Environment Management Plan
For
Morada Brick Earth Quarry

Tahasil: Morada, Mayurbhanj, Odisha

B2 Category Project

Applied By

M/s Rupa Bricks
Prop. - Sri Uttam Kumar Ghadei
At/Po: Morada, Pin-757020
District: Mayurbhanj, Odisha

Lease Details

Village	Tahasil	District	Khata No.	Plot No.	Kissam	Area in Acres/Ha.
Morada	Morada	Mayurbhanj	312	729	Sarad-II	3.20
					Total	3.20 Acres or 1.29 Ha.

Prepared By

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ENVIRONMENTAL MANAGEMENT PLAN FOR MORADA BRICK EARTH QUARRY IN MORADA VILLAGE MORADA TAHASIL OF MAYURBHANJ DISTRICT

1. Environmental Management Plan (EMP) consists of a set of impact mitigation, management monitoring waste minimization and institutional measures to be taken during implementation and operation of the project to eliminate the adverse environmental impacts or to reduce them to the acceptable level. This Environmental Management plan addresses, the component of environment, which are likely to be affected by the different operation in the Brick Earth Quarrying/Mining.

2. The objectives of EMP are:-

- Overall conservation of environment.
- Minimization of waste generation and pollution.
- Judicious use of natural resources and water.
- Safety, welfare and good health of the work force and populace.
- Ensure effective operation of all control measures.
- Vigilance against probable disasters and accidents.
- Monitoring of cumulative and long term impacts.
- Ensure effective operation of all control measures.

3. **The purpose of an EMP is to:**

(i) Assists proponent in the preparation of an effective and user friendly activity chart for environment management.

(ii) Ensure that the commitments made as part of the project's life are implemented throughout the project period.

(iii) Ensure that environment management details is captured and documented at all stages of a project.

4. Baseline information:

The Morada Brick Earth quarry is situated in Morada village of Morada Tahasil Mayurbhanj district. The extend of areas of leases are 1.29 Ha. The leased out land is non forest Government category. The Morada Lease area is bounded between the Latitudes 21^0 50' 29.7"N to 21^0 50' 35.4"N –Latitude 87^0 00'20.11"E to 87^0 00' 24.1"E in Toposheet no. 73K/13 covering 1.29 Ha. (Ref Fig. No. 1 & 2).

Topographically the lease area is the Agricultural Land. The nearest National Highway no:16 is passes at a distance of 21.0 km from the quarry area. The highest RL of the quarry area is 20 mRL . The land of ML areas are 1.29 ha. and non forest stitiban private land under Sarad-2, Kisam . There is no mining lease exists within 500 meters other than this leases. No ecologically sensitive area exists within 5 kms from the lease area. The district headquarter Baripada situated at a distance of 44 kms while the state headquarter Bhubaneswar at 252 kms from the Brick Earth site.

(i) Land Use Pattern

Proposed Quarrying of brick earth is only utilise non forest land of Sarad-II category . While mining proper safety barrier and distance of quarry from water course will be maintained. The land escape after mining will be reclaimed and plantation will be done all around.

Particulars	**Present land use (Ha.)**	**At the end of 5 years (Ha.)**
Area under excavation	---	0.848
Dump Area	---	----
Safety zone	---	0.442
Unused	---	----
Total		**1.29**

(ii) Quality of air, ambient noise level and water

The quality of air could be said quite clean and natural, free from any harmful gases arising out of any industrial establishment/ complex including mining ventures. The area in and around the project could be said free from any nuisance of repetitive nature such as noise. Thus, it is quite calm. The noise level is also not much high.

(iii) Water regime

The average annual rainfall in the area is more than 1500 mm per year. The area is abundant source of surface and ground water.

(iv) Flora and fauna

There are few shrubs, bushes & few trees Near the lease area**.** No Fauna exist in the lease areas.

(v) Climatic conditions

The weather is hot through the months of March to July – the average summer maximum is 40 °C (104 °F), and the average minimum is 23 °C (73 °F). From November to February, the average maximum temperature is 30 °C (86 °F), the average minimum is 15 °C (59 °F), and the climate is extremely dry. Cold northerly winds are responsible for a mild chill in January.

(vi) Human settlements

Morada is the nearest town with population around 2311. The population around 10 kms of the mines will be around 10,000.

(vii) Public buildings, places of worship and monuments

No National Monument, place of Worship, Sanctuary, National Park, exist with in 5 km periphery of the area.

(viii) Solid waste Management:

\ In Brick Earth quarry operation no solid waste expected to be generated.

5. Socio-economic Impact:

Positive impacts:

Employment:

Employment will be created during planning and preparation, construction and operational phases of the project. Employment opportunities created by lessee will provide a sustainable and safe working environment for women.

Community Skills Development:

The employees will benefit from the training programmers that will be instituted by leases to enable the community labour force to work in the different areas of project operations. This training will increase the number of technicians, electricians, and mechanics, among others, that will not only benefit leases but also the community at large during and after the project life.

Improved Standard of Living:

Employment opportunities created by the projects will increase income and therefore improve the overall standards of living in the area.

Community Organizational Capacity Development:

Through engagement of community members in development structures such as Community Development Committees, the community organizational capacity will be developed.

Improved Water Supply:

Supply of safe water for the community by leases will improve health standards and living conditions in the villages.

Economic Exposure and Development:

Running of these projects will make infrastructure and services available to the people. This will expose and introduce the local population to factors of economic development.

Adverse Social Impact

Price Inflation:

Increase in purchasing power of the community members through higher incomes from the mining, compounded by population increase and low agricultural productivity as a result of project will lead to inflation in the cost of goods and services, much to the detriment of the local population especially the poor and vulnerable.

Livelihood change

Due to the labour intensity of the mining, the project will attract the more able bodied persons from the community which in turn will lead to low labour availability in other sectors of the economy including agricultural, education and health skilled workers. Local employment opportunities will be created by the project. This impact will not be significant due to low level of education and skills in the area which will result in sourcing skilled workforce from outside the immediate area. But the magnitude of this impact will be high due to high number of dependants in a household.

Historical monuments etc.

There is no historical monument with in 10 km the lease area. So, there will be no impact on the historical monument due to proposed quarry activity in the area

6. PROJECT ACTIVITY

As per the Approved Mining Plan, size of the Lease area is 3.20 acres or1.29 Ha. with geological reserve of 27,906 cum. (Ref. Fig 3) and Mineable reserve of 17,623 cum Magnitude of the proposed operation is to produce 17,600 cum in 5 years or 3520 cum per annum of brick earth which will be further used in infrastructure project. The mining operation shall be carried out by manual method to achieve the production level. The maximum depth will be restricted to 2.0 m. The mining operation shall be carried out by manual method to achieve the production level. The proposed development

Year of Plan	**Sectional Area (m2)**	**Length of Influence**	**Brick Earth (m^3)**
1st	80	44	3520
2nd	80	44	3520
3rd	80	44	3520
4th	34.65	44	1525
	95	21	1995
Total			**3520**
5th	167.21	21	3520
	Total		**17600**

The proposed method of mining will be opencast and manual however the transportation will be done through dumper and tractor.

The average production per year will be 3520 cum per annum (Fig . No. 4). The depth of mining will be 2 meter , above water level. No waste or over burden will be generated. A total of 8 person will be required for the mining operation including 2 statutory and supervisory level official.

7. ENVIRONMENTAL MANAGEMENT PLAN

(i) **AIR ENVIRONMENT MANAGEMENT**:- The air Pollution in black trap mining occurs because of activities likes, Quarrying, loading unloading, crossing Transportation etc. Air Pollution cause by Quarrying activity is mainly SPM and vehicular emission.

Following mitigation measure is taken to minimize SPM generation.

1. Sparkling of water on haul road.
2. To control the emission of harmful gasses regular maintenance of equipment will be carried out on regular basis.
3. Proper mitigation measures like water sprinkling will be adopted to control dust generation on the quarry site.

4. Plantation will be carried out on approach roads barrio zone of the lease.
5. It is being ensured that all transportation vehicles will carry a valid PUC certificate.

During the course of mining no-toxic substance shall be released into the atmosphere being potential threat to health of human being. Proper maintenance of engines will be done to improve combustion process and brings reduction in pollution.

(ii) CONTROL OF DUST POLLUTION-

The main pollutant in air is PM10, which is generated due to various mining activities. However to reduce the impact of dust pollution the following steps should be taken during various mining activities.

a) During loading operation

(i) Care to reduce dust emission during brick earth mining & loading operations.
(ii) Avoid overloading of trucks and consequent spillage on the roads.

b) During Transport operation

(i) All the transport roads including the main ramp be kept wide, levelled, compacted and properly maintained and watered regularly during the shift operation to prevent generation of dust due to movement of dumpers, and other vehicles.
(ii) Brick Earth carrying trucks shall be effectively covered by Tarpaulin to avoid escape of fines to atmosphere.
(iii) Regular Compaction and grading of haul roads to clear accumulation of loose material.
(iv) Air quality shall be regularly monitored both in the core zone and the buffer zone.

c) Plantation work to be carried out

In order to reduce air pollution in the surroundings, green belt will be developed around mine approach road & barrier zone.

d) Monitoring of air pollution

Periodic air quality survey will be carried out to monitor the changes consequent upon mining activities as per the norms of Sate Pollution Control Board.

8. NOISE AND VIBRATION ENVIRONMENT

The ambient noise level monitoring carried out in and around the mine lease area / cluster to assess the ambient noise levels are well within the stipulated limits of MoEF & CC

Noise pollution due to excavation & transportation will cause some problem to the inhabitants of this area if there is human settlement in close proximity to the link roads in the lease area. Effective steps should be taken to keep the noise level well below the DGMS prescribed limit of 85 dBA.

Noise Abatement and Control

(i) All the machineries including transport vehicles will be properly maintained to minimize generation of noise.
(ii) Dense plantation in mining area will also reduce propagation of noise outside the core zone
(iii) Periodical monitoring of noise will be done to adopt corrective actions wherever needed
(iv) Plantation will be taken up along the approach roads. The plantation minimizes propagation of noise and also arrests dust
(v) PPE like ear plug, hand gloves, helmets will be provided to workers for noisy works.

Vibration Abatement (If blasting is done)

No drilling or blasting require for brick earth mining

9. WATER MANAGEMENT:

There will be no waste water generation from the brick earth mining operations.

Surface Water Management

There is no chance of surface water pollution. The Quarry will be done away from water course on the river bed only.

Ground Water Management

1. Depth of excavation /mining shall be restricted to above water level or 3 m whichever is less.
2. Necessary arrangement shall be made at the stockpiles to prevent silt and sediment flowing in water
3. No In stream mining will be done.

4. No effluent will be generated due to mining activities.

Water Conservation

The project do not consume any process water except for drinking, dust suppression and plantation. Plantation is proposed, which will increase the water holding capacity and help in recharging of ground water. Artificial rainwater harvesting is proposed for the present project.

10. SOLID WASTE AND TOP SOIL MANAGEMENT

Waste Management
In the Brick Earth mining no solid waste to be generated.

Top Soil Management
No top soil to be generated

11. GREEN BELT DEVELOPMENT

The proposed green belt shall be designed to control PM10, gaseous pollutants, noise, surface run off and soil erosion etc. Suitable local plant species shall be planted.

Plantation Program

Under the afforestation plan, plantation shall be carried out with in barrior zone & nearby villages and connecting roads , school and the areas allocated by the Panchayat/State authorities. Native plants like Neem, Peepal, Khejri and other local species will be planted.

Plant for Afforestation

Year	Saplings	Species	Place of Plantation
I	20	Neem, Khejari, Imli, Bel, Ashok, Amaltas, Babool and Mango etc. as per soil condition and suggestion of forest official	Nearby area of the School, at the Dump, at the govt. waste land provided by the Govt., at Own Private Land and nearby State Highway road
II	20		
III	20		
IV	20		
V	20		

List of Species for Greenbelt Development

S. No.	Scientific Name	Common Name	Type	Effective in Control
1	*Azadirachta indica*	Neem	Tree	Dust, air pollution, noise pollution
2	*Prosopis cineraria*	Khejari	Tree	Air Pollution
3	*Tarmarindus indica*	Imli	Tree	Air Pollution

4	*Aegle marmelos*	Bel	Tree	Air Pollution
5	*Polyalthia langifolia*	Ashok	Tree	Dust, Air Pollution
6	*Cassia Fistua*	Amalthus	Tree	Dust
7	*Acacia nilotica*	Babool	Tree	Air Pollution
8	*Mangifera induca*	Mango	Tree	Dust, air pollution, noise pollution
9	*Tectona grandish*	Teak	Tree	Dust, air pollution, noise pollution
10	*Sysgium cumini*	Jamun	Tree	Dust, air pollution, noise pollution

Source: Guidelines for Greenbelt Development, CPCB, March, 2000.

12. SOCIO-ECONOMIC ENVIRONMENT

Management Plan for Socio-Economic Environment

(i) In general, socio-economic environment will have positive impact due to the mining project in the area.
(ii) The deployed laborers will be from nearby villages only as these people are mainly dependent upon such mining activities.

13. OCCUPATIONAL HEALTH AND SAFETY

Occupational Health and Safety are important. Periodic assessment of it will be useful. Identifying workplace hazards, assessing risks to employee health and safety, are important. Health and Safety points are also important in many of the environmental aspects of the workplace

Occupational Health and Safety works

(i) The collection of sample of minor minerals from the quarry to analyse that it does not cause any occupational ill effects.
(ii) Except dust generation there is no source which can show a probability for health related diseases and proper dust suppression will control dust generation and dispersion.
(iii) Dust masks be provided to the workers working in the dust prone areas as additional personal protective equipment.
(iv) Awareness program be conducted about likely occupational health hazards so as to have preventive action in place.
(v) Any workers health related problem be properly addressed.
(vii Periodical medical checkup be conducted.
(vii) Promote occupational health and safety within workers in mine and develop safer and healthier ways of working;
(viii) Help supervise the investigation of accidents and unsafe working conditions, study possible causes and recommend remedial action;
(ix) Develop and implement training sessions for management, supervisors and workers on health and safety practices and legislation;
(x) Coordinate emergency procedures, mine rescues, fire fighting and first aid crews;

Budget for Occupational Health and Safety of the workers (Lakhs)

Items	Capital Cost	Recurring cost
Drinking water facility	--	Rs. 20000.00
Shelter and sanitation facility	--	Rs. 20000.00
Health Facility and first aid kit	--	Rs. 20000.00
Fuel for cooking	--	Rs. 10000.00
Total		Rs. 70000.00

14. COST OF EMP MEASURES FOR EACH LEASE

Following provisions are proposed to be taken for improving, control and monitoring of environment protection measures

Budgetary measures for EMP

Proposed Action Plan	Expenses per Year (in Rs.)
	Recurring
Pollution Control Dust Suppression	50000
Pollution Monitoring i) Air pollution ii) Water pollution	50000
3.Green Belt	10000
1. Reclamation of mined out area	5000
2. Haul road repair	10000
Miscellaneous	50000
Total	**175000**

15. ENVIRONMENT MONITORING PLAN

15.1 INTRODUCTION

Regular monitoring of environmental parameters is of immense importance to assess the status of environment during project operation. The knowledge of baseline conditions comes through monitoring of environmental parameters; the monitoring program will serve as an indicator for environmental conditions due to operation of the project. Monitoring is an important tool for the management, environmentalist and policy maker to make changes in pollution control equipments, environmental policy to save environment. It is decision making tool for the state of environment carried out through periodic monitoring. Further, impact assessment study is carried over short period of time and the data cannot bring out all variations induced by the natural or human activities. Therefore, regular monitoring program of the environmental parameters is essential to

take into account the changes in the environmental quality over the period of time to comply environmental conditions necessary to save environment.

15.2 MONITORING OBJECTIVE

Monitoring will conform to commitments and compliances. This may take the form of direct measurement and recording of quantitative information, such as amount and concentrations of discharges. The objectives of the monitoring are:-

- Very effectiveness of planning decisions;
- Measure effectiveness of operational procedures;
- Conform statutory and corporate compliance; and
- Identify unexpected changes.

15.2 ENVIRONMENTAL MONITORING CELL SEPARATELY FOR EACH AREA

A centralized Environmental Monitoring Cell will be established for monitoring of important and crucial environmental parameters which are of immense importance to assess the status of environment during mine operation. With the knowledge of initial parameters, deviations in environmental conditions due to operation of the mine will be assessed and mitigation steps will be taken to safeguard the environment. The routine monitoring program will be implemented under the project monitoring as per CPCB & MoEF & CC guidelines. Officer not below the rank of General Manager will be responsible of Environmental Management Cell and execution of environmental monitoring program.

Hierarchy of Environmental Management Cell

In order to maintain the environmental quality within the stipulated standard, regular monitoring of various environmental parameters will be necessary. Environmental Management Cell under Senior Officer (not below the rank of General Manager) will be constituted for regular monitoring, compliances, supervision and hearing of complain and reporting.

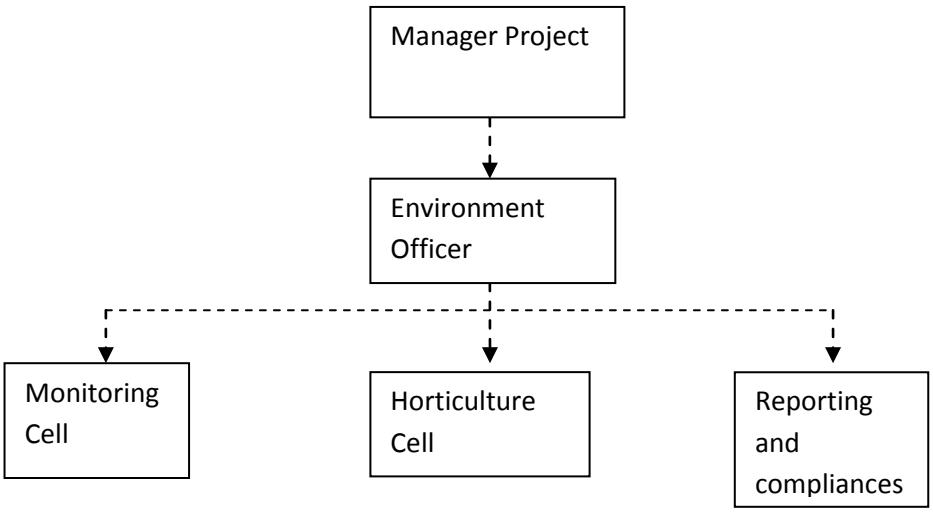


Fig: *Hierarchical Structure of Environmental Cell*

The core responsibilities of the Environmental Monitoring Cell will be:-

- The organization and interpretation of the environmental monitoring data to establish a record of change associated with the implementation of a project or the operation of an organization.

- The process of verification that all or selected parameters measured by Environmental Monitoring Program are in compliance with regulatory requirements, internal policies and standards, and established environmental quality performance limits.

- Assessment of the effective environmental management system, practices and procedures:

- The environmental monitoring and audit work will be carried out by qualified personnel.

- A summary of non-compliance of the environmental quality performance limits.

- To implement and monitor the control and protective measures based on the EMP.

- To coordinate the environment related activities to the top management within as well as with outside concerned agencies.

- To provide of health check up of workers and the people living in nearby villages.

- To develop greenbelt in the nearby villages, schools, Govt. offices and transportation routes.

15.4 ENVIRONMENTAL PARAMETER MONITORING

Environmental monitoring schedules will be prepared covering various phases of project advancement, such as Mining and regular operational phase. Environmental Monitoring Program will be conducted once in season except monsoon.

Reporting schedules of the reporting data

It is proposed that voluntary reporting of environmental performance with reference to the EMP will be undertaken.

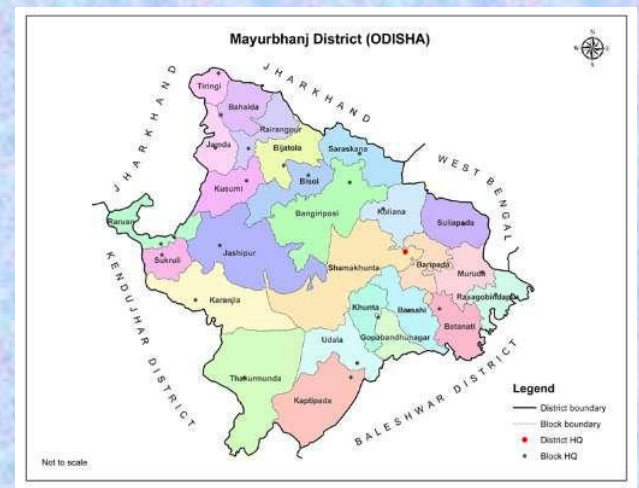
The Environmental Monitoring Cell will co-ordinate all monitoring programs at site and data thus generated will be regularly furnished to the State regulatory agencies/ State Pollution Control Board at the frequency of six month. The Environmental audit reports will be prepared for the entire year of operations and will be regularly submitted to regulatory authorities.

16. SUMMARY

As per above discussion there is no major impact on the environment due to mining except fugitive emission in the form of dust generated during handling and loading of mineral. The adequate preventive measures will be adopted to contain the various pollutants within permissible limits. Plantation development will be carried out in the mine premises, along the approach roads, around Govt. buildings, schools approx 50 trees per year. It will prove an effective pollution mitigate technique, and help avoid soil erosion during monsoon season. Employment opportunities will be provided to the locals as extraction of minerals from the mine site is an important prevailing occupation for them for their livelihood. A budget of Rs. 0.70 Lakhs for Occupational Health and Safety and budget of Rs. 1.75 Lakhs for EMP are proposed for each lease.

DISTRICT SURVEY REPORT (DSR)
OF
MAYURBHANJ DISTRICT, ODISHA.
FOR
ORDINARY EARTH/BRICK EARTH

(FOR PLANNING & EXPLOITING OF MINOR MINERAL RESOURCES)



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

(Prepared by DEIAA, Mayurbhanj, Odisha)

CONTENT

PREAMBLE

Odisha is the major mineral reach in India. Mayurbhanj is a unique district in Odisha lies on the northern most part of the state with varied mineral resources. In 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 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 Roadmetal/stone, Sand, Brick earth, & burrowed earth cutting for Road Construction has to take prior Environmental Clearance. for Mining Lease area more or less than 5 hectares also suggested making a policy on Environmental Clearance for minor minerals lease and leases in cluster. As per MOEF & CC Notification S.O.-1533(E) dated 14th Sept. 2006 and subsequent 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. In compliance to the notification issued by the Ministry of Environment and Forest and Climate Change Notification no. S.O.3611 (E) New Delhi dated 25-07-2018; the preparation of district survey report of road metal/stone mining has been prepared in accordance with Clause II of Appendix X of the notification.

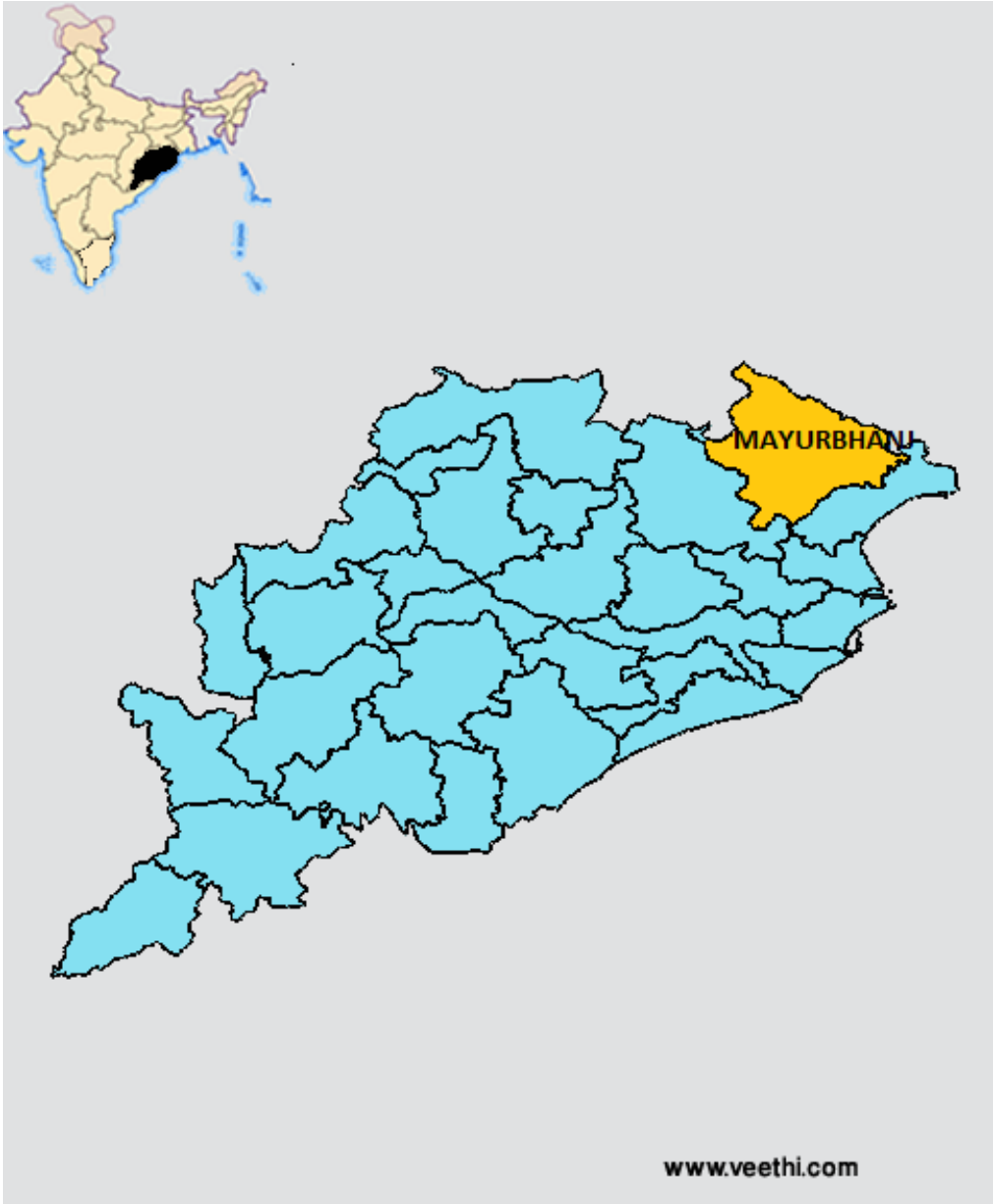
Keeping in view of the prior information of Odisha Minor Mineral Concession Rule 2004, (OMMCR -2004) the mining operation for minor minerals was carried out in unscientific manner. Identifying this fact in exercise of power, Conferred by Section 15 by Mines and Minerals (Development and Regulation) Act 1957 as amended in 2015 and all other powers enabling it in that behalf, the Mining & Geology Department, Govt. of Odisha framed the aforementioned rule. Further, this report will act as a compendium of available mineral resources, geological set up, environmental and ecological set up of the district and based on data of various departments like Revenue, Water Resources, Forest, Geology and Mining in the district as well as statistical data uploaded by various state Government departments for preparation for district survey report.

1. INTRODUCTION:

Mayurbhanj at a Glance:

1.1 Location and Geographical Area:

Mayurbhanj district is the largest among the thirty districts of Odisha and Baripada is the District head quarter, spreading over an area of 10,418 sq.km lies between latitudes 21° 17′ North and 22° 34′ North and longitudes 85°40′ East and 87°10′ East. It is bounded on the north by the Singhbhum district of Jharkhand and Midnapore district of West Bengal, on the south by the districts of Balasore and Keonjhar, on the east by the Midnapore and Balasore districts and on the west by the districts of Keonjhar and Singhbhum. Mayurbhanj occupies a unique position being endowed with lush green vegetation, different fauna & flora and rich cultural heritage. The district has a rich mineral base and is home to the Similipal Biosphere. Iron-ore (hematite), vanadiferous and titaniferous magnetic, chaina clay, galena (lead ore), Kyanite, asbestos, steatite (soap stone) and quartzite constitute the principal mineral resources of Mayurbhanj district, of these the iron-ore deposits of Gorumahisani, Badampahar and Suleipat, which have been exploited for a period of about half a century, deserve special mention.



1.2 Administrative Units:-

Baripada is the administrative headquarter of Mayurbhanj district. It is located at a distance of 263 km from Bhubaneswar, state capital of Odisha. In order of size, the district is the largest among the thirty districts of Odisha. It has 3980 villages (including 178 uninhabited villages) covering 26 Blocks, 26 Tahasils and 4 sub-divisions. The district is divided into 4 Sub-Divisions namely 1) Sadar Sub-Division Baripada, 2) Kaptipada Sub-Division Udala, 3) Bamanghaty Sub-Division, Rairangpur, 4) Panchapir Sub-Division, Karanjia which are given below:-

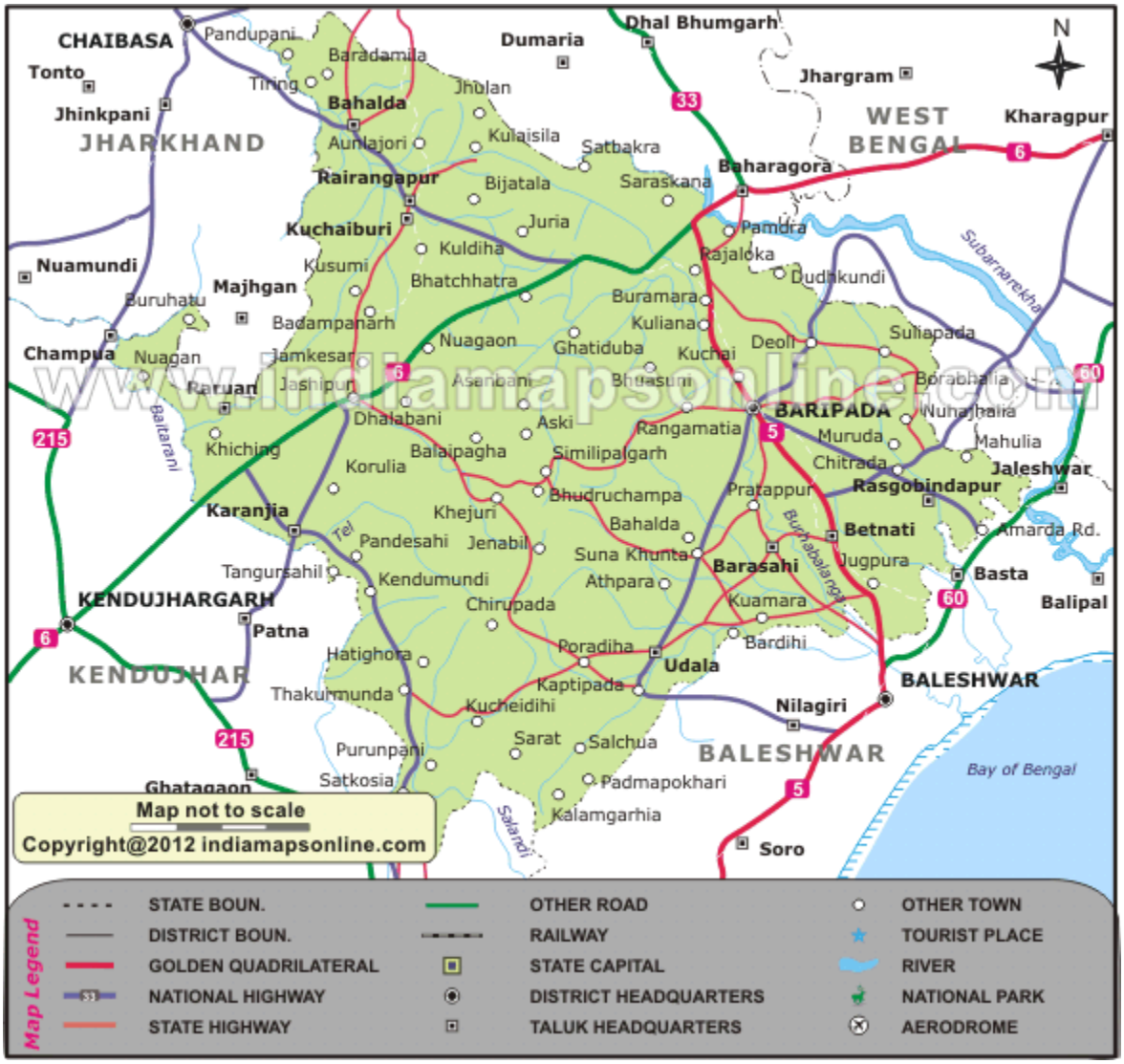
Sl No	Name of the Block/Tehsil	Name of the Sub-Division with Head quarter
1	Baripada	Sadar Sub-Division, Baripada
2	Samakhunta	
3	Kuliana	
4	Bangriposi	
5	Saraskana	
6	Suliapada	
7	Betnoti	
8	Badsahi	
9	Rasgovindapur	
10	Moroda	
11	Udala	Kaptipada Sub-Division, Udala
12	Kaptipada	
13	Khunta	
14	Gapabandhu Nagar	
15	Rairangpur	Bamanghaty Sub-Division, Rairangpur
16	Bisoi	
17	Bijatala	
18	Kusumi	
19	Bahalda	
20	Tiring	Bamanghaty Sub-Division, Rairangpur
21	Jamda	
22	Karanjia	Panchpir Sub-Division, Karanjia
23	Jashipur	
24	Sukruli	
25	Thakurmunda	
26	Raruan	

The population of the district is 25,19,738 according to the 2011 Census. The district accounts for 6.69% of the state's territory and about 6% of state's population. The density of population of the district is 242 per square km as against 270 per square km of the state. As per 2011 census, the population of Scheduled Caste is 1,84,682 (7.30%), that of Scheduled Tribe is 14,79,576 (58.7%). The literacy percentage of the district covers 63.2 against 72.9 of the state.

1.3 Connectivity facilities:-

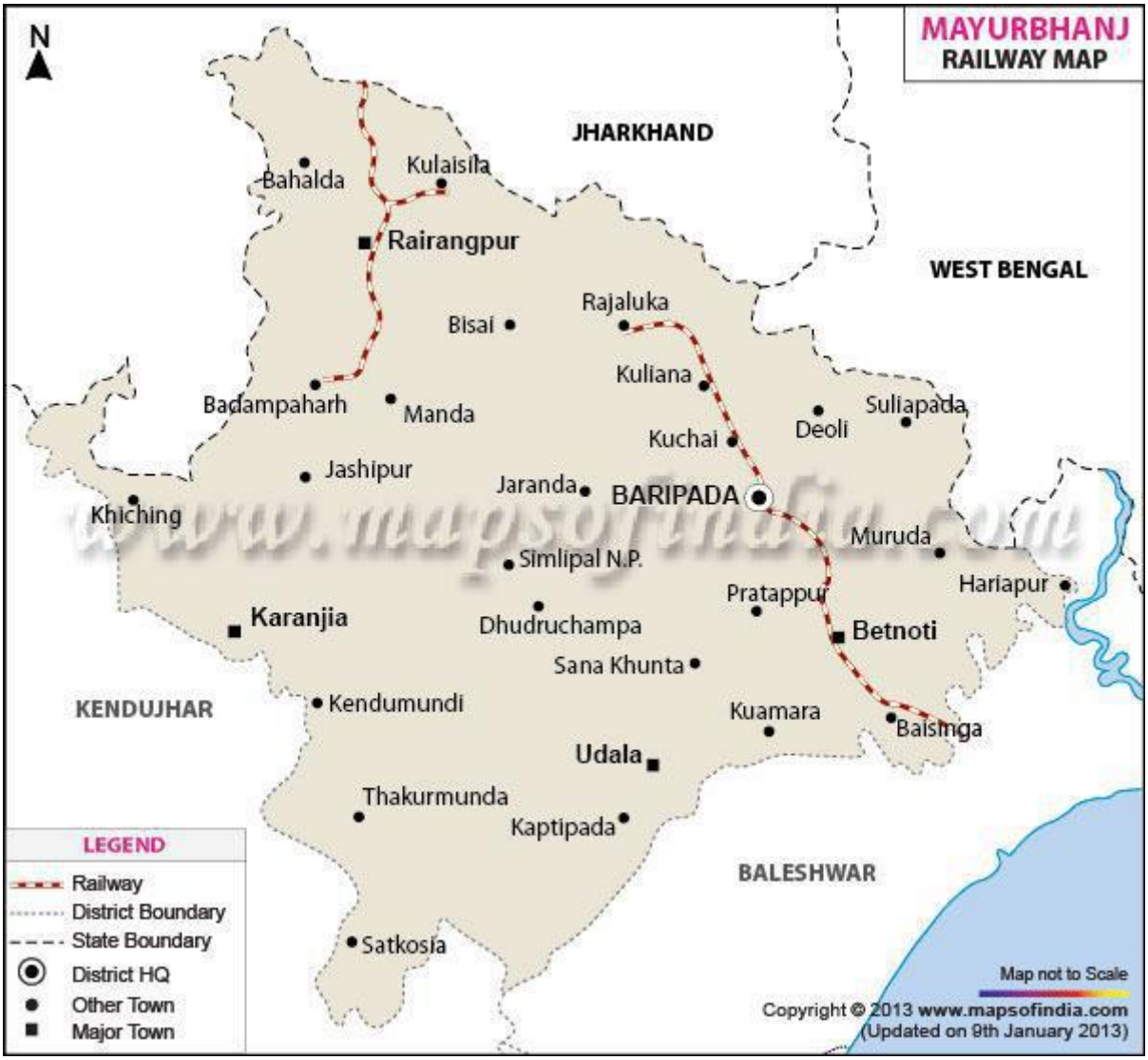
Road Network

The district is well served by a network of good roads and has been called the motorists paradise. The chief roads emanating from Mayurbhanj town are NH-18 and NH-49 passes the district. Baripada is 60 Kms from Mayurbhanj, 103 Kms from Kharagpur, 163 Kms from Jamshedpur, 231 Kms from Cuttack, 255 Kms from Bhubaneswar and 368 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 travel services.



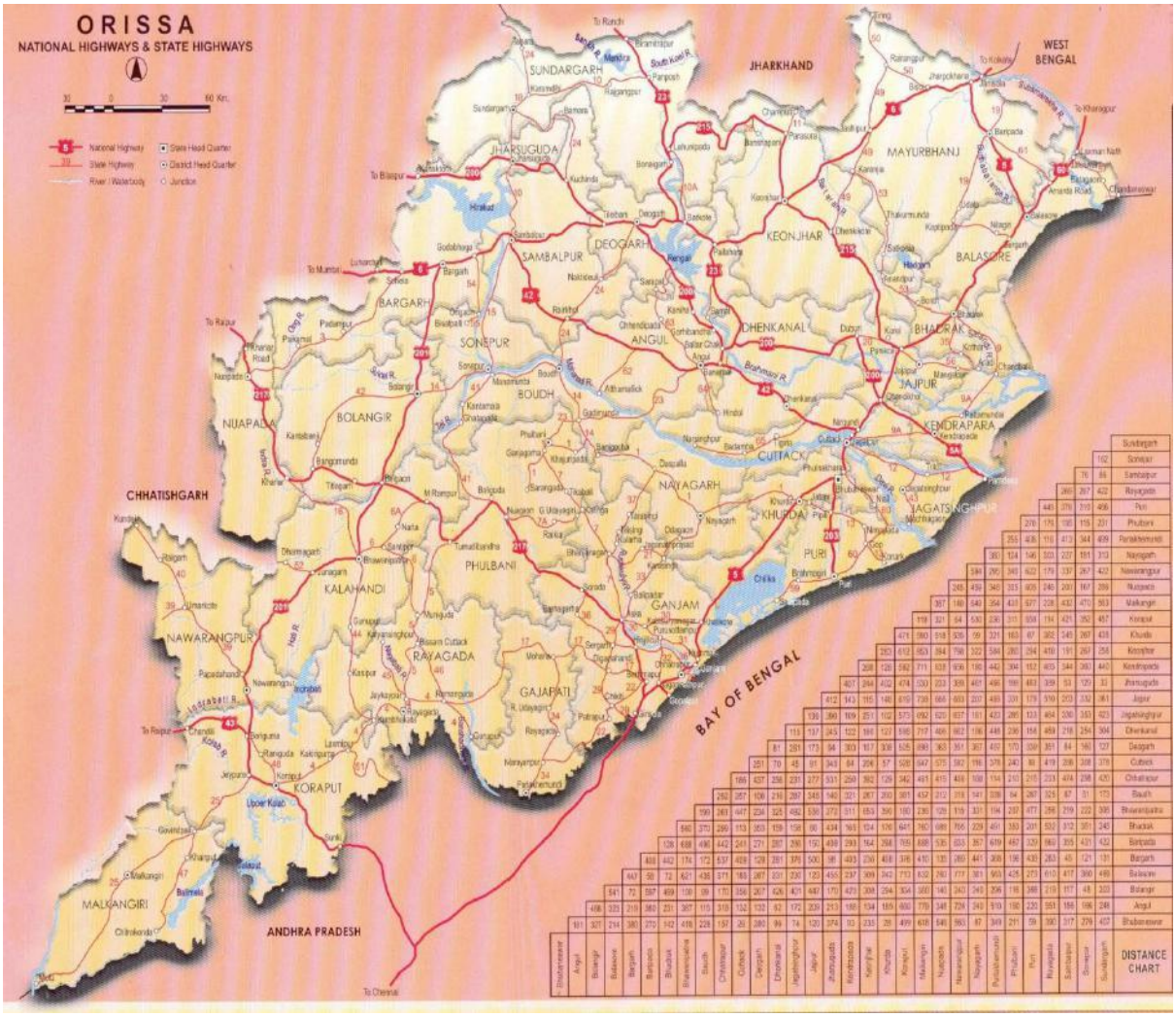
Rail Network

Mayurbhanj district is well connected by rail link to different places, the city of Baripada is well connected to many places in India like Mayurbhanj, Bhubaneswar, Kolkata, Jamshedpur and Cuttack,



Air Network

At present, Mayurbhanj has no connection by airway. The site selection for aerodrome is presently under process. Nearest aerodrome is Dum Dum Airport (International Airport) Kolkata, roughly 195 Kms from Baripada. The other nearest airport to Baripada is Biju Patnaik Airport, Bhubaneshwar, 207 Kms from Baripada.



2. OVERVIEW OF MINING ACTIVITY IN THE DISTRICT:

Mayurbhanj district is land features of both plain and hilly region. Most of the mineralized area coming under safety zone eco-sensitive zone, mining activity only confined out of safety zone of eco-sensitive zone. The mining activity in the district is not only restricted to minor minerals i.e. of sand, stone, granite and brick clays. Altogether there are leases of Iron-ore (hematite), vanadiferous and titaniferous magnetic, chaina clay, galena (lead ore), Kyanite, asbestos, steatite (soap stone) and quartzite constitute the principal mineral resources of Mayurbhanj district, of these the iron-ore deposits of Gorumahisani, Badampahar and Suleipat, which have been exploited for a period of about half a century. 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 Bangirposi, Badasahi, Kaptipada, Kuliana area etc. of Mayurbhanj district. Out of these huge granite stones deposits are available near Badasahi, Kaptipada, Kuliana area and major potential sand in G.B Nagar, Morda & Kaptipada area of the district, which have been provides tremendous scope for development of few more industries based on this resources.

Iron-ore (hematite), vanadiferous and titaniferous magnetic, chaina clay, galena (lead ore), Kyanite, asbestos, steatite (soap stone) and quartzite constitute the principal mineral resources of Mayurbhanj district, of these the iron-ore deposits of Gorumahisani, Badampahar and Suleipat, which have been exploited for a period of about half a century.

3.0 GENERAL PROFILE OF THE DISTRICT:

3.1 Demography:

Census - 2011	
Geographical Area	10,418 Sq. Km.
Total population	25,19,738
Male Population	12,56,213
Female Population	12,63,525
Male Literacy	794,171
Female Literacy	575,226
SC Male	92,127
SC Female	92,555
ST Male	730,487
ST Female	749,089
OBC	855,480
Illiterate Male	462,042
Illiterate Female	688,299

4.0 GEOLOGY OF THE DISTRICT:

Mayurbhanj is a unique district in Odisha with rich and varied geology. Similipal Complex being at its central part. The mountain ranges comprise mainly of highland plateau and valleys with intrusive running through them. The second physiographic unit is Tertiary Plain occurring in the eastern part of the district. The third physiographic unit is Alluvial Plain .The drainage density is observed to be fairly moderate and drainage pattern is dendritic in nature. The major rock types

encountered in the district are Granite Gneiss, Quartzite, Orthoquartzite, Arkose, Shale, Phyllite, Gabbro, Px-granite. The geology of the district is constituted by the Similipal complex at its central part belonging the Archaean age, unconformably lying over Singhbhum Granite and Banded Iron Formation (BIF). It consists of three alternate bands of volcano sedimentary units uniquely disposed in a ring like circular pattern formed under sub- marine conditions. Baripada Beds outcrops of tertiary formation occur around Baripada town. These comprise stratified clay and sand with marly clay or limestone interbands. Important mineral resources include iron, copper, itanium, vanadium, chinaclay, nickel, kyanite ,quartz, talc, steatite ,soapstone and bauxite.

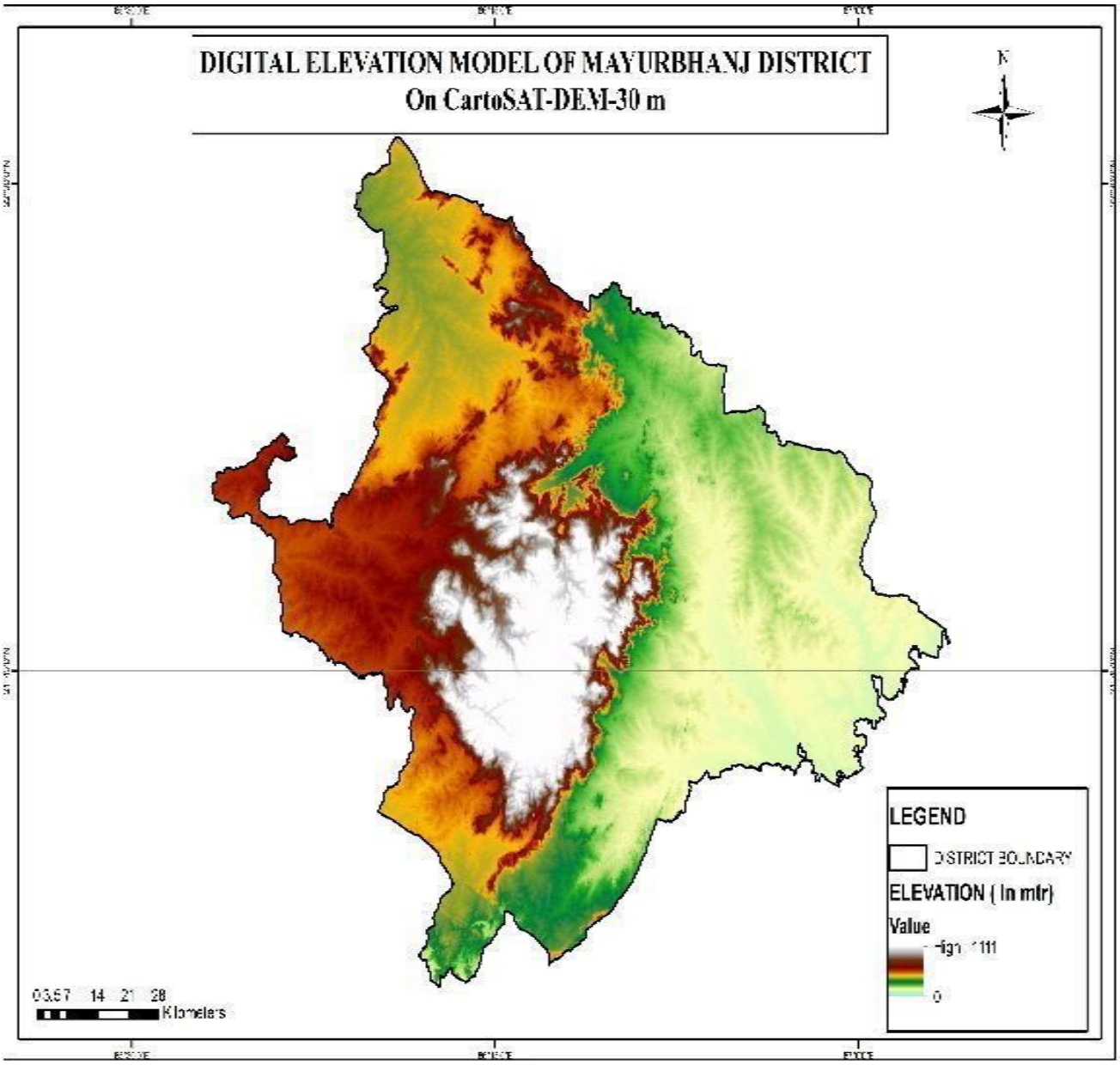
4.1 Physiography & Geomorphology:

Mayurbhanj district presents diverse physiographic features, Physiographically the study area can be divided into 3 categories. The first physiographic unit of the district is high mountain ranges, Similipal Complex being at its central part (Figure 1). The mountain ranges comprise mainly of highland plateau and valleys with intrusive running through them. The second physiographic unit is Tertiary Plain occurring in the eastern part of the district. The third physiographic unit is Alluvial Plain which lies partly in Rasgovindpur, Morada, Samakhunta, Betnoti, Baripada, Badasahi and Suliapada blocks. The highest elevation of about 559m at Bahalda near Similpal hill and higher elevations of the district, due to scarp landforms some waterfalls are observed in the district. The general slope of the district is from north to south. Geologically the area is comprised with Archean granites and gneisses. Geomorphologically the district is divided into 3 units:

i) The denudational hills with moderate to high slope occurring in the western part of the district.

ii) Dissected pediments having gentle slope.

iii) Pediplain having slope between 0^{o} to 5^{o}.



4.2 Stratigraphy:

Geological Age	Geological Formation / Group
Quaternany	: Recent Alluvium, Clays, silt, Sand, Gravel
Tertiary	: Older Alluvium, Laterite, Baripada Beds.
Mesozoic/ Palaeozoic	: Volcanics / Epidiorite
Precambrian	: Slate/ Phyllite/ Schist / Gneiss
Archean	: Granite/ Granite Gneiss

4.3 Mineral Resources:

The earliest known geological survey in Mayurbhanj dates back to 1903, when P.N. Bose brought to light the extensive iron-ore deposits of high quantity on the Gorumahisani and Sulaipat hills in Bamanghaty Sub-Division. These deposits were considered to be almost inexhaustible and were pronounced to be of excellent quality, perhaps second to none in the whole of Asia by the famous American and English experts like M/s Perin, Weld and Colonel Staddart, who visited these deposits during 1905-06. This discovery was a momentous one as the steel plant of the Tata Iron & Steel Co. at Jamshedpur was entirely based on the exploitation of these deposits. By 1915, important discoveries of Steatite near Lulung and placer gold from the sands of Subarnarekha, Kharkhai and Barhai rivers had been made. The placer gold deposits were being worked by M/s J.B. Bettie of Calcutta, Mr. V.G. Piggot of Ghatsila and the Mayurbhanj Prospecting Concession Syndicate.

Gold: The mid-Archaean Gorumahisani-Badampahar schist belt composed of basic ultrabasic, volcanic rocks and volcanogenic sediments. This belt has been prognosticated as a rift-type of volcanic dominated one and is highly potential for economic grade gold mineralization. Likely targets include: a) auriferous quartz veins close to the contact of sulphide chert volcanics, b) sheared and sulphidised Fe-rich tholeiite with anomalous copper, c) epigenetic vein type of mineralization and BIF volcanic association, and d) sulphidic conglomerate resting over the basic volcanics. Placer gold occurrence is known from rivers and stream of Mayurbhanj district. An area of about 5 square kilometers of alluvium at the headwaters of Sapgora and Borai rivers near Kudersai was indicated as promising.

Iron: Bose discovered iron ore deposits in Gorumahisani and Badampahar in the eastwhile princely state of Mayurbhanj (now Mayurbhanj District). Gorumahisani deposits were investigated by Perin & Weld (1905). Gorumahisani- Badampahar-Suleipat deposits are associated with banded hematite / magnetite grunerite and BHJ.

Gorumahisani – Badampahar- Sulaipat (Broad geological sequence)

Laterite & Alluvium
Newer Dolerite
Gabhro-Anorthosite Granite
---Unconformity---
Ultramafic dyke
Singhbhum Granite
Banded magnetite/ Martite quartzite with Fe-Ores
Quartzite
Basal Conglomerate
----Unconformity----
Older metamorphic

Vanadium Ores & Titanium*:* Vanadium is an important alloying element. Magnetite associated with gabbro- anorthosite suite of rocks contains vanadium and titanium. Deposits of vanadium-magnetite occur in association with Gabbro-Anorthosite suite of rocks in the Precambrian Metamorphites. Vanadium bearing magnetite belts are:-

(a) Rairangpur – Bisoi belt (Kumardubi, Betjharan Amdabeda)
(b) Bisoi – Jashipur belt (Mayurbeka, Kesham, Sialnoi)
(c) Baripada – Podadiha belt (Andipur, Bahalda)

Pyrophyllite : is mainly used as a high grade ceramic product, electric insulator and refractory material. The comp. is $Al_2O_3 4SiO_2\ H_20$. It is formed as an alteration product of feldspar. Pyrophyllite occurrences are reported at Kankrani, Jashipur, Gorumahisani, Bangriposhi and Manada in Mayurbhanj Dist. Ichinda, Khairakocha, Jamukunda, Nakulkocha, Kapadiha, Dunguridiha, Maheshpur, Kashidiha, Sagragora and Pokpoka. Dimension stone of the district are granite, granite-gneiss, migmatites, syenite, gabbro, anorthosite, charnockite, leptynite, pyroxene granulite, dolerite, pyroxinite and dunite etc.

Bauxite: In Similipal complex (Mayurbhanj) aluminous laterite/ Bauxite are observed around 1000 m AMSL. The spongy aluminous laterite/bauxite occurs as sheets and boulders occupying the flat-topped hills made up of metavolcanics. Both ultramafics and metavolcanics are lateritised giving rise to nickeliferous laterite and aluminous laterite respectively.

China Clay is clay like material approximating the mineral Kaolinite (Al_2O3, $2SIO_2$, $2H_2O$). China clay is found to occur in a long belt stretching from Singhbhum to Mayurbhanj. Badampahar-Joshipur- Karanjia – Ramachandrapur belt is the most important china-clay producing area of the state. The important deposits in Mayurbhanj district are found near Joshipur, Chanchbani, Dumuria, Jamoda, Kodadiha, Jamkeswar and Thakurmunda. China clay has many industrial applications as filler in paper, textile, rubber, in the manufacture of potteries, ceramics, sanitary wares, glazed tiles, white cement, insecticides, paints, cosmetics, refractory bricks etc. Soap stone and Steatite Asbestos is mined from Mayurbhanj area.

Talc, steatite and soapstone : Important localities of these deposits in Mayurbhanj dist are Tiring, Kendumundi and Kharidamak.

Kyanite: Kyanite deposits of refractory grade occur in Panijia area of Mayurbhanj dist, where it is associated with dumortierite bearing rocks, qtz-veins, quartz-mica-schists and talc-tremolite-schist. Other kyanite occurrence includes Purnapani & Similipal.

Quartz & Quartzite: Quartz and silica sand are mostly used in glass foundry, ferrosilicon alloy, ceramic industry, abrasive, paint, rubber, textile industries. Transparent varieties of quartz such as rock crystal, amethyst, citrine, Rosequartz and smoky quartz are used as semi-precious gemstone. Quartz is a piezoelectric material and is used in radio circuit, Radars and ultra-sonic devices. Quartzite is a monomineralic rock constituted predominantly of quartz. There are 6 mining leases for quartz and quartzite in Mayurbhanj dist.

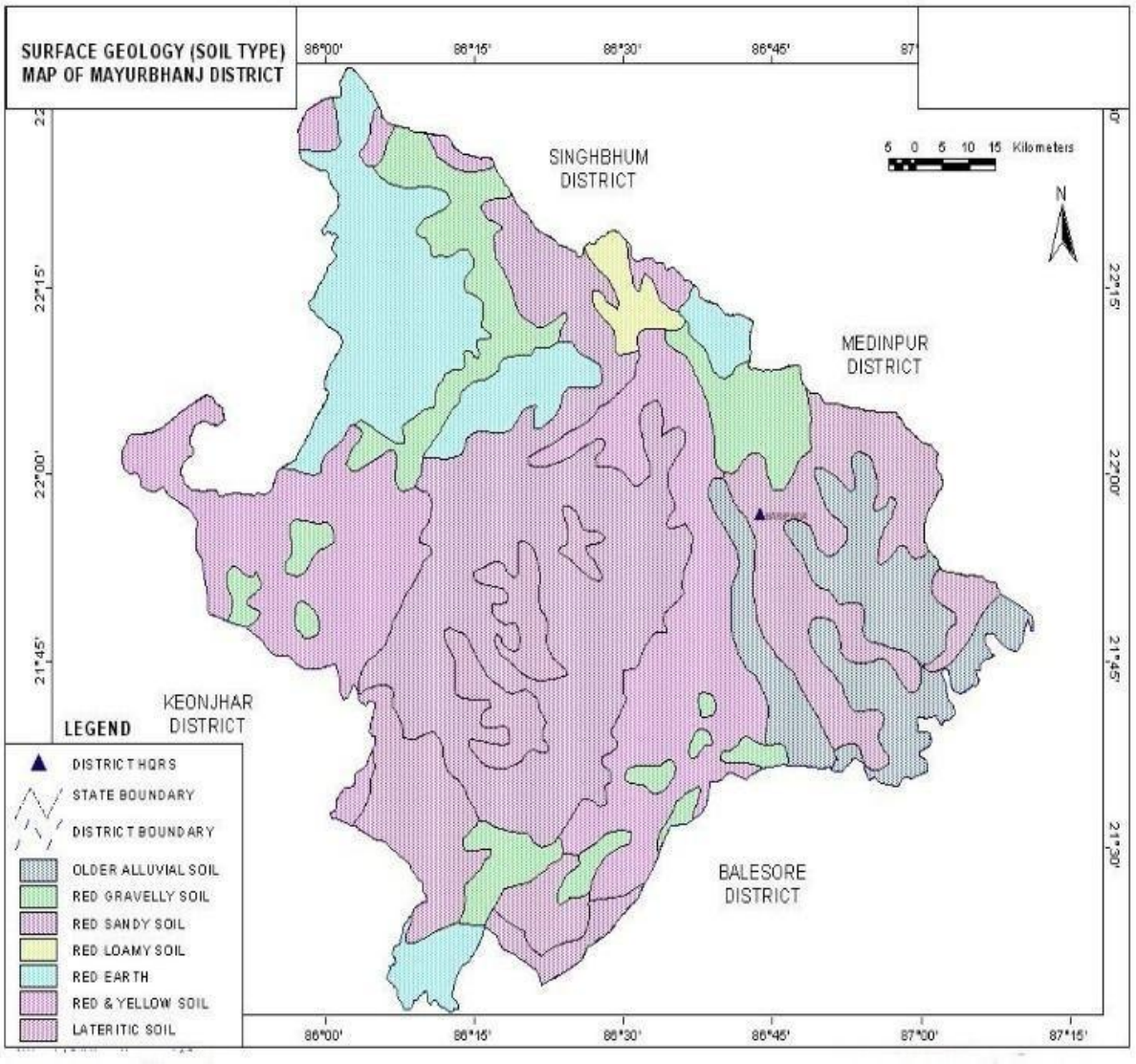
High Magnesia rock: are found in Notapahar, Thakurmunda, Amjori and Badampahar of Mayurbhanj Dist.

Nickel: Nickel is concentrated within chemically weathered ultramafic rocks and found in the laterite and soil capping in Similipal area. The mineral occurs in silicate

form i.e. garnierite. The important patches of prospective ore zones are: Gurguria and Nawana.

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.

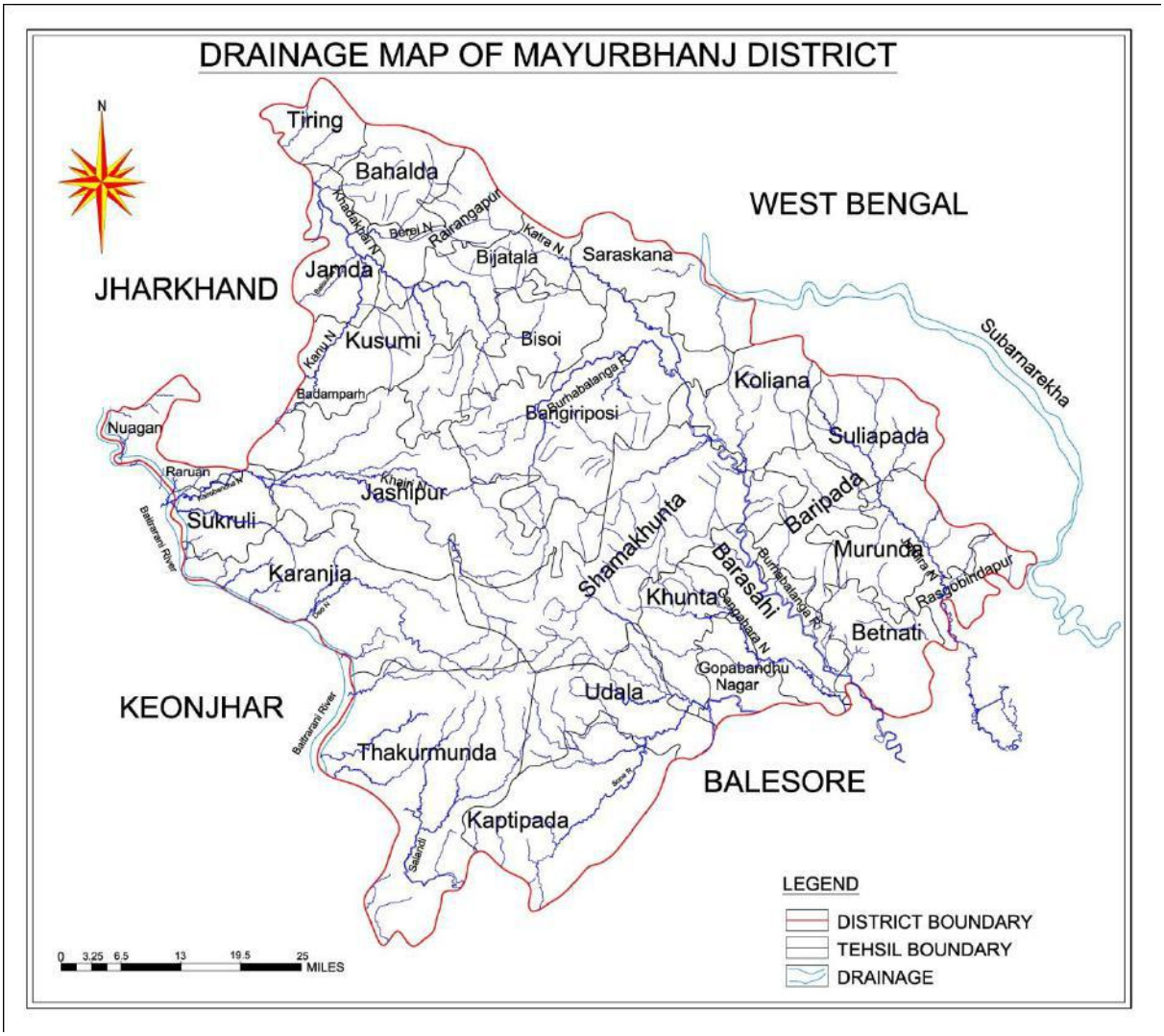


5. DRAINAGE OF IRRIGATION PATTERN

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, Subarnarekha, jambhira, Sona,

Khadkhai, Deo, Katra, Khairibandhan & Baitarani. Major crops grown in the district are rice Only. 14.82 percent area of agricultural use are net irrigated and major source of irrigations are well and tube wells.

Sl. No.	Name of the River	Area drained (Sq. Km.)	% Area drained in the District
1	Budhabalanga	2143	21%
2	Subarnarekha	265	0.25%
3	jambhira	1377	13%
4	Sona	1062	10%
5	Khadkhai	1131	10.8%
6	Khairibandhan	1014	0.09%
7	Deo	473	0.04%
8	Katra	352	0.03%
9	Gangahar	594	0.057%
10	Baitarani	260	24.6%
11	Tel	96	0.009%
12	Kantamauli	82	0.007%
13	Sim	165	0.015%
14	Jhagada	30	0.002%
15	Balijori	56	0.005%
16	Kantakhaira	186	0.017%
17	Kanu	383	0.036%
18	Balisudura	170	0.016%



5.1 River System

The Budhabalanga River (also called Balanga River) flows through the districts of Mayurbhanj & Balasore and finally reached Bay of Bengal. The Budhabalanga, rises from Similipal hills and plunges through Barehipani Falls, the second-highest waterfall in India, located in Similipal National Park. It then flows in a northerly direction up to the village Karanjiapal in Bangiriposi police-station. Thereafter, it turns to the north-east and flows along the railway track up to the village Jhankapahadi. There it changes its course to the south and meets the Katra nala. The other tributaries are the Palpala and the Chipat both of which are hill streams rising from the Similipal hills. Then the river passes through Baripada. It later flows through Balasore district and into the Bay of Bengal. The Budhabalanga is about 175 kilometres (109 mi) long and has a total catchment area of 4,840 square kilometres (1,870 sq mi). Its major tributaries are the Sona, Gangahar, and the Katra. Burhabalang and its tributaries, viz.

Sona Nadi, Amrutia Nadi, Gangahar Nadi drain almost round the year in the present area. Sona Nadi receives the watery effluent load through a nalah (Sankh nalah) from the Balgopalpur Industrial Estate and flows from west to east. Amrutia Nadi flows from NNW to SSE and carries the waste water load of East Coast. Subarnrekha originate from Nagri of jharkhand and then enter into Mayurbhanj district, very less portion of the river flows within Mayurbhanj district, Major portion of Subarnarekha River passes in the Balasore district. Another river Jambhira runs in Mayurbhanj district then enters into Balasore district and Renamed as river Jalaka flows into Bay of Bengal. Other small rivers run in this district like River Khadkhai originates from Tunhgru R.F. and plunges through Suleipat Dam (Khadkhai Reserviour). It then runs towards Rairangpur, Bahalda, Tiringi area of western direction of Mayurbhanj district and finally reached at River Subarnarekha. River Deo rises from Similipal R.F. and runs towards western part of the district and flows through Karanjia area and then joins with Baitarani River. River Khairabandhan originates from Similipal R.F. and flows towards western part of the Mayurbhanj district through Jshipur, Raruan, Sukurli area of district and then joins with River Baitarani This river maintains a sluggish flow in the pre-monsoon period, but swells menacingly with the onset of monsoon often flooding large tracts. Another small tributary named as Kanhu starts from River Khadkhai and branched into Jalapa, Ghagera nala meets at Jharbeda area of Mayurbhanj District.

Sl. No.	Name of the River or Stream	Total Length in District (in Km.)	Place of Origin	Altitude at Origin
1	Budhabalanga	161	Similipal Hill	940 mrl.
2	Subarnarekha	4	Nagri, Jharkhanda	610 mrl.
3	Jambhira	64	Chandra R.F. Mayurbhanj	60 mrl.
4	Sona	70	Jaymal Hill, Dugdha Mayurbhanj.	340 mrl.
5	Khadkhai	75	Tunhgru R.F.	500 mrl.
6	Khairibandhan	65	Similipal R.F.	800 mrl.
7	Deo	65	Similipal R.F.	930 mrl.
8	Katra	55	Jari R.F.	700 mrl.
9	Gangahar	55	Similipal R.F.	740 mrl.
10	Baitarani	48	Gonasika,	900 mrl.

			Guptaganga Hills	
11	Tel	20	Similipal R.F.	940 mrl.
12	Kantamauli	25	Similipal R.F.	360 mrl.
13	Sim	85	Similipal R.F.	900 mrl.
14	Jhagada	15	Jhagada R.F.	430 mrl.
15	Balijori	22	Similipal R.F.	520 mrl.
16	Kantakhaira	36	Similipal R.F.	420 mrl.
17	Kanhu	42	Similipal R.F.	400 mrl.
18	Balisudura	15	Similipal R.F.	450 mrl.

6.0 LAND UTILIZATION PATTERN IN THE DISTRICT

6.1 Forest and non forest land

The forest of Mayurbhanj district is full 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 Sanctuaries known as the Similipal Wildlife Sanctuary situated at the heart of the district, which hosts all type of wildlife even

tigers. The area of the sanctuary is 26, 886.23 hectares. And two kilometer safety zone of eco-sensitive zone of Suleipat Wildlife Sanctuary are coming in Mayurbhanj district. In these sanctuary areas 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 Km^2)

2017 Assessment								
District	**Geographical Area Km^2**	**Very Dense Forest**	**Moder-ate. 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 (39.16 % of TGA) and has scattered settlement pattern. The forest is full of variety of medicinal plants. 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 14.82 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

Tahasil	Forest Area	Misc Tree	Permanent Pasture	Cultivated waste	Non Agricultural uses	Barren land	Current Fallow	Other Fallow	Net area sown
Bahalda	964	471	1397	1262	2590	1900	875	944	14031
Bangiriposi	3712	281	1037	1688	3046	684	2054	922	16951
Baripada	216	6733	128	1628	1376	8	2752	2156	4219
Badasahi	288	1807	1194	1874	3840	24	3378	2110	17630
Betnoti	2271	911	1198	1728	3227	21	1915	578	17022
Bijatola	2841	224	681	3100	1792	1636	1214	600	11228
Bisoi	3116	471	757	2508	2193	459	2298	1643	15860
G.B.Nagar	191	116	683	582	1147	590	643	1209	10960
Jamda	408	100	1650	434	2060	785	840	1149	13608
Jashipur	8932	141	1389	2655	3637	400	3873	2634	17754
Kaptipada	8745	387	3292	5596	4123	2165	3123	4930	19932
Karanjia	1644	838	1444	2441	3065	462	3493	1362	16690
Khunta	400	2260	314	672	2061	21	1332	2213	12879
Kuliana	1749	1626	2222	1902	2529	608	4919	1504	11108
Kusumi	1434	32	2320	2679	2337	587	1086	1682	18032
Morada	993	4127	513	4340	1941	61	1909	3633	10179
Rairangpur	2260	107	1759	1373	2027	504	1276	631	9713
Raruan	1210	171	890	1120	1899	503	1609	1020	12818
Rasgovindpur	288	2145	665	1091	2774	142	2002	1537	10054
Shamakhunta	1354	764	1378	2472	1859	334	1861	941	6695
Saraskana	3464	275	689	2658	4042	115	1864	1837	15384
Sukrili	412	211	734	1295	1271	502	1286	1294	10352
Suliapada	2937	5535	97	2262	2148	86	1589	2906	8971
Thakurmunda	10885	96	1530	1438	2034	795	5317	2670	17681

6.2 Agriculture Land:

Mayurbhanj is surrounded by no of forest areas as well as Rocky Mountains. People used to cultivate Paddy in most parts of the hill slopes and in plain lands. Most of the cultivators grow short duration local paddy in the un-bonded upland during Kharif season. The crop suffers moisture stress at different stages due to inadequate rainfall. The primary objective of Agriculture Department is increase of production as well as 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. Under him there are 5 District Agriculture Officers & the block under them. As already pointed out that, agriculture is the main livelihood of the people in Mayurbhanj 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 Mayurbhanj 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	301.37	82.353%	3.80	4.015%	---	305.17	62.051%
Cereals	9.99	2.730%	2.17	2.293%	---	12.16	2.472%
Pulses	32.37	8.846%	36.20	38.255%	---	68.57	13.943%
Oilseeds	5.92	1.617%	28.30	29.906%	---	34.22	6.958%
Vegetables	12.39	3.386%	21.74	22.974%	---	34.13	6.940%
Fibres	2.43	0.664%			---	2.43	0.494%
Spices	1.48	0.404%	2.42	2.557%	---	3.90	0.792%
Sugarcane	---	---	00	---	---	00	---
Tobacco	---	---	00	---	---	00	---
Fruits	---	---	---	---	---	31.23	6.350%
TOTAL	**365.95**	**100.00%**	**94.63**	**100.00%**	**---**	**491.81**	**100.00%**

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.

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 Mayurbhanj restricted by two important factors- (i) Occurrence of hard rocks in the western side and (ii) Salinity hazard problems in the eastern part. The water bearing formation of the area can be divided into (a) areas underlain by fractured, fissured and consolidated basement rock formations (b) areas underlain by recent unconsolidated alluvial formations.

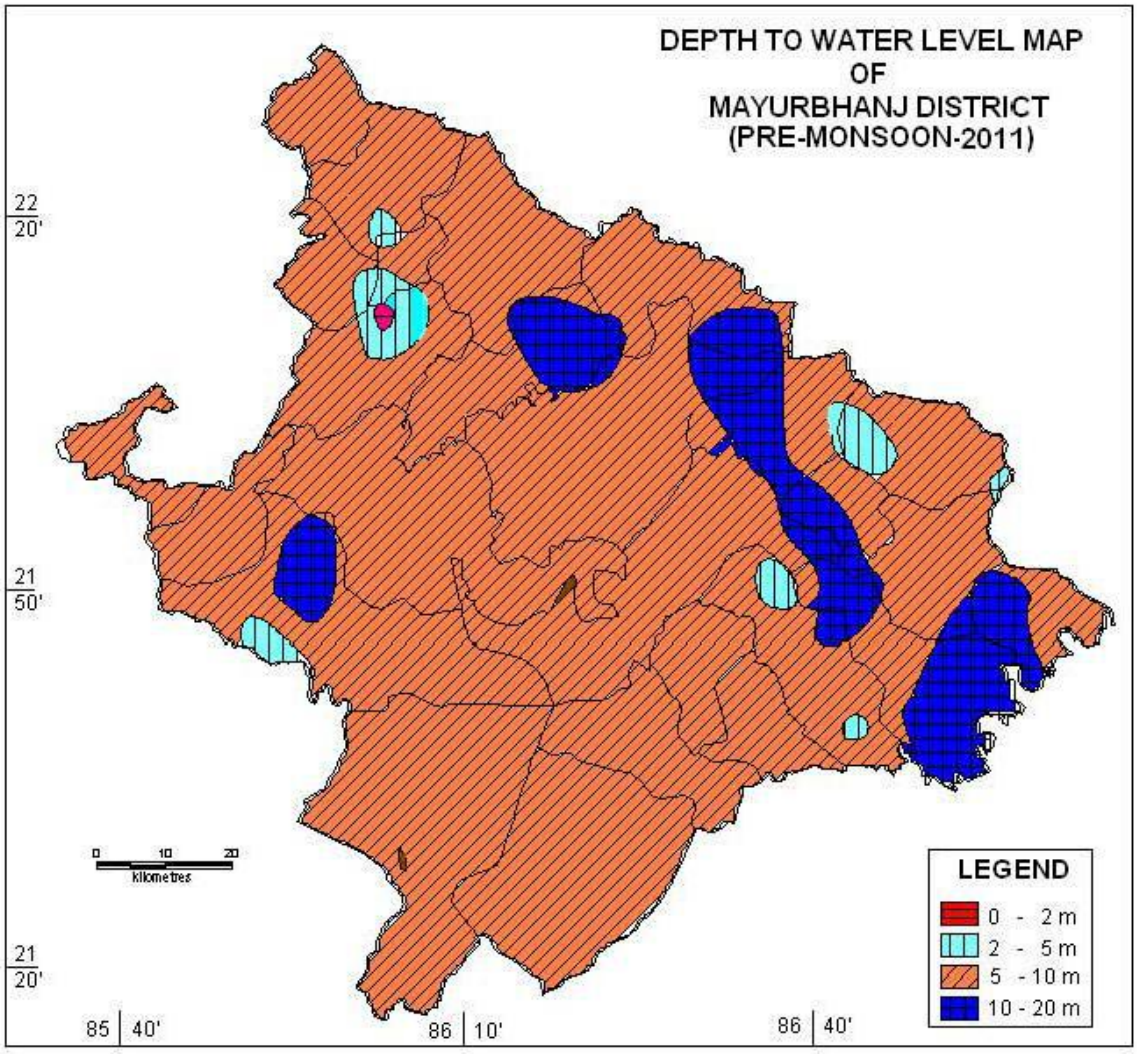
(a) Consolidated Formation - These are most predominant rock types occurring in the undulating plains of the district. Groundwater occurs under unconfined condition in the shallow weathered zone and circulates through fractures and joints. The thickness of the weathered zone varies from 3 to 35 m. Depth of open wells in these formations varies from 5 to 14 m below ground level.

(b) Unconsolidated alluvial formations - The unconsolidated formations consists of laterite and alluvium. Laterites at places are highly consolidated and used as building stones. The laterites have high degree of effective porosity and form potential aquifers commonly tapped in dug wells. The alluvium comprises an admixture of clay, silt, sand and calcareous concretions in varying proportions. The coarse sediments like sand and gravel form the main repository of ground water. Ground water occurs under both unconfined condition in shallow aquifers and in confined condition in deeper parts.

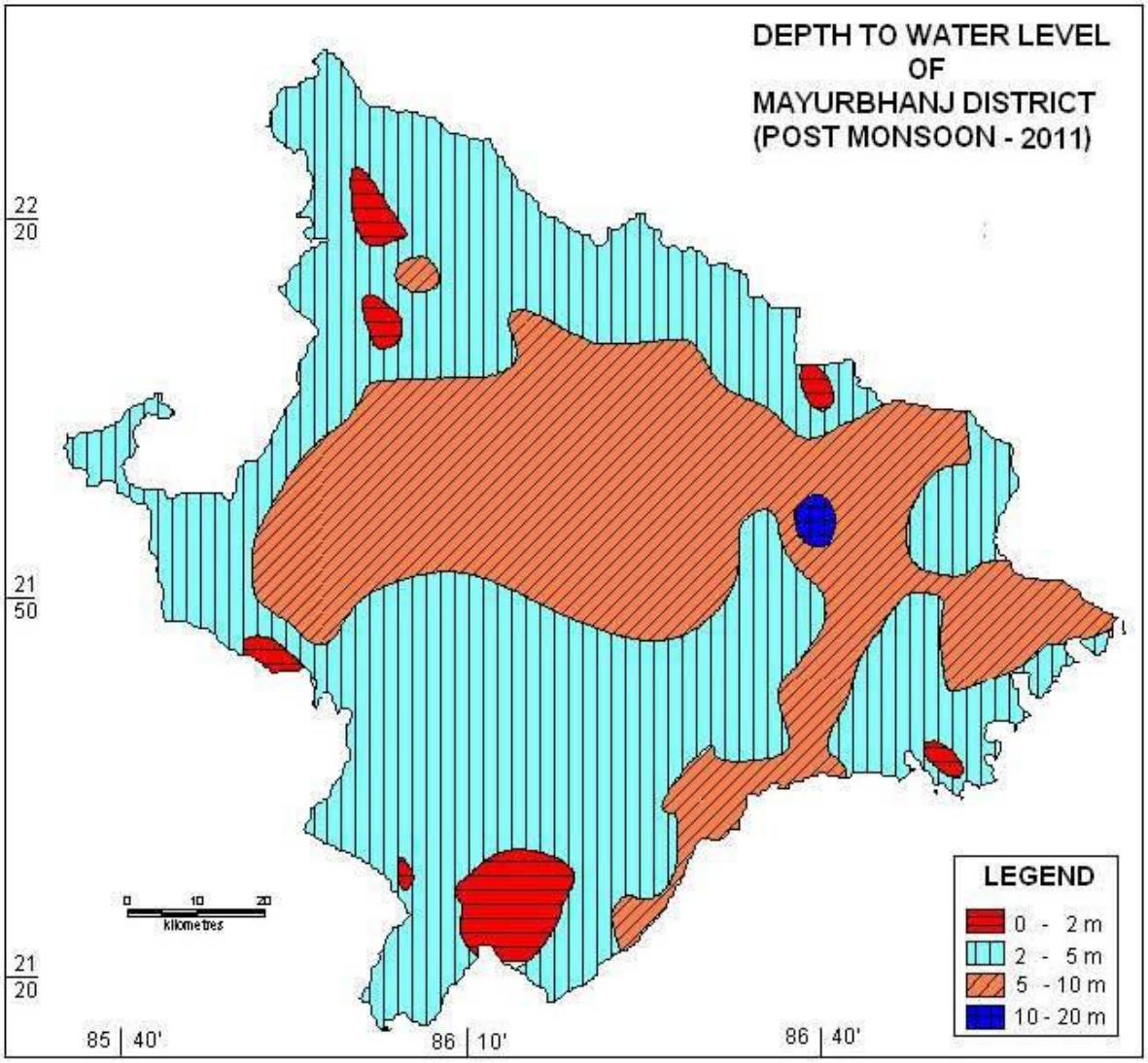
7.2 Depth of water level:

The depth to water level map for pre and post monsoon periods 2011 are prepared based on the ground water monitoring data of 77 Nos of National Hydrograph Stations of C.G.W.B. monitored during the month of April and November 2006 are presented below respectively**.** The pre and post monsoon depth to water level in the district range from 3.54 to 14.50 m below ground level and 1.39 to 8.20 m below ground level respectively. It is observed that during pre monsoon about 75% of the total areas show the water level varying between 5 to 10 m below ground level. During post monsoon nearly 60% of the area has water levels within 2 to 5 m, while the rest part has between 0 to 2 and 4 to 6 m below ground levels. In localized part of Morada, Kaptipada and Thakurmunda the water level is > 5 mt.

Depth & categorization of ground water levels during pre monsoon period (April 2011) of Mayurbhanj districts is presented below:



Depth & categorization of ground water levels during pre monsoon period (November 2011) of Mayurbhanj districts is presented below:



7.3 Ground Water Quality

The chemical quality of ground water in the district has been assessed on the basis of chemical analysis of ground water samples collected during groundwater monitoring, Hydrogeological surveys and groundwater exploration. The results of the chemical analysis are presented in Table.

Table showing chemical constituents in aquifers

Constituent	Shallow aquifer	Deeper aquifer
pH	6.97 – 8.25	6.84 – 8.25
Sp. Conductance (micromohs/cm at 25^0 C)	53 – 974	92 – 867
TDS (mg/l)	58 – 1430	106 – 429

Calcium (mg/l)	6 – 92	16 – 86
Magnesium (mg/l)	0.6 – 17	3.6 – 22
Sodium (mg/l)	1.6 – 100	3.5 – 168
Potassium (mg/l)	0.4 – 8	<1 --6.4
Bicarbonate (mg/l)	15 – 256	49 – 366
Chloride (mg/l)	7 – 238	5.3 – 85
Sulphate (mg/l)	0.1 – 9	<1 – 82
Nitrate (mg/l)	<0.01 – 53	0.1 – 78
Fluoride (mg/l)	0.08 – 20.3	0.21 – 0.61
Total hardness as calcium carbonate	10 – 245	35 - 285

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. Over all the present level of ground water development is only 27.21 percent in the district with the maximum in Badasahi Block viz. 64.65% and minimum in Bijatala Block. Block wise development figure indicate that all the blocks come under the white categories. Thus there is ample scope for development of groundwater in the district to augment irrigation potentials through suitable ground water abstraction structure

7.5 Ground Water Related Issue and Problems

Some of key ground water related issues are

I. Locating suitable sites for bore wells
II. Suitable design of dug wells and hand pumps
III. Taking up artificial recharge projects to augment the resource availability in

Mayurbhanj 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

7.7 Area Notified by Cgwb/Sgwa

None

7.8 RECOMMENDATIONS

1) Intensive groundwater exploration should be taken up to delineate deeper potential water saturated fracture zones and to compute aquifer parameter.
2) Large scale planning for ground water development should be preceded by intensive hydrogeological and geophysical surveys aided by remote sensing studies.
3) Effective measures may be taken to conserve the surface run off by contour bonding at suitable sites. Also proper maintenance of reservoir, tanks and spring channels by periodical disiltation should be carried out.
4) Existing dug-wells should be deepened to tap the maximum saturated thickness of the weathered mantle or vertical bores may be drilled through the bottom to enhance the well yield.
5) Energy-station of wells already constructed should be stepped up to ensure optimal utilization of the irrigation potential already created.
6) The farmers should be educated through agricultural extension services from adopting suitable cropping pattern for optimal utilization of available groundwater resources.
7) Programmes for artificial recharge may also be taken up for augmentation of groundwater through construction of percolation tanks, subsurface dykes, and check dams and through contour bonding etc.
8) An intensive network of groundwater monitoring stations are required to be

established in the command areas of irrigation projects to monitor the changes in groundwater regime consequent on application of surface water irrigation.

8.0 RAINFALL OF THE DISTRICT AND CLIMATE CONDITION

8.1 Month wise rainfall:

The driest month is November, with 3 mm of rain. There is on average 0 mm of precipitation in December. In July, the precipitation reaches its peak, with an average of 324 mm. 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.

Year		2016	2017	2018	Average
Sl. No.	Month	(mm)	(mm)	(mm)	(mm)
1	Jan	9.23	2.71	0.00	3.98
2	Feb	52.61	0.00	0.04	17.55
3	Mar	12.29	44.87	0.72	19.29
4	Apr	22.38	23.36	172.10	72.61
5	May	118.73	139.31	125.30	127.78
6	Jun	195.46	169.39	208.83	191.22
7	Jul	245.28	385.31	300.05	310.21
8	Aug	351.25	291.03	371.30	337.86
9	Sep	285.27	170.11	285.17	246.85
10	Oct	85.39	189.09	154.08	142.85
11	Nov	12.10	34.79	0.00	15.63
12	Dec	0.00	1.80	36.69	12.83
Total		**1389.99**	**1451.77**	**1654.28**	**1498.68**

Source: Indian Meteorological Department

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 Mayurbhanj is warm and temperate. In winter, there is much less rainfall in Mayurbhanj than in summer. The general climate of the district is characterized by oppressive heat in summer, severe cold in winter with high humidity throughout the year. The rainfall distribution is equal during the monsoon period. The period from June to October is the rainy season and the district experiences it from the southwest monsoon. May is the hottest month when the mean daily maximum

temperature rises up to 47° Celsius. The Köppen-Geiger climate classification is Cwa & as per they the average temperature in Mayurbhanj is 24.7 °C. The temperature in May averages 32.3 °C. January has the lowest average temperature of the year, it is 16.5 °C. There is a difference of 321 mm of precipitation between the driest and wettest months. During the year, the average temperatures vary by 15.8 °C., when the mean daily minimum temperature dips to 4º Celsius. The higher reaches of the Similipal experiences frosting during the peak of winter.

9.0 DETAILS OF MINING LEASE OF ORDINARY EARTH IN THE DISTRICT

9.1 List of Mines is operation in the district:

Attached as Annexure-E

9.2 List of Mines is not operation in the district:

Attached as Annexure-E

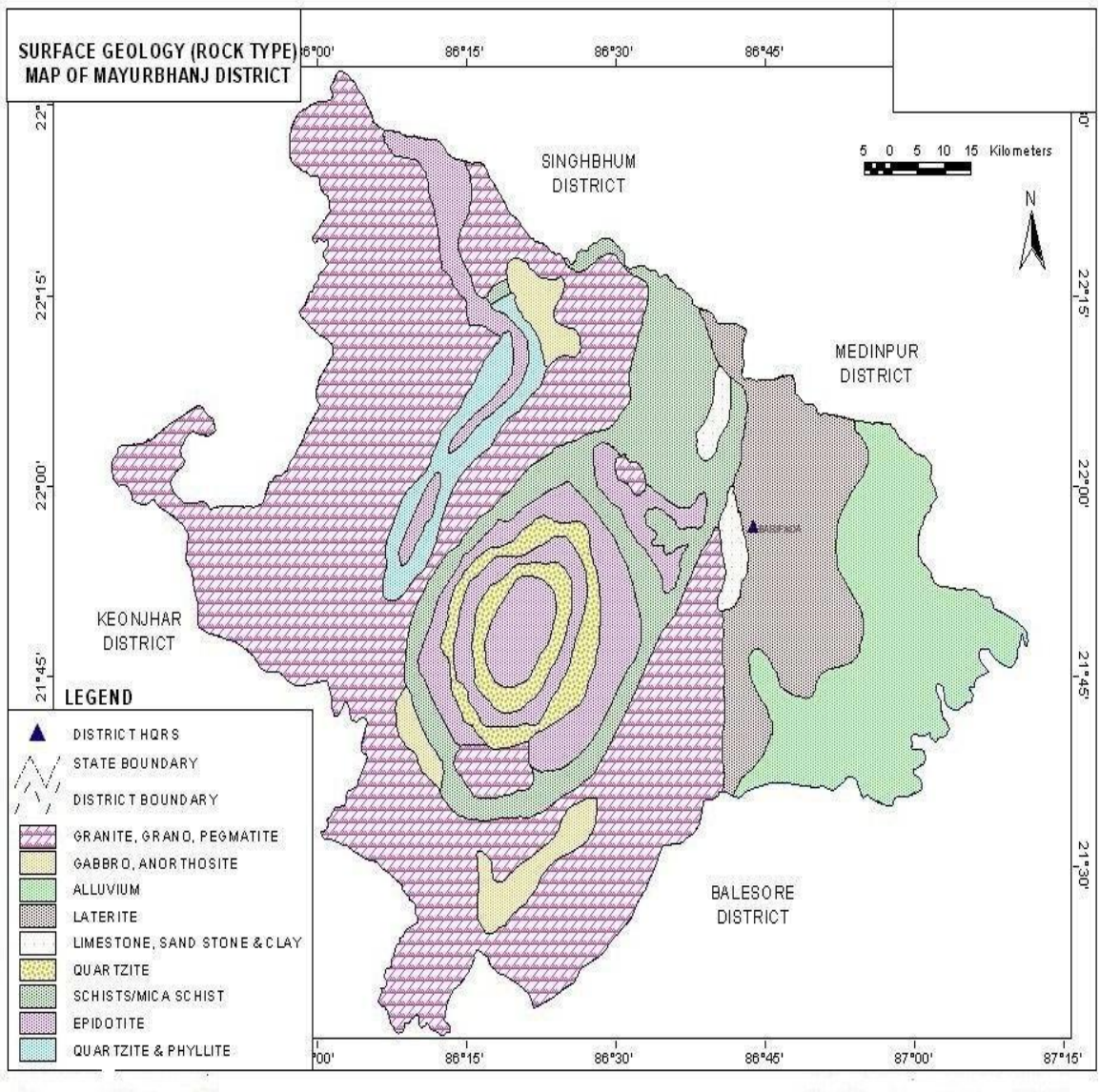
10. DETAIL OF ROYALTY OR REVENUE RECEIVED IN LAST THREE YEARS:

Sl. No.	Name of the Tahasil	2016-17	2017-18	2018-19	Total Amount (Rs.)
1	Baripada	0	0	0	**0**
2	Samakhunta	0	0	0	**0**
3	Kuliana	0	0	0	**0**
4	Bangriposi	0	0	0	**0**
5	Saraskana	0	0	0	**0**
6	Suliapada	0	0	0	**0**
7	Betnoti	0	0	0	**0**
8	Badsahi	0	0	0	**0**
9	Rasagovindpur	0	0	0	**0**
10	Morada	0	0	0	**0**
11	Udala	0	0	0	**0**
12	Kaptipada	0	0	0	**0**
13	Khunta	0	0	0	**0**
14	G.B Nagar	0	0	0	**0**
15	Rairangapur	0	0	0	**0**
16	Bisoi	0	0	0	**0**
17	Bijatala	0	0	0	**0**
18	Kusumi	0	0	0	**0**
19	Bahalda	0	0	0	**0**
20	Tiring	0	0	0	**0**
21	Jamda	0	0	0	**0**
22	Karanjia	0	0	0	**0**
23	Jashipur	0	0	0	**0**
24	Sukruli	0	0	0	**0**
25	Thakurmunda	0	0	0	**0**
26	Raruan	0	0	0	**0**
Grand Total		**0**	**0**	**0**	**0**

11. DETAIL OF PRODUCTION OF MINOR MINERALS IN LAST THREE YEARS:

Sl. No.	Name of the Tahasil	2016-17	2017-18	2018-19	Total in Cum.
1	Baripada	0	0	0	**0**
2	Samakhunta	0	0	0	**0**
3	Kuliana	0	0	0	**0**
4	Bangriposi	0	0	0	**0**
5	Saraskana	0	0	0	**0**
6	Suliapada	0	0	0	**0**
7	Betnoti	0	0	0	**0**
8	Badsahi	0	0	0	**0**
9	Rasagovindpur	0	0	0	**0**
10	Morada	0	0	0	**0**
11	Udala	0	0	0	**0**
12	Kaptipada	0	0	0	**0**
13	Khunta	0	0	0	**0**
14	G.B Nagar	0	0	0	**0**
15	Rairangpur	0	0	0	**0**
16	Bisoi	0	0	0	**0**
17	Bijatala	0	0	0	**0**
18	Kusumi	0	0	0	**0**
19	Bahalda	0	0	0	**0**
20	Tiring	0	0	0	**0**
21	Jamda	0	0	0	**0**
22	Karanjia	0	0	0	**0**
23	Jashipur	0	0	0	**0**
24	Sukruli	0	0	0	**0**
25	Thakurmunda	0	0	0	**0**
26	Raruan	0	0	0	**0**
Grand Total		**0**	**0**	**0**	**0**

12. MINERAL MAP OF THE DISTRICT:



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

Sl. No.	Name of the Mineral	Name of the Lessee	Address	Letter of Intent Grant Order No. & 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	8	9
Attached as Annexure-E								

14. TOTAL MINERAL RESERVE AVAILABLE IN THE DISTRICT

Total mineral reserve of Brick Earth will access 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	8	9
Attached as Annexure-E								

Sl. No.	**Name of the Tahasil**	**Mineral Resources in cum.**	**Mineable Reserve in cum.**
1	Baripada	Nil	Nil
2	Samakhunta	Nil	Nil
3	Kuliana	Nil	Nil
4	Bangriposi	Nil	Nil
5	Saraskana	Nil	Nil
6	Suliapada	Nil	Nil
7	Betnoti	Nil	Nil
8	Badsahi	Nil	Nil
9	Rasagovindpur	Nil	Nil
10	Morada	Nil	Nil
11	Udala	Nil	Nil
12	Kaptipada	Nil	Nil
13	Khunta	Nil	Nil
14	G.B Nagar	Nil	Nil

15	Rairangpur	Nil	Nil
16	Bisoi	Nil	Nil
17	Bijatala	Nil	Nil
18	Kusumi	Nil	Nil
19	Bahalda	Nil	Nil
20	Tiring	Nil	Nil
21	Jamda	Nil	Nil
22	Karanjia	Nil	Nil
23	Jashipur	Nil	Nil
24	Sukruli	Nil	Nil
25	Thakurmunda	Nil	Nil
26	Raruan	Nil	Nil
Total			

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

Rocks and Minerals found in Mayurbhanj District:-

The district is endowed with various types of mineral resources like Iron ore, China Clay, Quartz, Soap stone, Granite, Manganese, etc. Due to presence of huge mineral resources, mining activities have been undertaken in a big scale. Bahalda, Jashipur, Karanjia, Koshorpur, Bisoi, Gorumahisani and Rairangpur are the places in the district having deposits of the above mineral products. The availability of mineral deposits is given in the table below. The district's mineral deposits have not been utilized to maximum extent for industrial purpose. Some of the items like China clay, Soap stone, Asbestos, etc. can be used in small scale sector. So the available resources of the district need harnessing properly for industrial and productive use. Road metal/Building stone of the district are very much suitable for various construction purposes after crushing and screening. The granite gneisses are well foliated, jointed and weathered easily.

16. USE OF MINERAL

Uses of Soil/Brick earth:

- Soil/Brick earth have been extensively used for making of raw bricks and filling of new road construction and various public and commercial purposes.

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

As such there are huge infrastructural activities such as road, building, railways are coming up by state govt. under Govt. of India & PSUs under "Make in India" programme. The Granitic rocks are the main raw minerals for the above activities and considering the last three years' actual production of Mayurbhanj with respect to the requirement of the state has a huge gap. It is proposed to start the production from larger block/area to at least double the production of the district which will enhance the revenue of the district and also support the livelihood of the local people.

18. MAP OF EXISTING MINING LEASES IN THE DISTRICT:

Enclosed as Plate-I

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

Currently there are no clusters of mining leases in the district. However, it is proposed to consider the cluster of mining lease while planning for new lease area in coming years.

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

Eco sensitive zone of Similipal wild life sanctuary is located within the district.

21. 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 conditions 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

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:

1. Following are the remedial measures to mitigate the in Water sprinkling on haul road, loading and unloading points.
2. Plantation along the safety zone and dump area.
3. Providing dust masks to workers.
4. Regular monitoring of ambient air quality.
5. Provision of air conditioned cabin of Excavators and Dumpers.
6. Regular and proper maintenance of working equipments.

7. Periodic medical examination of the workers and organize medical camp in the area.
8. Use Milli Second Delay Detonator in blasting operation.
9. Provisions of ear plug to the workers.
10. Regular training programme to the mines workers and operators.

23. RECLAMATION OF MINED OUT AREA

Necessity of Reclamation & Rehabilitation:

- Exponential growth in mineral production since 1980.
- Mining activities causes 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 opencast mines & hence land degradation problems are of serious concern.
- An intricate, in-depth and site-specified techniques involving integrated approach is necessary.

Reclamation has three vital roles:

i. **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 inconformity with a prior land use. Reclamation always may not be a single- phase operation.

ii. **Rehabilitation** – Rehabilitation is to bring batch 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.

iii. **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 rate 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 based 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 that protects 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 risks 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 HEALTH 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 like Pneumoconiosis, Silicosis, Tuberculosis, Hearing Impairment etc. caused by exposure to health hazards at work. Almost all occupational diseases can be prevented by adopting proper occupational health measures and engineering control on airborne dust pollution at workplace. Occupational Diseases in mines or 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. The essential features of health surveillance programme required to be carried out in mines are:

(a) Initial Medical Examination of persons to be conducted at the time of appointment.

(b) Periodic Medical Examination or General physical examination to be conducted once in every year.

(c) Maintenance of medical records and health services till the person is in service.

(d) The Details of Tuberculosis cases in last 5 years is given below

RNTCP Activities from 2014 to 2018

Year	Projected Population (in Lakh)	No of Sputum Examined	Sputum Examined per Lakh/Qr Norm-150	No of Sputum Positive	Sputum Positive % Norm-8-15 %	Total Case put on DOTS /No of TB cases	Child DOTS out of Total DOTS	Case detectin per Lakh/Yr Norm-170 /L/Y	Sputum Conversion Rate Norm-90 %	NSP Cure Rate Norm-90%	NSP Death Rate Norm < 5%
2014	26.01	16848	161.9	2825	16.8%	4883	103	187.7	90.2%	89.0%	7.4%
2015	26.30	18118	172.2	2836	15.7%	4831	123	183.7	90.5%	89.0%	6.7%
2016	26.59	20060	188.6	2975	14.8%	5171	119	194.5	95.0%	90.9%	6.5%
2017	26.88	31035	289.4	3152	11.4%	5127	111	190.7	94.0%	91.6%	5.5%
2018	27.18	21273	195.6	2853	13.4%	4894	95	173.4	95.3%	92.7%	6.4%

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

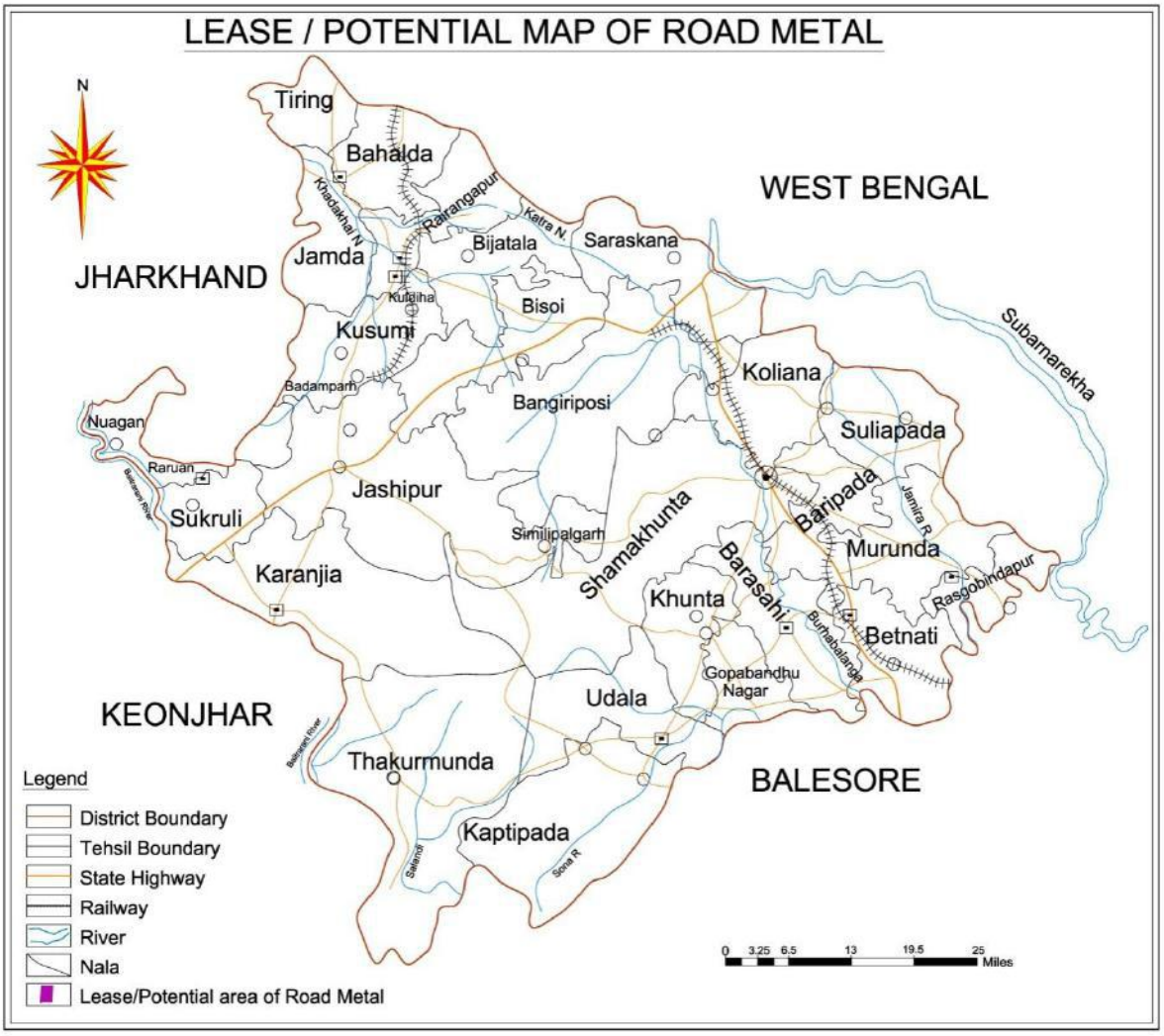
During mining operation green belt development through plantation is most important for environment safe guard, which should be supervision by mining department. Different type of species should be planted near lease periphery to keep environment clean at post mining period through reclamation. Where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

27. CONCLUSION:

Since it is an interim report, 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. The insitu 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 Mayurbhanj 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.

Plate No.-I



The District Survey Report for Ordinary Earth/ Brick Earth (Minor Mineral) in respect of Mayurbhanj District prepared 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 is approved for final publication in the district website.

28/12/19

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SDM, Sadar-cum -Member Secretary
DEIAA, Mayurbhanj

28/12/19

Sri Vineet Bhardwaj, IAS
Collector & DM-cum- Chairman, DEIAA
Mayurbhanj (Odisha)

OTHER THAN SAND MINING (Ordinary Earth/Brick Earth) — Annexure - E

Name of the Tahasil	Sl No	Name of Minerals	Name of Lessee	Address and Contact No. of Lessee	Mining Lease Grant Order No. & Date	Area of Mining lease (Ha.) with Village,Khata No, Plot No & Kisam	Period of mining Lease (Initial)		Period of Mining Lease (1st /2nd--Renewal		Date of Commencement of mining Operation	Status (Working /non-working/temp working for dispatch etc.	Captive /Non-Captive	Obtained environmental Clearance(Yes/No). If yes Letter no with date of EC	Location of Mining Lease (Latitude & Longitued)	Method of Mining Open Cast/ Under Ground)	Geological Reserve (MT/ Cums)	Mineable reserve (MT/ Cums)
							From	To	From	To								
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**
Samakhunta	**1**	Ordinary Earth /Brick Earth	SSri. Bijay Kumar Das M/s Tiger Bricks.	At-Palbani,Ward No-25 Po-Baripada Dist-Mayurbhanj	Order No of the Concession –2312 Dated-31/10/2018	Area-1.8 Ha Vill-Dumukapal Khata No-23, Plot No-74,59 & 63 Kisam-74-Ashu, 59-Sarada-3,63-Sarada-3	I	I	I	I	I	Non-working	–	–	–	–		
Samakhunta	**2**	Ordinary Earth /Brick Earth	Sri Rajendra Ram M/s Sarala Bricks.	At/Po-Baripada Dist-Mayurbhanj	Order No of the Concession –1174 Dated-21/06/2018	Area -0.445 Ha Vill-Maluha Khata No-17/5 Plot No-35/80,34/79,31/78,29/77, 28 & 27 Kisam-35/80,34/79,31/78-Ashu 29/77-Palo-II 28-Bagayat-II 27-Saradjal-III	I	I	I	I	I	Non-working	–	–	–	–		
Samakhunta	**3**	Ordinary Earth /Brick Earth	Sri Biseswar Khanda M/s Prava Bricks.	At.W.No.11,Sunamuhin Po/Ps-Baripada Dist-Mayurbhnj	Order No of the Concession –1849 Dated-28/08/2018	Area - 0.554 Ha Vill-Mohulia Khata No-248/149 Plot No-350 Kisam-350-Ashu	I	I	I	I	I	Non-working	–	–	–	–		

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Samakhunta	**4**	Ordinary Earth /Brick Earth	Sri Manoj Kumar Sahu M/s OM Maa Bricks	At-Naharpada, Ward No-11 Dist-Mayurbhanj	Order No of the Concession –2148 Dated-05/10/2018	Area -0.607 Ha Vill-Pundura Khata No-48 Plot No-637 Kisam-637-Ashu	I	I	I	I	I	Non-working	–	–	–	–		
Samakhunta	**5**	Ordinary Earth /Brick Earth	Sri Joyram Ram.	At-Madhuban Po/Ps-Baripada Dist-Mayurbhanj	Order No of the Concession –1804 Dated-20/08/2018	Area -0.278 Ha Vill-Pundura Khata No-48 Plot No-261,267,268 & 272 Kisam--Ashu	I	I	I	I	I	Non-working	–	–	–	–		
Samakhunta	**6**	Ordinary Earth /Brick Earth	Sri Shailesh Kumar Prajapati	At-W.No.15,Kamimandir Sahi Po/Ps-Baripada Dist-Mayurbhanj	Order No of the Concession –1802 Dated-21/08/2018	Area -0.497 Ha Vill-Pundura Khata No-67/10 & 67/11 Plot No-542,626,659/807,543/808,624,625/809,627/810,657/811,659/812 & 659/813 Kisam--Ashu	I	I	I	I	I	Non-working	–	–	–	–		
Samakhunta	**7**	Ordinary Earth /Brick Earth	Sri Sahadev Ram M/s-NICE Bricks	At-Ward No.09, Madhuban Po/Ps-Baripada Dist-Mayurbhanj	Order No of the Concession –1940 Dated-04/09/2018	Area -0.412 Ha Vill-Tikarpada Khata No-81 Plot No-488 Kisam--Ashu	I	I	I	I	I	Non-working	–	–	–	–		
Samakhunta	**8**	Ordinary Earth /Brick Earth	Sri Bhim Charan Ram M/S-Gold Bricks	At-Ward No.09, Madhuban Po/Ps-Baripada Dist-Mayurbhanj	Order No of the Concession –1468 Dated-17/07/2018	Area -0.346 Ha Vill-Tikarpada Khata No-107/21 Plot No-395,396,311/573 & 308/572 Kisam-395,396-Saradjala-III 311/573,308/572-Saradjala-I	I	I	I	I	I	Non-working	–	–	–	–		

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Samakhunta	**9**	Ordinary Earth /Brick Earth	Sri Anil Kumar Panda M/s Ashok Bricks	At-Mahulia Dist-Mayurbhanj	-	Area -1.602 Ha Vill-Mahulia Khata No-248/5 Plot No-88,87,07,08,87/1733,88/1732 & 88/1826 Kisam-88-Ashu,87-Dahi-I,07,08-Ashu 87,1733,88/1732,88/1826-Gharabari	I	I	I	I	I	Non-working	–	–	–	–		
Samakhunta	**10**	Ordinary Earth /Brick Earth	Sri Niranjan Naik M/s Shakti Bricks	At-Mankadapal Dist-Mayurbhanj	-	Area-0.627 Ha Vill-Mankadapal Khata No-42 Plot No-49 Kisam--Ashu	I	I	I	I	I	Non-working	–	–	–	–		
Samakhunta	**11**	Ordinary Earth /Brick Earth	Sri Upendra Nath Tung M/s Trisul Bricks	At-Mahulia Po-Goudadiha Dist-Mayurbhanj	-	Area -0.574 Ha Vill-Mankadapal Khata No-248/49 Plot No-6 & 8 Kissam-6-Nadi,8-AShu	I	I	I	I	I	Non-working	–	–	–	–		
Samakhunta	**12**	Ordinary Earth /Brick Earth	Sri Basudev Pradhan M/s Payal Bricks	At-Maluha Po-Astia Dist-Mayurbhanj	-	Area -0.574 Ha Vill-Maluha Khata No-15 plot No-1,2,9,26 & 2/87 Kissam-1,2,9-Sarada Jala -I 26,2/87 - Gharabari	I	I	I	I	I	Non-working	–	–	–	–		

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Samakhunta	**13**	Ordinary Earth /Brick Earth	Sri Sahadev Ram M/s Nice Bricks	At-Tikarpada Dist-Mayurbhanj	-	Area -2.116 Ha Vill-Tikarapada Khata No-81, Plot No-39,40,41,42,309,360, 361,401,418,487,488, 489,495& 498 Kissam-39,42,360-Gharabari, 40,41,418,487,488,489,495,498 - Ashu,309-Sarad Jala-I,361-Sarad Jala-II,401-Sarad Jala-III	I	I	I	I	I	Non-working	–	–	–	–		
Samakhunta	**14**	Ordinary Earth /Brick Earth	Sri Ganeswar Naik M/s-K.B. Bricks	At-Chipat Asia Ps-Baripada Dist-Mayurbhanj	Order No of the Concession –455 Dated-06/09/2018	Area - 0.574 Ha Vill-Tikarpada Khata No-859/7 Plot No-238 Kissam-Ashu	I	I	I	I	I	Non-working	–	–	–	–		
Kuliana	**15**	Ordinary Earth /Brick Earth	Sri Bijay Sahaa M/s TulsiBricks	At/Po-Ambadiha Ps-Kuliana Dist-Mayurbhanj	Order No of the Concession –3025 Dated-05/10/2018	Area-2.65 Ha Vill-Ambadiha Khata No-24 Plot No-106 & 106/130 Kisam - 106 - Ashu, 106/130 - Gharabari	I	I	I	I	I	Non-working	–	–	–	–		
Kuliana	**16**	Ordinary Earth /Brick Earth	Sri. Raj Kishore Singh M/s M/s Durga Bricks	At/Po-Kamardiha Ps-Kuliana Dist-Mayurbhanj	Order No of the Concession –3027 Dated-05/10/2018	Area -0.971 Ha Vill-Kamardiha Khata No-62/2 Plot No-127,128,157,158,189 Kisam - 127,128 & 157 - Gharabari, 158 &159 - Ashu	I	I	I	I	I	Non-working	–	–	–	–		
Kuliana	**17**	Ordinary Earth /Brick Earth	Sri Purendra Nath Sahu M/s Maa Bricks	At/Po-Pariakuli Ps-Kuliana Dist-Mayurbhanj	Order No of the Concession –3023 Dated-05/10/2018	Area -0.421 Ha Vill-Pariakuli Khata No-144/23 Plot No-518 Kisam - Sarada - II	I	I	I	I	I	Non-working	–	–	–	–		

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Betnoti	**18**	Ordinary Earth /Brick Earth	Sri Rabi Narayan Panda M/s Shiva Bricks	At- Baisinga Dist- Mayurbhanj	Order No of the Concession –5167 Dated-08/11/2019	Area-0.501 Vill-Belbaria Khata No-242/46 Plot No-643,646 & 471 Kisam - 643-Pala - I, 646-Sarada-II,471-Gharabari	I	I	I	I	I	Non-working	–	–	–	–		
Betnoti	**19**	Ordinary Earth /Brick Earth	Sri Abhilas Dandapat M/s Rupa Bricks	At-Betnoti Dist-Mayurbhanj	Order No of the Concession –5167 Dated-08/11/2019	Area -0.437 Ha Vill-Pratimadeipur Khata No-99/47 plot No-59,67 & 68 Kisam - Pal - I	I	I	I	I	I	Non-working	–	–	–	–		
Betnoti	**20**	Ordinary Earth /Brick Earth	Sri Ganeswar Swain M/s Dayal Bricks Industry	At-Gobindapur Dist-Balasore	Order No of the Concession –5167 Dated-08/11/2019	Area-0.574 Ha Vill-Pratimadeipur Khata No-99/97 & 99/91 Plot No-330 & 325 Kissam - Pal - I	I	I	I	I	I	Non-working	–	–	–	–		
Betnoti	**21**	Ordinary Earth /Brick Earth	Sri Ajoy Kumar Rout M/s Laxmi Bricks	At/Po-Betnoti Dist-Mayurbhanj	Order No of the Concession – Dated-	Area -0.689 Ha Vill-Kathpal Khata No-119/28 Plot No-349 & 349/765 Kisam - 349 - Bagayat - II 349/765 - Gharabari	I	I	I	I	I	Non-working	–	–	–	–		
Betnoti	**22**	Ordinary Earth /Brick Earth	-	-	-	Area- 0.58 Ha Village-Dariha Khata No. 156/34 Plot No. 420 & 422 Kisam-Gharabari	'	'	'	'	'	Non-Working						

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Badasahi	**23**	Ordinary Earth /Brick Earth	-	-	-	Area - 0.5169 Ha Vill.- Aguad Khata No. 237/115, Plot No. 967 & 1053/1322/1339 Kisam- Pala II, Sarad II khata No-237/112, Plot No-956/1335 & 1064/1336, Kisam- Pala II, Sarad II						Non-Working	Non-Captive					
Badasahi	**24**	Ordinary Earth /Brick Earth				Area - 1.3598 Ha Vill.- Sarbesarpur Khata No. 78/44, Plot No. 21, Kisam- Pala II Plot No-25/403/452 & 25/402/456 Kisam- Bagayat II						Non-Working	Non-Captive					
Badasahi	**25**	Ordinary Earth /Brick Earth				Area - 0.5101 Ha Vill.- Khuntapal Khata No. 195/69, Plot No-1069, Kisam- Asu						Non-Working	Non-Captive					
Badasahi	**26**	Ordinary Earth /Brick Earth				Area - 1.016 Ha Vill.- Srirampur Khata No.242/103, Plot No-164, Kisam- Gharabari						Non-Working	Non-Captive					
Badasahi	**27**	Ordinary Earth /Brick Earth				Area - 0.2186 Ha Vill.-Khuntapal Khata No. 286/102, Plot No. 622, Kisam- Gharabari						Non-Working	Non-Captive					
Badasahi	**28**	Ordinary Earth /Brick Earth				Area - 0.1943 Ha Vill.-Sakua Khata No. 228/91, Plot No. 1177/1445, Kisam-Pala II						Non-Working	Non-Captive					

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Badasahi	**29**	Ordinary Earth /Brick Earth				Area - 0.2186 Ha Vill.-Mahupura Khata No. 132, Plot No. 288, Kisam- Pala II						Non-Working	Non-Captive					
Badasahi	**30**	Ordinary Earth /Brick Earth				Area - 1.469 Ha Vill.-Haripur Khata No. 77, Plot No. 547,554,555 & 559, Kisam- Asu						Non-Working	Non-Captive					
GB Nagar	**31**	Ordinary Earth /Brick Earth	Sairam Bricks			Area - Ac 0.81 dec Vill.- Patsanipur Khata No. 155/23 & 1522 Plot No.140 &141, Kisam-												
Kaptipada	**32**	Ordinary Earth /Brick Earth	Sri Pradeep Kumar Nayak M/s Eagle Bricks	At-Potaldihi Ps-Udala Dist-Mayurbhanj	Order No of the Concession –5042 Dated-09/12/2019	Area -1.19 Ha Vill-Potaldiha Khata No-8, Plot No-1333 & 1333/2126 Kisam - 1333 - Asu, 1333/2126 - GHarabari	I	I	I	I	I	Non-working	–	–	–	–		
Udala	**33**	Ordinary Earth /Brick Earth	Sri Indra Ranjan Sahu M/s KalingaBricks	At/Po-Patpur Ps-Udala Dist-Mayurbhnj		Area -0.424 Ha Vill-Patapur, Khata No-279/221 Plot No-144/939 & 154/940 Kisam-144/939-Sarad Jala-III,154/940-Chaka No.10/187	I	I	I	I	I	Non-working	–	–	–	–		
Bangriposi	**34**	Ordinary Earth /Brick Earth	Sri Sishu Ananta Sahu M/s Sahu Bricks	At-Damsol Po-Pathuri Dist-Mayurbhanj	Order No of the Concession –4523 Dated-30/11/2017	Area -0.667 Ha Vill-Damsol Khata No-38/4 Plot No-28,29,30,51,52,55,56 & 57 Kissam - Sarada-II	I	I	I	I	I	Non-working	–	–	–	–		

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Bangriposi	**35**	Ordinary Earth /Brick Earth	Sri Radhagobinda Naik M/s Tarini Bricks	At-Dhadangri Po-Pathuri	Order No of the Concession –4770 Dated-18/12/2017	Area -0.829 Ha Vill-Manaharpur Khata No-34 Plot No-32,34 & 34/276 Kissam - 32 & 34-Ashudafasali, 34/276-Gharabari	I	I	I	I	I	Non-working	–	–	–	–		
Saraskana	**36**	Ordinary Earth /Brick Earth	L & T Company	L & T Company	No.1003, Dtd 26.3.18	Area: 0.781Ha, vill : Kanimahuli Khata No.22 Plot No. 579,580,582& 900 kisam: Sarad-II, Gharabari, Jalasaya-II & Sarad-II						Non-working		No	Lat: 22'10' 2.9" N to 22'10' 3.9"N Longi : 86'35' 28.8" E to 86'35' 43.3" E	under ground	20314	10136
Saraskana	**37**	Ordinary Earth /Brick Earth	L & T Company	L & T Company	No.1003, Dtd 26.3.18	Area:4.33Ha, Vill : Palasia Khata No.47 & 41 Plot No. 493,497,529,531,538, 555,558,590,667,543, 544,585 & 591 kisam: Sarad-II, Gharabari, Jalasaya-II & Sarad-II						Non-working		No	Lat: 22'10' 12.5" N to 22'10' 34.3"N Longi : 86'36' 51.1" E to 86'37' 6.5" E	under ground	162685	118660
Saraskana	**38**	Ordinary Earth /Brick Earth	L & T Company	L & T Company	No.2180, Dtd.27.7.18	Area: 0.857Ha Vill : Dighi, Khata No.22 Plot No. 488 & 505 kisam: Sarad-III & Sarad-II						Non-working		No	Lat: 22'10' 23.9" N to 22'10' 28.2"N Longi : 86'37' 47.5" E to 86'38' 4.1" E	under ground	48490	30475

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Moroda	**39**	Ordinary Earth /Brick Earth	Sri Muchiram Behera M/s Mataa Bricks	At/Po-Morada Dist-Mayurbhanj Dist-Mayurbhanj	Order No of the Concession –93 Dated-04/01/2019	Area -0.246 Ha Vill-Baladia Khata No-213/178 Plot No-1022 & 954/1326 Kisam - 1022-Sarada-2, 954/1326-Sarada-1	I	I	I	I	I	Non-working	–	–	–	–		
Moroda	**40**	Ordinary Earth /Brick Earth	Sri. Sri Bijay Kumar Sahoo M/s Baba Bricks	At/Po-Khuruntia Dist-Mayurbhanj	Order No of the Concession –953 Dated-13/03/2018	Area -0.558 Ha Vill-Belajhari Khata No-140 Plot No-34/870 Kisam - 34/870-Gharabari	I	I	I	I	I	Non-working	–	–	–	–		
Moroda	**41**	Ordinary Earth /Brick Earth	Sri Uttama Ku. Ghadei M/s Rupa Bricks	At/Po-Morada Dist-Mayurbhanj	Order No of the Concession –2648 Dated-22/12/2018	Area -1.29 Ha Vill-Morada Khata No-312 Plot No-729 Kisam - 729-Sarada - II	I	I	I	I	I	Non-working	_	_	_	_		
Rasagovindpur	**42**	Ordinary Earth /Brick Earth	Sri Ranjit Kumar Sahu M/s Ambika aBricks	At/Po-Tambakhuri Po-Rasgobindapur Dist-Mayurbhnj		Area -1.529 Ha Vill-Tambakhuri Khata No-219/58,219/268,219/210,219/211,83,219/157 & 219/144 Plot No-930,925/1262,929,925,933,935,921/1391,972,973,974,975,976,977,985,985/1334,962/1336,963,980,981, 962 & 964 Kisam - 930,925/1262,929,925,933,935,921/1392,972.973,974 - Sarad - III 975,976,977,985,985/1334,962/1336,963,980,981,962,964 - Gharabari	I	I	I	I	I	Non-working	–	–	–	–		

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Rairangpur	**43**	Ordinary Earth /Brick Earth	Sri Umeswar Mohanta M/s Eswar Bricks	At/Po-Halda Ps-Badbaikala Dist-Mayurbhanj	Order No of the Concession –4036 Dated-17/12/2018	Area -0.607 Ha Vill-Badbaikala Khata No-26 Plot No-502,503 & 502/2090 Kisam - 502-Sarad Jala-I,503-Sarad Jala-I,502/2090-Gharabari	I	I	I	I	I	Non-working	–	–	–	–		
Sukruli	**44**	Ordinary Earth /Brick Earth	Sri Dillip Kumar Prusty	At/Po-Pandarsil Ps-Raruan Dist-Mayurbhanj	Order No of the Concession –3509 Dated-09/12/2019	Area -0.870 Ha Vill-Jamdapal Khata No-122/30 Plot No-200 Kisam-200-Palo-II	I	I	I	I	I	Non-working	–	–	–	–		
Jashipur	**45**	Ordinary Earth /Brick Earth	M/S Larsen & Tourbo Pvt. Ltd, L. & T. Construction, Kanimahuli, Jharpokharia	At- Kanimahuli PO-Manbhanj PS-Jharpokharia, Dist. Mayurbhanj	No.630 Dt.25.07.18	Area - 0.526 Ha. Vill-Kenjhera Khata No.134 Plot No.1439 Kissam-Asu	'	'	'	'	'	Non-working	-	No	Latitude-21'53' 27.0"N to 21.53' 30.6" N Longitude-86.0" 50.8" E to 86'00' 53.8" E	Open Cast	15,664 MT	9344 MT
Jashipur	**46**	Ordinary Earth /Brick Earth	M/S Larsen & Tourbo Pvt. Ltd, L. & T. Construction, Kanimahuli, Jharpokharia	At- Kanimahuli PO-Manbhanj PS-Jharpokharia, Dist. Mayurbhanj	No.630 Dt.25.07.19	Area - 1.95 Ha. Vill-Kenjhera Khata No.130 Plot No.891 & 892 Kissam-Asu	'	'	'	'	'	Non-working	-	No	1.Latitude-21'53' 43.5'' N to 21.53' 47.9'' N Longitude- 86'00' 55.4" E to 86' 01' 3.2'' E	Open Cast	73,400 MT	58,645 MT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Jashipur	**47**	Ordinary Earth /Brick Earth	M/S Larsen & Tourbo Pvt. Ltd, L. & T. Construction, Kanimahuli, Jharpokharia	At- Kanimahuli PO-Manbhanj PS-Jharpokharia, Dist. Mayurbhanj	No.630 Dt.25.07.20	Area - 2.71 Ha. Vill-Tangabilla Khata No.101, Plot No. 12,81,86,104, Kissam-Asu,SJ-1, S-II, S-II Khata No.152, Plot No.17,80,89 Kissam-S-1, S-III, S-IIKhata No.84 Plot No.62,63 Kissam-S-III, S-I Khata No.17 Plot No.15,82 Kissam-S-III, S-III Khata No.2, Plot No.79,88,90,92 Kissam-S-III,S-II, S-II, S-II, Khata No.42, Plot No.11,13, 14, 83 Kissam-S-II, S-II, S-II, S-II, Khata No.158 Plot No.16,84, Kissam-S-III, S-III	'	'	'	'	'	Non-working	-	No	1. Latitude-21.54' 33.1'N to 21.54' 42.9"N Longitude-86.02' 30.1"E to 86.02' 37.3"E	Open Cast	68,495 MT	53,760 MT
Jashipur	**48**	Ordinary Earth /Brick Earth	M/S Larsen & Tourbo Pvt. Ltd, L. & T. Construction, Kanimahuli, Jharpokharia	At- Kanimahuli PO-Manbhanj PS-Jharpokharia, Dist. Mayurbhanj	No.630 Dt.25.07.21	Area - 1.15 Ha. Vill-Tangabilla Khata No.102, Plot No. 111,112 & 113 Kissam-S-I,S-I,S-I Khata No.2, Plot No.110 Kissam-S-1, Khata No.42 Plot No.98 Kissam- S-II	'	'	'	'	'	Non-working	-	No	Latitude-21.54' 30.8"N to 21.54' 40"N Latitude-86.02' 36.1"E to 86.02' 40.2"E	Open Cast	31,800 MT	17,914 MT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Jashipur	**49**	Ordinary Earth /Brick Earth	M/S Larsen & Tourbo Pvt. Ltd, L. & T. Construction, Kanimahuli, Jharpokharia	At- Kanimahuli PO-Manbhanj PS-Jharpokharia, Dist. Mayurbhanj	No.630 Dt.25.07.22	Area - 1.87 Ha. Vill- Kointa Khata No. 39 Plot No. 143,144,145,152,153 & 151 Kissam- S-II, S-III, S-III, S-III, S-III, S-II Khata No.10 Plot No.148,149 & 150 Kissm- S-III, Asu,S-III	'	'	'	'	'	Non-working	-	No	1. Latitude-21.53' 21.7" N to 21.53' 28.8'N Longitude- 86.0' 52.7"E to 86.01' 2.6"E	Open Cast	46,620 MT	33,168 MT
Jashipur	**50**	Ordinary Earth /Brick Earth	M/S Larsen & Tourbo Pvt. Ltd, L. & T. Construction, Kanimahuli, Jharpokharia	At- Kanimahuli PO-Manbhanj PS-Jharpokharia, Dist. Mayurbhanj	No.630 Dt.25.07.23	Area- 1.43 Ha. Vill- Kointa Khata No.10 Plot No.927 & 943 Kissam-Asu, Asu, Khata No.79/1 Plot No.932, 938, Kissam-Asu, S-III, Khata No. 75 Plot No.939 Kissam-S-III	'	'	'	'	'	Non-working	-	No	Latiitude-21.53' 5.5"N to 21.53' 14.2"N Longitude-86.00' 36.2"E to 86.00' 54.2"E	Open Cast	35,764 MT	21,749 MT
Jashipur	**51**	Ordinary Earth /Brick Earth	M/S Larsen & Tourbo Pvt. Ltd, L. & T. Construction, Kanimahuli, Jharpokharia	At- Kanimahuli PO-Manbhanj PS-Jharpokharia, Dist. Mayurbhanj	No.630 Dt.25.07.24	Area - 0.497 Ha. Vill- Kointa Khata No. 66 Plot No. 819 Kissam-S-II,	'	'	'	'	'	Non-working	-	No	Latitude-21.52' 54.5"N to 21.52' 56.2"N Longitude-86.00' 16.0"E to 86.00' 20.5"E	Open Cast	15,345 MT	8,760 MT