°29': 86°42') area under Nilgiri Sub-Division of Balasore District. Ultramafic rocks comprising serpentinised dunite, peridotite and pyroxenite largely under soil and laterite cover occur intermittently spreading over an area of 1.8m × 800m. A 100m long E-W trench has exposed two chromite ore bodies on its either end, the dimensions being 500m × 3.5m × 4.5m and 5.5m × 2m × 3.3m. A reserve of the order of 1550 tons was estimated with massive and

spotted type of chromite with Cr_2O_3 content ranging from 25.77 to 54.76%. These chromite occurrences along with the associated ultramafic rocks are considered to be xenolithic bodies lying within a plutonic mass of gabbroic rocks.

4.1 Physiography & Geomorphology:

Physiography:

The District of Balasore is having unique physiographic setup. It is bounded by the Bay of Bengal in its eastern part and in the north western part it is marked by a set of hillocks and mounds including a north east – south west trending Hilly patch in the Nilgiri, Khaira & Oupada Blocks. The land elevation varies from as low as near mean sea level in the southern part to as high as about 600 m above mean sea level in the north western part. In between a major part covering more than 75% of the geographical area is having elevation within the range of 2 – 10 meters above mean sea level. In the extreme eastern part of the District, within the alluvial tracts of the River Subarnarekha & Budhabalanga, the average elevation is within 1 – 2 meters above mean sea level.



Geomorphology :

Hydrogeomorphological features of Balasore District are mainly attributed to fluvio-marine, erosional, denudational and depositional processes. The coastal plain has been developed due to fluvio-marine processes. The alluvial plains owe their origin due to various fluvial actions of major rivers. The details of the geomorphic unit as identified are as below:

Coastal Plain: Coastal plain predominantly consist of sand silt and clay is developed all along the coast of Balasore District. It is developed all along the coast of Balasore District. It is gently sloping plain occurring parallel to the coast. The saline marshy tract with shrubby vegetation comes under this coastal plain. Tidal streams are very active during high tide time. Ground water prospect is good but salinity is a major problem in thistract.

Beach: Beach is mainly formed by marine action. Beach ridges are very common and these are formed due to sea waves. They are mainly consisting of sand mixed with silt etc. Ground water prospect is good within a depth of 30-40 m, where fresh

ground water pockets are available. Deep tube wells in these areas may lead to sea wateringress.

Mud flat: This is arelatively marshy area covered with fine silt and mud along the shore. Mangroves vegetation is very common. Ground water quality is mostly saline.

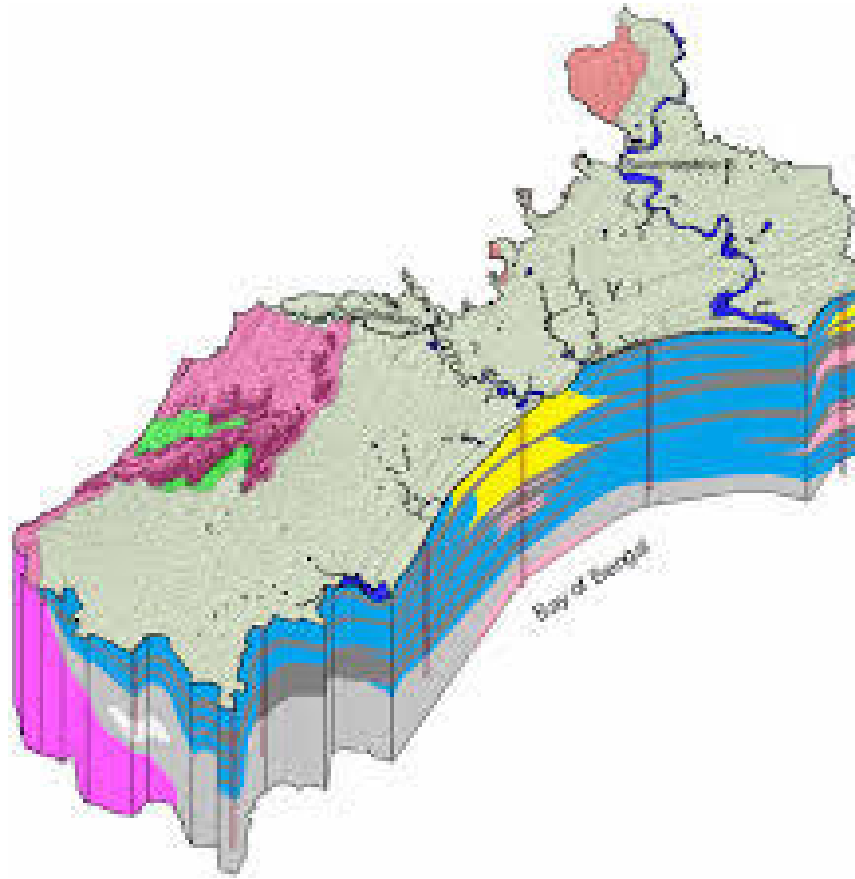
Paleo mud flat: These are the ancient mud flat consisting of fine sand andmud.These are mostly converted to agricultural land in due course of time. Due to marine regression, ground water quality is saline.

4.2 Stratigraphy:

The study area comprises the following distinct geomorphic units:

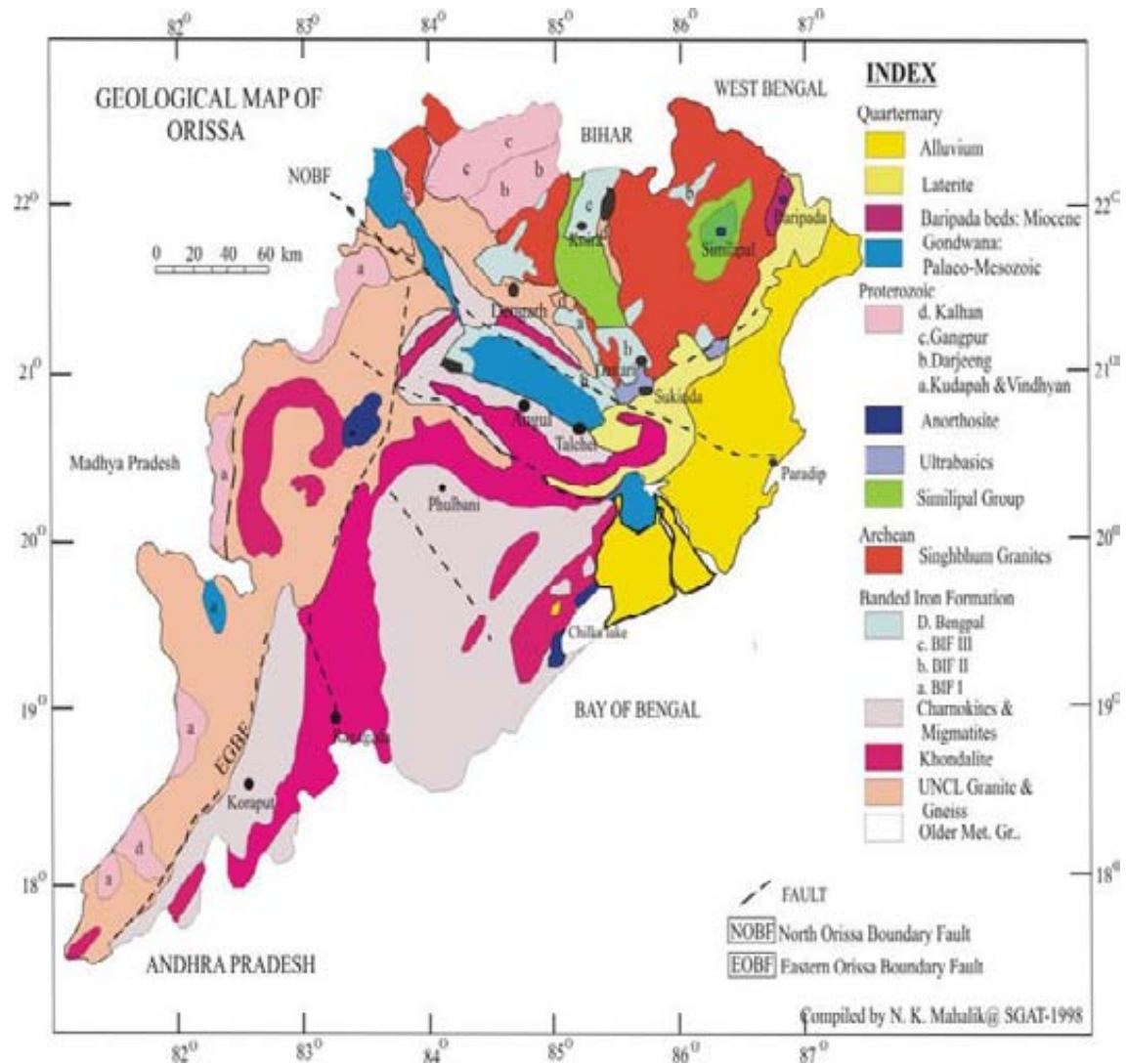
- i) Younger alluvial plain
- ii) Older alluvial plain
- iii) Lateritic upload

↑	<u>GeologicalAge</u>	<u>Geological Formation / Group</u>
	Quaternary	: Recent Alluvium, Clays, silt, Sand,Gravel
	Tertiary	: Older Alluvium, Laterite, BaripadaBeds.
	Mesozoic/Palaeozoic	:Volcanics / Epidiorite
	Precambrian	:Slate/ Phyllite/ Schist / Gneiss
	Archean	:Granite/ GraniteGneiss



4.3 Mineral Resources:

Minerals like soft stones, limestone, stone chips are available in the District, which are mainly used in industrial units in the District. The huge deposits of granite stones at Nilgiri, Khaira, Soro, Jaleswar area provides tremendous scope for development of few more industries based on this resources. Except these, no minerals in large quantity which can be explored for commercial purpose found in the District.



4.4 Soil:

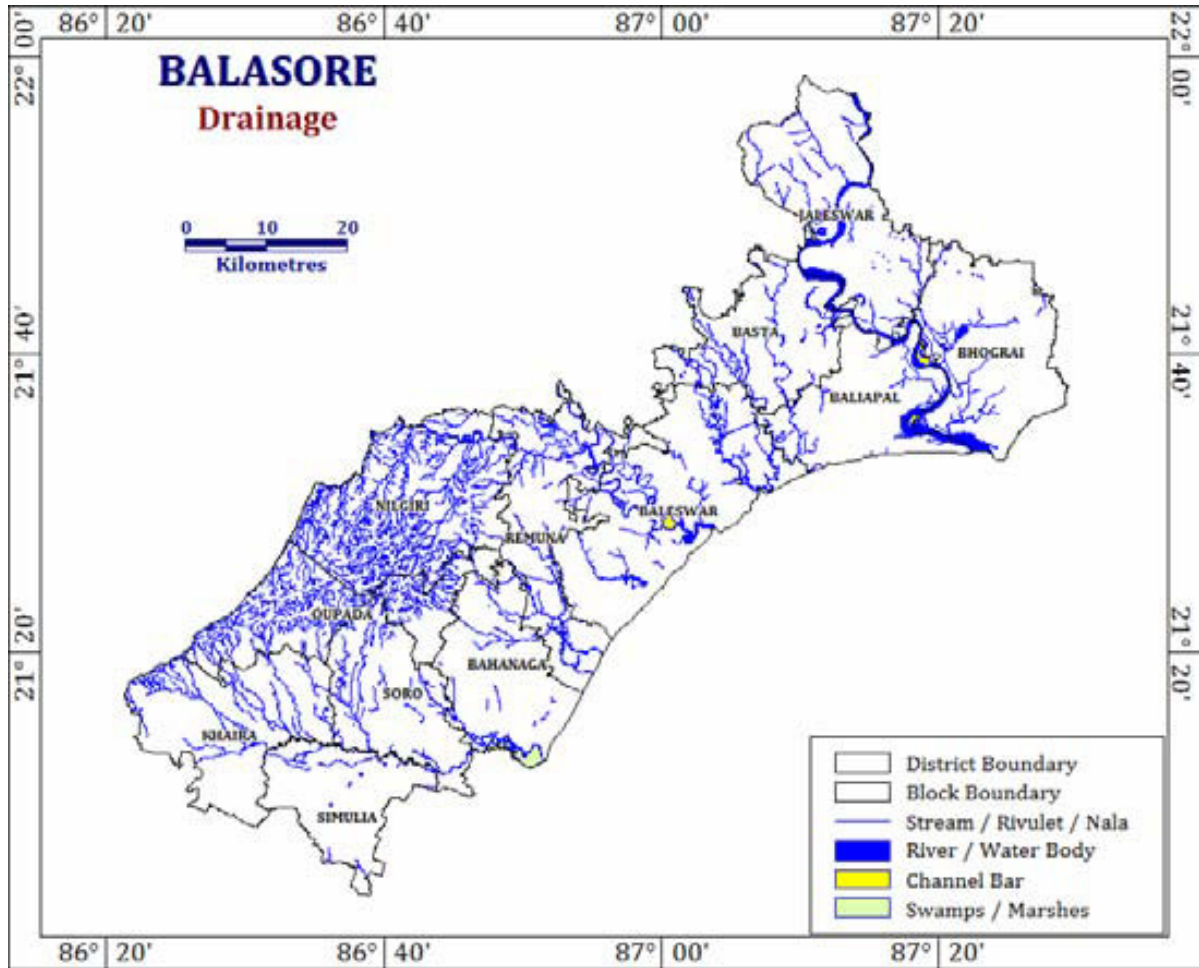
The District comprises chiefly of lateritic, sandy loam and clayey loam type of soil (Figure 3). Laterite soil is mostly marked in the area occupied by crystalline rocks. The low lying valley fields are covered with clayey loam type of soil.

5. DRAINAGE OF IRRIGATION PATTERN

The District has considerable flat land, which provide suitable site for agricultural use. The hilly areas are mostly under forest with patches of cultivation on scarp areas. Major rivers flowing in the District are Budhabalanga, Subernarekha, Jambhira, Sona. Major crops grown in the District is rice. Only 12.21 percent area of agricultural use are net irrigated and major source of irrigations are well and tube

wells.

IRRIGATION BY DIFFERENT SOURCES(Areas and Number of Structures)				
	Sources of Irrigation	Number	Area in hectare	Percentage of total irrigated area
	Canals	3	20.8	8.5
	Tanks	35,624	5.6	2.3
	Open wells	-	-	-
	Bore wells	-	-	-
	Lift irrigation schemes	14,034	104.8	43
	Micro-irrigation	75	0.1	0.1
	Shallow tube well	2239	4.4	1.8
	Medium irrigation project	2	3.8	1.6
	MIP	32	6.0	2.5
	Other		98.1	40.2
	Total Irrigated Area		244.0	
	Pump sets	321		
	No. of Tractors	62		
	Irrigation	Area in hectares		
	Net irrigated area	Net irrigated area 177.53 ha (97.1 kharif + 80.3 Rabi)		
	Gross irrigated area	Gross irrigated area 244.01 (138.9 kharif + 105.0 Rabi)		
	Rainfed area	146.3		
Source: SREP and DAO, Balasore				



5.1 RiverSystem

The **Budhabalanga River** (also called Balanga River) flows through the Districts of Balasore. The Budhabalanga, rises in the Similipal hills and plunges through Barehipani Falls, the second-highest waterfall in India, located in Simlipal National Park. Perennial Budhabalanga is the main river of the study area. It flows from northwest to southeast. This river is an 'extended consequent,' since it has maintained its original easterly course in the plains and has reached a mature stage of development. The annual flow of water in river Budhabalanga is 637 Mm³. Its total drainage area is 4,847 sq. km. This river maintains a sluggish flow in the pre-monsoon period, but swells menacingly with the onset of monsoon often flooding large tracts. Budhabalang and its tributaries, viz. Sona Nadi, AmrutiaNadi, GangaharNadi drain almost round the year in the present area. Sona Nadi receives the watery effluent load through a nalah (Sankhnalah) from the

Balgopalpur Industrial Estate and flows from west to east. Amrutia N. flows from NNW to SSE and carries the waste water load of East Coast Fertilizer at Gadadeulia and water laden solid wastes (particularly in rainy season) from the dumping site of Krebs & CIE Ltd. at Kalma. These tributaries join Budhabalang river downstream at Sahupada and Bhimda (outside present area) respectively. There is another local stream, which flows from southwest to northeast, carrying the waste water of Birla Tyres Ltd. at Chhanpur and the industries located at Ganeshwarpur Industrial Estate. This stream too ultimately joins the Burhabalang river near Nuabazar, Balasore town.



6.0 LAND UTILIZATION PATTERN IN THE DISTRICT

6.1 Forest and non forest land

The forest of Balasore District is full of variety of medicinal plants, Kendu leaves, Bamboo, Sal, Teak, other timber species and a wide range of carnivorous & herbivorous wild animals. The District has one Wildlife Sanctuary known as the Kuldiha Wildlife Sanctuary, which hosts even elephants. The area of the sanctuary is 26,886.23 hectares. In the sanctuary the principal animals that are found are Elephant, Bear, Nilgai, Sambhar, Peacock, Wild Boar and Deer, together with variety of snakes and birds.

District-wise Forest Cover Area in Odisha (Area in Km²)

2017 Assessment								
District	Geographical Area Km ²	Very Dense Forest	Moderate. Dense Forest	Open Forest	Total	Percent of GA	Change	Scrub
Angul	6375	371	1380	1004	2755	43.22	43	84
Bolangir	6575	70	224	837	1131	17.2	151	142
Balasore	3806	23	127	234	380	9.98	30	48
Bargarh	5837	176	371	484	1031	17.66	88	47
Bouda	3098	263	546	480	1289	41.61	27	57
Bhadrak	2505	0	9	66	75	2.99	2	0
Cuttack	3932	53	226	517	796	20.24	11	68
Deogarh	2940	191	667	614	1472	50.07	-3	14
Dhenkanal	4452	174	418	825	1417	31.83	9	82
Gajapati	4325	84	1490	946	2520	58.27	12	262
Ganjam	8206	164	1075	864	2103	25.63	15	655
Jagatsinghpur	1668	0	5	131	136	8.15	6	0
Jajpur	2899	6	72	225	303	10.45	3	50
Jharsugada	2114	3	140	179	322	15.23	9	36
Kalahandi	7920	362	729	1327	2418	30.53	36	362
Kandhamal	8021	661	2588	2143	5392	67.22	16	380
Kendrapada	2644	84	88	133	305	11.54	14	2
Keonjhar	8303	289	1404	1519	3212	38.68	4	55
Khorda	2813	21	186	250	457	16.25	0	92
Koraput	8807	94	740	1255	2089	23.72	120	944
Malkangiri	5791	158	709	1475	2342	40.44	20	45

Mayurbhanj	10418	1335	1718	1027	4080	39.16	42	34
Nabarangpur	5291	168	428	507	1103	20.85	8	47
Nayagarh	3890	189	965	556	1710	43.96	28	173
Nuapada	3852	86	482	705	1273	33.05	33	109
Puri	3479	0	54	160	214	6.15	8	11
Rayagada	7073	422	853	1851	3126	44.2	7	349
Sambalpur	6624	499	1675	1106	3280	49.52	13	40
Subarnapur	2337	2	187	161	350	14.98	26	29
Sundargarh	9712	1019	1814	1431	4264	43.9	107	89
Grand Total	155707	6967	21730	23008	51345	32.98	885	4306

(Source: India state of forest report 2017-Odisha)

The major portion of the District is covered by forest (9.98 % of TGA) and has scattered settlement pattern. The forest is full of variety of medicinal plants, kendu leaves, bamboo, sal, teak and other timber species. The District has considerable flat land, which provide suitable site for agricultural use. The hilly areas are mostly under forest with patches of cultivation on scarp areas. Major crops grown in the District are rice and pulses. Only 12.50 percent area of agricultural use are net irrigated and major source of irrigations are well and tube wells.

Source: Fertilizer and Agriculture Statistics, Eastern Region (2006-2007)

Tahasil	Forest Area	Misc Tree	Permanent Pasture	Cultivated waste	Non Agricultural uses	Barren land	Current Fallow	Other Fallow	Net area sown
Bahanaga	0	714	992	904	2882	0	525	438	24047
Balasore	4	634	3133	2949	6116	1640	531	553	15185
Baliapal	1008	1813	295	2855	4515	0	638	717	16624
Basta	13	198	892	498	4143	0	551	103	12954
Bhogorai	118	3364	1263	5350	4732	59	1025	510	15794
Jaleswar	1716	2045	1396	2455	5422	43	736	334	18713
Khaira	55	630	1544	1210	3508	0	1173	764	18160
Nilagiri	977	289	1444	2343	2312	435	558	188	28280
Oupada	329	374	855	557	1656	0	177	338	19759
Remuna	108	813	1317	2989	5070	10	1073	114	16363
Simulia	5	438	846	576	2677	0	439	889	17646
Soro	1109	441	1121	564	2066	28	295	564	21476
Total	5442								

6.2 Agriculture Land:

The primary objective of Agriculture Department is to increase of production as well as the productivity of major crops like Paddy, Groundnut, Mustard, Mung, Biri& vegetables which is widely covered in this District in both Kharif & Rabi season. Another key objective is the all round development of the farming community of the District. The Deputy Director of Agriculture is the head of office so far as agriculture is concerned & he is the Principal Agriculture Officer of the District .There are 5 District Agriculture Officers & the BlockLevel Officers are working under him. As it has already been pointed out, that agriculture is the main livelihood of the people in Balasore District. It is therefore also designated as the food bowl of Odisha. Rice is the principal crop grown in this District, followed by other cereals, pulses, oilseeds, vegetables, spices and sugarcane. The agricultural statistics for the District is shown in subsequent tables below:

Table – 3.6a: Crop Coverage Area of Balasore District, Odisha

Crop	Khariff		Rabi		Annual	TOTAL	
	Area (ha)	(% of Cropped Area)	Area (ha)	% of Cropped Area	Area (ha)	Gross Cropped Area (ha)	% of Gross Cropped Area
Rice	206.14	91.62	33.47	34.38		239.61	72.03
Cereals	0.31	0.14	0.79	0.82		1.10	0.33
Pulses	0.48	0.21	21.64	22.55		22.12	6.65
Oilseeds	0.13	0.06	14.38	20.20		19.51	5.87
Vegetables	13.04	5.80	16.14	16.82		29.18	8.77
Fibres	2.20	0.98	-	-		2.20	0.66
Spices	2.69	1.19	4.08	4.25		6.77	2.04
Sugarcane	-	-	0.46	0.48		0.46	0.14
Tobacco	-	-	-	-		-	-
Fruits	-	-	-	-	11.68	11.68	3.51
TOTAL	224.99	100	95.96	100	11.68	332.63	100

6.3 Horticulture Land:

The primary objective of Horticulture Department is increase of production as well as productivity of major fruits like Mango, Guava,Citrus etc., which is widely covered in this District. Another key objective is the all round development of the farming community of the District. The Deputy Director of Horticulture is the head of office. The horticulture statistics for the District is shown in subsequent tables below:

Horticulture crops	Total Area (hectares)
--------------------	-----------------------

Mango	4.39
Citrus	0.80
Papaya	0.06
Pineapple	0.04
Guava	0.32
Sapota	0.07

Source: SREP, Balasore.Orissa Agric.

7.0 SURFACE WATER AND GROUND WATER SCENARIO OF THE DISTRICT

7.1 Hydrogeology

Distribution of Saline / fresh water aquifers: The occurrence of fresh water aquifers in coastal tract of Balasore restricted by two important factors-(i) Occurrence of hard rocks in the western side and (ii) Salinity hazard problems in the eastern part. In the narrow tract, close to the coast line extending right from Chandaneswar in the North to Bahanga/ Simulia in the south in the District, salinity problem occurs where both the saline water bearing and fresh water bearing aquifers occurs at different depths. The depth of occurrence of saline water bearing aquifers is not uniform along the entire tract. The study of lithological logs and electrical logs of boreholes and results of zone tests etc. indicate occurrence of saline water either above or below fresh water bearing aquifers and also both above and below the fresh water aquifers,

The width of the coastal saline tract is generally ranging from 4 to 5 km running from Bahanaga to Baliapal Block near Subranarekha river, towards north east it encroaches the inland and in Bhogarai Block its width generally to a range from 5 to 10 km . In general the top aquifers up to 150 meter are saline. However, during the detailed studies in the area, it is observed that up to the depth range of 25 to 30m, fresh aquifers are occurring having a thickness of 5 to 15 meters, which are tapped by shallow tube wells. Below 150m the aquifers are fresh up to 220m below which up to 250m below ground level the aquifers are saline. The salinity hazards occur in a narrow tract along the eastern margin adjoining the sea coast and in the rest part of coastal alluvium fresh water occurs all through down to the bed rock. Disposition of fresh and saline water in District is shown as Map No-3. The occurrence of aquifers and its yield potential etc. are described below.

Non-saline area: The depth of the bore holes varied from 103m to 330 and the depth of the tube wells varied from 96 to 208m. The bed rocks were encountered at Hanspatna (110m) and at Soro(295m).

In the Jaleswar-Basta-Baliapal-Remuna-Balasore tract a group of aquifers usually varies in thickness from 3 to 15m, attains a maximum cumulative thickness of around 40 to 50m. The yield varies from 20 to 66 Ips against the drawdown of pumping water level varying between 5.83 to 15 60m. The static water levels vary from 2.13 to 10.68m bgl. The discharge in general is less in the southern part of thistract.

In the area around Soro and Markona a group of aquifers consisting fine to coarse sands which generally occur below 46m depth attains a cumulative thickness of about 125m and the thickness of aquifers dwindles towards west. The discharge is generally low and varies between 11 to 24 Ips against the draw down more than 15m.

In and around Gopalpur of BahanagaBlock aquifers are thin and mixed with finer materials and are low yielding. Also in Kasbajaypur-Bahanga area the formation are predominantly argillaceous in nature and sand horizon are lesser. The yield generally varies between 20 to 30 lps against the draw down around 20m. In this area auto flowing condition occurs from deeper aquifer blow 200m depths at Soud. In general in the northern part (north of Balasore town) thickness of aquifers as well as yield is more in comparison to southern part of the District (south of Balasore town).

7.2 Depth of water level:

Categorization of depth to water level of pre-monsoon period (Apr-2015)

No. of wells measured	Depth to water level (m bgl)		0-2 (m)		2-5 (m)		5-10 (m)		10-20(m)	
	Min	Max	No.	%	No.	%	No.	%	No.	%
25	2.41	7.81	0		2	8	23	92	0	---

Depth to ground water levels during the post monsoon period (April 2015) varie between 2.41 and 7.81 m bgl. Categorization of depth to water level of post-

monsoon period (November 2012) for HNS in BalasoreDistrict is presented below in table

Categorization of depth to water level of pre-monsoon period (Nov-2015)

No. of wells measured	Depth to water level (m bgl)		0-2 (m)		2-5 (m)		5-10 (m)		10-20(m)	
	Min	Max	No.	%	No.	%	No.	%	No.	%
34	1.08	5.18	6	17	27	79.4	1	2.9	0	

7.3 Ground WaterQuality

Ground water in the phreatic aquifers in BalasoreDistrict slightly alkaline in nature, which is also colourless, odourless. The specific electrical conductance of ground water in phreatic zone at 25°C. The suitability of ground water for drinking purpose has been evaluated on the basis of pH, Total hardness (T.H), Ca, Cl, F and NO3. The chemical concentration of these constituents is presented.

7.4 Ground Water Development

In the rural areas the entire water supply is dependent on ground water. Ground water development is mainly carried out in the District through dug wells and Hand pumps. In general dug wells are of 2 m diameter and the depth ranges between 8 to 15 m depending on the thickness of the weathered zone, tapping the shallow aquifer in the weathered zone and uppermost slice of the basement. Large number of dug wells used for drinking water is under private ownership for which there is no reliable data. Over the years Mark II/ Mark III hand pumps are being drilled in large numbers for ground water development. These hand pumps have the following two major advantages i) less susceptible to contamination from surface sources and ii) tap fractures between 20-60m depth which have been found to be less affected by seasonal water level fluctuation and thus have lesser chances of failure even during extreme summer. In rural areas of BalasoreDistrict the number of hand pumps drilled by PHED is 12311 of which 9342 are under working condition. There are 574 dug wells constructed by government departments that are under regularuse.In the urban areas ground water plays a supplementary role in water supply, the major supply being made through dams, reservoirs or weirs across rivers

or streams. No authentic data is available on the number of ground water structures catering the urban water supply.

As per the latest ground water resource estimation carried out adopting GEC 97 methodology, the overall stage of ground water development in Balasore District has been found to be 41 % indicating enough scope for future development. The ground water resources of Balasore District is given in the table

7.5 Ground Water Related Issue and Problems

Some of key ground water related issues are

- I. Locating suitable sites for borewells
- II. Suitable design of dug wells and handpumps
- III. Taking up artificial recharge projects to augment the resource availability in Balasore District.
- IV. Optimal development of irrigation potential by developing ground water available for future uses.
- V. Creating public awareness for conserving ground water through awareness camps, NGO's and mass media.

7.6 Mass Awareness Campaign (MAP) & Water Management Training Programme (WMTP) by CGWB

NIL

Area Notified by Cgwb/Sgwa

None

7.8 RECOMMENDATIONS

As the District suffers from water scarcity, it is recommended to take artificial recharge at suitable locales. On the basis of the hydrogeological criteria such as post monsoon water level below 7 m bgl indicating availability of sufficient space in the unsaturated zone to retain additional water and availability of surplus surface runoff, 250 Sq kms area in Balasore District has been demarcated as suitable for artificial recharge. Through this 41.25 mcm water can be recharged.

In the hard rock areas, pin pointing suitable sites for bore wells is always a challenge. Considering the anisotropy in distribution of fractures at deeper level, suitable sites may be selected using remote sensing techniques in association with geophysical and hydro- geological investigations.

For deriving optimal benefit from aquifers in areas under fissured formation, the dug wells should be designed to penetrate the weathered zone as well as top part (1-2 m) of the underlying bed rock, so as to get the full benefit, from the total thickness of the shallow aquifer. For hand pumps and shallow tube wells the casing provided against the weathered zone should be slotted at the bottom so that the well can extract shallow ground water also. In urban areas use of shallow aquifers should be encouraged.

The surface run off in urban areas and its peripheral parts should be harnessed to augment the ground water resource through appropriate recharge techniques. For urban areas roof top rain water harvesting and artificial recharge is most suitable. Location and design of the structures should be guided by findings from hydrogeological and geophysical surveys. Sites for artificial recharge should be taken up at places where sufficient thickness of weathered zone as well as fracture/fracture zones is available. The depth of the recharge well should be governed by the depth of occurrence of the fractures.

8.0 RAINFALL OF THE DISTRICT AND CLIMATE CONDITION

8.1 Month wise rainfall:

The driest month is November, with 31 mm of rain. There is on average 3 mm of precipitation in December. In July, the precipitation reaches its peak, with an average of 313.98 mm.

Year		2020	2021	2022	Average
Sl. No.	Month	(mm)	(mm)	(mm)	(mm)
1	Jan	41.71	0.00	17.67	59.38
2	Feb	16.48	0.00	35.92	52.40

3	Mar	52.00	0.00	0.00	52.00
4	Apr	123.27	34.75	3.36	161.38
5	May	218.76	342.22	80.54	641.52
6	Jun	221.88	175.22	173.33	570.43
7	Jul	149.18	216.21	342.52	707.91
8	Aug	414.26	220.58	462.67	1097.51
9	Sep	109.40	456.06	187.33	752.79
10	Oct	185.24	177.93	179.42	542.59
11	Nov	6.00	0.92	0.00	6.92
12	Dec	0.00	58.47	0.00	58.47
Total		1538.18	1682.36	1482.76	4703.3

The Indian Meteorological Department, Bhubaneswar, vide letter No. BBS/RMC/CS-312, dated 18th January, 2016 has provided the period of Rainy Season viz. Normal dates of Onset and Withdrawal of South West Monsoon over India as state-wise. The duration for the period is 10th June to 15th October.

8.2 Climate

The climate in Balasore is warm and temperate. In winter, there is much less rainfall in Balasore than in summer. The Köppen-Geiger climate classification is Cwa. The average temperature in Balasore is 24.7 °C.

Temperature Graph- Balasore

May is the warmest month of the year. The temperature in May averages 32.3 °C. January has the lowest average temperature of the year. It is 16.5 °C.

Source: Indian Meteorological Department.

9.0 DETAILS OF MINING LEASE OF MORRUMIN THE DISTRICT

No Quarry lease has been granted.

10.DETAIL OF ROYALTY OR REVENUE RECEIVED IN LAST THREE YEARS:

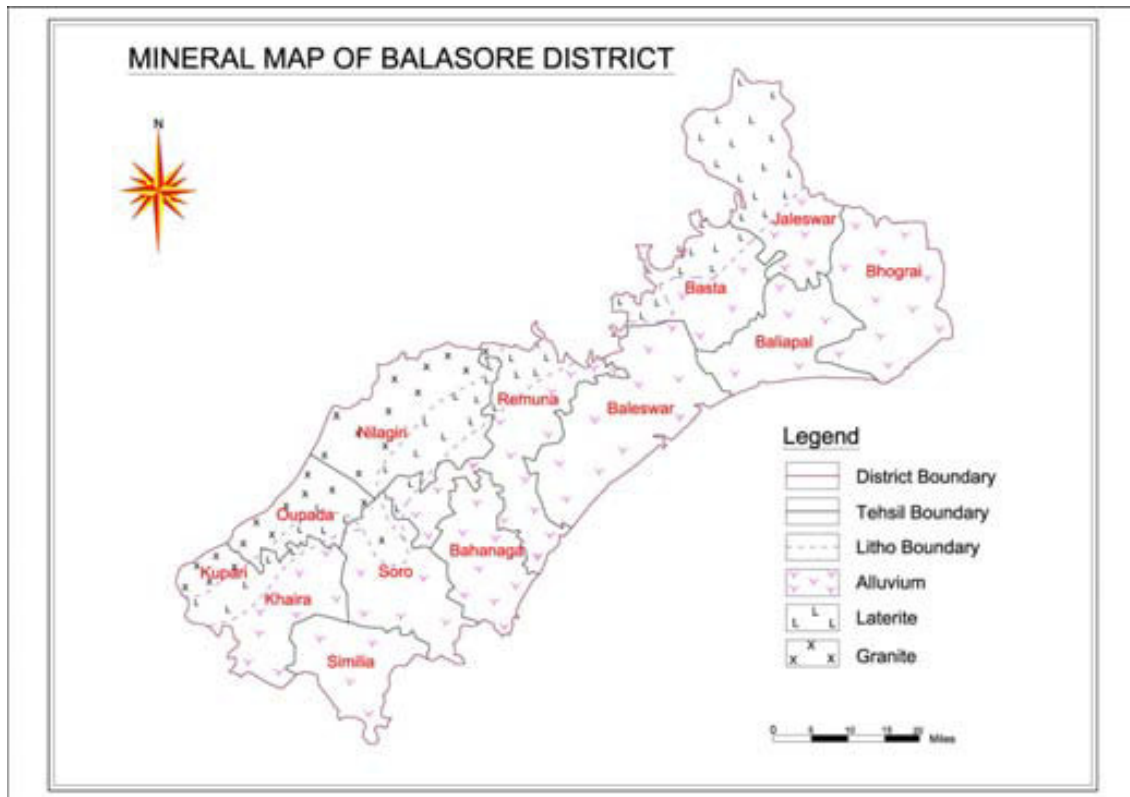
Sl. No.	Name of the Tahasil	2016-17	2017-18	2018-19	Total Amount (Lakh)
1	Bahanaga	Nil	Nil	Nil	Nil
2	Balasore	Nil	Nil	Nil	Nil
3	Baliapal	Nil	Nil	Nil	Nil

4	Basta	Nil	Nil	Nil	Nil
5	Bhogarai	Nil	Nil	Nil	Nil
6	Jaleswar	Nil	Nil	Nil	Nil
7	Khaira	Nil	Nil	Nil	Nil
8	Nilgiri	Nil	Nil	Nil	Nil
9	Oupada	Nil	Nil	Nil	Nil
10	Remuna	Nil	Nil	Nil	Nil
11	Simulia	Nil	Nil	Nil	Nil
12	Soro	Nil	Nil	Nil	Nil
Grand Total				Nil	Nil

11. DETAIL OF PRODUCTION OF MINOR MINERALS IN LAST THREEYEARS:

Sl. No.	Name of the Tahasil	2016-17	2017-18	2018-19	Total Quantity (Cubic meter)
1	Bahanaga	Nil	Nil	Nil	Nil
2	Balasore	Nil	Nil	Nil	Nil
3	Baliapal	Nil	Nil	Nil	Nil
4	Basta	Nil	Nil	Nil	Nil
5	Bhogarai	Nil	Nil	Nil	Nil
6	Jaleswar	Nil	Nil	Nil	Nil
7	Khaira	Nil	Nil	Nil	Nil
8	Nilgiri	Nil	Nil	Nil	Nil
9	Oupada	Nil	Nil	Nil	Nil
10	Remuna	Nil	Nil	Nil	Nil
11	Simulia	Nil	Nil	Nil	Nil
12	Soro	Nil	Nil	Nil	Nil
Grand Total					Nil

12. MINERAL MAP OF THE DISTRICT:



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

Nil

14. TOTAL MINERAL RESERVE AVAILABLE IN THE DISTRICT

Total mineral reserve of Morrum will be determined after detail study or grant of potential area, which may investigate as per details below.

- (i) Blocks were identified based on geological studies through field observation.
- (ii) Mineable resource was calculated by considering detail prospecting.

(iii) Area calculated as per GPS co-ordinates and information obtained from local people. Land detail need to be verified from revenue record.

(iv) Since this is an interim report, as per the present requirement of minerals, more such Blocks need to be identified and the data should be updated periodically, after certain intervals to update the data bank of DSR.

Summary of Identified Mineral Potential:

Sl. No.	Name of the mineral	Name of the lessee	Address and contact No. of the lessee	Letter of Intent Grant Order No. and date	Area of mining lease to be allotted	Validity of LoI	Use (Captive / Non-Captive)	Location of the Mining lease (Latitude & Longitude)
1	2	3	4	5	6	7		
4 new sairat detected in Nilgiri Tahasil (1-Govt. Khata and 2-Private Khata)								

15. QUALITY/GRADE OF MINERAL AVAILABLE IN THE DISTRICT

Morrum found in District:-

Morrum of the District is very much suitable for making of various construction purposes.

Use of Mineral:

Morrum of the District is used mainly for Road construction, also the Morrum is used in filling in various construction activities.

16. 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 Govt. of India & PSUs under "Make In India" programme.

It is proposed to start the Morrum production for full fill the Requirement of the District which will enhance the revenue of the District and also support the livelihood of the local people.

17. MAP OF EXISTING MINING LEASES IN THE DISTRICT:

Enclosed as Plate-I

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

Nil

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

Eco sensitive zone of Kuldiha wild life sanctuary is located within the District.

20. IMPACTS OF MINING ON ENVIRONMENT:

The most important environmental impact of mining projects is:-

Transportation sources:

Transportation sources of air pollutants include heavy vehicles used in excavation operations, cars that transport personnel at the mining site, and trucks that transport mining materials. The level of polluting emissions from these sources depends on the fuel and condition of the equipment. Even though individual emissions can be relatively small, collectively these emissions can be of real concern. In addition, mobile sources are a major source of particulate matter, carbon monoxide, and volatile organic compounds that contribute significantly to the formation of ground-level ozone.

Stationary sources:

The main gaseous emissions are from combustion of fuels in power generation installations, and drying, roasting, and smelting operations. Many producers of precious metals smelt metal on-site, prior to shipping to off-site refineries. Typically, gold and silver is produced in melting/fluxing furnaces that may produce elevated levels of airborne mercury, arsenic, sulfur dioxide, and other metals.

Fugitive emissions:

Common sources of fugitive emissions include: storage and handling of materials; mine processing; fugitive dust, blasting, construction activities, and roadways associated with mining activities; leach pads, and tailing piles and ponds; and waste rock piles. Sources and characteristics of fugitive emissions dust in mining operations vary in each case, as do their impacts. Impacts are difficult to predict and calculate but should be considered since they could be a significant source of hazardous air pollutants.

Noise and vibration:

Noise pollution associated with mining may include noise from vehicle engines, loading and unloading of rock into steel dumpers, chutes, power generation, and other sources. Cumulative impacts of shoveling, ripping, drilling, blasting, transport, crushing, grinding, and stock-piling can significantly affect wildlife and nearby residents.

Vibrations are associated with many types of equipment used in mining operations, but blasting is considered the major source. Vibration has affected the stability of infrastructures, buildings, and homes of people living near large-scale open-pit mining operations. According to a study commissioned by the European Union in 2000: "Shocks and vibrations as a result of blasting in connection with mining can lead to noise, dust and collapse of structures in surrounding inhabited areas. The animal life, on which the local population may depend, might also be disturbed."

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

- Water sprinkling on haul road, loading and unloading points.
- Plantation along the safety zone and dump area.
- Providing dust masks to workers.
- Regular monitoring of ambient air quality.
- Provision of air-conditioned cabin of Excavators and Dumpers.
- Regular and proper maintenance of working equipments.

- Periodic medical examination of the workers and organize medical camp in the area.
- Use mill Second Delay Detonator in blasting operation.
- Provisions of ear plug to the workers.
- Regular training program to the mine workers and operators.

23. RECLAMATION OF MINED OUT AREA

Necessity of Reclamation & Rehabilitation:

- Exponential growth in mineral production since 1980.
- Mining activities cause physical, chemical, biological and socio-economic changes in the area.
- Surface mining activities disturb the original land profile.
- In India, mineral production comes mostly from open cast mines & hence Land degradation problems is of serious concern.
- An intricate, in-depth and site-specified techniques involving integrated approach is necessary.

Reclamation has three vital roles:

- Reclamation** – Reclamation means return the mined-out land with useful life. It implies restoring the land to a form and productivity that is useful and in conformity with a prior land use. Reclamation always may not be a single-phase operation.
- Rehabilitation** – Rehabilitation is to bring back the degraded land to a normal stage by a special treatment. It is a process of taking some mitigation measures for disturbed environmental condition created through mining activities.
- Restoration** – Restoration is the process of returning the mined out land being fit to an acceptable environmental condition. However, the general acceptable meaning of the term is bringing the disturbed land to its original form. Restoration is often used to indicate that biological properties of soil are put back to what they were. This is a rare phenomenon.
- iv. When active mining ceases, mine facilities and the site are reclaimed and closed. The goal of mine site reclamation and closure should always be to return the site to a condition that most resembles the pre-mining condition. Mines that are notorious

for their immense impact on the environment often made impacts only during the closure phase, when active mining operations ceased. These impacts can persist for decades and even centuries.

Mine reclamation and closure plans must describe in sufficient detail how the mining company will restore the site to a condition that most resembles pre-mining environmental quality; how it will prevent – in perpetuity – the release of toxic contaminants from various mine facilities (such as abandoned open pits and tailings impoundments); and how funds will be set aside to insure that the costs of reclamation and closure will be paid for.

Proposed future land use after reclamation:

a. Forestry, b. Recreation, c. Water Reservoir, d. Crop Land, e. residential/Commercial, f. Fish & wildlife Habitat, g. Undeveloped Land, h. Grazing/Pasture Land

Statutory requirement:

As per the Mineral Conservation Development Rule, 2017, the following rules must be bear in mind by the mine owner/agent/manager, which is a part of reclamation activities –

Rule 22, Mine Closure Plan

Rule 23, Submission of Progressive Mine Closure Plan Rule 24, Submission of Final Mine Closure Plan

Rule 26, Responsibility of holder of mining lease Rule 27, Financial Assurance

Rule 35, Sustainable Mining

24. RISK ASSESSMENT AND DISASTER MANAGEMENT PLAN:

Mining activity because of the very nature of the operation, complexity of the systems, procedures and methods always involves some amount of hazards. Hazard identification and risk analysis is carried for identification of undesirable events that can leads to a hazard, the analysis of hazard mechanism by which this undesirable event could occur and usually the estimation of extent, magnitude and likelihood of harmful effects. The activities which can cause high risk related to face stability and the person blasting the shots. It was observed that on a working face of the mine, there were large cracks and unsupported rocks were present, which can lead to a serious hazard and injure workers engaged in loading operation and machineries

because of rock falls or slides. This type of condition turn out because improper dressing of the bench and improper supervision. To avoid the hazards due to fall of rocks the face must be examined, made suitable for working and the remedial measures must be taken to make it safe if there is any doubt that a collapse could take place. Working of the face should be in the direction taking into account the geology of the area such that face and quarry side remain stable. Another major risk identified in mines is due to the firing of explosive by an unqualified person. In the mines there is problem of fly rocks and the village is located close to the mine and so it is rated high as it can affect may people. Explosives by nature have the potential for the most serious and catastrophic accident. Planning of round of shots, holes correctly drilled, direction logged, weight of explosive suitable for good fragmentation are the few of the steps necessary to ensure its safe use and if the shots are not properly designed can result in misfires, early ignition and flying rocks. No person is allowed to use explosives without being properly trained in its handling. In the mine a large numbers of heavy vehicles were in operation and the roads were not proper for haulage purpose. The haulage roads were not even and were not wide enough for the crossing purpose and hence the chances of hazards are very high. The main hazards arising from the use large earth moving vehicles are incompetent drivers, brake failure, lack of all-around visibility from the driver position, vehicle movements particularly reversing, roll over, and maintenance. Those most at risk are the driver and pedestrians likely to be struck by the vehicle, and drivers of smaller vehicles, which cannot be seen from the cabs of large vehicles. Edge protection is always necessary to prevent inadvertent movement over the edge of roadway or a bench. Seatbelt will protect driver in case of roll. Good maintenance and regular testing are necessary to reduce the possibility of brake failure. Access to the vehicles should always be restricted to those people necessary for the work in hand. The use of personal protective equipment and proper arrangements is essential to check if the person is wearing protective equipment or not. The personal protective equipment includes helmet, non-skid safety boots, safety glasses, earmuffs etc. The required personal protective equipment should be provided and used in a manner thatprotects the individual from injury. Few minor injuries which can be prevented are slip, trip, or fall hazards; hazards due to rock

falls and collapse of unstable rocks, atmosphere containing toxic or combustible gases; protects from chemical or hazardous material etc. A disaster management plan should be prepared for taking care of for any disaster. Other risk which are included in this category are noise, as it occurs and it can lead to permanent disability. There are problems related to road traffic in and out issuers; inappropriate exposure of moving machines; mechanical failure and because of large number of moving trucks and dumpers there is large quantity of dust present in roadways which affects the operators and can lead to accidents causing injury. They are in acceptable range because of precautions measures taken but no step is taken it can cause hazard hence steps should be taken to reduce the hazards such as for dust suppression system should be installed. Other problems like occurrence of lots of mosquitoes in the area due to unhygienic conditions which affect the human health causing malaria, dengue etc. and causing a person to be hospitalized.

Disaster in the mines like fires, explosions, entrapments, and inundations can occur any time, so emergency preparedness is a must. The Disaster management plan and risk assessment in the mines will include all sorts of above mentioned emergency and the extent that this plan will be implemented will depend on the nature and scope of the emergency. The basic purpose of Disaster management plan and risk assessment to ensure that mine rescue and recovery activities are conducted safely for rescuer and survivors. According to MMR act 1961 a standard operating procedure should be drawn for involvement different category of staff and officers. The SOP should be updated periodically to reduce the chaos and response to the emergency should be quick and smooth. The responsible person should be familiar with his responsibility during the mock drills. One or two standby should be there to replace the person in Emergency situation. Rescue operations should not include the survivors for any assistance.

First Information of Disaster / Emergency should go to the attendance clerk on duty. Duties of attendance Clerk (Emergency Siren) the attendance clerk or other designated person should on getting information of major accident, sound a hooter or a siren immediately declaring a state of emergency at the mine and then to contact the manager and on his advice to call key personnel using the information

listed in the Emergency Organization Chart. It is important that all telephone calls are recorded in a telephone log book. Duties of Other Officials should be displayed and handed over to all concerned. Copy the same should be kept at Manager's Office for ready reference. Establishment of Control Room at Unit Level, Area Level and Company Level is essential. Control Room should keep the contact information about –

- Company Manager
- Company owner/ Administrative officer.
- District Administration
- Govt. Hospitals in Nearby Localities,
- Private Nursing Homes of Localities

Attendance roaster and duty charge register should be properly maintained so the record of missing people can be obtained.

25. DETAILS OF THE OCCUPATIONAL HELTH ISSUE IN THE DISTRICT:

The persons employed in the mines are exposed to a number of hazards at work which adversely affect their health. Some of the important ones are dust, noise, heat, humidity, vibration etc. In recent times, there has been increasing awareness among mining industry and the workers about occupational diseases such as Coal Worker's Pneumoconiosis, Silicosis, Manganese Poisoning, Hearing Impairment etc. caused by exposure to health hazards at work. Almost all occupational diseases are known to cause permanent disablement and there is no effective treatment. However, most of the occupational diseases can be prevented by adopting proper occupational health measures and engineering control on airborne dust at workplace.

Following diseases have been notified as the diseases connected with mining operations for the purpose of sub-section (1) of Section 25 of the Mines Act, 1952: S.R.O. 1306 dated the 21st July, 1952

1. Silicosis
2. Tuberculosis

Total Number of TB cases in Balasore District of last 5 years

S.R. O. 2521 dated the 26th June, 1986

Cancer of lung or the stomach or the pleura and peritoneum (i.e. mesothelioma)

25 S.O. 399(E) dated 21st February, 2011

1. Noise Induced Hearing Loss
2. Contact Dermatitis caused by direct contact with chemical.
3. Pathological manifestations due to radium or radioactive substances

System of Detection of Occupational Diseases in Mines In order to detect occupational diseases the industry is required to conduct medical examinations and health surveillance of workers as per the provisions of Mines Act. The present efforts of mines management are concentrated on detection of silicosis, Pneumoconiosis and other notified diseases. Very little attention is paid to other occupational diseases. The essential features of health surveillance programme required to be carried out in mines are:

- (a) Initial Medical Examination of persons to be employed in mines.
- (b) Periodic Medical Examination once every five years. General physical examination, chest radiographs, lung function tests and audiometry.
- (c) Classification of chest radiographs of workers as per ILO Classification.
- (d) Medical examination within one year of superannuation. Evaluation of all cases of suspected pneumoconiosis by Pneumoconiosis Medical Board.
- (f) Maintenance of medical records till the person is in service and 10 years thereafter. The cases of silicosis detected during health surveillance programme are referred to Pneumoconiosis Medical Board of the mining companies for evaluation and certification. If certified, the case is notified to the enforcement authority and evaluated for disability and payment of compensation. Many cases of silicosis and other pneumoconiosis go undetected and a large number of cases of silicosis are misdiagnosed due to lack of training of medical professionals.

**26. PLANTATION GREEN BELT DEVELOPMENT IN RESPECT OF LEASE
ALREADY GRANTED IN THE DISTRICT:**

During mining operation green belt development through plantation is most important for environment safe guard, which should be supervision by mining department. Different type of species should be planted near lease periphery to keep environment clean at post mining period through reclamation. Where specific usefulness of land could be decided, afforestation is normally planned through the site could have been considered for better possibilities of land use.

27. CONCLUSION:

To meet the requirement of minerals in the present scenario, it is proposed to identify such potential areas at certain interval and get the data bank of DSR to be updated regularly. The mining activity in any area is on one hand bring revenue and employment (Direct and indirect) and on other hand if not done properly potential pollution and ecological imbalance increases, the ability of the ecosystem can also be reduced. Particulate matter transported by the wind as a result of excavations, blasting, transportation of materials, heavy equipments used raise these particulate levels; and Gas emissions from the combustion of fuels in stationary and mobile sources, explosions, and mineral processing. All these activities indirectly affected the biodiversity of area. Larger potential and smaller areas have been identified in Balasore District on the basis of geological study carried out during field observation, which can be considered for mining concession after all the parameters for statutory clearances are verified by consulting with concerned authorities.

The District Survey Report for Murrom (Minor Mineral) in respect of Balasore District in accordance with Appendix-X, Para-7 (iii) (a) of S.O. 3611(E) dt. 25.07.2018 of Ministry of Environment, Forest and Climate Change, New Delhi, Enforcement & Monitoring Guideline for Sand Mining-2020 and in compliance with the orders of Hon'ble Supreme Court dt. 10.11.2021 in connection with C.A Nos. 3661-3662 of 2020. Before preparation of this report, a survey has been conducted by District Environment Impact Assessment Authority (DEIAA) with the assistance of Irrigation Department, Forest Department, Public Works Department, Mining Department, Ground Water Boards, Remote Sensing Department, Mining Departments. The DSR is being submitted to SEIAA, Odisha, Bhubaneswar for necessary evaluation and approval.


S.D.O, Irrigation, Division,
Balasore


Regional Officer,
SPCB, Balasore



Mining Officer,
Baripada


S.D.O, Irrigation Division
Nilgiri


Sub-Collector, Nilgiri-cum
Chairman, Sub-Divisional Committee, Nilgiri


Sub-Collector, Balasore-cum
Chairman, Sub-Divisional Committee, Balasore &
Member Convener, DEIAA, Balasore


Divisional Forest Officer, (W.L)
Balasore


Superintending Engineer, Irrigation Division,
Balasore


Bhaskar Behera
Professor, Department
Of Bio-Tech, F.M University
Balasore


Collector & District Magistrate, Balasore-
cum- Chairman, DEIAA, Balasore

DETAIL OF MINOR MINERAL SAIRAT SOUCES (MURROM) IN RESPECT OF BALASORE DISTRICT

ANNEXURE - I

DETAIL OF MINOR MINERAL SAIRAT SOUCES (MURROM) IN RESPECT OF BALASORE DISTRICT

Name of the Tahasil	SL NO	Name of the Mineral	Name of the lease	Address & Contact number of the Lease	Mining Lease Grant order No & Date	Area of Mining Lease in (Hc)	Period for Minig Lease		Period of Mining Lease 1st/ 2nd renewal		Date of Commencement of Mining Operation	Status (working /Non working/t emp. Working for dispatch etc	captive/ Non captive	Obtained Environmental Clearance(Yes/No). If yes Letter No with Date of grant of EC	Location of the Minor lease(Longitude/Latitude)	Method of Mining(open cast /under ground)	Geological Reserve (MT/Cums)	Mineable Serve (MT/Ccums)	Royalty/Revenue Received in last 3 years (In Rupees)			Production of Mineral in last 3 years (In Cum)			
							From	To	From	To									2020-21	2021-22	2022-23	2020-21	2021-22	2022-23	
							7	8	9	10									11	12	13	14	15	16	17
Nilgiri Tahasil																									
Nilgiri	1	Bholadanga Murrom Quarry Pvt.	04/2021-22	Settled		Khata No. 45/12, Plot No. 1,2,5,6,7,8,9, 10,11,14,18, 19,20,21,26, 27,30,31,32, 33,34,35,36, 37,41,42,43, 44,45,65,68, 69,73,74,77 total area Ac. 11.735dec	N.A	N.A	N.A	N.A	N.A	Non working	Non captive	Yes	Lat-21°31'11.1"N to 21°31'20.8"N Long-86°43'0.7"N to 86°43'12.4"N	Open cast	2,51,100	2,07,200	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Nilgiri	2	Jamudiha Murrom Quarry	01/2021-22	Settled		Khata No. 1066/627 Plot No. 4108/4903 total area Ac.1.50dec	N.A	N.A	N.A	N.A	N.A	Non working	Non captive	Yes	Lat-21°29'01.26"N to 21°29'04.26"N Long-86°44'59.40"N to 86°45'03.51"N		38,502	22,010	NIL	NIL	NIL	NIL	NIL	NIL	

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Jaleswar Tahasil																									
Jaleswar	1	Baradiha Murrom Source	37/22-23	Manoj Kumar Balabantaray Prop. Of M/s Radharani Enterprises At/Po-Kupari Ps-Khaira Dist-Balasore		Khata No. 266 Plot No. 1608total area Ac.1.96dec	N.A	N.A	N.A	N.A	N.A	Non working	Non captive	Yes	Lat-21°52'19.3"N to 21°52'23.7"N Long-87°08'49.9"N to 87°08'55.7"N		57,655	40,250	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Jaleswar	2	Baradiha Murrom Source	37/22-23	Manoj Kumar Balabantaray Prop. Of M/s Radharani Enterprises At/Po-Kupari Ps-Khaira Dist-Balasore		Khata No. 495 Plot No. 1081,1093 & 1100total area Ac.2.47dec	N.A	N.A	N.A	N.A	N.A	Non working	Non captive	Yes	Lat-21°52'22.5"N to 21°52'26.9"N Long-87°07'58.5"N to 87°08'9.8"N		63,802	49,950	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Jaleswar	3	Baradiha Murrom Source	37/22-23	Manoj Kumar Balabantaray Prop. Of M/s Radharani Enterprises At/Po-Kupari Ps-Khaira Dist-Balasore		Mz. Baradiha, Khata No. 495, Plot No. 1330, total area Ac. 2.27dec	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Non working	Non captive	No	Information not available	Open cast	Not applicable	Not applicable	Nil	Nil	Nil	Nil	Nil	Nil	Nil

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Jaleswar	4	Baradiha Murrom Source	37/22-23	Manoj Kumar Balabantaray Prop. Of M/s Radharani Enterprises At/Po-Kupari Ps-Khaira Dist-Balasure		Mz. Baradiha, Khata No. 1173/774 Plot No. 3812, total area Ac. 0.56 dec.	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Non working	Non captive	No	Information not available	Open cast	Not applicable	Not applicable	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Jaleswar	5	Baradiha Murrom Source	37/22-23	Manoj Kumar Balabantaray Prop. Of M/s Radharani Enterprises At/Po-Kupari Ps-Khaira Dist-Balasure		Mz. Baradiha, Khata No. 1173/516 Plot No. 3760/7363, 3761/7364, total area Ac. 9.18 dec.	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Non working	Non captive	No	Information not available	Open cast	Not applicable	Not applicable	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.

Oupada Tahasil

Oupada Tahasil	1	Garuda Hata Murrom Quarry	Not intimated	NA		Mz. Garuda Hata Khata No. 81, Plot No. 2158, 286	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Non working	Non captive	No	Information not available	Open cast	Not applicable	Not applicable	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Oupada Tahasil	2	Aghasul Murrom Quarry	Not intimated	NA		Mz. Aghasul Khata No. 23, Plot No. 291	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Non working	Non captive	No	Information not available	Open cast	Not applicable	Not applicable	Nil	Nil	Nil	Nil	Nil	Nil	Nil

Final List of Potential Mining Lease (Existing & Proposed)

Tahasil	Sl No	Source detail	Lease detail	Area (in Ha)	Distance (in K.M) from PA/BR/WC	Distance from forest area (in K.M)	Mining lease within 500 metres (if yes cluster area)	Total excavation in Tonnes/ Annum considering digging depth max as 3 metres	Mineral to be mined (sand/Bajri/RBM etc.	Existing/ proposed
1	2	3	4	5	6	7	8	9	10	11
Nilgiri tahasil										
Nilgiri	1	Bholadanga Murrom Quarry Pvt.	Bholadanga Murrom Quarry Pvt.	4.746	PA, WC-12.61K.M BR-0.65KM	Kuldiha Wild life Sanctuary 12.61 km	No	41,440	2,07,200	
Nilgiri	2	Jamudiha Murrom Quarruy	Jamudiha Murrom Quarruy	0.607	PA, WC-12.9K.M BR-1KM	Kuldiha Wild life Sanctuary 12.9 km	No	4,402	22,010	
Jaleswar tahasil										
Jaleswar	1	Baradiha Murrom Source	Baradiha Murrom Source	0.793	BR-18KM	Similipal 70 Km, Kuldiha 63 Km	No	8,050	40,250	
Jaleswar	2	Baradiha Murrom Source	Baradiha Murrom Source	0.999	BR-18KM	Similipal 70 Km, Kuldiha 63 Km	No	9,990	49,950	
Jaleswar	3	Baradiha Murrom Source	Baradiha Murrom Source	0.918	BR-18KM	Similipal 70 Km, Kuldiha 63 Km	No	Not assessed	Not assessed	
Jaleswar	4	Baradiha Murrom Source	Baradiha Murrom Source	0.226	BR-18KM	Similipal 70 Km, Kuldiha 63 Km	No	Not assessed	Not assessed	
Jaleswar	5	Baradiha Murrom Source	Baradiha Murrom Source		BR-18KM	Similipal 70 Km, Kuldiha 63 Km	No	Not assessed	Not assessed	
Oupada Tahasil										

1	2	3	4	5	6	7	8	9	10	11
Oupada	1	Garuda Hata Murrom Quarry	Garuda Hata Murrom Quarry	Not reported	Not reported	Not reported	No	Not assessed	Not assessed	
Oupada	2	Aghasul Murrom Quarry	Aghasul Murrom Quarry	Not reported	Not reported	Not reported	No	Not assessed	Not assessed	

Final Transportation Routes for individual leases and leases in cluster

Name of the Tahasil	Name of the Murrom source	Lease No.	Transportation Route number	Whether runs on Govt. or Private Land	Details of village/Forest area/Agricultural land through which the approach road runs if any	Number of tippers / day of lease	Number of tippers / day of all the lease on route	Length of Route in K.M	Type of Road (Black Topped/unpaved)	Recommendation for road (Black Topped/unpaved)	The road will be constructed by Government /Lease Owner	Route map and location
1	2	3	4	5	6	7	8	9	10	11	12	13
Nilgiri Tahasil												
Nilgiri	Bholadanga Murrom Quarry Pvt.	04/2021-22	village road	Govt. Land	Bholadanga	NA	NA	4 K.M	Unpaved	Unpaved	Lease Owner	
Nilgiri	Jamudiha Murrom Quarry	01/2021-22	village road	Govt. Land	Jamudiha	NA	NA	12 K.M	Unpaved	Unpaved	Lease Owner	
Jaleswar Tahasil												
Jaleswar	Baradiha Murrom Source	37/2022-23	village road	Govt. Land	Baradiha	NA	NA	20m	Unpaved	Unpaved	Lease Owner	
Jaleswar	Baradiha Murrom Source	37/2022-23	village road	Govt. Land	Baradiha	NA	NA	20m	Unpaved	Unpaved	Lease Owner	
Jaleswar	Baradiha Murrom Source	37/2022-23	village road	Govt. Land	Baradiha	NA	NA	20m	Unpaved	Unpaved	Lease Owner	
Jaleswar	Baradiha Murrom Source	37/2022-23	village road	Govt. Land	Baradiha	NA	NA	20m	Unpaved	Unpaved	Lease Owner	

1	2	3	4	5	6	7	8	9	10	11	12	13
Jaleswar	Baradiha Murrom Source	37/2022-23	village road	Govt. Land	Baradiha	NA	NA	20m	Unpaved	Unpaved	Lease Owner	
Oupada Tahasil												
Oupada	Garuda Hata Murrom Quarry	Not initiated	village road	Govt. Land	Garuda Hata	Not reported	Not reported	Not reported	Unpaved	Unpaved	Lease Owner	
Oupada	Aghasul Murrom Quarry	Not initiated	village road	Govt. Land	Aghasul	Not reported	Not reported	Not reported	Unpaved	Unpaved	Lease Owner	

Cluster No.	Transportation Route number	Number of tippers / day of cluster	Number of tippers / day of all the clusters on route	Length of Route in K.M	Type of Road (Black Topped/unpaved)	Recommendation for road (Black Topped/unpaved)	The road will be constructed by Government /Lease Owner	Route map and location
No cluster approach of sand sources in this district								