Draft report
Environmental Impact Assessment
&
Environment Management Plan

Project
Gaurala & Somnala Limestone & Dolomite mine -116.13 ha, Village: Gaurala, Taluka - Maregaon, District – Yavatmal

Proponent
Maharashtra State Mining Corporation Limited
Plot No. 7, Ajni Square, Wardha Road, Nagpur 440 015

Consultant
Enviro Techno Consult Private Limited
68, Mahakali Nagar
Near Manewada Square, Nagpur 440 024

ACCREDITED BY NABET-LISTED AT SERIAL NO. 50 DT. SEPT. 05, 2018

October 2018

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Declaration

We do hereby declare that the EIA/EMP report of Gaurala Limestone mine 116.13 ha of M/s Maharashtra State Corporation Ltd., Nagpur has been prepared in compliance with the TOR prescribed on 04.10.2018 vide EAC meeting No. 13th held on Sept. 19, 2018. The samples taken for baseline data generation during the summer season, March to May are analysed in the laboratory and the data given in the EIA/EMP report are correct to the best of our knowledge and belief.

Dr. V.P. THERGAONKAR
CO-ORDINATOR
ENVIRO TECHNO CONSULT PRIVATE LIMITED

MAHARASHTRA STATE MINING CORPORATION LTD.

(A Government of Maharashtra Undertaking)

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Ref. No.: MSMC/EC/GLM/2018/ 1567 Date : 17.08.2018

17 OCT 2018

Declaration by Project proponent

(Compliance to MoEF&CC Office Memorandum J-11013/41/2006-IA.II(I) dated 04.08.2009)

M/s Maharashtra State Mining Corporation Ltd, Nagpur have submitted an application for grant of environmental clearance for Gaurala & Somnala Limestone and dolomite mine 116.13 ha Village Gaurala & Somnala, Tehsil: Maregaon in Yavatmal district, Maharashtra under EIA notification 2006 and amendments therof.

On our proposal, EAC, New Delhi granted Standard Terms of Reference vide 13th meeting of Expert Appraisal Committee for the proposal involving violation of EIA Notification 2006 held on September 19, 2018, listed at Sr. No. 13.4.5. for preparation of EIA / EMP report as per generic structure.

Place : Nagpur.

Maharashtra State Mining Corporation Ltd. Nagpur MSMC

(P. Y. Tembhare)
General Manager (Operations)
M.S.M.C. Limited, Nagpur.

Declaration by Experts contributing to the EIA : Gaurala Limestone mine 116.13 ha of M/s Maharashtra State Mining Corporation Ltd, Nagpur, Village : Gaurala & Somnala, Tehsil : Maregaon, Dist Yavatmal, MS.

I, hereby, certify that I was a part of the EIA team in the following capacity that developed the above EIA.

EIA coordinator: .....

Name : V.P. Thergaonkar

Signature and Date : 16.10.2018

Period of involvement : 01.11.2017 to till date

Contact information : M/s Enviro Techno Consult Private Limited
68, Mahakali Nagar, Near Manewada Square, Nagpur

Functional area experts:

Sr. No.	Functional areas	Name of the expert/s	Involvement (period and task**)	Signature and date
1	AP	V.P. Thergaonkar *Prashil P. Shukla	TOR granted 18.05.2018 to till date Collation and interpretation of base line data by concerned FAE	
2	WP	V.P. Thergaonkar Amol Zilpe*	TOR granted 18.05.2018 to till date Collation and interpretation of base line data by concerned FAE	
3	SHW	V.P. Thergaonkar Amol Zilpe*	TOR granted 18.05.2018 to till date Collation and interpretation of base line data by concerned FAE	
4	EB	P.S. Umredkar Ashish Shukla*	TOR granted 18.05.2018 to till date Collation and interpretation of base line data by concerned FAE	
5	HG	T. Rajasekhar *A.P. Saraf	TOR granted 18.05.2018 to till date Collation and interpretation of base line data by concerned FAE	
6	GEO	T. Rajasekhar *A.P. Saraf	TOR granted 18.05.2018 to till date Collation and interpretation of base line data by concerned FAE	
7	AQ	V.P. Thergaonkar Prashil P. Shukla*	TOR granted 18.05.2018 to till date Collation and interpretation of base line data by concerned FAE	
8	NV	Ashish P. Shukla	TOR granted 18.05.2018 to till date Collation and interpretation of base line data by concerned FAE	

*One TM against each FAE may be shown.

**Please attach additional sheet if required.

Declaration by the Head of the accredited consultant organization/ authorized person

I, V.P. Thergaonkar, hereby, confirm that the above mentioned experts prepared the EIA of Gaurala Limestone mine 116.13 ha of M/s Maharashtra State Mining Corporation Ltd, Nagpur, Village : Gaurala & Somnala, Tehsil : Maregaon, Dist Yavatmal, MS.

I also confirm that the consultant organization shall be fully accountable for any mis-leading information mentioned in this statement.

Signature : .....

Name : V.P. Thergaonkar

Designation: H.O.O.

Name of the EIA consultant organization : M/s Enviro Techno Consult Private Limited

NABET Certificate No. & Issue Date : QCI/NABET/ENV/ACO/17/0350 dated June 29, 2017.

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EXECUTIVE SUMMARY

- Government of Maharashtra has granted a 116.13 ha limestone lease for 20 years to Maharashtra State Mining Corporation Limited (MSMCL) vide order no MMN-1006/C.R. 3065/INd-9 dated 13.10.2006.

- Maharashtra State Mining Corporation Limited (MSMCL). MSMCL is a limited company fully owned by Govt. of Maharashtra

- The lease is near village Gaurala in Maregaon tehsil in Yavatmal district and MSMCL is in possession of land required for the mining period.

- Latitude and longitude of the lease are 20^0 05' 01" - 20^0 06' 19.1"N and 78^0 51'1.1"- 78^0 51'30.7" E respectively.

- Lease land is in possession of the project proponent. It is not a part of any forest. There is no agriculture on the land.

- EAC issued TOR following a presentation on Sept. 19, 2018.

- M/s Enviro Techno Consult Private Limited of Nagpur, retained by MSMCL carried out environmental monitoring was conducted as per MOEF & CC norms for summer season (March to May, 2018).

- Present summary is of the EIA report as per TOR and has been prepared as per generic structure given in Appendix III of EIA notification 2006 by MOEF & CC .

- It is proposed to mine limestone @ 833.3 tonnes per day by Category 'A' mechanized open cast mining method.

- Limestone mining is important to Vidarbha region since there is perennial demand for quality limestone within economic distance from Gaurala & Somnala. There are about 15-20 industries e.g. M/s Maharashtra Electro Smelt, M/s Vinar Ispat Ltd., M/s Grace Industries, M/s Chaman Metallics in Chandrapur and M/s NECO, M/s FACOR etc.in Nagpur, which need limestone as raw material.

- This is a new project & RQP has prepared the mining plan for the period 2018-19 and has been approved.

- Life of the mine will be six years because proved mineable reserves are 1,48,09,942 tonnes.

- Total reserves – 1,71,29,942 T; Proved – 1,48,09,942 T ; Blocked – 4,29,471 T.

- Ore quality is CaO- 51.26- 51.54 ; SiO_2 - 2.64- 2.90 & MgO - 1.25 - 1.45 each in percentage.

- Geology: Area around Gaurala comprises of limestone and dolomitic limestone of Penganga group (Precambrian age), sandstone and shales of Gondwana group, clay and sandstones of Lameta group and Deccan lava.

- Limestone is jet black to grey in colour, fine grained and compact. It occurs in bedded form and is intermixed with magnesium limestone.

- There are no sensitive receptors or ecosystems or water bodies in core and buffer zones.

- Villages Gaurala & Somnala are at 1.5 and 3 km respectively.

- There are no industries within this area.

Proposed mining

Mining will be restricted to 24.54 ha area. Open cast mechanized mining is proposed @ 833.3 TPD. Bench height will be 6 m and width will exceed 6 m. Eight pits of sizes varying from 83.85 to 28,071.33 m^2 and 14 waste dumps exist in the lease. Existing pits in the lease will be deepened to ultimate depth of 14 m below ground level. Total excavation in the year will be 1,22,117.4 m^3.

- Resulting over burden, rejects, saleable ore and rejects during the year will be respectively 22,123 m^3, 9,999.44 m^3, 2,24,987.4 T and 24,998.6 T.
- Three holes will be drilled in a day and three blasts per week are planned. Depth of each 100 mm hole will be 6.6 m and in burden it will be 2.5 m. Space between two holes will be 3 m.
- Tree felling will not be required as area is devoid of any trees.
- Backfilling is not proposed. Limestone deposits continue below.
- Pit area will be 80,706.89 m^2 and O.B dump area would be 33,508.28 m^2 at the end of plan period.

Average/year	Quantity
Limestone production	2,24,986 T
Excavation	1,22,117.4 m^3
Top soil	Nil
OB/SB	22,123 m^3
Ore	89,994.96 m^3
Ore rejects @ 10% ROM	9999.44 m^3

Base line environmental quality:

Air :

- There are no industrial gaseous -emission sources. Predominant wind directions in the order are NE (17%),ENE, S, &SSW(12 %). Average wind speed is 0.9 m /sec. Calm conditions are 10.4 per cent.
- Atmospheric stability class at Gaurala is "moderately unstable to slightly unstable" during the day. Area has rural setting.
- Concentrations of criteria pollutants were found to be well below National air quality criteria viz. PM_{10} ,$PM_{2.5}$, SO_2 and NOx which are respectively 100,60,80 and 80 µg/m^3.
- Predominant emissions during open cast mining project would be generate particulate matter likely during drilling, blasting, loading/unloading and transportation activities .

Noise: Ld, Ln &Ldn values were typical of rural background.

	Lease dB(A)	Gaurala dB(A)	Somnala dB(A)
Ld	51.1	52.7	53.4
Ln	52.4	53.8	52.3
Ldn	58.2	59.7	59.1

Sources of noise would be during drilling and blasting. Three holes will be drilled in a day and there would be two blasts per week.

Water: There are no surface sources viz. rivers/ lake in the lease except abandoned pits occupying 55,205.05 m^2. Average depth of these pits is 6 m. Pits would collect rainwater @ 4599.9 say 4600 m^3 /year presuming 901 mm average annual rainfall. Ground water from limestone deposit areas is known to contain higher fluoride. Ground water in such areas is alkaline. There is isomorphic replacement of fluoride ions in geology by hydroxyl ions. Fluoride was more in the tube well/hand pump water samples. Fluoride has to be removed from water if this water is to be used for drinking. Alum can be used for removing fluoride.

- Surface runoffs during monsoon from lease will enter abandoned pits. Some water will evaporate and some can slowly percolate down.

- Abandoned mine pit water quality meets the criteria A-II for surface water source viz. public water supply with approved treatment equivalent to coagulation, sedimentation & disinfection (Govt. of Maharashtra resolution no 2000/326/P.K .22/3 dated 15-07-2000). It would need disinfection if it is to be used for consumption. Suspended solids, if any will settle down during long detention in the pits.

Solid waste :

During mining plan period (2018-2019) mineral rejects are estimated to be 9999.44 m^3. Ore with CaO less than 34 per cent CaO will be rejects and subgrade material will contain CaO between 34 and 42 percent. Beneficiation is not planned.

Rejects will be dumped and its height will be 6 m. Dump site is within lease. Leachates from limestone dumps will be innocuous . Soil will not be generated.

Impacts :

Land: There is no soil cover or agriculture. There are pits and dumps covering 55,205.05 m^2 and 29,568.13 m^2 respectively. There is no mining or agriculture over the land. One pit will be deepened during the operational phase. Hence there would not be any adverse impact on topography/drainage or on land use or agriculture. Appearance will continue to be as it is. Geological records on these limestone deposits state that considerable limestone quantity would be present in the pit after extracting limestone as per approved mining plan. Proved mineable reserves would not have been mined till the conceptual period of mine. Hence backfilling or reclamation of the mined out area is not proposed. Thus, mined out pit will be a "rainwater" storage structure till mining starts again. It is likely that recharge ground water aquifer takes place. Also reservoir water can be used for miscellaneous purposes like plantation, fish culture etc.

Already some waste material is stored in 14 old waste dumps in the lease. These dumps are of weathered limestone and some soil. Dumps' heights vary from 1.51 to 5.16 m.

They have not caused any adverse impact on prevailing mine lease environment. Leachates from dumps will not contain any toxic material.

During proposed mining 24998.6 m^3 similar waste material will be generated. It will be stored over 33508.28 m^2 area to a height of 6. Existing waste dumps will be re-arranged and stabilized. Physical stability of dump will be ensured since it will be designed as per I.B.M. norms. A garland drain will be provided to collect runoff from the dumps.

Land use in lease at the end of mining plan period.

Land use	Area,m^2
Pit area	80,706.89

Waste dump area	33,508.28
Structures	2,286.92
Reject area	6,505.40
Area under plantation	3,176.16
Area under roads	11,815.06
Area under stack yard	3,493.98
Total	1,41,492.69

Air :

Ground level concentrations as per NCST model for dispersion of air pollutants for lease area source show that there would not be any adverse impact on ambient air quality .

Water :

There would not be any impact on aquatic environment including hydrology, drainage or quality because a) there is no drain in the lease, b) ground water table will not be intercepted, c) dewatering of pits will not be required and d) limestone pit water is suitable for irrigation. Regular monitoring for fluoride content is required.

Noise:

Sources during mine operation would be drilling and blasting. Drillers would be exposed to about 75-80 dB(A). Blasting noise will be short lived. Levels are about 110 -120 dB(A) near the blast. In this case blasting would be below ground level during day time. Pit-walls would absorb the noise waves. Hence, there would not be any adverse impact. Blasters would be given personal protection equipment. There are no structures over the lease

Biological:

There is no sensitive fauna and flora or endangered species in 10 km radius of the lease. Lease is not a part of any forest area. This area is not known for its biodiversity. Project proponent will carry out plantation in scientific way. It will choose local species in consultation with local forest department. Secondly State Fisheries department will be requested to carry out fish culture in abandoned mine pits.

Socioeconomic & health:

There will not be any displacement on account of this project because land is in possession of MSMCL. It is proposed to a) prefer employment to deserving local persons in mining related

trades like loading/unloading of ore, its gradation, drilling etc., b) train residents of Gaurala for harvesting rain water, and sanitation practices etc., c) training in fish culture also is one activity which will be useful to local population.

Monitoring schedule :

Env. segment	Parameter	Frequency
Water quality	IS 10500	Monthly
G.W. table	Fluctuation in monsoon & post monsoon period	May & October
AAQ	Particulate matter PM_{10} & $PM_{2.5}$	Monthly
Noise	Equi. noise levels	During drilling & blasting
Vibration	before starting mining	During blasting each month
Health	Pulmonary function, eye sight, audiometry, B.P., etc.	Annual record
Plantation	Survival	Annual survival rate
Data analyses	Efficiency of mitigation measures	Monthly

Plantation :

About 100 saplings will be planted in 7.5-10 m wide safety zone. One cubic meter pits will be made along the border and will be filled with local soils from lease. Refuse or garbage will be added as per availability. Growth in the first year will be observed. Species will be chosen from the following and depending on availability.

Common name	Botanical name
Nagamali	Millingtoniasp
Sunari	Cassia fistula
Kanchan	Bahuniavariegata&accuminate
Pink cassia	Cassia nodasa&javanca
Bahada	Ficusglomrata

Safety measures :

Blasting : Shots will be muffled to avoid flying fragments beyond 10 m. Adequate warning by siren to reach 500 m. Protective shelters for workers with treated R.O. Water, First Aid facilities, Dining facility. Use of PPE will be compulsory.

Corporate Social Responsibility:

A few are mentioned below:

- Supply of fluoride–free drinking water-

  Fluoride removal plants based on electrochemical method will be installed on fluoride infested hand pumps in nearby villages within 5 km radius. Approximate cost is Rs. 50,000/- per unit.
- MSMCL will organize awareness camp amongst villagers to educate people on i) health -impact of excessive fluoride in water, ii) need for sound sanitation practice particularly with regard to water quality and sullage/gray water management,

  iii) narrow bore sewerage in suitable habitations etc. Appropriate allocation of funds on yearly basis will be requested from Government.

CSR - funds

Activity	Anticipated funds/year Rs
Supply of fluoride free water	Treatment plant -Rs 50,000-75,000/-/unit
Awareness camps	Rs. 50,000
Narrow bore sewerage	Survey- @ 6000/- /ha Execution Rs 6000/- per connection
Training for fish culture in pit water	Rs. 25,000

N.B. Costs are indicative.

Economics of project :

Limestone deposits at Gaurala are of good quality. It has high percentage of CaO and low silica. These have been lying unused for various reasons. There is market for limestone in and around deposits. Land is non- productive and unsuitable for agriculture. Therefore mining will be in the interest of State revenue and of the people around. Direct and indirect employment to locals is assured.

Lease is a waste land. It has no tree cover. There are abandoned pits. Water in pits is used. Therefore there would not any damage to environmental quality.

Initiation of mining by MSMCL will improve revenue to the state without deterioration in environmental quality. On the contrary population in nearby villages will become aware of importance of potable water quality and sanitation.

Openings for indirect employment to locals in plantation, fish culture are possible. Additional water supply source in form of pit-water, recharge of aquifer is likely.

COMPLIANCE OF TERMS OF REFERENCE

Sr. No.	Terms of Reference	Compliance
1)	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification, 1994 came into force w.r.t. the highest production achieved prior to 1994.	Please see Annexure 7 Page 189 for production details since 1994 till 2011. There was no production after 2011 Highest production was in the year 1994-95
2)	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.	Refer Annexure – 1 Page No 160
3)	All documents including approved mine plan, EIA and public hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management and mining technology and should be in the name of the lessee.	Will be complied with.
4)	All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ topography sheet should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	Refer Figure 4, Page 40 for Google Image. Refer Figure 3, Page 39 for Toposheet.
5)	Does the company have a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA report with description of the prescribed operating process/procedures to bring into focus any infringement/ deviation/violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large may	Yes, Refer Para 2.11, Page 56

	also be detailed in the EIA report.	
6)	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.	Refer Para 2.12, Page 59
7)	The study area will comprise of 5 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.	Study was carried out for 5 Km area around mine lease for carrying out EIA. For Waste generation Refer Chapter 2, Para 2.4.1 Page 43.
8)	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological use features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	Refer Chapter 3, Para 3.2 page 63, Table 5 page 65.
9)	Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, RandR issues, if any, should be given.	No Over Burden Dumps are proposed outside the lease area.
10)	A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.	Area for active mining over 24.54 is with MSMCL. No forest Land is involved.
11)	Status of forestry clearance for the broken up area and virgin forest land involved in	Not applicable since lease is not a forest area.

	the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.	
12)	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Not applicable since lease is not a forest area. Forest Rights) Act, 2006 should be indicated.	Not applicable since lease is not a forest area.
13)	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	Not applicable since there is no RF/PF
14)	A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly detailed mitigative measures required, should be worked out with cost implications and submitted.	No wild life in surrounding and other protected area is involved. There would not be any impact. Refer Annexure 5 for flora & fauna.
15)	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Tiger/Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the State Wildlife Department/Chief Wildlife Warden under the Wildlife (Protection) Act, 1972 and copy furnished.	No National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Tiger/Elephant Reserves are existing as well as proposed within 10 Km of mine lease area. No clearance is required.
16)	A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any schedule-I fauna found in the study	Only domesticated animals are seen. Refer Para 3.4.2 page 94 and Annexure 6 for list of flora & fauna.

	area, the necessary plan for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost. The Conservation Plan for Schedule-I species shall be approved by the Chief Wildlife Warden of the State Government.	
17)	Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered.	Proposed lease does not fall under Critically Polluted area or under "Aravali range".
18)	Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL. HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).	Not applicable since proposed lease does not fall under CRZ area.
19)	R and R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R and R Plan, the relevant State/National Rehabilitation and Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village located in the mine lease area will be shifted or not. The issues relating to shifting of Village	Not applicable since land is already in possession of Project Proponent. R & R not applicable.

	including their RandR and socio-economic aspects should be discussed in the report.	
20)	One season (non-monsoon) primary baseline data on ambient air quality (PM_{10}, SO_2 and NOx), water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.	Refer Chapter 3, Table 6 – Physical and Chemical Properties of Soil Page 67. Table 7 – Site Specific Meteorological Data Page 70. Table 9 - Ambient Air Quality Monitoring Stations Page 73. Table 10 - Ambient Air Quality Monitored Data Page 75-83. Table -14 Ground Water Monitoring Stations Page 88. Table -15 Ground Water Quality Analysis Page 90. Table -16 Noise Monitored Data Pages 91-93.
21)	Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.	Refer Chapter 4 , Para 4.2.1.2 , Page 111-116
22)	Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF/ NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the project.	Refer Annexure -8, Page 190.
23)	The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.	Refer Para 3.4 page 84, Table 11, Water Requirement, Page 84. Drinking water will be delivered by tankers from nearby village. Table 12 for Regional Ground Water Availability page 84.

24)	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	Water will be sourced by tankers from village. No ground water withdrawl is proposed.
25)	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	Refer Para 4.3.3, Page 118-119.
26)	Impact of the project on the water quality, both surface and ground water should be assessed and necessary safeguard measures, if any required, should be provided.	Refer Para 4.3.1 for impact & 4.3.2 for mitigation measures pages 117 & 118.
27)	Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.	Ground water will not be intercepted since ground water table is beyond 20 m bgl and ultimate depth of pit will be 15 m. Refer para 3.4 pages 85-87
28)	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.	No diversion of stream is proposed.
29)	Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.	Refer Para 3.4, Page 84.
30)	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the project.	Refer Para 6.3 page 129
31)	Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the	Refer Table 8, Page 72 for existing Traffic Survey. Existing road net - work is capable of handling

	Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered.	additional traffic.
32)	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA report.	Protective shelters will be provided for workers. Refer 7.2.2, Page 131.
33)	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.	Refer Table 3, Page 53 for land use during the scheme period. No plan for reclamation and restoration of mined out area at this stage. Deposits continue deeper beyond depth in the mining plan.
34)	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given.	Refer Para 6.3, page 129,
35)	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP.	Refer Para 4.8 page 122 , Table 26, Page124.
36)	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	Duration of the project in the plan period is one year and observations will be pilot observations for future.

37)	Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	As per State Government policy, Please see para 7.4.2. page 142 for CSR funds.
38)	Detailed environmental management plan to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.	Refer Chapter 10, pages 135-140.
39)	Public hearing points raised and commitment of the project proponent on the same along with time bound action plan to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.	This document is prepared for public hearing only.
40)	Details of litigation pending against the project, if any, with direction / order passed by any Court of Law against the project should be given.	No litigation or Court Case is pending against project.
41)	The cost of the project (capital cost and recurring cost) as well as the cost towards implementation of EMP should clearly be spelt out.	Refer Chapter 10, Para 10, Table 28, Page 140.
42)	Provide a brief background of the project, financial position, group companies and legal issues etc.; past and current important litigations.	Refer Para 1.2 , Page 27 Project Proponent is a state Govt. undertaking working in the field of extraction of minerals having 9 leases of limestone, Siliminite, Pyrite, Silica Sand, Flourite, Quartzite, Iron Ore, Felspar etc.

SPECIFIC TERMS OF REFERENCE

Sr. No.	Conditions	Compliance
(i)	The State Government/SPCB to take action against the project proponent under the provisions of section 19 of the Environment (Protection) Act, 1986, and further no consent to operate to be issued till the project is granted EC.	To be effected by the State authorities
(ii)	The project proponent shall be required to submit a bank guarantee equivalent to the amount of remediation plan and natural and community resource augmentation plan with the SPCB prior to the grant of EC. The quantum shall be recommended by the EAC and finalized by the regulatory authority. The bank guarantee shall be released after successful implementation of the EMP, followed by recommendations of the EAC and approval of the regulatory authority.	Yes and will be complied with.
(iii)	Assessment of ecological damage with respect to air, water, land and other environmental attributes. The collection and analysis of data shall be done by an environmental laboratory duly notified under the Environment (Protection) Act, 1986, or an environmental laboratory accredited by NABL, or a laboratory of a Council of Scientific and Industrial Research (CSIR) institution working in the field of environment.	Please refer Chapter 13 page154
(iv)	Preparation of EMP comprising remediation plan and natural and community resource augmentation plan corresponding to the ecological damage assessed and economic benefits derived due to violation.	Please refer Chapter 13 page154
(v)	The remediation plan and the natural and community resource augmentation plan to be prepared as an independent chapter in the EIA report by the accredited consultants.	Please refer Chapter 13 page154
(vi)	The PP is required to conduct public hearing as per EIA notification, 2006.	Yes
(vii)	One season fresh base line data to be generated for EIA/EMP preparation.	Data for summer from March to May 2018 was collected.
(viii)	To submit the lease sketch/ lease co-ordinates approved by DMG, at the time of presentation before EAC for EC	Yes will be submitted.

(ix)	(ix) Fund allocation for Corporate Environment Responsibility (CER) shall be made as per Ministry's O.M. No. 22-65/2017-IA.III dated 1st May, 2018 for various activities therein. The details of fund allocation and activities for CER shall be incorporated in EIA/EMP report.	Yes shall be incorporated after conduct of public hearing.
(xiv)	DGMS permission for blasting at project site.	Yes it will be taken.
(xv)	Detailed hydrological study to be carried out in core and buffer zone of the project as per GEC 2015 guidelines.	Will be carried out.
(xvi)	District survey report to be submitted for minor mineral Dolomite.	Not applicable

CHAPTER 1

INTRODUCTION

1.1 Purpose of the report:

Project proponent Maharashtra State Mining Corporation Limited (MSMCL) had made a presentation to the EAC (violation) of MoEF & Climate Change, New Delhi on September 19th 2018 in its 13th meeting to seek terms of reference for EIA for proposed limestone & dolomite mining over a lease of 116.13 ha near villages Gaurala & Somnala in Maregaon tehsil of Yavatmal district. The lease has been granted by State Government and the same is enclosed at **Annexure 1.** MSMCL is in possession of 24.54 ha area and mining will be restricted to this area only**.**

The committee issued TOR which were displayed on the MOEF & CC website on Oct. 04, 2018.

MSMCL has engaged Enviro Techno Consult Private Limited, Nagpur for preparation of EIA & EMP for the project. Environmental monitoring was conducted as per MOEF & CC norms for summer season for the period March to May, 2018.

This EIA report contains information as per TOR and has been prepared as per generic structure given in Appendix III of EIA notification 2006 by MOEF & CC.

1.2 Identification of the project & project proponent:

Project:

This proposal is for mining of limestone @ 2,49,986 T/Y (833.3 tonnes per day) by Category 'A' mechanized open cast mining from 24.54 ha out of 116.13 ha lease. This land is in lease in possession of Maharashtra State Mining Corporation Limited. Lease period is 20 years with effect from 12.12. 2004.

Lease is near villages Gaurala and Somnala in Maregaon Tehsil of Yavatmal district. It is not a part of any forest. There is no agriculture on the land which is in possession.

Project proponent:

Maharashtra State Mining Corporation Limited, (MSMCL) Nagpur is the project proponent. MSMCL is a limited company owned by State of Maharashtra and has been established under

Companies Act in order to promote systematic development of mines in the State. There is a Board of Directors and office of the Managing Director is located in Nagpur. Managing Director is an I.A.S. Officer appointed by State Government.

1.2.1 The project :

Department of Industries, Energy and Labour, Mumbai vide their order no MMN2284/16604 (3513)/INd-9 dated 17.04.1984 had originally granted a lease of 203.85 ha. to MSMCL. Subsequently, Government of Maharashtra issued a renewal order vide letter no MMN-1006/C.R.2065 DT. 13-10-2006 for 116.13 ha for 20 years with effect from 12-12-2004.

M/S. MSMCL has proposed to mine limestone from this lease by open cast mechanized mining method. Mining will be @ 833.3 tonnes per day (2,49,986 T/year) presuming 300 working days a year. Limestone mining is important to Vidarbha region since there is perennial demand for quality limestone within economic distance of Gaurala mine. There are about 15-20 industries e.g. M/s Maharashtra Electro Smelt, M/s Vinar Ispat Ltd., M/s Grace Industries, M/s Chaman Metallics in Chandrapur and M/s NECO, M/s FACOR etc. in Nagpur, which need limestone as raw material.

Mining will be restricted to 24.54 ha. area which is now in possession of M/s MSMCL.

The lease is approachable by a road on Wani-Yavatmal state highway. Site is 12 km from Wani. Lease is in non-forest area. It is neither grazing nor agriculture land. It is near village Gaurala and Somnala villages in Maregaon tehsil of Yavatmal district in Maharashtra. Land in possession of MSMCL meets all regulations by Central/ State/ local regulations for mining limestone. There is neither litigation nor any directions by any court case pending for this project.

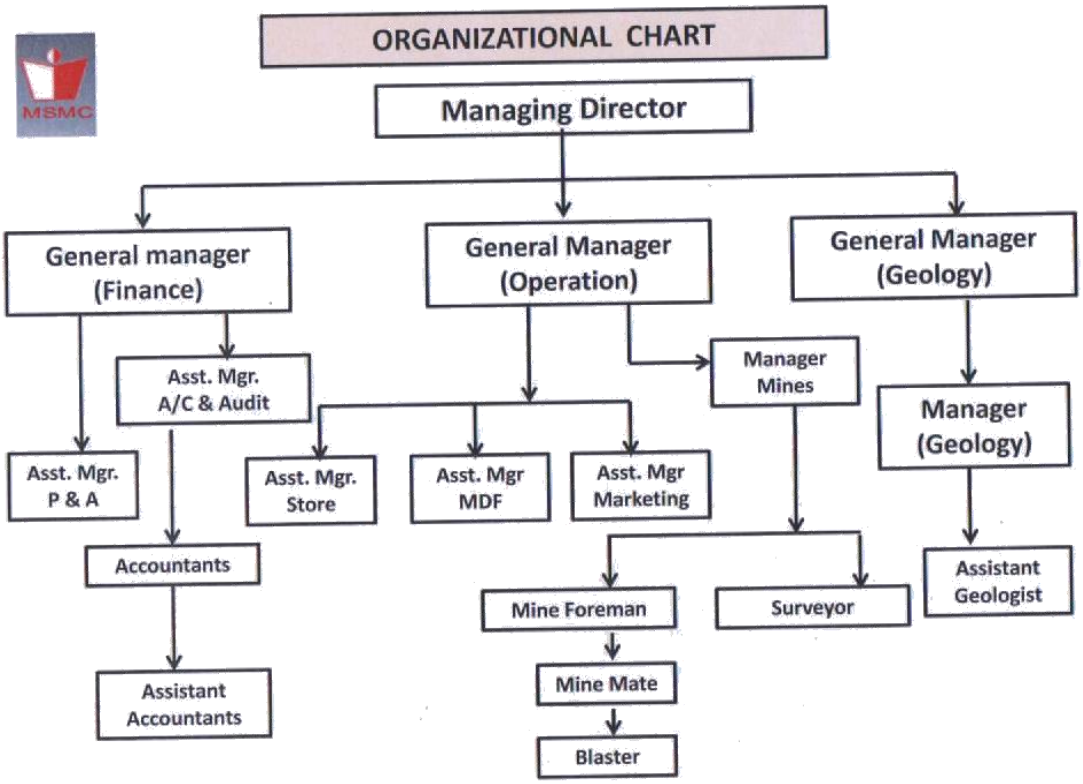
This is a new project & RQP has prepared the mining plan for mining of limestone ore to the maximum possible extent by maintaining proper safety standards. Approval of mining plan letter is enclosed at **Annexure 2.**

1.2.2 Project proponent:

Proponent of this project is Maharashtra State Mining Corporation Limited (MSMCL). MSMCL is a limited company fully owned by Govt. of Maharashtra. It is incorporated on 14th November 1973 under the Company Act 1956. State government has formed this company to ensure i) systematic

development of mines in order to conserve mineral wealth, ii) efforts/research to upgrade low grade minerals/ores and iii) to take mine on lease in the State to explore and work them for extraction of minerals/ores. Details of contact person are given below:

Name	:	Shri. P.Y. Tembhare, General Manager (Operations)
Address	:	Plot No 7, Ajni Square, J. N. Nehru Marg, Nagpur
E mail	:	gm@msmc.gov.in
Telephone	:	0712- 2253207, Fax No: 0712- 2253203



MSMCL have engaged M/s M.V. Geo Mining Services for preparation of the mining plan for mining of limestone and RQP is Shri M.S. Waghmare of Nagpur (P. No 8055157799; email - mswaghmare60@gmail.com).

1.3 Brief description of the nature, size, location of the project and its importance to region:

It is proposed to mine limestone@ 833.3 tonnes/day from the 24.54 ha within 116.13 ha lease by category "A" opencast mechanized mining method as per approved mining plan. Total limestone and dolomite reserves are 172,29,942 T, proved reserves are 167,00,471 T as per UNFC 111 and

blocked reserves are 4,29,471 as per UNFC 222. There are no eco sensitive areas within 10 km of the lease. There are no industries within buffer zone. There is no mining.

This proposal of mining has been proposed because there are about 20 limestone- user industries in nearby Nagpur and Chandrapur region.

1.4 Scope of the study:

A standard terms of reference for the mining (non coal) projects and those mentioned in the TOR was the scope of EIA studies for region within 10 km radius from the lease. TOR given by the EAC (MoM) is enclosed at **Annexure 3** and standard TOR is at **Annexure 4.** Baseline ambient air quality, hydrogeology and water quality, land use etc. was studied as per MOEF&CC norms.

Probable impacting activities during proposed mining activity have been identified. Particulate matter emissions were predicted by emission factor approach for drilling, blasting, transportation activities etc. Impacts on water quality quantity impacts were considered. Impacts on land use, socio economic status during project activities have been considered.

CHAPTER 2

PROJECT DESCRIPTION

2.1 Type of project:

Open cast mining @ 2,49,986 T limestone / year by Category "A" mechanized method from a part of 24.54 ha of the 116.13 ha lease is proposed. Lease is in possession of Maharashtra State Mining Corporation Limited (MSMCL), Nagpur which has acquired 24.54 ha to initiate mining. Lease is near villages Gaurala and Somnala in Maregaon tehsil of Yavatmal district. Lease period is 20 years with effect from 12th December 2004.

MSMCL has proposed to start mining over this part of lease during the period 2018-19. Mining plan for 116.13 ha has been approved by the Regional Controller of Mines, IBM vide letter no. YTL/LST/MPLN-221/2018 Dt. 2nd July, 2018.

2.2 Need for the project:

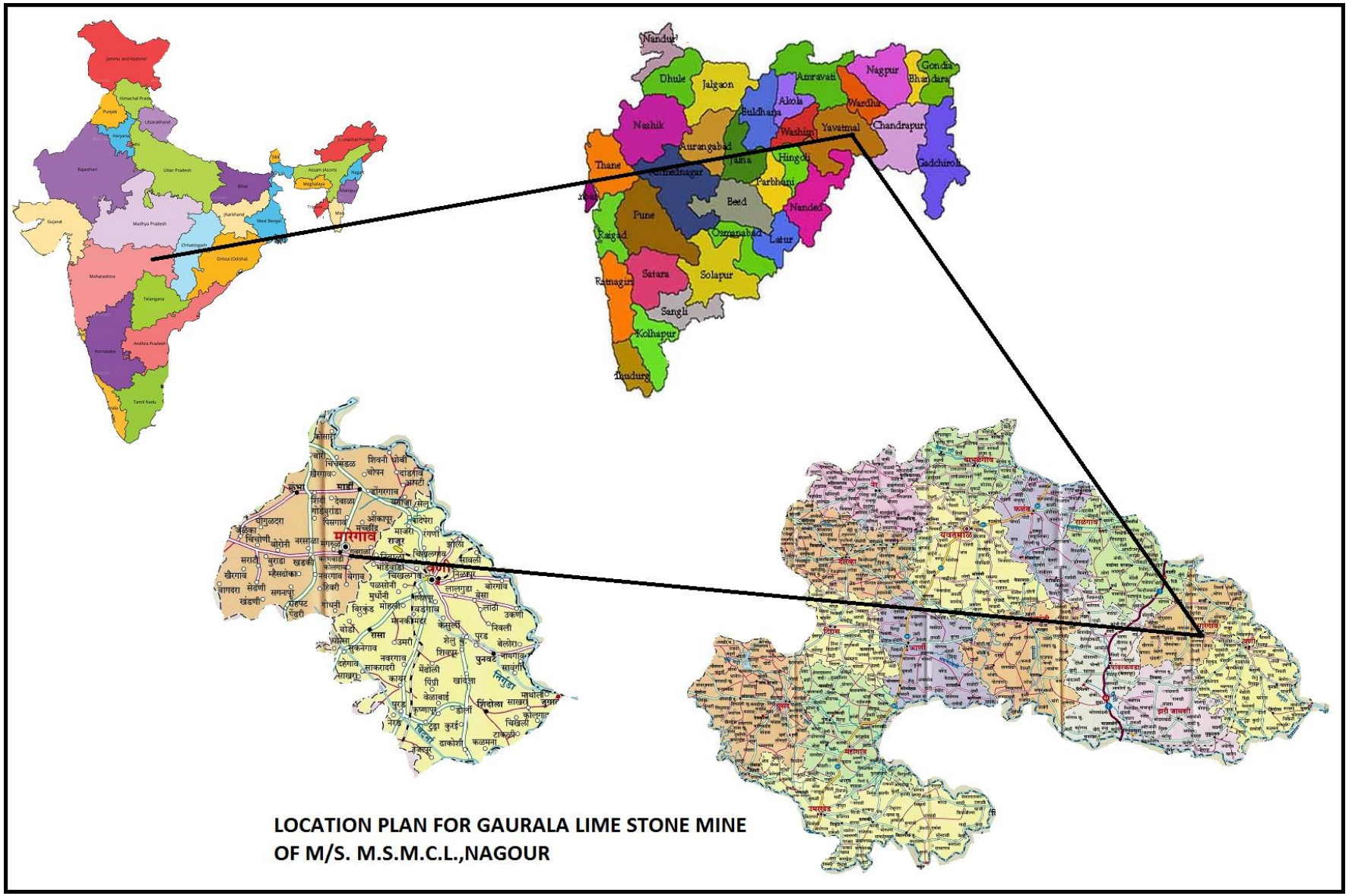
In Vidarbha and in Maharashtra, limestone is in perpetual demand because there are a number of foundries and industries around e.g. Maharashtra Electro Smelt at Chandrapur. Market survey ensures regular demand for limestone. MSMCL has other limestone leases in the area and thus production will be economical.

Sociologically Yavatmal district is one district where social conditions indicate need for employment to farmers / land owners of the region who cannot practice regular agriculture due to paucity of water, irregular rainfall and absence of irrigation. Utilization of limestone by scientific mining method will add to State revenue.

2.3 Location:

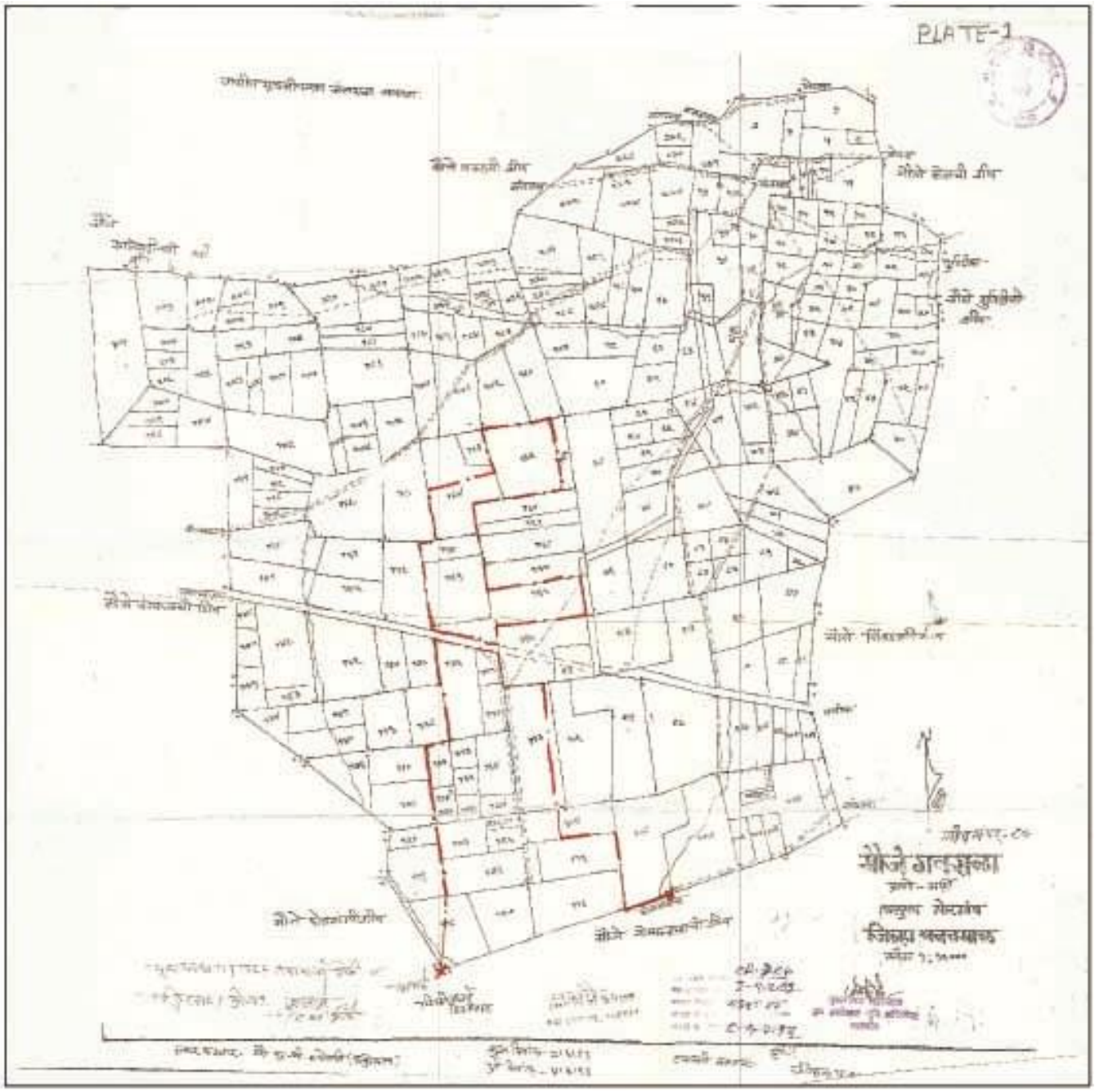
Gaurala village is shown in **Figure 1.** Latitude and longitude of the lease are 20^0 05' 01 - 20^0 06' 19.1"N and 78^0 51'1.1"- 78^0 51'30.7" E respectively. Khasra Nos. are given in **Figure 2**.

FIGURE 1



LOCATION OF GAURALA & SOMNALA

FIGURE 2



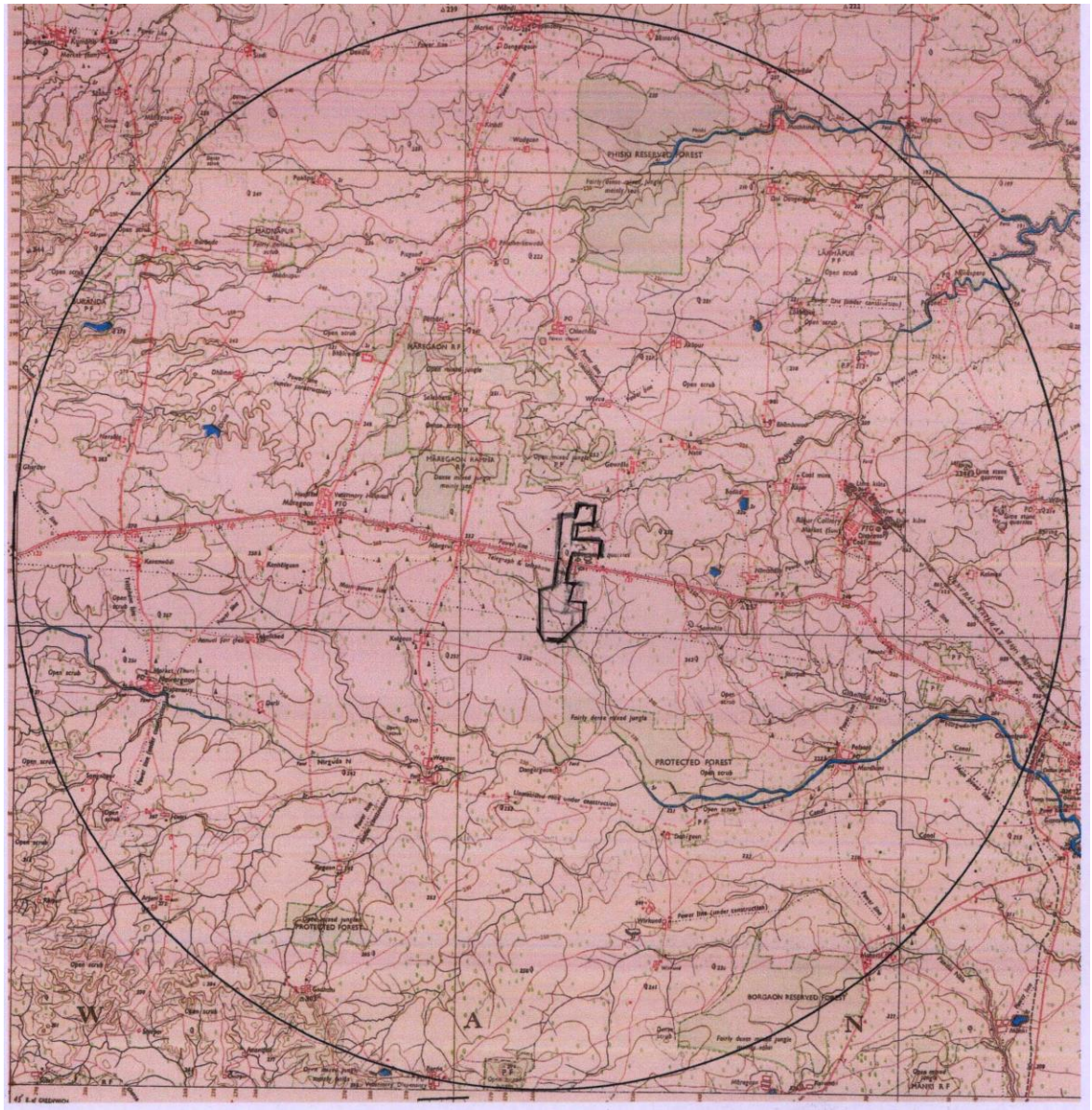
Lease is approachable by a road connecting Wani-Yavatmal state highway. Site is 12 km from Wani. Lease is covered in Survey of India Topo sheet No. 55 L/16. Coordinates of the lease boundary are given in **Table 1**.

Table 1 : Coordinates of the lease boundary

LEASE NAME	B.P. NO.	E	N
1	2	3	4
GAURALA	BP-1	$78^0$51’13.1”	20°05’42.1’’
SOMNALA	BP-2	$78^0$51’19.1”	20°05’43.0’’
	BP-3	$78^0$51’22.9”	20°05’21.6’’
	BP-4	$78^0$51’29.9”	20°05’22.5’’
	BP-5	$78^0$51’30.7”	20°05’11.8’’
	BP-6	$78^0$51’29.6”	20°05’01.0’’
	BP-7	$78^0$51’14.4”	20°05’03.5’’
	BP-8	$78^0$51’06.7”	20°05’01.2’’
	BP-9	$78^0$51’04.3”	20°05’03.6’’
	BP-10	$78^0$51’04.8”	20°05’13.7’’
	BP-11	$78^0$51’03.5”	20°05’23.2’’
	BP-12	$78^0$51’02.7”	20°05’35.0’’
	BP-13	$78^0$51’05.5”	20°05’35.3’’
	BP-14	$78^0$51’14.2”	20°05’42.5’’
	BP-15	$78^0$51’03.5”	20°05’48.7’’
	BP-16	$78^0$51’02.5”	20°05’50.1’’
	BP-17	$78^0$51’01.1”	20°06’02.3’’
	BP-18	$78^0$51’03.6”	20°06’02.5’’
	BP-19	$78^0$51’02.1”	20°06’13.2’’
	BP-20	$78^0$51’12.0”	20°06’13.9’’
	BP-21	$78^0$51’10.4”	20°06’18.1’’
	BP-22	$78^0$51’20.1”	20°06’19.1’’
	BP-23	$78^0$51’21.5”	20°06’10.0’’
	BP-24	$78^0$51’09.0”	20°06’09.1’’
	BP-25	$78^0$51’11.0”	20°05’56.4’’
	BP-26	$78^0$51’25.4”	20°05’58.8’’
	BP-27	$78^0$51’26.5”	20°05’52.6’’
	BP-28	$78^0$51’12.4”	20°05’50.5’’
	BP-29	$78^0$51’12.5”	20°05’48.3’’

Location of the site on Survey of India Topo sheet No. 55 L/16 is shown in **Figure 3**. Latitude and longitude of the lease area are marked on Google imagery in **Figure 4.** Layout of the lease and the 24.54 ha land is shown in **Figure 5.** Present appearance of the lease is shown in **Plate 1.**

FIGURE 3



SOI TOPO SHEET 55 L/16 AND THE LEASE

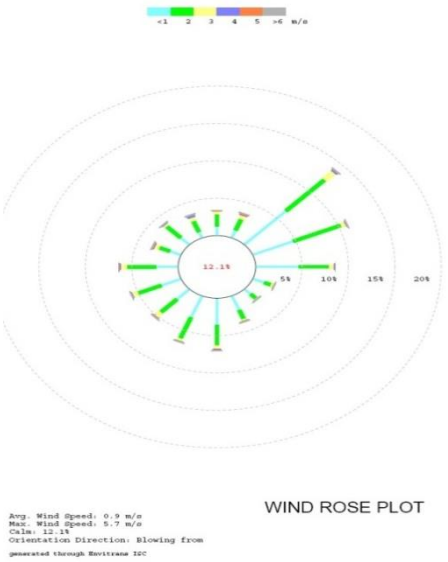
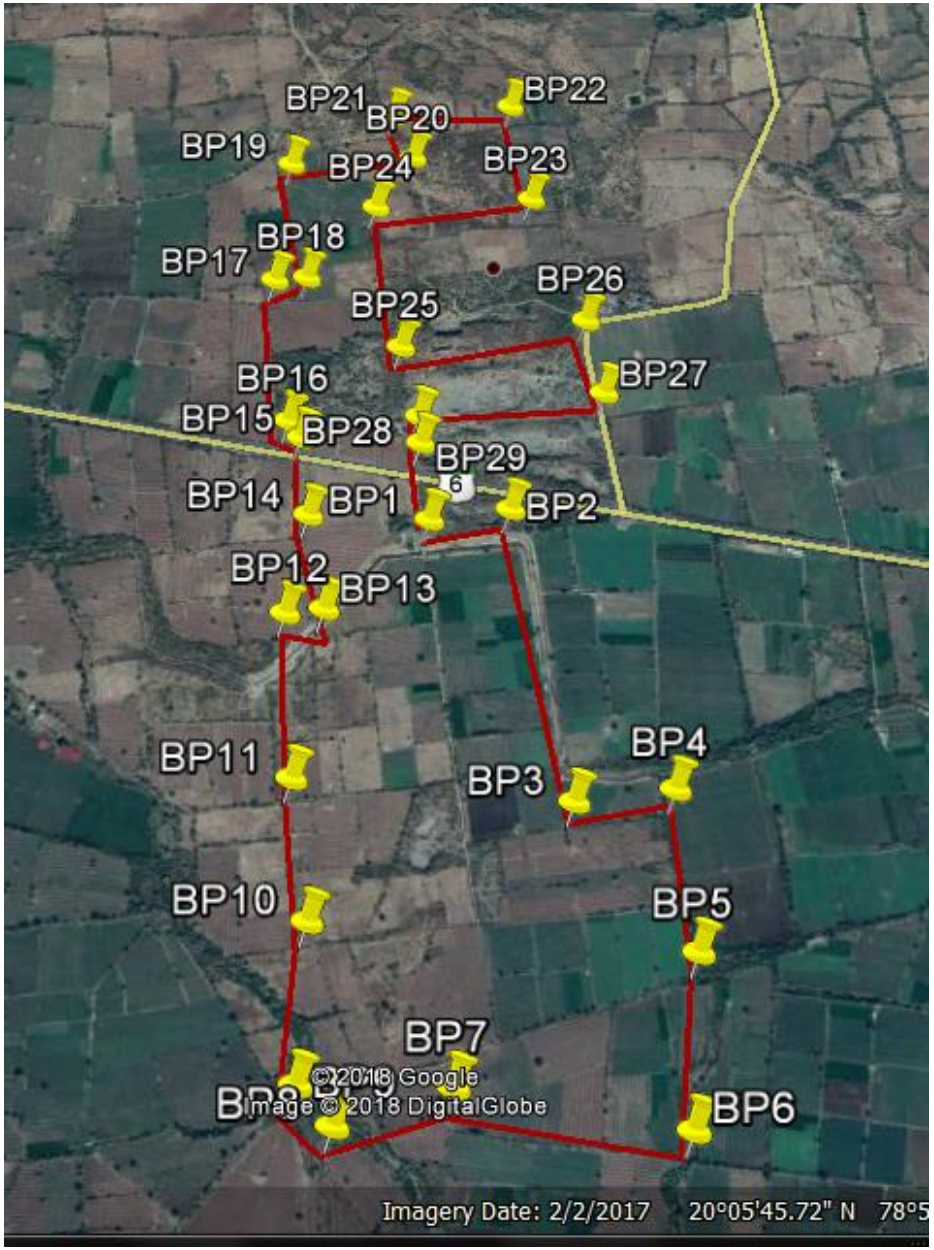


FIGURE 4



LEASE NAME	B.P. NO.	E	N
1	2	3	4
GAURALA	BP-1	78°51''13.1"	20°05'42.1''
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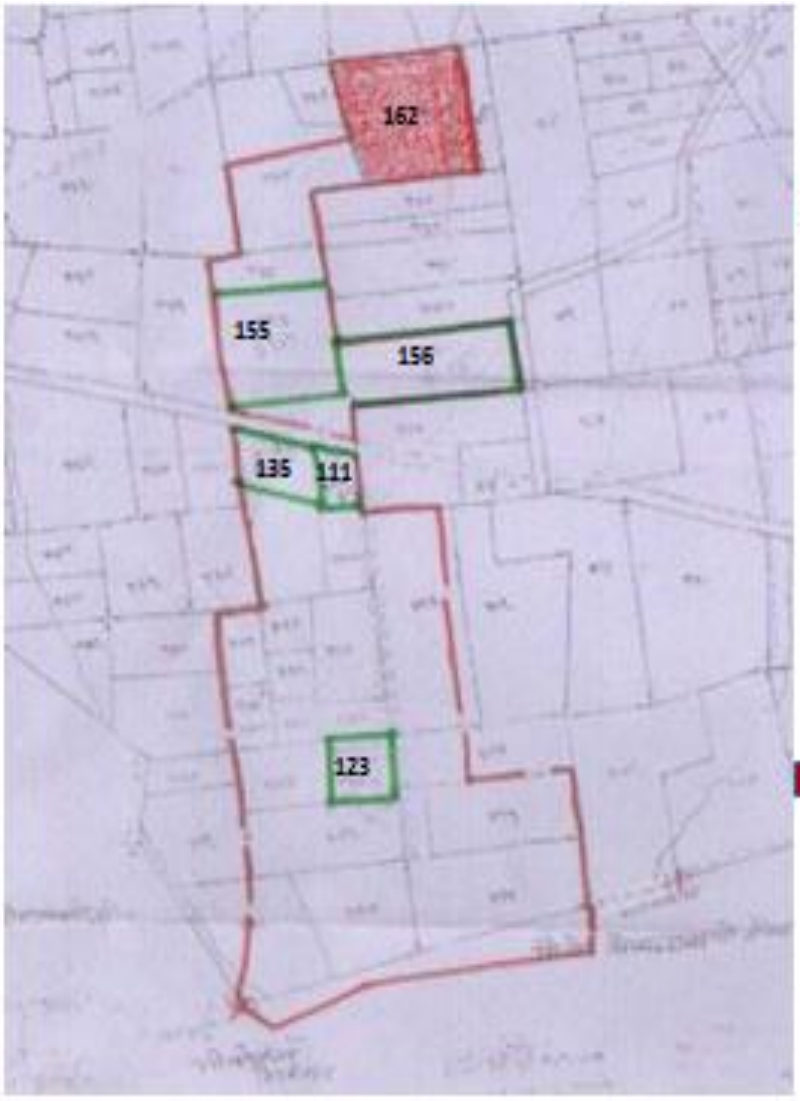
	BP-6	78°51''29.6"	20°05'01.0''
	BP-7	78°51''14.4"	20°05'03.5''
	BP-8	78°51''06.7"	20°05'01.2''
	BP-9	78°51''04.3"	20°05'03.6''
	BP-10	78°51''04.8"	20°05'13.7''
	BP-11	78°51''03.5"	20°05'23.2''
	BP-12	78°51''02.7"	20°05'35.0''
	BP-13	78°51''05.5"	20°05'35.3''
	BP-14	78°51''14.2"	20°05'42.5''
	BP-15	78°51''03.5"	20°05'48.7''
	BP-16	78°51''02.5"	20°05'50.1''
	BP-17	78°51''01.1"	20°06'02.3''
	BP-18	78°51''03.6"	20°06'02.5''
	BP-19	78°51''02.1"	20°06'13.2''
	BP-20	78°51''12.0"	20°06'13.9''
	BP-21	78°51''10.4"	20°06'18.1''
	BP-22	78°51''20.1"	20°06'19.1''
	BP-23	78°51''21.5"	20°06'10.0''
	BP-24	78°51''09.0"	20°06'09.1''
	BP-25	78°51''11.0"	20°05'56.4''
	BP-26	78°51''25.4"	20°05'58.8''
	BP-27	78°51''26.5"	20°05'52.6''
	BP-28	78°51''12.4"	20°05'50.5''
	BP-29	78°51''12.5"	20°05'48.3''

COORDINATES OF MINE LEASE AREA

FIGURE 5



Land with MSMCL possession

Private land

Khasra No	Area (ha)
111	0.20
123	3.08
135	0.06
155	6.84
156	6.15
TOTAL	16.33

Govt. land

162	8.21
TOTAL	8.21

PROJECT SITE LAYOUT OF 24.54 HA

PLATE 1 : PRESENT APPEARANCE OF THE LEASE

2.4 Size /magnitude of operations:

Active mining area – 24.54 ha

Reserves

Total : 171,29,942T {Limestone: 140,39,942 T ; Dolomite: 30,90,000 T}*UNFC 111

Proved

Total : 148,09,942 T {Limestone: 123,09,942 T; Dolomite: 25,00,000 T}

Probable

Total : 23,20,000T {Limestone : 17, 30,000 T ; Dolomite : 5,90,000 T}

Blocked - 4,29,471 UNFC 222

Life of mine:

DGM, Maharashtra has quantified proved limestone reserves in the area as 13.61 million tonnes, under probable category. Yearly production will be @ 250000 tonnes. Mine life would be six years based on lease period viz. 2018-2024.

Ore: O.B. ratio – 1: 0.24 m^3

Ore quality – CaO%- 51.26 to 51.54 ; SiO_2 % -2.64 to 2.90 and MgO %-1.25 to 1.45. B.D.–2.5 T / m^3

There are no sensitive receptors or ecosystems or water bodies like sanctuaries, forest etc. in core and buffer zones. Village Gaurala is at 1.5 km and Somnala is at 3 km to the SE. There is no agriculture over 24.54 ha land of the lease.

Mining will be in an environment-friendly manner with a) water sprinkling for dust control, b) transportation of ore in covered vehicles and c) plantation over safety zone of the lease.

2.4.1 Magnitude of operations:

a)	Mechanical open - cast mining of limestone	@ 2,49,986 T / year
b)	Total excavation in plan period	122117.4 m^3
c)	Resulting total over burden / side burden	22123.0 m^3
d)	Rejects	9999.44 m^3
e)	Saleable ore per year @ 90%	224987.4 tonnes
f)	Mineral rejects per year @ 10 %	24,998.6 MT

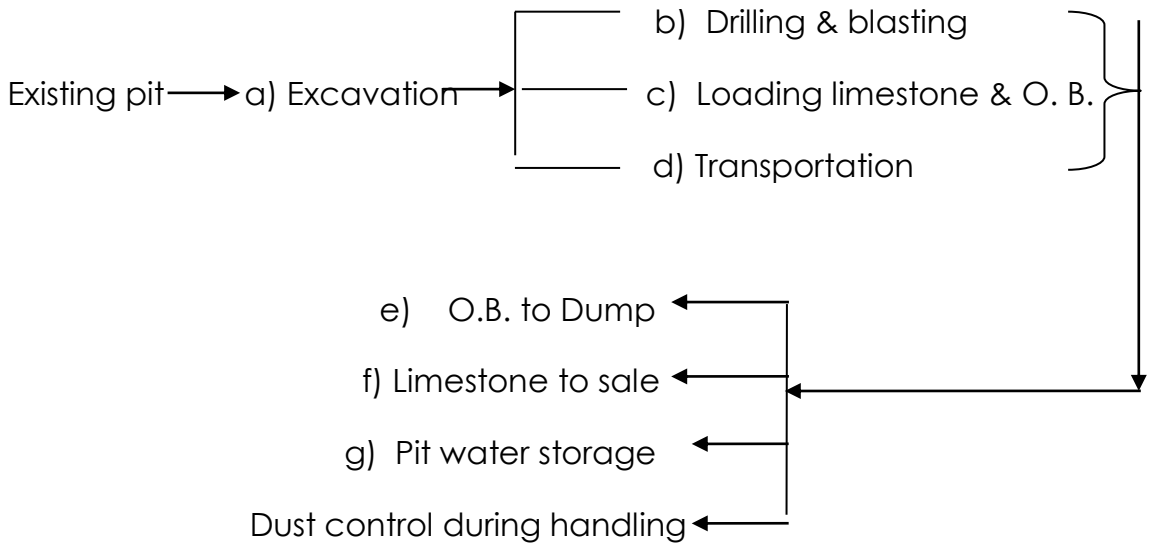
2.4.2 Mining related activities :

a) Present status of this lease:

There are eight pits in the proposed active mining area viz. 24.54 ha lease. They occupy about 5.52 ha and depths vary between 1-12 m below ground level. There is no soil cover. There are 14 over burden dumps whose heights vary from 1.51 to 5.16 m occupying 2.2 ha area.

b) Activities:

Orientation of mining benches will be NS to E. Bench height will be 6 m and width not more than 6 m. Bench slope will be 60 °. Seven holes will be drilled in a day and three blasts per week are planned. Limestone will be blasted in a year as per DGMS norms. Diameter of hole will be 100 mm and depth will be 6.6 m and in burden it will be 2.5 m, space between two holes will be 3 m. Mining will commence in Pit no 1 and advance to Pit 2 in west. Tree felling will not be required as area is devoid of any trees. Equipment requirement will be air compressor, jack hammer drills, exploder, water pump, wagon drill etc. Tipper trucks will transport the extracted material.



Backfilling is not proposed because considerable limestone will be left in the pit at the end of plan period.

2.5 Proposed schedule for approval and implementation:

MSMCL will follow the standard schedule with regard to environmental clearance of this mining project as follows:

a) Seeking approval of mining plan from I.B.M. Nagpur.

b) Submitting Form 1 and Pre-feasibility report to MOEF & CC, New Delhi for TOR.

c) Monitoring of base line environmental quality.

d) Submission of draft EIA report to MPCB for P.H.

e) P.H. will be conducted as per the guideline.

f) Receipt of P.H. minutes from the authority.

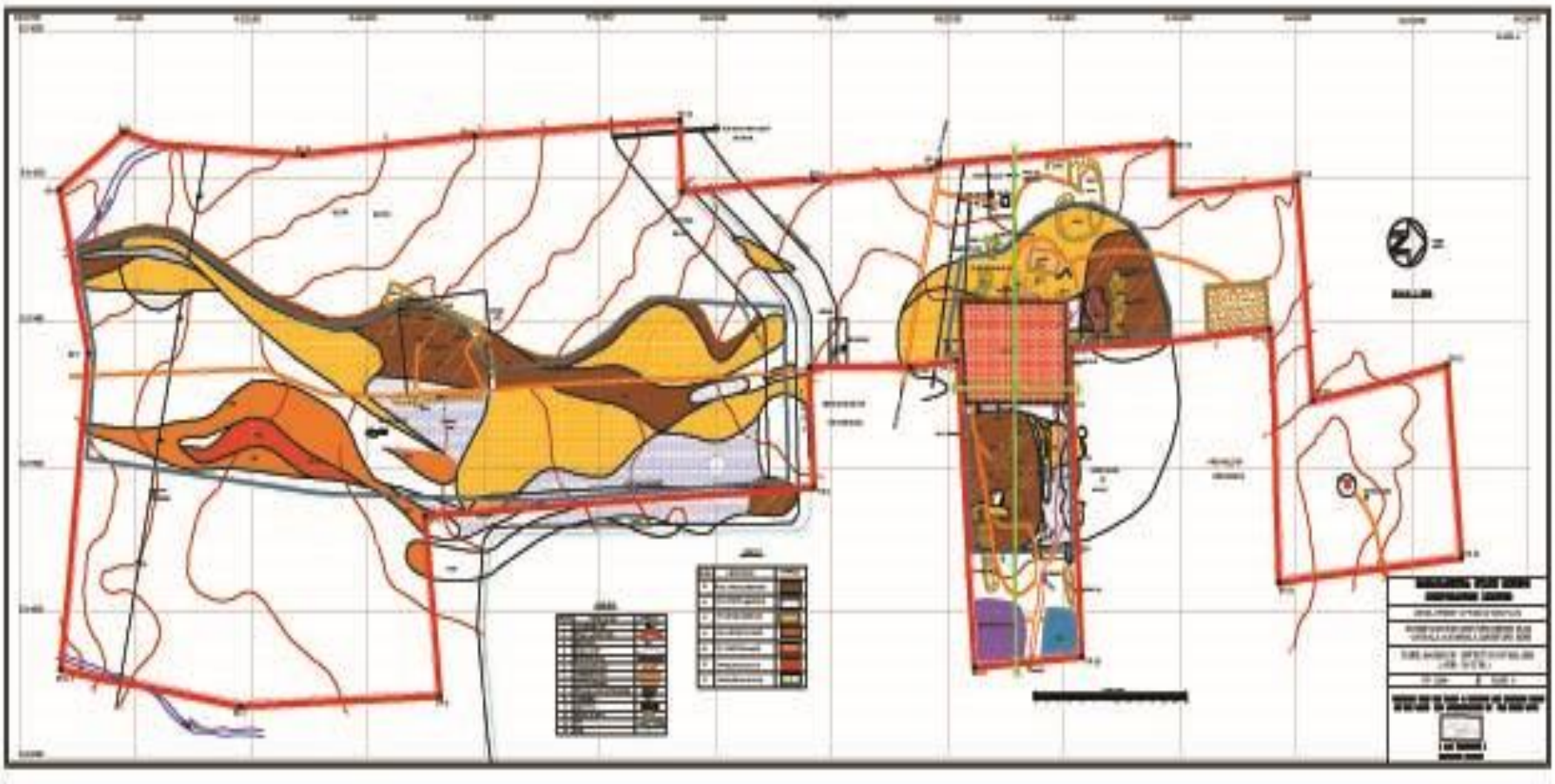
g) Submission of final EIA report to EAC for E.C.

2.6 Technology and process description:

Technology for open cast Category 'A' mechanized open cast mining is proposed. It includes drilling of holes in ore/O.B with specified spacing, charging the holes with explosive, blasting, removal and transport of blasted material and safe stacking of O.B. and ore.

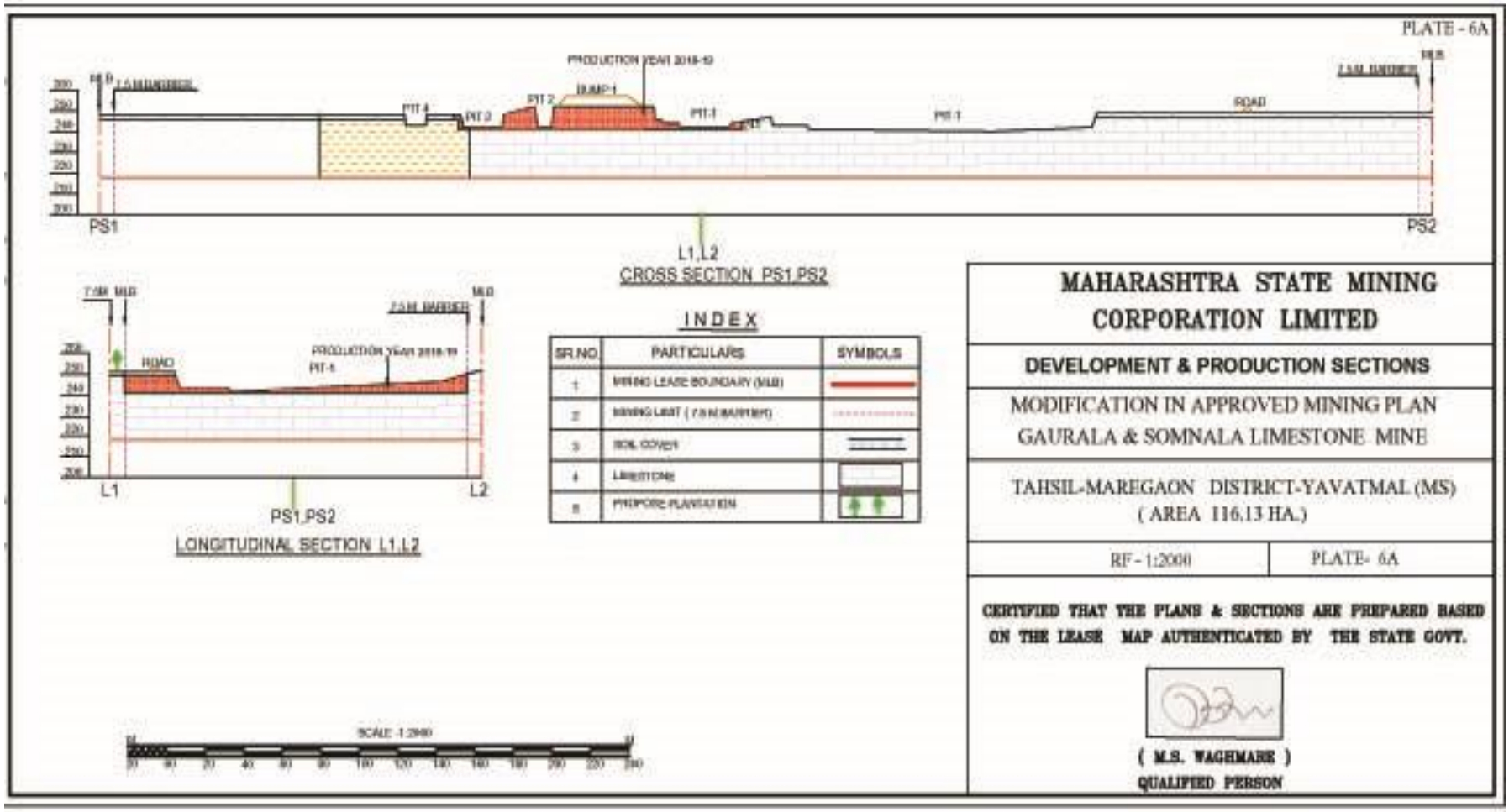
There is a very thin layer of weathered lime stone (0.5m thick) appearing as soil. This constitutes waste material. Limestone will be mined by Category A mechanized method. Bench height will be six m. and width will not be less than 6 m. Bench slope will be 60° to horizontal. Excavation will start in Pit no 1, proceed to west and will join pit no2. Holes of with 100 mm Ø and 6.6 m deep will be drilled at 3 m in limestone. Holes will be charged by slurry-based cap sensitive Solar gel of 6 cartridges (2.75 kg weight). NONEL detonator will be used. Blasted limestone will be transferred by loader (capacity 1.5 m^3) into 16 tonner tipper to be stored in stock yard. It is proposed to work Pit 1 which will join Pit 2 and will become one. Development & production plan and section are shown in **Figures 6 & 6A.**

FIGURE 6



DEVELOPMENT & PRODUCTION PLAN

FIGURE 6A



DEVELOPMENT & PRODUCTION SECTIONS

Haul roads with proper gradients to facilitate movement of 16 T tippers will be provided. Loaders will be used for loading the ore. Excavation details proposed in the period 2018-19 are given below:

Excavation, m^3	O.B./SB/IB, m^3	ROM, m^3		Saleable ore T* @90%	Rejects, T @10 %	Ore: OB m^3/ m^3
		ROM,	Mineral			
122117.4	22,123	89994.96	9999.44	224987.4	24998.6	1:0.24

N.B. Ore- B.D. = 2.5 T/ m^3

2.7 Project description:

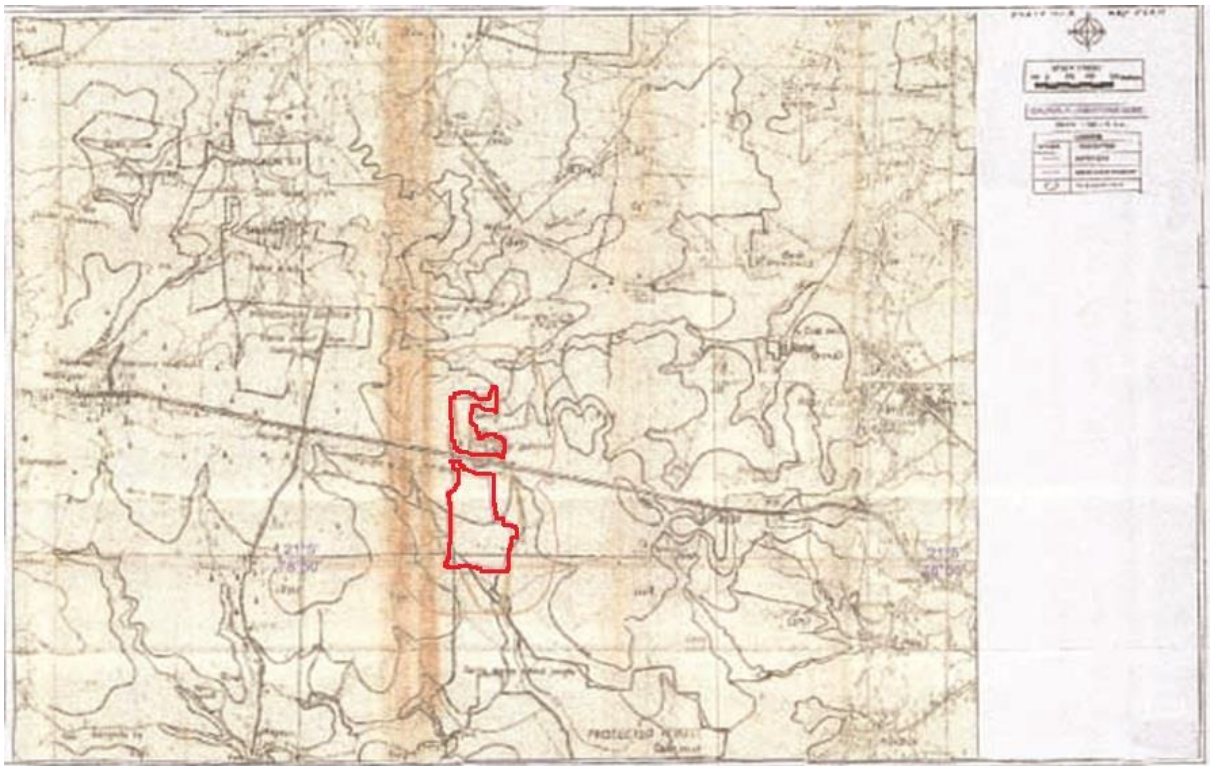
Lease details:

2.7.1 Location:

This MSMCL lease is in Maregaon tehsil of Yavatmal district in Maharashtra.

2.7.2 Connectivity: Lease can be approached via Warora first by road by Nagpur –Chandrapur State highway and then to Wani. Wani is 130 km from Nagpur, Warora to Wani is 30 km and the site is 12 km. from Wani on Wani –Yavatmal road. Nearest airport is Nagpur. Key plan is given in **Figure 7** for 116. 13 lease.

FIGURE 7



Key plan-116.13 ha

2.7.3 Topography- Lease is part of plain ground with gentle slope to E. Highest and lowest contours being 253 m on West and 249 m MSL on East of lease.

2.7.4 Regional geology:

Area around Gaurala comprises of limestone and dolomitic limestone of Penganga group (Precambrian age), sandstone and shales of Gondwana group, clay and sandstones of Lameta group and Deccan lava.

Geological sequence

Alluvium Traps Deccan lava LametasCretaceous	Recent Cretaceous -Eocene
Unconformity	
Kamthishales& sandstone	Lower Gondwana
Barakar sandstone TalchirshalesUpper carboniferous to Permian	
unconformity	
Limestone Dolomite & shales	Penganga group Pre Cambrian

2.7.4.1 Local geology:

Limestone is spread over central and north part of the lease. It is jet black to grey in colour, fine grained and compact. It occurs in bedded form and is intermixed with magnesium limestone. Veins of calcite are seen. Ore dolomite is not seen.

2.7.6 Mining activity :

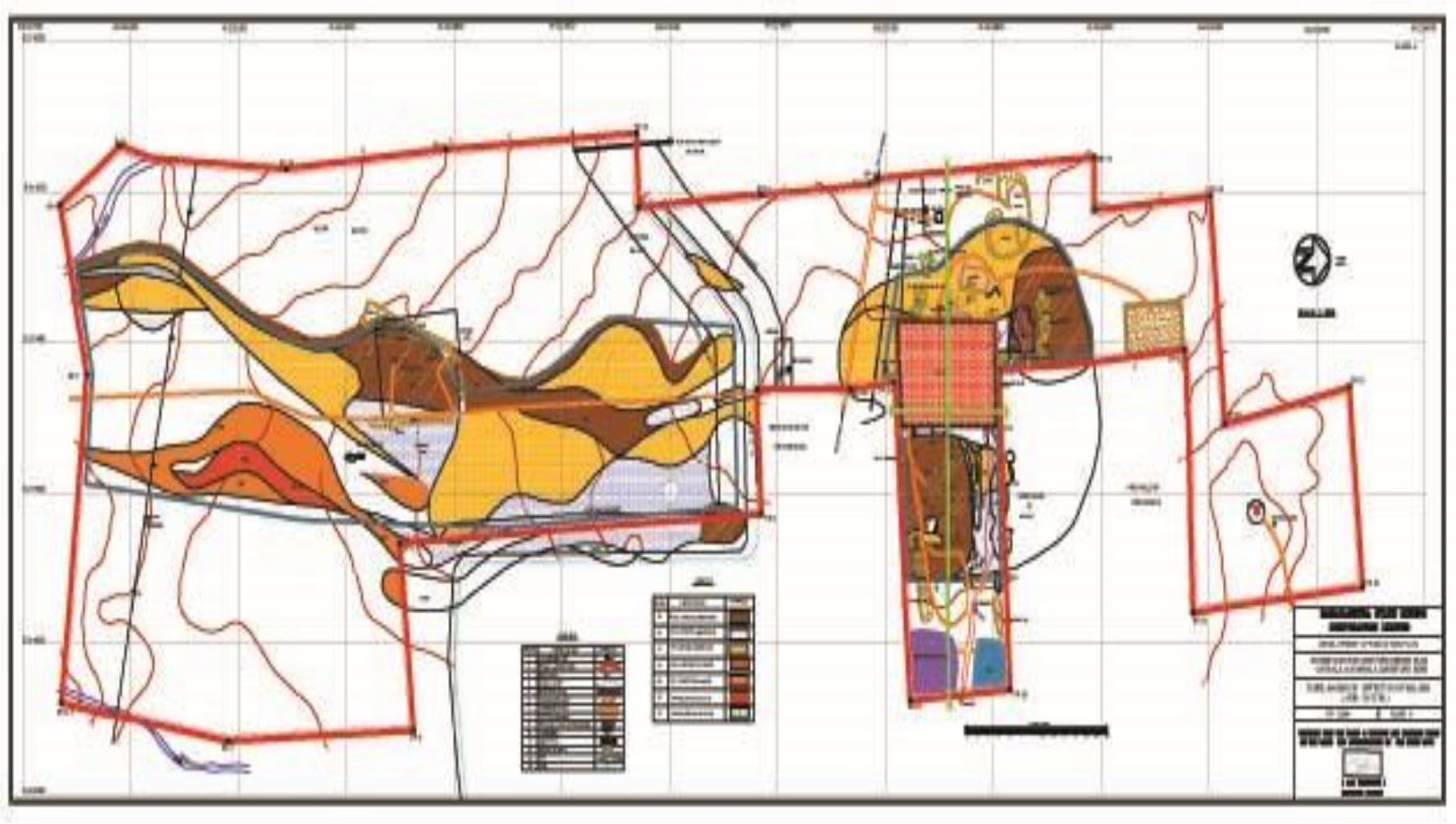
Mechanical open - cast mining of limestone will be @ 249986 T/ year. Total excavation will be 122117.4 m^3 in one year and resulting total over burden / side burden will be 22123 m^3 and rejects will be 24998.6 T. Saleable ore @ 90% would be 224987.4T.

There are eight pits in the lease and their sizes vary from 83.85 to 28071.33 m^2. Their depths vary between 1 to 12 m. below ground level (b.g.l). There is no soil cover. There would be only in-situ excavation. Surface plan and year wise development plan during 2018-2019 period along with sections are given in **Figures 8, 9-9A** respectively.

FIGURE 8

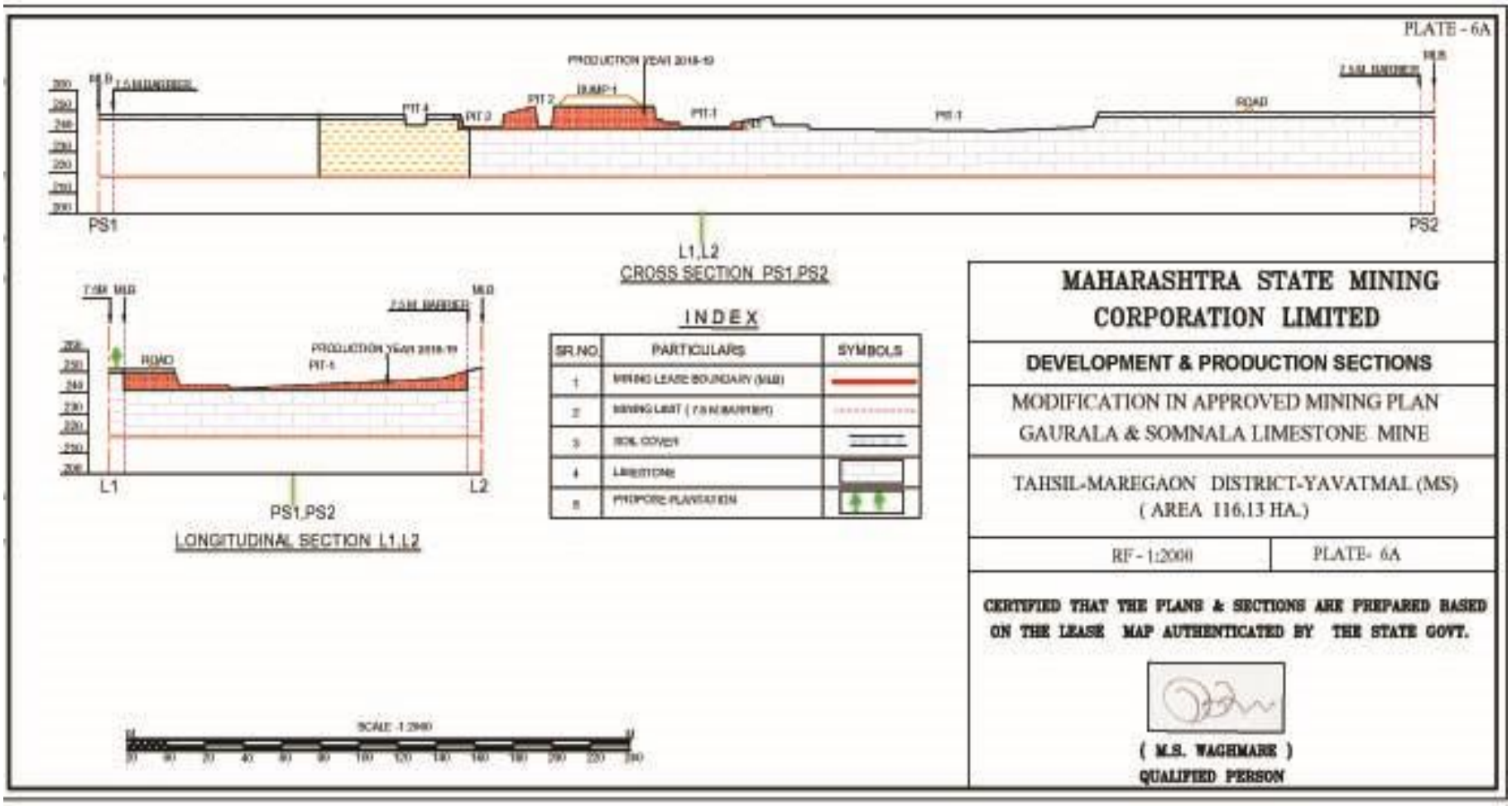
SURFACE PLAN

FIGURE 9



DEVELOPMENT & PRODUCTION PLAN

FIGURE 9A



DEVELOPMENT & PRODUCTION SECTIONS

2.8 Description of mitigation incorporated in the project to meet environmental standards and operating conditions for EIA

Open cast mining will be strictly as per approved mining plan. **Table 2** includes precautionary measures given in the mining plan.

Table 2: Precautionary Measures in Mining Plan

Activity	mitigation measures
Hole drilling	Wet drilling; Ø-100mm,Depth-6.6m in limestone, 2.5 in burden at 3m spacing
Blasting Lime stone blasted per hole Powder factor Explosive/hole Explosive requirement /year	Max. quantity of limestone = 99994.4 m^3 in a year 49.5 m^3 3.6 m^3 13.75 kg 27,776 kg
Transportation	Will be in covered -tipper trucks (2 no.) over macadamized roads.
Plantation	Over 900-1000 $m^2$and in safety zone
Dewatering of pits	Ground water table will not be intercepted thus dewatering of pits will not be required. Rain water in pits will be used for dust control.

Existing Land Use & Conceptual Land Use at the end of mining plan period is given in **Table 3.**

Table 3: Land Use for Gaurala Limestone Mine

Land use	Existing Land Use Area (m^2)	Land Use at end of modified period Area (m^2)
Pit area	55,205.05	80,706.89
Waste dump area	29,568.13	33,508.28
Structure	2,237.94	2,286.92
Reject area	2,679.30	6,505.4
Plantation	2,926.16	3,176.16
Road	11,397.89	11,815.06
Stack yard area	--	3,493.98
Total	1,04,014.47	1,41,492.69

2.9 Assessment of new & untested technology for technological failure

Category "A" mechanized open cast mining method is not a new technology. It is being practiced regularly. Drilling, blasting, ore handling of ore will be as per approved mining plan.

2.10 Environmental Setting:

Basic Information:-

Name of the Mining Lease site : Gaurala Limestone Mine

Location / site (GPS Co-ordinates) : Gaurala , Tq. Maregaon , Yavatmal (20^0 05' 01"- 20^0 06' 19.1"N and 78^0 51'1.1"- 78^0 51'30.7" E)

Size of the Mining Lease (Hectare) : 116.13 ha

Period of Mining Lease : 20 years from 12-12-2004

Expected cost of the Project : Rs. 85 Lakhs

Contact Information : G.M.-Operations, Maharashtra State Mining Corporation, Nagpur

Table 4: Environmental Settings

Sl. No.	Areas	Distance in kilometer / Details
1	Distance of project site from nearest rail or road bridge over the concerned River	3.90 Km West Nirguda
2	Distance from infrastructural facilities Railway line National Highway NH 7 State Highway Wani-Yavatmal SH(Now NH930) Any Other Road (Village Rd) Electric transmission line pole or tower Canal or check dam or reservoirs or lake or ponds (Canal)	 5.4 Km East Rajur 23 Km West 252 m South 50 m Not within 5 km Study area 529 m South
3	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Nil
4	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses	None within 10 km Study area

	or other water bodies, coastal zone, biospheres, mountains, forests	
5	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	Nil
6	Inland, coastal, marine waters	None within 10 km
7	State, National boundaries	39 km Telangana
8	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	None within 10 km
9	Defence installations	Bhadrawati, 27 km
10	Densely populated or built-up area, distance from nearest human habitation	Gaurala - 1.5 km Mangrul - 2.5km Somnala - 3 km.
11	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Wani- 12 km, Rajur- 5 km
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)	None within 10 km area
13	Is proposed mining site located over or near fissure / fracture for ground water recharge	No
14	Whether the proposal involves approval or clearance under the following Regulations or Acts, namely:- (a) The Forest (Conservation) Act, 1980; (b) The Wildlife (Protection) Act, 1972; (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status to be given.	No
15	Forest land involved (hectares)	No
16	Whether there is any litigation pending against the project and/or land in which the project is propose to be set up? (a) Name of the Court (b) Case No. (c) Orders or directions of the Court, if any, and its relevance with the proposed project.	No

2.11 Environmental Policy at Gaurala Limestone Mine

A] Objectives:

Conduct mining and associated operations in an environmentally friendly manner to comply applicable laws and other requirements related to environmental aspects and design projects with due consideration of sustainable development.

Prevent pollution of surrounding habitation by continuous monitoring and adopt suitable measures for environmental protection.

Ensure compliance of Environmental Clearance conditions and other statutory conditions issued by regulatory authorities.

Implement Environmental Management Plan in the mine effectively to mitigate pollutions of air, water, noise and land caused by mining operations.

B] Strive to conserve Bio-diversity:

Strive for continual improvement in environmental performances by setting targets, measuring progress and taking corrective actions.

Great awareness about environment among the employees and local community through proactive communication and training.

C] Strategies to implement Environmental Policy:

1] Mine planning on sustainable development:

MSMCL is a State Government undertaking. Hence, mining activity will be designed on principal of sustainable development with due consideration to environment and safety at the planning stage itself.

Efforts will be given to use latest equipments and technologies which will be environmental friendly.

2] Environmental Impact Assessment and Management Plan:

Mining will be carried out to comply the environmental standards of quality of various pollutants within limit under NAAQM acts and National Environmental Policy.

Detailed EIA-EMP will be prepared and operations will be carried out as per clearances of M.P.C.B. and environment department of State or Central Government.

Detailed mine closure plans is/shall be prepared as per IBM guidelines.

3] Compliance to statutory requirements

Timely submission of returns / compliance will be ensured with respect to implementation of EMP, EC, CTE & CTO.

4] Measure to mitigate Pollution

a] Air Pollution:

Generation of dust will be controlled at source to possible extent with necessary measures during drilling, loading, unloading, transfer points etc. Dust generation will be minimized along transportation as per mitigation measures in EMP. Green belt will be developed around dust source and along road.

b] Mine Closure Plan:

Mine closure plan is/will be prepared as progressive and at final stage. Appropriate funds were deposited every year for its utilization for PMCP and FMCP.

c] Monitoring:

All receptors in and around mine will be monitored regularly to assess efficiency of pollution control measures.

Effect of mining on hydrology of the area will be monitored through measurement of water level and its quality of nearby wells/bores. Conservation of water through rain water harvesting shall be taken up.

Environmental cell will regularly interact with local area people related to environment to have corrective actions.

Environmental monitoring and audit will be carried out regularly.

Annual budget will be prepared based on action plan including monitoring and implementation. Budget utilization will also be recorded.

d] Preservation of Bio-diversity:

Selection of species for plantation shall be done in consultation with local community to include the local species and their preferences if any. Technical help of experts like local forest departments will also be sought.

e] Awareness Program:

Regular training programs were organized for executives and workers to aware the environmental policies and implementation, execution of EMP etc.

D] Implementation of Policy:

a] Manpower:

An environmental cell shall be setup as

i] Managing Director

ii] General Manager –Mine Operations

iii] Manager - Mines

iv] Admin Officer

v] Representative of Worker

Mine manager will be in charge of "Environment cell" at Gaurala Limestone Mine and will be responsible for compliance of

i) "consent-to-operate" issued by MPCB and

ii) for the conditions stipulated in environmental clearance by State Environment Department /MoEFCC.

Environment management plan has been prepared to ensure mining with least likely alterations in environmental quality. Needs as per review of impacting activities at Gaurala are i) dust control from fugitive sources, ii) controlled blasting & noise control, iii)storage of material and iv) sustained health care of miners.

Environmental cell will ensure the following during regular mine operations:

-Construction of macadamized /asphalted roads,

-Transportation of mined material in covered trucks,

- Provision of speed breakers over haul roads.

- Water sprinkling and plantation along the roads,

-Blasting will be as per DGMS norms. Approval will be taken before commencement of mining,

-Plantation along the safety zone, Stabilization of dumps by plantation.

-Study efficiencies of control measures.

-Regular monitoring of ambient air quality, noise levels within buffer zone as per MoEF norms & conditions in the environmental clearance letter.

A NABET - accredited agency will be engaged for monitoring. They will use appliances like standard make high volume samplers, noise meter and collect micrometeorology data.

b] Roles and Responsibilities:

This environmental cell will be responsible to implement environmental policy, obtain consents to establish and operate, undertaking mitigation measures, preparation of action plan every year and statutory compliances to regulatory agencies.

This cell will be responsible for monitoring of work, budget allocation, its expenses, audits and will monitor cost effectiveness of environmental control measures undertaken and help to

frame future budget allocations. Any noncompliance will be dealt as per procedure defined in OM J11013/41/2006 IA.II(I) dated 12.12.2012 and amendments thereof or notifications or time to time guidelines and court orders.

C] Review of Policy:

In view of fast changing social, environmental, economic scenario, this policy will be reviewed and revised every 5 years to incorporate statutory legal and other changes to acts, policies, standards prevailing at that time.

2.12 Safeguards in Opencast Mine working at Gaurala Limestone Mine:

Basis & provisions of safeguards

Metalliferous Mines Regulations, 1961

A] Opencast Workings

Height of benches will not be more than digging height of machine used for digging, excavation, removal.

Width of bench shall not be less than height of bench

Formation of bench will be from top to downwards

B] Roads for trucks/dumpers

All roads and machinery like trucks, dumpers will be maintained in good condition probably under AMC with OEM.

If possible one way traffic / flagging for traffic management will be implemented.

Benches will be designed in such a way that at corner/bends vehicle drives shall at least have visibility 3 times of breaking distance. Speed limit restriction will be 20km/hr within mines.

Haul road shall be designed in such a way that it shall not have gradient more than 1 in 10.

C] Supervision

Well qualified mining engineer will only supervise the operations.

All drilling and blasting operations will be carried under supervision of qualified Mining Engineer only as per standard drilling, charging of hole and blasting pattern.

D] Maintenance of machineries and vehicles

Every HEMM will be maintained in good condition probably under supervision of OEM.

All the machineries and vehicles will be equipped with alarming systems, horns, front and rear lights, efficient brakes, reverse alarms and trained operators.

Code of instruction furnished by OEM regarding machinery operations, maintenance, schedules etc. shall be strictly followed and recorded.

Any machine found to be unfit for operation shall be boldly tagged as " OUT OF SERVICE" to avoid any mishap.

Powers will be disconnected when repairs made to any electrical machinery.

Brakes for machinery/vehicles /dumpers shall be tested on regular interval as per schedule of OEM. Records shall be maintained.

No person will be allowed to work under chassis when body will be on raised position. Chokes will be used during parking of machineries.

All the machineries will be daily monitored, checks for preventive maintenance before their deployment to field by authorized persons. Record will be maintained on daily basis.

No person/ helper will be deployed without permission of Mines Manager to any machinery/dumper.

No vehicle without instruction of management will be allowed to Mines as a safety matter.

E] Duties of Machinery Operator:

Operator will check his machinery on daily basis before operating it.

All operators will be regularly monitored by authority for their fitness and skills.

To prevent unauthorized driving ignition keys/cabin keys will be deposited to store keeper. Store keeper will issue these key only on permission of Mines Manager to Operator or to Maintenance Supervisor.

Code of Traffic Rules will be framed by Mines Manager for movement of HEMM, Dumpers, Trucks will be prominently displayed and complied with.

Spoil bank will be designed and maintained scientifically away from railway track, public roads building or other permanent structures.

F] Precautions while drilling

Position of every shot –hole will be drilled strictly as marked by competent authority of Mines. These will be clearly visible.

No person will be permitted within radius of 20m or 60m from same bench while charging of explosives.

G] Transportation of Explosives

All explosives will be transported in wooden cases only with required quantity only.

No mechanically propelled vehicle will be used while transport of explosive within mines.

Every such vehicle will be fitted with fire extinguishers , with exhaust mufflers , with proper Nomenclature.

No vehicle will be overloaded at any cost and circumstances.

No such vehicle loaded with explosives will be left unattended. Only authorized driver and helper will be allowed in cabin.

Maximum speed limit will be 25 km/hr. Loaded vehicle with explosives shall not be moved at any garage, repair shop etc.

Every such vehicle shall ensure

- Filled fire extinguishers in place
- Well insulated electrical wiring and connections
- Clean chassis, engine, underbody parts – free from grease, oils, dust etc.
- No cigarette or biri will be allowed near the vehicle.
- Blaster under which such vehicle is, shall satisfy himself with all respect about vehicle compatibility, operator and helper.

Precautions during firing

All shots will be in day time only on fixed hours probably.

All charged holes will be blasted on same day only.

During approach and progress of an electric storm following precautions shall be taken

- No explosives, detonators shall be handled.
- Work shall be discontinued until storm has passed.
- Every precaution must be taken up if fired electrically.
- All electrical wires shall be removed from steel railing, haulage tracks as a precaution.

Danger zone shall be strictly demarcated by red flags before charging of holes.

Before firing siren will be blown three times for one minute each with one minute interval as per norms.

No firing will be done until blaster report about no man's land to Mines Manager.

H] Miscellaneous Precautions

Contractors will be guided and monitored as a safety point of view.

No trailer will be allowed in the mine.

Management will frame Safe Operating Procedures (SOP) for each operation and copy will be handed over to concerns for implementation.

All precautions and directives given by DGMS will be strictly followed.

CHAPTER 3

DESCRIPTION OF ENVIRONMENT

3.1 This chapter includes baseline environmental quality data in and around Gaurala project site which is the proposed open cast lime stone mining by Category "A" mechanized method over 116.13 ha lease at Gaurala. Relevant Information was generated and also collected from secondary sources.

Present terrestrial/land use and status of aquatic/water, air quality , noise levels, biological, socio economic aspects of environment was studied . Mining operations are concerned with status of land, water, air, noise & vibration, biological, socio economic aspects directly or indirectly related.

a) Study area:

Core zone is the lease itself. Core and buffer zones for this project are marked on Survey of India Topo sheet no 55 L/16 as shown in Figure 3.

b) Monitoring period:

Project proponent MSMCL being a State Government undertaking desired that E.C. is to obtained as early as possible so that they can generate revenue and utilize the hitherto unused quality limestone at Gaurala.

Base line monitoring was conducted by the EIA consultant as per Office Memo no J-110134/2006-IA-II(part) by MOEF&CC Impact assessment division dated 29th August 2017. Monitoring period is from March 2018 to May 2018.

C) Components of environment which were examined and monitored included

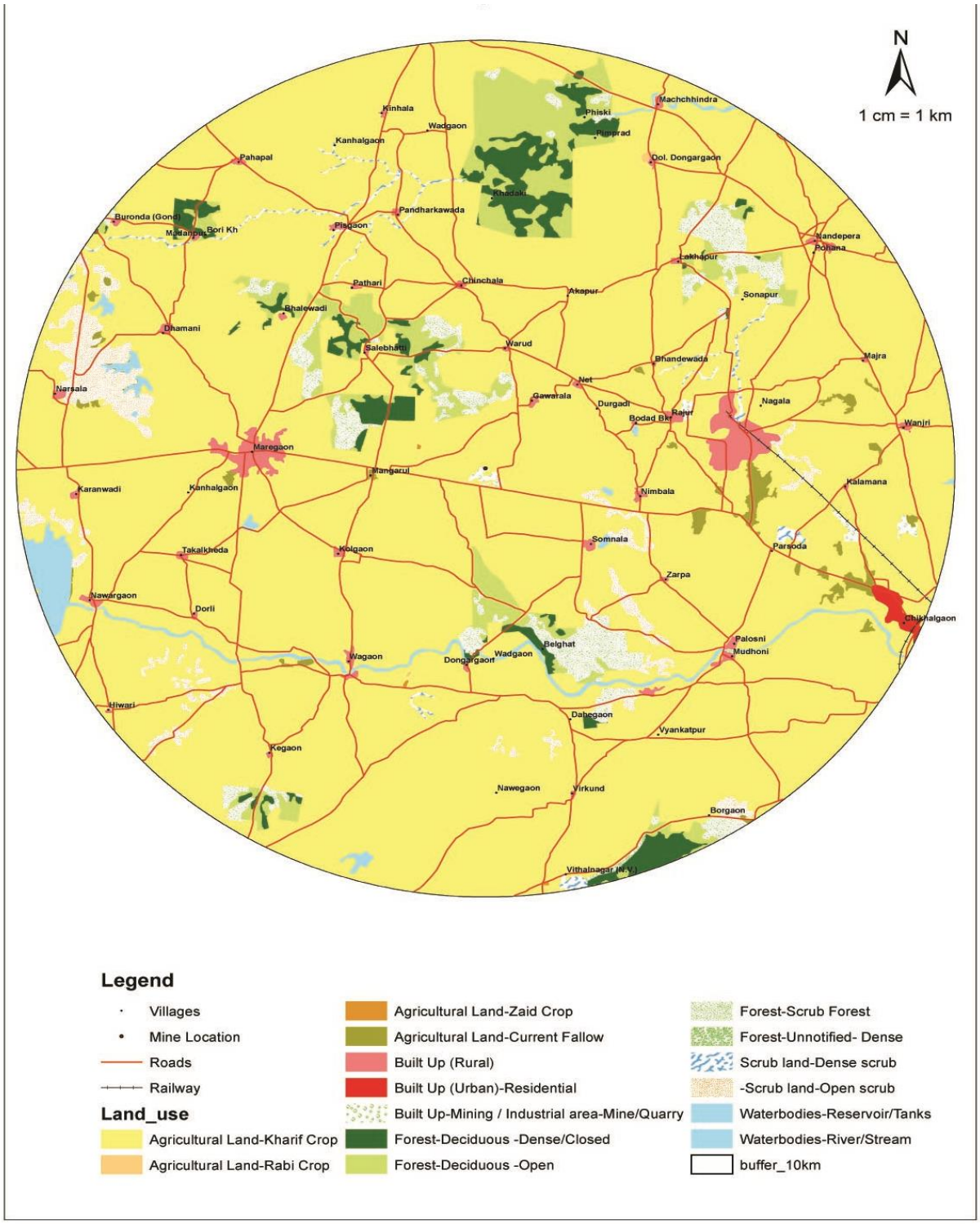
- Land-use pattern, topography, geology/soil
- Air – Micrometeorology, concentrations of criteria pollutants within core zone as per wind direction, inventory of sources etc.
- Water- Inventory of surface, ground water sources, ground water potential, hydrogeological features e.g. ground water fluctuation, yield.
- Noise: inventory of sources, receptors etc.
- Biological- flora, fauna, national park, wild life sanctuaries etc. and
- Socio economic- Demographic details, quality of life, land losers, R & R issues etc.

3.2 Terrestrial/land environment:

3.2.1 Land use

Landsat imagery of present land use within in 10 km radius is shown in **Figure 10.** Detailed classification of land use is given in **Table 5**.

FIGURE 10



LAND USE PATTERN

Table 5 : Land use details within 10 km.

DESCRIPTION	Area,m^2
Agricultural Land-Kharif Crop	31010.88
Agricultural Land-Rabi Crop	0.36
Agricultural Land-Zaid Crop	0.17
Fallow-Current Fallow	12.23
Built Up (Rural)	24.30
Built Up-Residential	36.66
Built Up-Mining / Industrial area-Mine/Quarry	3.26
Forest-Deciduous -Dense/Closed	50.83
Forest-Deciduous -Open	89.52
Forest-Scrub Forest	52.75
Forest-Tree Clad Area- Dense	0.84
Scrub land-Dense scrub	10.32
Scrub land-Open scrub	42.56
Water bodies-Reservoir/Tanks	26.15
Water bodies-River/Stream	39.18
Total	31400.00

A part of lease in possession of MSMCL is not a part of agriculture or forest area. Limestone occurs over central and north part of lease. There is no habitation, vegetation or agriculture.

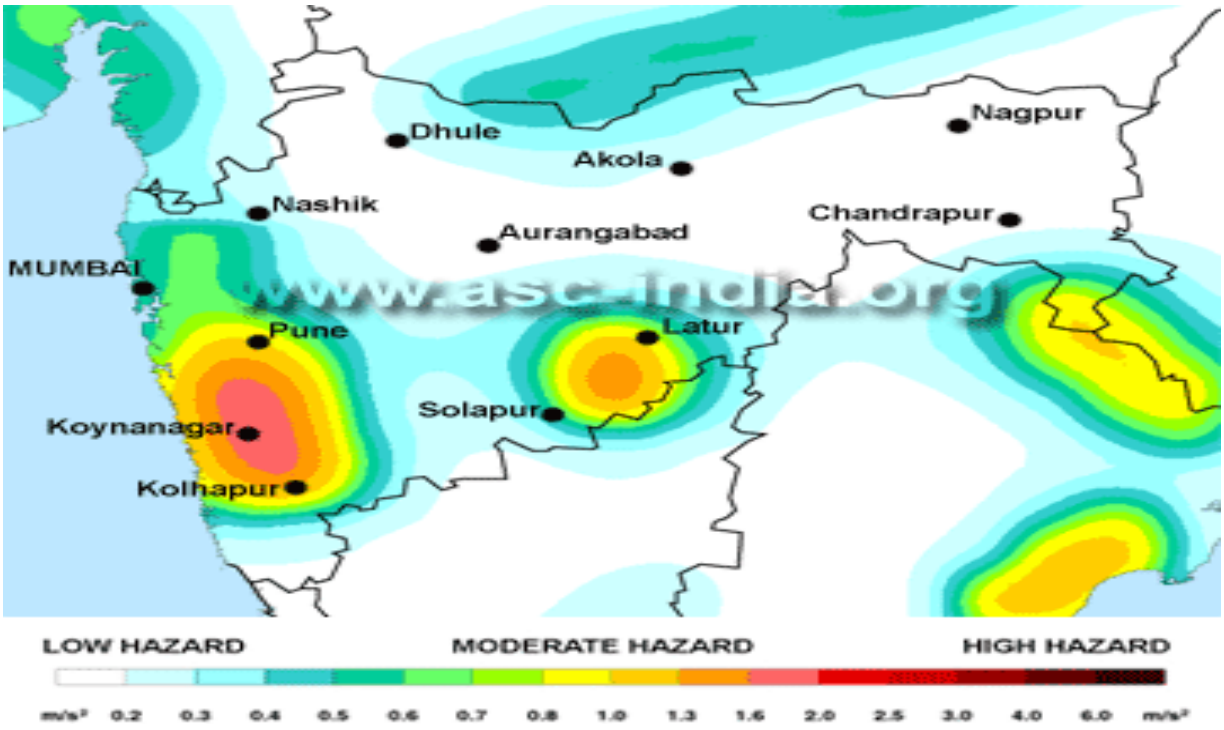
Lease details:

Pit area : 55,205.05 m^2

Existing dump area : 29,568.13 m^2

Slope of area : Gentle slope to E, elevation 249-253 m MSL

Highest and lowest contours are 253 m on West and 249 m MSL on East respectively. There is gentle slope to northwest – east. There is only a thin layer of yellow non fertile soil over lease. Limestone is in bedded form and mixed with magnesium limestone. Area is under low hazard seismic zone. There is no record of earthquake.



Soil quality:

Soils of area beyond lease are part of Wani series of soils. Ground water table is about 20 m. Soils are moderately well drained and have slow permeability. Parent material is basalt / weathered basalt. Common use is for cotton and vegetation -neem, palas, mahua etc. Yield of cotton as per present farming practice by most land owners is one to two quintals per ha.

Soil samples were collected from the lease and from a nearby agriculture field at 0-30, 30-60 & 60-90 cm. There was no soil beyond 30 cm over the lease. Sampling stations are mine lease area and Gaurala. There is no agriculture over the lease. Physical - chemical properties of soil are given in **Table 6**. Soils are calcareous. Clay content in soil from lease is less than that in agricultural field. Calcium and magnesium are the dominant cations at the exchange sites.

Table 6 : Physical - chemical properties of Soil

Sr. No.	Parameters	Unit	S1 – Mine lease area		
			0-30 cm	30-60 cm	60-90 Cm
I	**Physical properties**				
1.	Particle size distribution				
	i. Gravel	%	10.6	11.2	12.5
	ii. Sand	%	22.8	23.2	23.4
	iii. Silt	%	33.6	34.5	35.4
	iv. Clay	%	43.6	42.3	41.2
	v. Texture		Clayey	Clayey	Clayey
2.	Bulk density	g/cm^3	1.46	1.44	1.42
3.	Permeability	Mm/hr	28.7	29.6	30.4
4.	Available water retention capacity				
	i. 1/3 bar	%	33.6	32.6	31.5
	ii. 15 bar	%	16.8	18.4	19.8
Ii	**Chemical properties**				
1.	pH		7.1	7.0	7.0
2.	Elect. Conductivity	Ms/cm	0.04	0.06	0.08
3.	CEC	Meq/100g	39.2	37.9	36.8
4.	Exchangeable (Ca+Mg)	Meq/100g	32.6	31.5	30.3
5.	Exchangeable (K)	Meq/100g	1.38	1.32	1.26
6.	Organic carbon	%	0.42	0.38	0.36
7.	Available nitrogen	Kg/ha	231.0	216.2	198.0
8.	Available phosphorus	Kg/ha	14.7	14.2	13.8
9.	Available potassium	Kg/ha	352.4	338.6	328.6

Table 6 : contd….

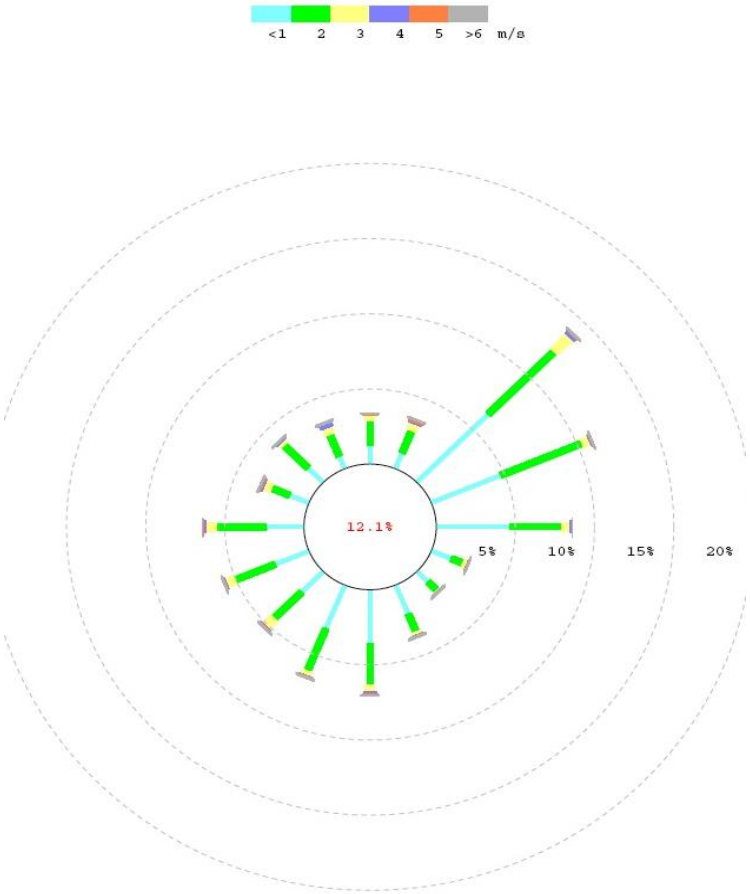
Sr. No.	Parameters	Unit	S2 – agricultural land -Gaurala		
			0-30 cm	30-60 cm	60-90 Cm
I	**Physical properties**				
1.	Particle size distribution				
	i. Gravel	%	6.8	6.0	5.3
	ii. Sand	%	20.1	19.8	19.8
	iii. Silt	%	27.6	25.6	23.5
	iv. Clay	%	52.3	54.6	56.7
	v. Texture		Clayey	Clayey	Clayey
2.	Bulk density	G/cm^3	1.46	1.41	1.36
3.	Permeability	Mm/hr	28.7	23.2	18.7

4.	Available water retention capacity i. 1/3 bar ii. 15 bar	 % %	 33.6 16.8	 36.2 17.5	 38.6 18.2
Ii	**Chemical properties**				
1.	pH		8.0	8.0	8.0
2.	Elect. Conductivity	ms/cm	0.15	0.14	0.14
3.	CEC	m eq /100g	48.2	49.3	50.4
4.	Exchangeable (ca+ mg)	m eq /100g	38.2	38.9	39.6
5.	Exchangeable (k)	m eq /100g	1.46	1.44	1.42
6.	Organic carbon	%	0.54	0.44	0.38
7.	Available nitrogen	Kg/ha	297.0	251.0	209.0
8.	Available phosphorus	Kg/ha	19.4	18.8	18.2
9.	Available potassium	Kg/ha	412.8	414.7	416.7

3.3 Air Environment:

3.3.1 Micrometeorology: Nagpur is the nearest IMD station from Gaurala. Average temperature, rainfall, cloud cover for the past 30 years at Nagpur was procured. Wind rose for monitoring period is given in **Figure 11.**

FIGURE 11



WIND ROSE PLOT

Avg. Wind Speed: 0.9 m/s
Max. Wind Speed: 5.7 m/s
Calm: 12.1%
Orientation Direction: Blowing from

generated through Envitrans ISC

Micro meteorology during monitoring period (March – May 2018) was studied. Date wise temperature and humidity values are given in **Table 7** and wind rose is shown in Figure 9. This wind rose was superimposed on toposheet in which the lease is included (Figure 3). Base line air quality monitoring sites were selected accordingly.

Table 7 : Temperature and humidity – monitoring period

DATE	TEMPERATURE ºC		HUMIDITY %		RAINFALL mm
	minimum	maximum	minimum	maximum	
01.03.2018	--	--	--	--	--
02.03.2018	16.9	37.0	36	46	--
03.03.2018	--	--	--	--	--
04.03.2018	18.3	37.5	36	50	--
05.03.2018	19.7	36.4	39	52	--
06.03.2018	19.4	36.6	38	53	--
07.03.2018	20.0	35.4	42	55	--
08.03.2018	17.2	35.6	44	49	--
09.03.2018	19.9	34.1	40	60	--
10.03.2018	22.6	32.3	47	55	--
11.03.2018	18.8	36.9	49	66	--
12.03.2018	20.7	35.0	49	66	--
13.03.2018	17.2	37.0	39	61	--
14.03.2018	18.7	38.5	45	58	--
15.03.2018	20.1	38.8	42	58	--
16.03.2018	21.4	36.2	36	44	--
17.03.2018	20.0	27.6	84	94	1
18.03.2018	16.3	35.1	53	85	0.3
19.03.2018	18.2	35.6	49	74	--
20.03.2018	18.6	37.2	41	51	--
21.03.2018	22.6	37.9	48	69	--
22.03.2018	22.9	39.1	41	59	--
23.03.2018	18.7	38.4	12	43	--
24.03.2018	16.8	38.9	11	26	--
25.03.2018	19.0	38.7	20	27	--
26.03.2018	19.0	39.0	16	28	--
27.03.2018	19.0	39.4	12	26	--
28.03.2018	17.2	40.2	16	27	--
29.03.2018	18.3	40.9	20	32	--
30.03.2018	19.4	40.9	22	29	--
31.03.2018	19.1	41.9	23	33	--

Table 7 : contd.

DATE	TEMPERATURE ºC		HUMIDITY %		RAINFALL mm
	minimum	maximum	minimum	maximum	
01.04.2018	19.6	41.6	27	30	--
02.04.2018	22.1	41.4	13	68	--
03.04.2018	22.3	39.8	26	46	--
04.04.2018	20.1	40.7	28	44	--
05.04.2018	21.5	40.9	32	47	--
06.04.2018	22.4	40.6	30	48	--
07.04.2018	22.9	40.6	34	55	--
08.04.2018	24.9	40.4	35	39	--

09.04.2018	24.2	34.8	51	58	--
10.04.2018	20.2	38.9	44	62	--
11.04.2018	20.7	38.4	52	64	--
12.04.2018	20.8	37.7	26	73	--
13.04.2018	24.6	38.9	24	37	--
14.04.2018	24.5	38.5	49	61	--
15.04.2018	23.8	39.7	34	52	--
16.04.2018	21.9	37.6	35	57	9.8
17.04.2018	22.2	42.0	27	28	Traces
18.04.2018	23.5	43.2	20	40	Traces
19.04.2018	24.5	43.2	14	27	--
20.04.2018	22.1	42.2	13	16	--
21.04.2018	24.3	44.2	12	20	--
22.04.2018	26.6	42.9	12	22	--
23.04.2018	23.2	42.5	21	25	--
24.04.2018	24.3	42.0	29	37	--
25.04.2018	22.7	41.8	13	20	--
26.04.2018	21.5	41.7	19	52	--
27.04.2018	21.1	43.3	16	18	--
28.04.2018	22.0	44.1	17	33	--
29.04.2018	25.0	44.3	23	36	--
30.04.2018	28.3	45.2	19	41	--

Table 7 : contd.

DATE	TEMPERATURE ºC		HUMIDITY %		RAINFALL mm
	minimum	maximum	minimum	maximum	
01.05.2018	27.0	45.6	19	25	--
02.05.2018	--	--	--	--	--
03.05.2018	27.6	43.2	37	59	--
04.05.2018	27.4	37.9	46	47	--
05.05.2018	22.8	42.1	31	58	--
06.05.2018	26.8	44.0	26	42	--
07.05.2018	26.9	43.7	26	38	--
08.05.2018	29.0	44.5	24	33	--
09.05.2018	27.5	44.4	26	28	--
10.05.2018	25.2	44.6	22	33	--
11.05.2018	28.5	45.0	25	47	--
12.05.2018	28.2	44.5	31	42	--
13.05.2018	--	--	--	--	--
14.05.2018	29.1	42.9	17	45	--
15.05.2018	29.2	44.1	16	41	--
16.05.2018	26.7	42.2	21	42	--
17.05.2018	27.4	44.3	22	34	--
18.05.2018	27.4	44.7	21	32	--
19.05.2018	30.0	45.5	19	30	--
20.05.2018	27.7	46.2	--	--	--

21.05.2018	27.7	46.2	18	22	--
22.05.2018	29.3	45.2	29	30	--
23.05.2018	31.0	43.7	33	54	--
24.05.2018	32.7	43.0	31	60	--
25.05.2018	29.0	44.7	25	48	--
26.05.2018	27.5	45.7	26	30	--
27.05.2018	31.5	43.7	39	64	1.0
28.05.2018	23.0	38.8	47	70	35.8
29.05.2018	28.3	44.4	35	51	--
30.05.2018	29.5	46.7	25	52	--
31.05.2018	29.7	46.3	37	45	--

Sampling sites were selected both in upwind and downwind directions. There are about 47 villages within 10 km radius.

3.3.2 Air pollutants:

Source inventory:

There are no industries within core and buffer zones and there are no stationary sources like stacks/chimneys. There is no agriculture over proposed active mining area. Nearest habitation is Gaurala village and fugitive sources are occasional burning of cow dung cakes. Mobile sources at present also are occasional. Traffic survey was conducted during monitoring and given in **Table 8.**

Table 8 : Traffic survey –vehicles /hour

Date – 25.05.2018

Name of Road	2-wheelers	LMV-MMV-Tractors	Heavy Vehicles
Wani-Yavatmal SH	80	63	26
SH- Gaurala Village	3	1	0

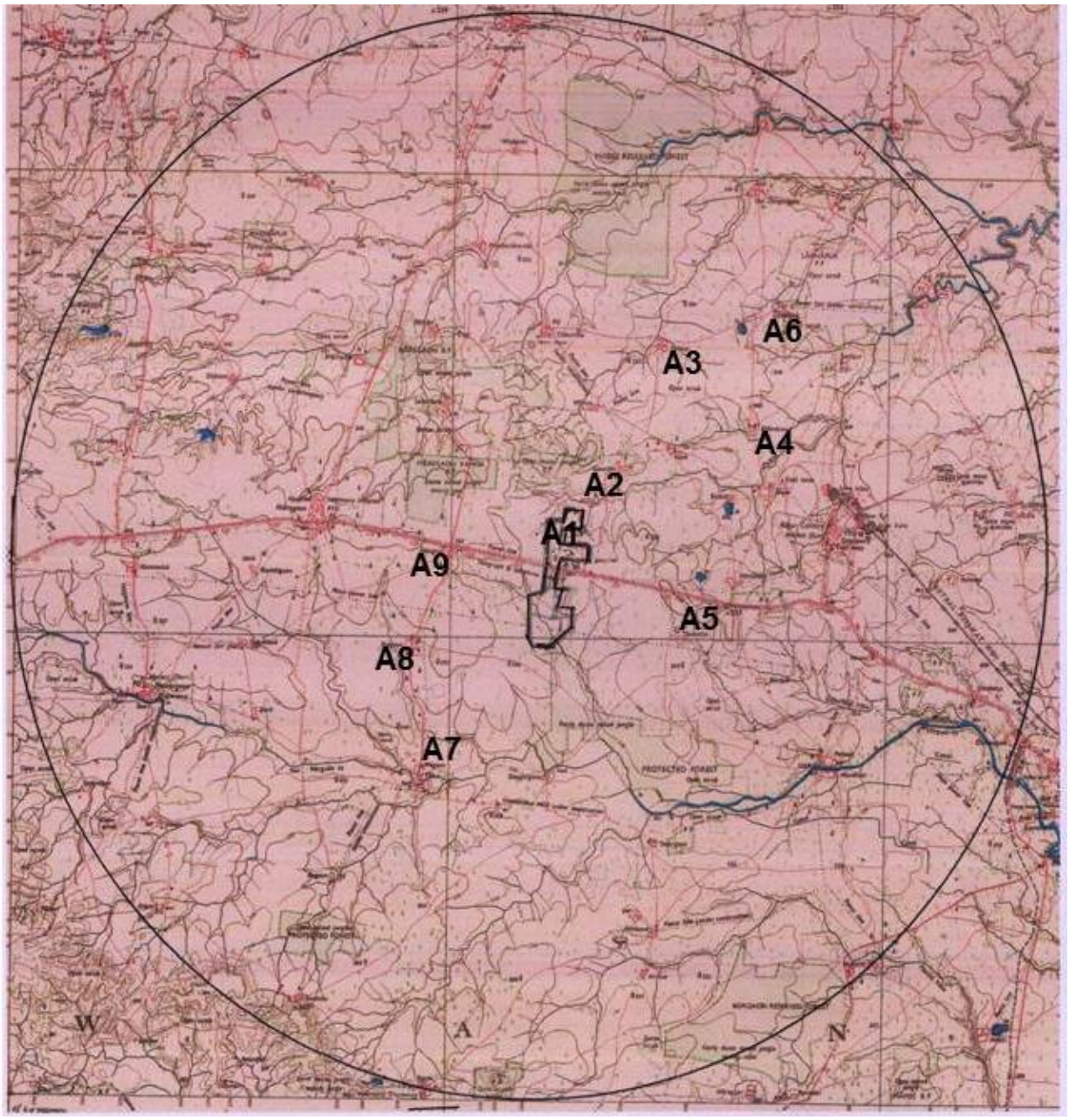
3.3.3 Monitoring stations for ambient air quality (AAQ):

AAQ monitoring sites were decided on basis of predominant wind directions as per the wind rose cited above and wind direction during monitoring period. AAQ stations are described in **Table 9** and shown in **Figure 12.**

Table 9: AAQ monitoring stations

Sampling code	Monitoring station	Direction	Up/down wind	Distance wrt Lease Area (Km)
A1	Mine lease area	-	-	-
A2	Gaurala	N	upwind	1.5
A3	Akapur	NE	downwind	4.5
A4	Bhandewada	NE	downwind	4.0
A5	Somnala	SE	downwind	3.0
A6	Lakhapur	NE	downwind	7.5
A7	Wegaon	S	downwind	4.8
A8	Kolgaon	SW	downwind	4.0
A9	Mangrul	W	upwind	2.5

FIGURE 12



Sampling code	Monitoring station	Direction	Up/down wind	Distance w.r.t. Lease Area (Km)
A1	Mine lease area	-	-	-
A2	Gaurala	N	upwind	1.5
A3	Akapur	NE	downwind	4.5
A4	Bhandewada	NE	downwind	4.0
A5	Somnala	SE	downwind	3.0
A6	Lakhapur	NE	downwind	7.5
A7	Wegaon	S	downwind	4.8
A8	Kolgaon	SW	downwind	4.0
A9	Mangrul	W	upwind	2.5

AIR QUALITY MONITORING STATIONS

Air quality was monitored as per MOEF & CC norms. There are no sources of sulphur & nitrogen oxides, hydrocarbons or heavy metals etc. Limestone deposits do not contain trace/heavy metals. Therefore air–quality-criteria pollutants for this project are PM_{10}, $PM_{2.5}$. Sulphur dioxide and nitrous oxides in air were measured. Calibrated high volume samplers were used. One 24 hour sample was collected twice a week for 13 weeks at each station. Samples were collected and sent to a MOEF & CC -recognized laboratory for analysis. Air quality monitoring data is given in **Table 10**.

Table 10 : A1- Mine lease area

Week	Date	PM $_{10}$ µg/m^3	PM $_{2.5}$ µg/m^3	NOx µg/m^3	SO_2 µg/m^3
W1	05.03.2018	42.4	9.6	9.3	6.3
	08.03.2018	39.9	8.2	8.7	7.8
W2	12.03.2018	36.7	7.8	7.9	8.2
	15.03.2018	40.2	8.4	8.2	8.9
W3	19.03.2018	38.7	7.6	8.6	7.9
	22.03.2018	43.6	8.8	8.2	8.2
W4	26.03.2018	47.5	9.4	9.8	6.3
	29.03.2018	42.8	8.4	8.4	7.4
W5	02.04.2018	45.4	9.2	10.6	7.8
	05.04.2018	43.8	8.8	9.8	6.6
W6	09.04.2018	39.6	7.8	8.3	6.7
	12.04.2018	44.2	8.6	8.8	7.2
W7	16.04.2018	48.8	11.4	9.6	7.5
	19.04.2018	46.3	9.8	9.8	7.0
W8	23.04.2018	41.7	8.6	11.2	8.3
	26.04.2018	38.5	7.2	10.4	7.9
W9	30.04.2018	35.9	7.0	7.4	7.6
	03.05.2018	38.2	7.6	9.2	6.2
W10	07.05.2018	41.4	10.4	8.9	8.4
	10.05.2018	38.2	9.8	9.2	8.9
W11	14.05.2018	41.7	11.6	8.2	7.8
	17.05.2018	45.3	12.3	8.8	8.3
W12	21.05.2018	39.2	9.6	9.6	9.6
	24.05.2018	36.4	8.2	9.0	9.2
W13	28.05.2018	37.5	7.8	8.4	7.8
	31.05.2018	41.2	10.3	8.9	8.0
Minimum		35.9	7.0	7.4	6.2
Maximum		48.8	12.3	11.2	9.6
Average		41.4	9.0	9.0	7.8
98 percentile		48.2	12.0	10.9	9.4

A2 – Gaurala

Week	Date	PM $_{10}$ µg/m^3	PM $_{2.5}$ µg/m^3	NOx µg/m^3	SO_2 µg/m^3
W1	05.03.2018	48.8	14.7	8.2	7.2
	08.03.2018	44.8	13.5	7.4	7.3
W2	12.03.2018	41.0	13.5	8.6	9.2
	15.03.2018	30.7	10.5	9.8	9.6
W3	19.03.2018	42.9	14.6	11.2	8.4
	22.03.2018	35.6	11.0	9.8	7.7
W4	26.03.2018	47.9	15.9	10.4	8.9
	29.03.2018	50.8	16.2	11.0	9.2
W5	02.04.2018	48.4	16.3	9.6	7.6
	05.04.2018	51.2	16.8	10.6	8.4
W6	09.04.2018	55.9	18.4	12.8	9.4
	12.04.2018	57.6	18.8	11.2	7.9
W7	16.04.2018	40.8	14.3	9.4	7.8
	19.04.2018	38.6	12.5	9.0	7.4
W8	23.04.2018	40.2	13.4	10.4	7.8
	26.04.2018	44.8	14.2	11.6	9.2
W9	30.04.2018	47.4	15.3	9.8	8.5
	03.05.2018	51.1	16.2	12.6	11.3
W10	07.05.2018	52.4	17.2	10.6	9.8
	10.05.2018	46.8	16.5	13.2	12.3
W11	14.05.2018	42.4	13.4	9.2	7.8
	17.05.2018	47.2	14.1	11.6	8.2
W12	21.05.2018	51.5	15.2	10.4	9.6
	24.05.2018	44.2	14.4	9.8	9.2
W13	28.05.2018	50.8	15.6	11.5	11.1
	31.05.2018	47.6	13.8	10.8	8.6
Minimum		30.7	10.5	7.4	7.2
Maximum		57.6	18.8	13.2	12.3
Average		46.2	14.9	10.4	8.8
98 percentile		56.8	18.6	13.0	11.8

A3 – Akapur

Week	Date	PM $_{10}$ µg/m^3	PM $_{2.5}$ µg/m^3	NOx µg/m^3	SO_2 µg/m^3
W1	05.03.2018	42.3	13.8	7.6	6.4
	08.03.2018	44.8	14.8	8.0	8.4
W2	12.03.2018	45.6	14.4	6.6	6.0
	15.03.2018	33.6	11.7	7.2	7.4
W3	19.03.2018	54.3	17.3	7.5	6.6
	22.03.2018	37.8	13.3	8.6	8.3
W4	26.03.2018	44.3	14.5	9.0	6.8
	29.03.2018	48.7	16.3	7.2	7.4
W5	02.04.2018	38.6	12.5	6.5	7.8
	05.04.2018	40.2	14.2	7.1	6.9
W6	09.04.2018	35.6	11.9	8.6	6.0
	12.04.2018	45.8	15.2	7.9	7.5
W7	16.04.2018	38.9	12.8	8.4	8.2
	19.04.2018	48.6	15.4	9.0	7.5
W8	23.04.2018	41.5	13.4	7.8	6.8
	26.04.2018	45.6	13.1	9.2	7.0
W9	30.04.2018	38.2	11.3	9.6	6.2
	03.05.2018	41.4	11.5	11.2	6.4
W10	07.05.2018	46.4	14.2	8.6	6.8
	10.05.2018	42.8	13.4	10.4	7.3
W11	14.05.2018	36.4	11.4	8.4	6.6
	17.05.2018	38.2	12.6	9.1	6.9
W12	21.05.2018	41.4	12.9	11.2	7.1
	24.05.2018	43.6	13.2	9.8	6.8
W13	28.05.2018	38.4	10.4	7.6	8.2
	31.05.2018	36.2	9.6	8.2	7.6
Minimum		33.6	9.6	6.5	6.0
Maximum		54.3	17.3	11.2	8.4
Average		41.9	13.3	8.5	7.1
98 percentile		51.5	16.8	11.2	8.4

A4- Bhandewada

Week	Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	Nox ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)
W1	06.03.2018 09.03.2018	34.2 37.1	10.9 11.8	8.2 7.3	7.5 7.8
W2	13.03.2018 16.03.2018	38.6 33.2	12.5 10.9	7.7 9.2	8.1 6.4
W3	20.03.2018 23.03.2018	30.7 28.9	10.2 9.8	6.2 6.9	6.0 7.3
W4	27.03.2018 30.03.2018	33.1 35.0	10.6 11.9	8.4 7.5	8.0 8.3
W5	03.04.2018 06.04.2018	31.8 28.6	10.6 9.2	7.7 7.3	7.1 7.3
W6	10.04.2018 13.04.2018	30.4 31.2	9.9 9.8	6.5 7.8	9.2 8.4
W7	17.04.2018 20.04.2018	20.6 24.8	7.1 7.9	6.7 6.9	8.6 7.3
W8	24.04.2018 27.04.2018	32.8 29.4	9.2 9.0	6.8 7.1	7.6 7.0
W9	01.05.2018 04.05.2018	28.4 22.8	11.1 10.6	6.3 6.5	7.3 7.8
W10	08.05.2018 11.05.2018	28.4 30.6	9.4 9.7	6.8 6.2	8.0 7.6
W11	15.05.2018 18.05.2018	28.4 31.1	7.8 8.1	6.4 6.7	6.8 7.2
W12	22.05.2018 25.05.2018	33.6 37.2	9.2 8.6	7.2 7.0	7.6 6.4
W13	29.05.2018 01.06.2018	34.2 29.6	7.8 7.0	6.6 6.5	8.5 8.2
Minimum		20.6	7.0	6.2	6.0
Maximum		38.6	12.5	9.2	9.2
Average		31.0	9.6	7.1	7.6
98 percentile		37.9	12.2	8.8	8.9

A5-Somnala

Week	Date	PM $_{10}$ µg/m^3	PM $_{2.5}$ µg/m^3	Nox µg/m^3	SO_2 µg/m^3
W1	06.03.2018 09.03.2018	33.8 37.7	9.4 10.3	8.2 7.3	9.2 8.1
W2	13.03.2018 16.03.2018	38.9 37.3	12.8 12.2	9.4 7.2	6.5 7.4
W3	20.03.2018 23.03.2018	36.8 47.8	12.4 15.5	7.8 6.2	8.4 9.4
W4	27.03.2018 30.03.2018	39.4 36.4	12.8 11.6	6.5 7.4	7.6 6.5
W5	03.04.2018 06.04.2018	38.7 39.8	12.5 13.2	9.4 8.1	7.2 7.0
W6	10.04.2018 13.04.2018	45.4 38.8	14.4 11.9	8.2 8.0	6.9 7.8
W7	17.04.2018 20.04.2018	42.8 40.7	12.9 11.8	9.2 9.2	7.8 6.7
W8	24.04.2018 27.04.2018	37.6 39.4	11.4 11.0	8.9 9.3	7.6 7.5
W9	01.05.2018 04.05.2018	38.6 41.1	10.4 10.8	9.1 7.8	8.4 8.2
W10	08.05.2018 11.05.2018	42.4 37.6	13.4 11.8	9.1 8.6	7.2 7.7
W11	15.05.2018 18.05.2018	44.2 41.6	12.4 11.6	7.8 7.2	6.8 7.3
W12	22.05.2018 25.05.2018	38.8 41.0	10.8 11.2	8.4 8.1	7.6 6.9
W13	29.05.2018 01.06.2018	42.6 37.8	12.4 10.6	7.6 7.9	8.2 8.6
Minimum		33.8	9.4	6.2	6.5
Maximum		47.8	15.5	9.4	9.4
Average		39.9	12.0	8.2	7.6
98 percentile		46.6	15.0	9.4	9.3

A6 – Lakhapur

Week	Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	Nox ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)
W1	06.03.2018 09.03.2018	45.1 38.6	13.8 11.2	8.2 7.6	8.6 7.8
W2	13.03.2018 16.03.2018	37.4 39.2	10.6 12.4	9.0 8.2	8.2 7.9
W3	20.03.2018 23.03.2018	38.6 41.4	11.4 12.6	7.9 7.2	8.9 9.2
W4	27.03.2018 30.03.2018	32.5 37.1	9.2 10.6	7.0 7.8	8.8 7.6
W5	03.04.2018 06.04.2018	39.5 41.7	12.3 12.8	8.4 7.8	9.3 8.9
W6	10.04.2018 13.04.2018	28.2 32.8	9.6 10.3	8.2 9.4	9.0 8.6
W7	17.04.2018 20.04.2018	36.4 35.0	11.2 10.4	8.6 7.9	9.2 7.9
W8	24.04.2018 27.04.2018	39.2 34.6	12.6 10.8	7.7 8.3	8.7 8.2
W9	01.05.2018 04.05.2018	33.8 38.5	9.2 12.8	8.7 8.3	9.8 9.2
W10	08.05.2018 11.05.2018	47.2 38.4	14.8 13.4	9.2 8.8	9.0 8.9
W11	15.05.2018 18.05.2018	30.4 35.6	9.6 10.2	7.6 8.1	8.6 9.4
W12	22.05.2018 25.05.2018	41.2 47.6	12.8 15.3	7.2 7.7	7.8 8.3
W13	29.05.2018 01.06.2018	39.4 33.8	12.2 9.4	8.0 8.4	7.6 8.2
Minimum		28.2	9.2	7.0	7.6
Maximum		47.6	15.3	9.4	9.8
Average		37.8	11.6	8.1	8.6
98 percentile		47.4	15.1	9.3	9.6

A7 – Wegaon

Week	Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	Nox ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)
W1	07.03.2018	54.3	16.5	6.5	6.5
	10.03.2018	48.6	14.3	8.2	6.8
W2	14.03.2018	47.2	14.8	7.5	8.5
	17.03.2018	41.5	15.3	7.7	9.5
W3	21.03.2018	59.3	17.7	7.0	7.6
	24.03.2018	52.1	16.7	8.1	9.5
W4	28.03.2018	58.4	17.5	7.4	8.4
	31.03.2018	53.5	16.9	6.5	6.1
W5	04.04.2018	49.6	15.9	7.7	7.1
	07.04.2018	54.1	14.8	7.3	7.3
W6	11.04.2018	52.7	15.4	6.5	9.2
	14.04.2018	58.9	17.5	7.8	8.4
W7	18.04.2018	58.5	15.8	6.7	8.6
	21.04.2018	53.8	16.5	6.9	7.3
W8	25.04.2018	42.8	14.2	7.1	9.2
	28.04.2018	46.4	14.6	6.6	7.8
W9	02.05.2018	48.4	15.6	6.8	7.2
	05.05.2018	52.3	16.2	7.0	7.6
W10	09.05.2018	54.2	16.8	7.1	6.8
	12.05.2018	48.6	15.8	6.9	7.3
W11	16.05.2018	53.6	16.2	6.8	8.4
	19.05.2018	48.9	15.6	7.0	8.0
W12	23.05.2018	44.2	13.8	7.4	9.2
	26.05.2018	49.8	14.4	6.6	8.9
W13	30.05.2018	44.6	12.3	6.8	8.6
	02.06.2018	47.2	13.4	6.3	7.3
Minimum		41.5	13.8	6.5	6.1
Maximum		59.3	17.7	8.2	9.5
Average		51.3	15.8	7.1	8.0
98 percentile		59.1	17.6	8.2	9.5

A8-Kolgaon

Week	Date	PM $_{10}$ µg/m^3	PM $_{2.5}$ µg/m^3	Nox µg/m^3	SO_2 µg/m^3
W1	07.03.2018	38.7	11.5	7.2	9.2
	10.03.2018	39.8	11.3	7.8	8.4
W2	14.03.2018	45.4	13.7	8.4	7.5
	17.03.2018	38.8	10.9	8.0	9.0
W3	21.03.2018	42.8	11.7	6.4	6.8
	24.03.2018	40.7	10.9	6.8	7.2
W4	28.03.2018	47.6	13.6	8.9	7.0
	31.03.2018	33.6	10.8	9.2	8.1
W5	04.04.2018	40.5	11.6	9.6	7.6
	07.04.2018	38.9	9.3	7.4	9.3
W6	11.04.2018	33.6	9.2	10.3	8.0
	14.04.2018	45.0	12.6	8.6	6.5
W7	18.04.2018	32.4	8.3	11.4	6.7
	21.04.2018	38.3	9.8	8.3	7.4
W8	25.04.2018	44.3	11.2	10.1	7.2
	28.04.2018	39.8	9.6	8.8	6.9
W9	02.05.2018	35.6	9.8	9.1	9.1
	05.05.2018	37.4	10.2	9.4	7.8
W10	09.05.2018	33.8	9.6	8.2	6.5
	12.05.2018	37.1	10.8	7.6	7.2
W11	16.05.2018	41.4	10.2	6.8	7.3
	19.05.2018	39.2	10.0	7.1	7.7
W12	23.05.2018	32.8	9.6	8.6	8.6
	26.05.2018	36.7	10.0	9.4	6.8
W13	30.05.2018	37.6	9.2	7.9	7.4
	02.06.2018	39.3	10.4	8.3	8.2
Minimum		32.4	8.3	6.4	6.5
Maximum		47.6	13.7	11.4	9.3
Average		38.9	10.7	8.5	7.7
98 percentile		46.6	13.7	10.9	9.3

A9 – Mangrul

Week	Date	PM_{10} $\mu g/m^3$	$PM_{2.5}$ ($\mu g/m^3$)	Nox $\mu g/m^3$	SO_2 $\mu g/m^3$
W1	07.03.2018 10.03.2018	44.3 37.8	11.9 11.4	7.6 7.2	7.2 6.4
W2	14.03.2018 17.03.2018	44.3 48.7	12.4 12.8	8.4 10.2	6.8 7.7
W3	21.03.2018 24.03.2018	38.6 40.2	10.5 11.2	7.2 8.8	6.8 6.6
W4	28.03.2018 31.03.2018	35.6 45.8	10.8 12.6	7.3 7.8	8.4 8.7
W5	04.04.2018 07.04.2018	38.9 32.6	10.9 9.6	6.8 7.3	7.8 8.3
W6	11.04.2018 14.04.2018	30.4 36.8	9.2 10.1	7.7 6.6	9.6 9.0
W7	18.04.2018 21.04.2018	31.5 40.0	8.9 11.4	6.9 7.4	9.2 9.1
W8	25.04.2018 28.04.2018	37.4 39.2	10.2 10.4	7.6 7.8	8.5 8.3
W9	02.05.2018 05.05.2018	41.1 38.6	11.3 10.6	8.3 8.7	9.4 7.7
W10	09.05.2018 12.05.2018	44.2 36.6	12.4 10.2	7.9 7.2	7.2 7.9
W11	16.05.2018 19.05.2018	34.2 39.6	9.8 10.6	6.9 7.6	6.8 7.2
W12	23.05.2018 26.05.2018	41.2 44.8	10.8 11.4	8.9 8.2	9.2 9.0
W13	30.05.2018 02.06.2018	38.6 32.9	11.8 9.2	7.9 8.6	8.2 6.8
Minimum		30.4	8.9	6.6	6.4
Maximum		48.7	12.8	10.2	9.6
Average		39.3	10.9	7.8	8.0
98 percentile		47.4	12.7	9.6	9.5

Baseline ambient air quality has indicated the following.

- Atmospheric stability class at Gaurala is “moderately unstable to slightly unstable” during the day.
- Area has rural setting.
- Concentrations of criteria pollutants were found to be well below National air quality criteria viz. PM_{10} , $PM_{2.5}$, SO_2 and NOx which are respectively 100,60,80 and 80 $\mu g/m^3$.

- Predominant emissions during open cast mining project would be generate particulate matter likely during drilling, blasting, loading/unloading and transportation activities .

3.4 Water environment:

a) Water requirement for project, sources and ground water potential.

Limestone mining will need water for drinking for the mine workers, dust control and plantation. Mining operations *per se* will not need water.

There will not be any residential colony. Drinking water requirement for 47 workers and staffs would be about 2.5 m^3/d @ 50 l p c d. Water requirement for dust control would be 5 m^3/d and about 5-6 m^3/d will be required for plantation. Drinking water will be supplied from a nearby well after disinfection. Tankers will be used.

Table 11 : Water budget

Use	Source	Quantity,m^3	Consumption, m^3	Wastewater, m^3	Use, m^3
Dust control	Mine pit /well	5	5	Nil	--
Plantation	Mine pit /well	6	6	Nil	--
Domestic	Mine pit /well	2.5	0.5	2.0	Plantation
Total	--	13.5	11.5	2.0	--

b) There are no surface sources viz. rivers/ lake in the lease except abandoned pits occupying 55205.05 m^2. Average depth of these pits is 6 m. Thus, average storage capacity of these pit is about 30,000 m^3 if filled to the brim presuming 901 mm average annual rainfall.

c) Ground water potential :

Ground water resource in the Maregaon region of which lease is a part, as per hydrogeology report –CGWB is given below :

Table 12 : Ground Water Potential

Net G.W. availability	5009.5 ha. m
Draft for irrigation	747.0 ha. m
Domestic	153.71 ha. m

Gross draft	901.43 ha. m
Provision for 2025	307.24 ha. m
Water availability for irrigation	3885.69 ha. m
G.W. development	(307.24/5009.50)x 100= 17.99%
Category	safe

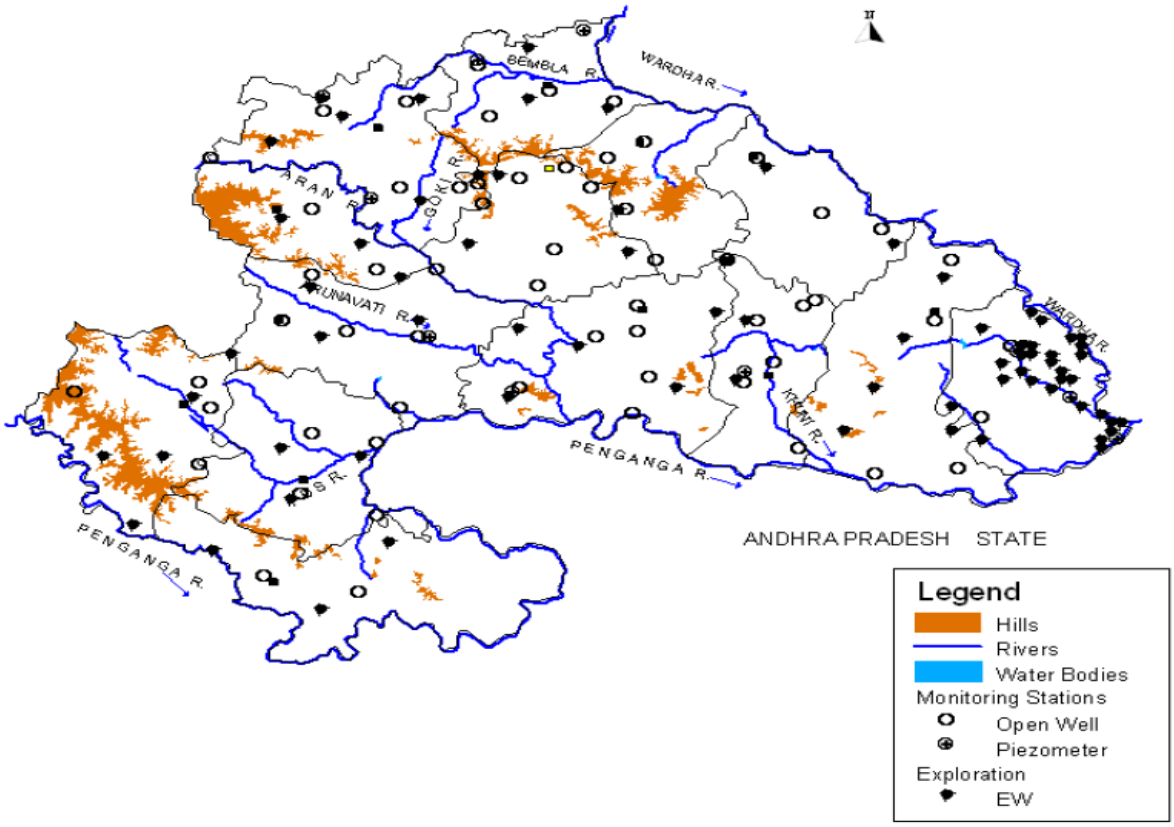
Ground water recharge rate by pit- water was calculated using relation area x annual rainfall x coefficient 0.3 for limestone. It is likely to be 1381.5 m^3 /year. Water table is at 20 m below ground level near the lease.

Area under pits at the end of ensuing period would increase from 55205.05 m^2 to 80,706.89 m^2. Ground water table will not be intercepted.

d) Ground Water Scenario :

At the end of conceptual period there will be a single pit of 80,706.89 sq. m. with the conceptual depth of 14 m BGL. At the end of conceptual period ultimate bottom level will be 241 m.

A map showing physical features of Yavatmal district is shown below.

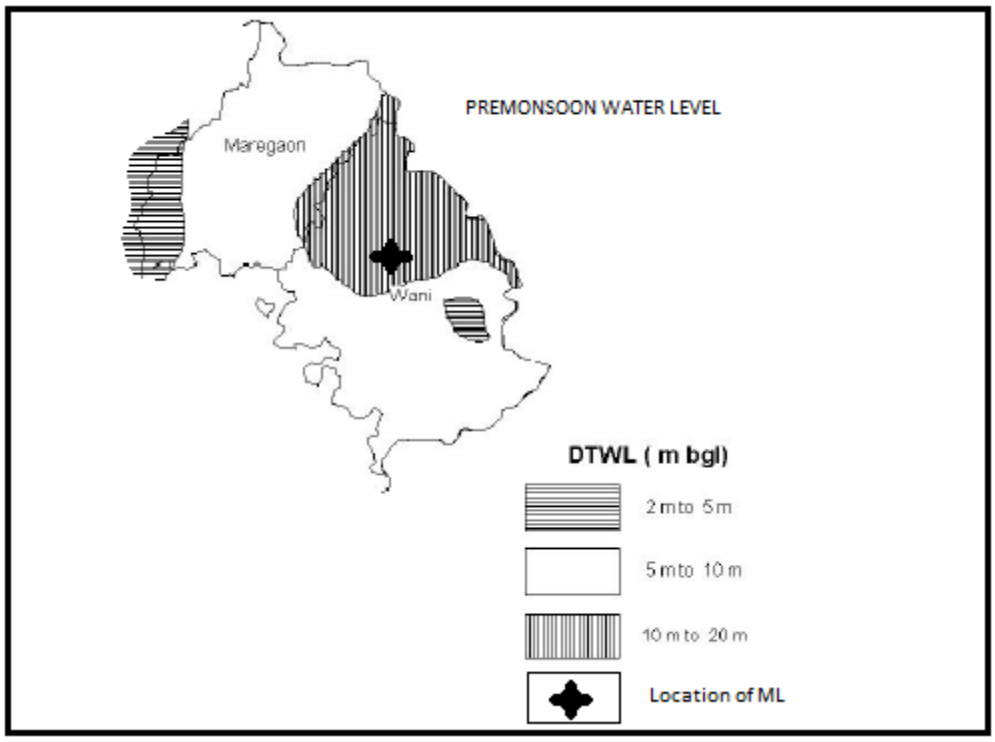


Climate of the area is characterized by a hot summer and general dryness throughout the year except during the south-west monsoon season, i.e., June to September. The temperature rises rapidly after February till May, which is the hottest month of the year. The mean daily maximum temperature during May is 41.8°C and the mean daily minimum temperature during December is 15.1°C.

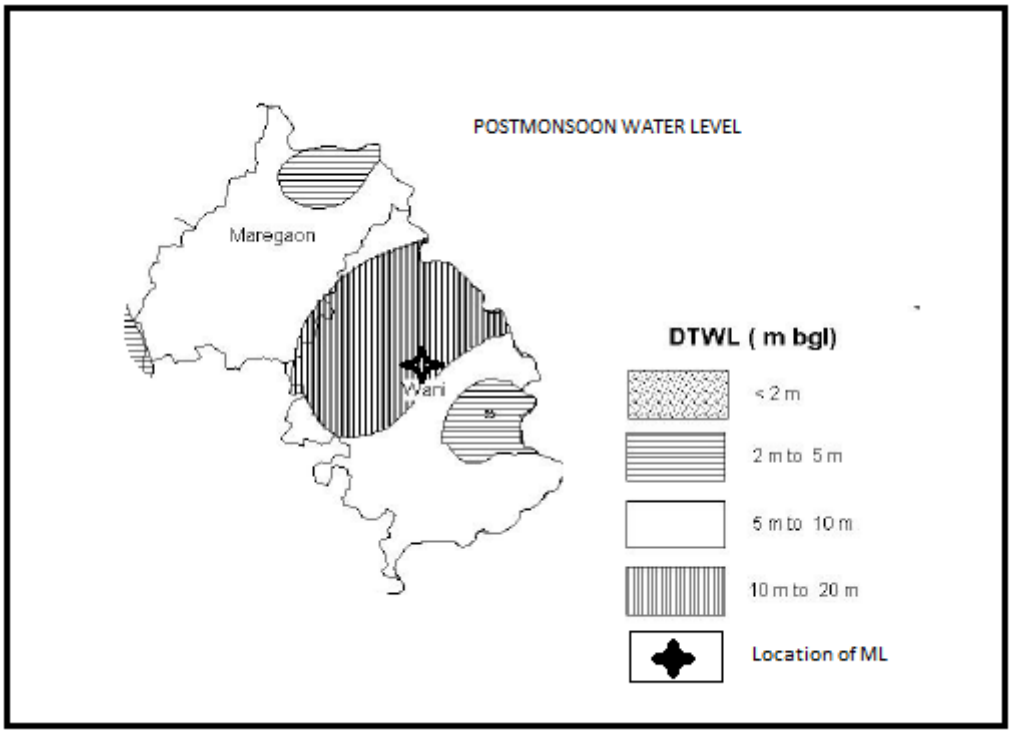
The normal annual rainfall varies from about 850 to 1150 mm and it increases from NW to SE direction in the area. The average annual rainfall for the last ten years 901 mm.

The Gondwana consists of Kamthi and Barakar Sandstone and Shale and occupy north-south extending elongated stretch in parts of Maregaon and Wani talukas. Sandstone is usually friable and possesses primary porosity due to its granular nature. They are most productive water bearing formations in the district. The ground water occurs under semi confined to confined conditions in the area and water bearing zones have been encountered down to depth of 470 m.

Pre-monsoon Water Level is drawn as for the area



Post monsoon Water Level is drawn as for the area



Ground water level was monitored at four locations during May 2018 and is given below in **Table 13**.

Table 13 : Ground water level

S. No.	Village	Type of Well	Depth of Well in m	Diameter In inches	Acquifer	R.L. during May 2018 in m (Pre Monsoon)
1	Gaurala	Tube well	50	6	Limestone	92.7
2	Somnala	Tube well	60	6	Limestone	91.1
3	Nimbala	Tube well	75	6	Limestone	89.9
4	Net	Tube well	60	6	Limestone	91.6

It is concluded that ground water level at the lease area is varying in between 15m to 20m from the secondary sources. It is also confirmed from the ground water level data collected during the post monsoon season.

Hence it is also concluded that mining operation will not intersect ground water table of the area.

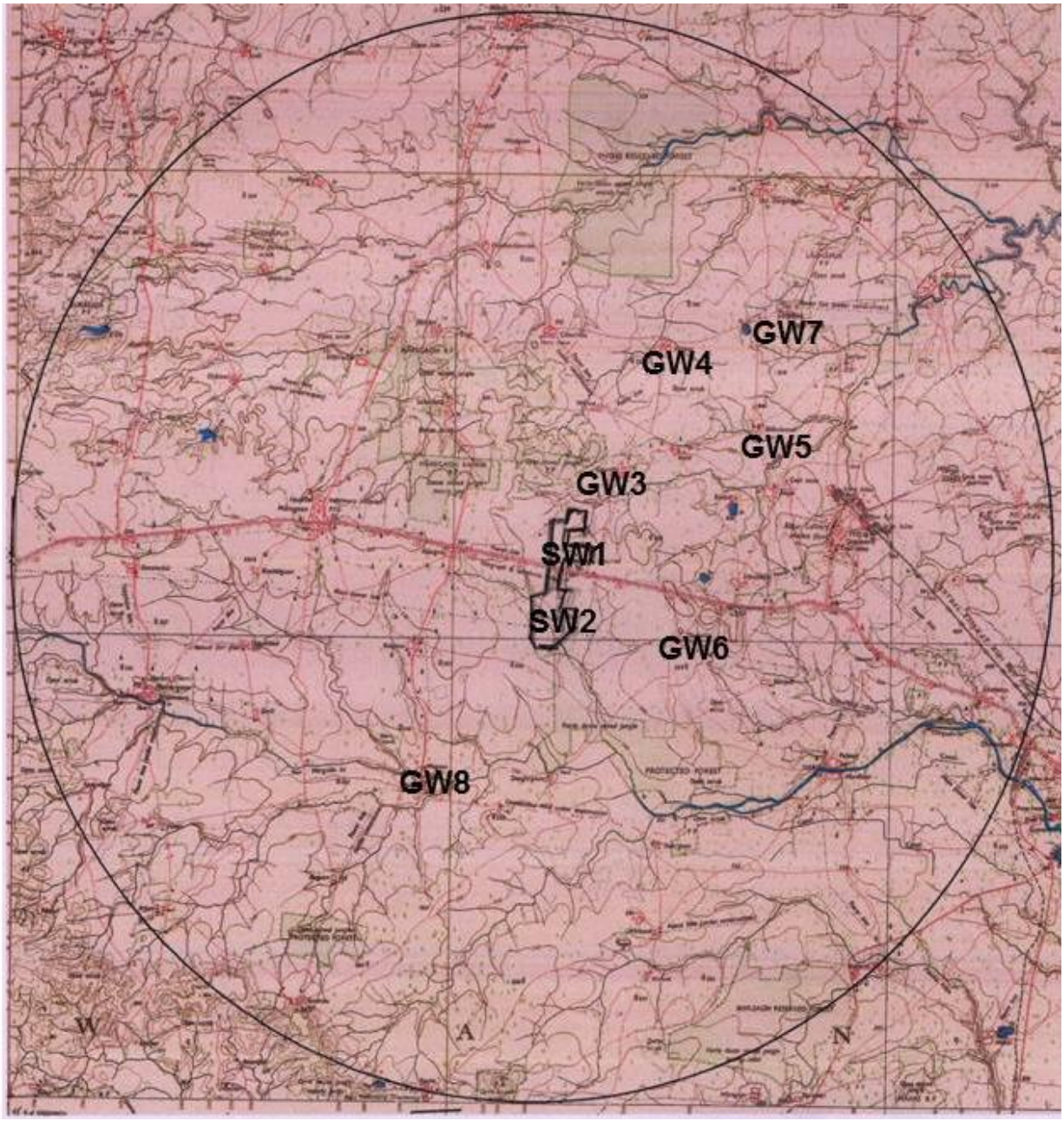
3.4.1 Water quality :

Water samples from abandoned mine pits in the lease were collected. Water sampling stations are shown in **Figure 13** and given in **Table 14.** Also samples from a nearby dug well and hand pumps in nearby villages were collected and analyzed. Analysis of water samples are given in **Table 15**. Variable parameters temperature, pH, D.O. were estimated at site and samples were preserved for heavy -metal analysis.

Table 14 : Water sampling stations

Sampling code	Monitoring station	Direction	Up/down wind
SW-1	Mine lease area mine pit 1	-	-
SW2	Mine lease area mine pit 2	--	--
GW3	Gaurala	N	upwind
GW4	Akapur	NE	downwind
GW5	Bhandewada	NE	downwind
GW6	Somnala	SE	downwind
GW 7	Lakhapur	NE	downwind
GW8	Wegaon	S	downwind

FIGURE 13



Sampling code	Monitoring station	Direction	Up/down wind
SW-1	Mine lease area mine pit 1	-	-
SW2	Mine lease area mine pit 2	--	--
GW3	Gaurala	N	upwind
GW4	Akapur	NE	downwind
GW5	Bhandewada	NE	downwind
GW6	Somnala	SE	downwind
GW 7	Lakhapur	NE	downwind
GW8	Wegaon	S	downwind

Water Quality Monitoring Stations on Toposheet 55 L/16

Table 15 : Surface and ground water quality

Parameters	Sampling Stations							
	SW-1 Mine lease area mine pit 1	SW2Mine lease area mine pit 2	GW3 Gaurala	GW4 Akapur	GW5 Bhandewada	GW6 Somnala	GW7 Lakhapur	GW8 Wegaon
Temperature, ^{0}C	27.1	27.0	27.5	27.0	27.0	27.5	28.0	27.5
pH	7.3	7.4	7.0	7.2	7.1	7.1	7.0	7.0
Conductivity, µS	374	452	343	358	664	1395	837	982
D.O.	6.9	6.9	6.5	5.9	6.2	6.8	6.9	6.5
TDS	187	204	171	179	332	1255	753	881
T. Alkalinity,$CaCO_3$	262	278	208	178	266	426	182	242
T. hardness $CaCO_3$	245	252	288	266	372	600	380	540
Ca^{++}	38	40	72	70	66	98	96	128
Mg^{++}	43	39	26	22	50	86	34	54
Na	32	28	71	85	92	9	48	75
Chlorides	16	18	156	181	231	71	26	28
Sulphates	15	12	16	20	69	100	66	105
Iron as Fe	Traces	0.1	<0.2	Traces	Traces	Traces	Traces	0.1
Ammonia	Traces	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Phosphate	Traces	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Fluoride	0.6	0.7	0.8	0.7	1.0	2.0	1.2	1.6
Bicarbonate	6.1	5.9	3.7	8.4	3.6	4.8	5.1	5.6
Chloride	0.5	0.5	6.5	2.0	0.7	0.7	1.7	1.0
Sulphate	0.7	0.6	1.4	2.0	1.2	2.1	0.8	0.5
Calcium	2.2	2.3	3.5	4.9	4.8	6.4	5.2	6.0
Magnesium	3.7	3.8	4.1	7.1	2.8	4.5	2.8	1.6
Sodium	0.9	0.6	4.0	0.4	2.1	3.3	0.4	0.5
Total ionic load	13.8	12.2	23.2	24.8	15.2	21.8	16.0	15.2

N.B: All values in mg/L except otherwise stated

a) Observations on water quality:

Ground water from limestone deposit areas is known to contain higher fluoride. Ground water in such areas is alkaline. There is isomorphic replacement of fluoride ions in geology by hydroxyl ions. Fluoride was more in the tube well/hand pump water samples.

Fluoride has to be removed from water if this water is to be used for drinking. Alum can be used for removing fluoride.

Surface runoffs during monsoon from lease will enter abandoned pits. Some water will evaporate and some can slowly percolate down.

Abandoned mine pit water quality meets the criteria A-II for surface water source viz. public water supply with approved treatment equivalent to coagulation, sedimentation & disinfection (Govt. of Maharashtra resolution no 2000/326/P.K .22/3 dated 15-07-2000). It would need disinfection if it is to be used for consumption. Suspended solids, if any will settle down during long detention in the pits.

b) Wastewater:

Dewatering of pits during mining will not be required. Sanitary wastewater will be generated. Toilet facility will be provided with septic tank and soak pit.

3.5 Noise environment:

3.4.1 There are no industrial noise sources. There is no habitation either over the lease. Ambient noise levels were measured at the ambient air monitoring stations. Day and night equivalent noise levels were measured using a standard noise meter. Observed values are given in **Table 16**.

Sources of noise would be during drilling and blasting. Three holes will be drilled in a day and there would be two blasts per week.

Table 16 : Noise levels L eq

Monitoring site	Lease	Gaurala	Akapur
Time	dB(A)	dB(A)	dB(A)
0600	38.2	37.8	44.3
0700	39.4	38.2	41.3
0800	37.1	38.4	43.6
0900	37.6	41.0	42.7
1000	39.3	42.3	47.9
1100	41.8	41.5	46.2
1200	42.2	49.7	48.3
1300	42.6	49.2	44.2
1400	41.5	42.5	41.7
1500	44.3	42.3	46.2
1600	42.7	39.4	47.1
1700	41.5	37.1	42.3
1800	39.2	36.6	44.5
1900	36.1	39.8	46.2

2000	38.0	41.2	47.7
2100	41.7	39.5	44.1
2200	42.3	38.3	46.2
2300	39.6	40.7	47.2
2400	38.4	43.1	47.2
0100	38.9	38.0	47.5
0200	38.2	39.3	44.6
0300	37.2	38.7	43.2
0400	39.7	35.6	44.8
0500	38.6	39.1	41.5
Range	36.1-44.3	35.6-49.7	41.3-48.3
Ld	40.7	43.2	45.5
Ln	39.7	39.6	45.0
Ldn	46.3	51.9	51.9

Table 16 : Contd ..

Monitoring site	Bhandewada	Somnala	Dongergaon
Time	dB(A)	dB(A)	dB(A)
0600	42.4	43.2	51.2
0700	44.6	45.8	53.7
0800	43.8	42.0	52.8
0900	47.2	42.3	47.6
1000	43.8	45.7	42.4
1100	51.2	44.2	49.8
1200	44.6	45.5	41.5
1300	55.4	42.9	47.6
1400	47.8	46.3	42.4
1500	51.2	44.0	49.3
1600	54.6	44.6	52.4
1700	52.8	42.2	55.6
1800	43.7	40.5	46.4
1900	41.4	42.2	44.8
2000	42.8	42.7	44.2
2100	38.6	40.3	38.2
2200	36.7	37.2	36.4
2300	42.4	37.5	32.3
2400	36.2	37.6	32.0
0100	38.6	38.0	33.2
0200	43.4	37.5	35.6
0300	40.6	38.2	40.2
0400	38.2	39.9	42.8
0500	44.1	40.8	47.0
Range	36.2-55.4	37.5-45.8	32.0-55.6
Ld	49.6	43.9	50.1
Ln	40.7	38.8	40.4
Ldn	50.1	46.4	50.2

Table 16 : Contd ..

Monitoring site	Wegaon	Kolgaon	Mangrul
Time	dB(A)	dB(A)	dB(A)
0600	40.7	45.6	37.6
0700	40.9	41.0	38.2
0800	45.5	46.8	38.8
0900	55.5	48.9	41.0
1000	57.2	55.5	42.1
1100	49.5	58.9	41.5
1200	48.7	60.3	49.8
1300	48.2	63.8	49.3
1400	49.7	51.5	42.1
1500	58.6	58.9	42.7
1600	59.5	50.9	39.6
1700	58.9	58.6	37.8
1800	56.5	41.6	36.2
1900	40.2	41.5	39.5
2000	41.5	43.0	41.4
2100	58.3	40.6	39.7
2200	51.6	43.2	38.9
2300	40.3	40.6	40.3
2400	41.5	40.9	43.6
0100	46.5	39.9	38.5
0200	41.5	40.0	39.8
0300	40.2	40.7	38.2
0400	41.5	40.1	37.5
0500	40.0	40.0	39.0
Range	40.0-59.5	39.9-63.8	36.2-49.8
Ld	54.4	56.4	43.3
Ln	50.2	40.8	39.9
Ldn	57.5	55.0	47.0

Nearest sanctuary Tipeshwar is at 49 km to SW and Tadoba is to NE at 60 km of the lease. Gaurala lease is not a part of any forest. There is no tree cover over the lease. There is no wild life within 10 km.

Seasonal shrubs occur over the lease during monsoon and dry out by month. Only thin soil cover is seen. Further, extraction of limestone will be from a pit.

A detailed survey is carried out for flora and fauna at Gaurala and peripheral area. Inventory of flora and fauna are listed below:

Lease Area :

Flora Observed	Tarota, Babool, Neem, Bor
Fauna Observed	Rats, dog, Grosshoppers, insects

Village Gaurala :

Flora Observed	Tarota, Bhoinim, Babool, Neem, Bor, Mango, Vad, Pimpal, Mahua, Khair, Jamb, Sitaphal, Karanj
Fauna Observed	Cow, Buffallow, goats, Rats, dog, Cat, Sasa, Rat snakes, Rohi, Grosshoppers, insects, Zural , Sparrow, cuckoo.
Crops as per villagers	Cotton, Toor, Soyabean, Chana & wheat (in traces as second crop where irrigation is available)

List as per Forest department for the area is enclosed at **Annexure 5**.

3.6 Socio economic environment:

Introduction

The study of socio-economic component of environment incorporates various facets, viz. demographic structure, availability of basic amenities such as housing, education, health and medical services, occupation, water supply, sanitation, communication and power supply, prevailing diseases in the region as well as features such as places of tourist attraction and monuments of archaeological importance. The study of these parameters helps in identifying predicting and evaluating the likely impacts due to project activity in the surrounding region.

In the 10 km radius study area map, total 1 district areas falling in the study area. From Maharashtra, Yavatmal district total 13 villages and 1 town are falling. On the basis of available census data, 2011 different aspects of socio economic condition of total 13 villages in the study area have been analyzed and surveyed villages are presented in **Table 17.**

3.6.1 Methodology used for the Field survey:

In order to access and evaluate likely impacts arising out of any development projects on socio economic environment, it is necessary to gauge the apprehensions of the people in the study areas.

3.6.2 Methodology applied for selection of sample & data collection:

The methodology which is applied for primary source of data collection i.e. gathering data through field survey for socio-economic environment is depicted below:

A Sampling Method

A judgmental and purposive sampling method was used for choosing respondents of various sections of the society i.e. Sarpanch, adult males and females, teachers, medical practitioners, businessmen, agriculture laborers, unemployed group etc. Judgmental and purposive sampling method includes the right cases from the total population that helps to fulfill the purpose of research needs.

B Data Collection Method

For the process of data collection through primary source farming methods are used:

3.6.3 Field Survey and Observation:

Field survey and observations is made at each sampling village and the socio-economic status of that region is studied. Visits are made at hospitals, primary health centers and sub-centers to know the health status of the region. Various Governmental organizations such as Statistical Department, Census Department visited to collect the requisite details of that region.

Table 17 : List of Sampling Villages

Sr. No	Villages
1.	Gawarala
2.	Chinchala
3.	Akapur
4.	Warud
5.	Salebhatti

3.6.4 Data Collection and Quality Assurance

The latest available data have been complied to generate the existing socio-economic scenario of the study area. Information on socio-economic profile was collected from the Primary Census Abstract CD 2011, including the population details of the region and Village Directory CD 2011, having the details of basic amenities available in the region. In the 10 km radius study area constitute Yavatmal district from Maharashtra.

3.6.5 Salient Observation of the Survey/ Study Area

- **House pattern:** It is notable that nearly 85% of the houses were semi pakka with good construction and others were pakka at survey area.

- **Employment:** Main occupation of the people in the study area was labour work and Business. And some of agriculture. The labours were getting daily wage in the range of Rs. 200-250, depending on type of work involved.
- **Fuel**: Most of the villagers use fire woods and LPG for cooking purpose
- **Main Crops**: The principal crops grown in agricultural farm were Jowar, Sugarcane & cotton Average crop productivity of cotton was 12-15 quintal per acre. Water from dug well and bore well and cannel was used for irrigation
- **Migration**: During survey it was found that local population were migrating for employment purpose. As well as others state peoples were came in that area for the labour work also.
- **Sanitation:** Toilet facility is one of the most basic facilities required in a house. The findings of the survey show that more than 90% of the households were having toilet facilities in their houses. There was open drainage system were seen at the surveyed villages. The overall condition of cleanliness was satisfactory.
- **Drinking Water Facilities:** Ground water is the major source of drinking water in the villages wherein hand pumps, tap water and dug wells are installed.
- **Education Facilities**: Most of the villages had education facilities in the form of Anganwadi and Primary Schools. Higher education facilities were available in the range of 5-10 km. Colleges and other diploma courses were available at district place.
- **Transportation Facility**: For transportation purpose Auto, Public and Private Bus services were available. Transportation facilities were frequently available in the study area and connecting major cities. Private vehicles like Bicycles & Motor Cycles were mostly used by villagers for transportation purpose
- **Road Connectivity:** Most of the roads were pucca and connecting to villages. Dambar and cement roads were commonly seen inside the villages
- **Communication Facilities:** For communication purpose mainly mobile phones, newspaper & post offices were seen in the villages.
- **Medical Facilities:** There were few health care facilities available in the study area. In some of the villages, Primary Health Sub-Centers were available. Hospitals and other better medical facilities were available in the range of 05-10 km at town/city place

- **Electricity:** All villages were availing electricity facility for all uses
- **Market Facility:** Study area was predominantly semi urban type. In villages, small shops were available for daily needs. Weekly market facility was available in some villages. Wholesale markets were available at town place.

3.6.6 Demographic Structure

Details regarding the demographic structure of the region were collected from Primary Census Abstract of Maharashtra State for the year 2011.

Demographic details such as number of persons per household, total area, population density, sex ratio, SC and ST population, and literacy rate and employment pattern are summarized. The salient observations are as follows:

3.6.7 Population Structure --- 5km

- As per 2011 Census, total population of the study area was 21925 out of which male population was 11413(52%) and female population was 10512(48%)
- Total number of households were 5119 with average occupancy of 4.28persons per household
- Total child (below 6 years of age) population was 2461(11%)
- Total SC population was 3205(15%) , ST population is 3772(17%) in the study area
- Sex ratio (number of females per 1000 males) of total population was 921.

Tehsil and village wise demographic details are given in **Table 18** and **Figure 14.**

3.6.8 Literacy Details

- According to census 2011, in the study area, overall literate population 16424(75%) and illiterate population was 5501(25%)
- Out of total literates, male literates were 9143(56%) and female literates were 7281(44%)
- Out of total illiterates, male illiterates were 2270(41%) and female illiterates were 3231(59%)

Tehsil and village wise literacy details are given in **Table 19** and **Figure 15.**

3.6.9 Employment Pattern

Economic resource base of any region mainly depends upon its economically active group i.e. the working population involved in productive work. Work may be defined as participation in any economically productive activity. Such participation may be physical or mental in nature. Work not only involves actual work but also effective supervision and direction of work. It also includes unpaid work on farm or in family enterprise.

There are different types of workers that may be classified as - those persons who had worked for at least six months or 183 days are treated to be Main Workers, on the other hand if person categorized as worker has participated in any economic or productive activity for less than six months or 183 days during the last one year is treated as Marginal Worker. Non–workers are those who have not worked any time at all in the year preceding the enumeration.

The workers coming under the main and marginal workers category are those involved in activities such as cultivation, agriculture, livestock, forestry, fishing, hunting, plantations, orchards and allied activities, mining and quarrying, manufacturing, processing, servicing and repairs in household industry, construction, trade and commerce, transport, storage and communication and other services.

- According to 2011 Census, total worker population in the study area was 10783(49%).
- Main workers were 9131(42%) and marginal workers were 1652(7%).Total non-working population was 11142(51%**)**

Tehsil and village wise details of employment pattern are given in **Table 20 and Figure 16.**

3.6.10 Main Workers Employment Pattern

Main workers are classified in four categories as cultivators, agricultural workers, household industry workers and other workers. As per 2011 Census, Out of total 9131 main workers in the study area, there were total 2539 cultivators (28%), 3179 agricultural workers (35%), 115 household industry workers (1%) and other workers 3298(36%). Mostly in main workers population other workers were highly found in study area.

Tehsil and village wise details of main workers employment pattern, is given **in Table 21** and **Figure 17.**

3.7 Infrastructure Resource Base

The infrastructure resources base of the eleven study areas with reference to education, medical facility, water supply, post and telegraph, transportation, communication facility, power supply and existence of nearest town etc. All infrastructure facility details of the study area is taken from district census handbook 2011of Maharashtra State. Details are presented in **Table 22.**

3.7.1 Cultural and Aesthetic Environment

There are no cultural and aesthetic areas in the study area.

Table 18 : Demographic details

Sr. No.	Town/ Village	Name	TRU	Household	Population			0_06 Child	SC	ST
					Total	Male	Female			
Tehsil- Maregaon, District- Yavatmal, Maharashtra										
1	543784	Gawarala	Rural	198	783	380	403	84	10	260
2	543778	Chinchala	Rural	185	782	399	383	93	22	112
3	543774	Akapur	Rural	160	639	331	308	80	85	235
4	543782	Warud	Rural	164	625	326	299	75	10	162
5	543799	Wegaon	Rural	677	2771	1412	1359	275	143	433
6	543764	Dongargaon	Rural	50	208	111	97	26	0	16
7	543797	Kolgaon	Rural	416	1614	832	782	172	144	174
8	543781	Salebhatti	Rural	194	727	365	362	89	12	498
Sub-total				**2044**	**8149**	**4156**	**3993**	**894**	**426**	**1890**
Tehsil- Wani, District- Yavatmal, Maharashtra										
9	543944	Bhandewada	Rural	240	1096	597	499	84	152	147
10	544100	Rajur (CT)	Urban	2318	10692	5639	5053	1257	2617	1294
11	543954	Nimbala	Rural	186	764	402	362	83	5	173
12	543955	Somnala	Rural	182	729	362	367	80	5	166
13	543961	Zarpat	Rural	148	492	256	236	63	0	101
Sub-total				**3074**	**13773**	**7256**	**6517**	**1567**	**2779**	**1881**
Tehsil- Arni, District- Yavatmal, Maharashtra										
14	543289	Mangrul	Rural	**1**	**3**	**1**	**2**	**0**	**0**	**1**
Grand-total				**5119**	**21925**	**11413**	**10512**	**2461**	**3205**	**3772**

Source: Primary census abstract 2011, Yawatmal district, State Maharashtra.

Table 19 : Literacy details

Sr. No.	Town/Village	Name	TRU	Literate			Illiterate		
				Total	Male	Female	Total	Male	Female
Tehsil- Maregaon, District- Yavatmal, Maharashtra									
1	543784	Gawarala	Rural	575	296	279	208	84	124
2	543778	Chinchala	Rural	594	328	266	188	71	117
3	543774	Akapur	Rural	474	270	204	165	61	104
4	543782	Warud	Rural	459	258	201	166	68	98
5	543799	Wegaon	Rural	2059	1141	918	712	271	441
6	543764	Dongargaon	Rural	165	92	73	43	19	24
7	543797	Kolgaon	Rural	1308	714	594	306	118	188
8	543781	Salebhatti	Rural	500	281	219	227	84	143
Sub-total				**6134**	**3380**	**2754**	**2015**	**776**	**1239**
Tehsil- Wani, District- Yavatmal, Maharashtra									
9	543944	Bhandewada	Rural	838	494	344	258	103	155
10	544100	Rajur (CT)	Urban	7906	4418	3488	2786	1221	1565
11	543954	Nimbala	Rural	637	353	284	127	49	78
12	543955	Somnala	Rural	543	292	251	186	70	116
13	543961	Zarpat	Rural	365	205	160	127	51	76
Sub-total				**10289**	**5762**	**4527**	**3484**	**1494**	**1990**
Tehsil- Arni, District- Yavatmal, Maharashtra									
14	543289	Mangrul	Rural	**1**	**1**	**0**	**2**	**0**	**2**
Grand-total				**16424**	**9143**	**7281**	**5501**	**2270**	**3231**

Source: Primary census abstract 2011, Yawatmal district, State Maharashtra

Table 20 : Employment pattern details

Sr. No.	Town/Village	Name	TRU	Total Workers	Employment Pattern		
					Main	Marginal	Non
Tehsil- Maregaon, District- Yavatmal, Maharashtra							
1	543784	Gawarala	Rural	481	442	39	302
2	543778	Chinchala	Rural	477	175	302	305
3	543774	Akapur	Rural	403	347	56	236
4	543782	Warud	Rural	394	377	17	231
5	543799	Wegaon	Rural	1646	1319	327	1125
6	543764	Dongargaon	Rural	133	121	12	75
7	543797	Kolgaon	Rural	1040	1012	28	574
8	543781	Salebhatti	Rural	454	454	0	273
Sub-total				**5028**	**4247**	**781**	**3121**
Tehsil- Wani, District- Yavatmal, Maharashtra							
9	543944	Bhandewada	Rural	454	427	27	642
10	544100	Rajur (CT)	Urban	4141	3348	793	6551
11	543954	Nimbala	Rural	552	517	35	212
12	543955	Somnala	Rural	316	308	8	413
13	543961	Zarpat	Rural	289	281	8	203
Sub-total				**5752**	**4881**	**871**	**8021**
Tehsil- Arni, District- Yavatmal, Maharashtra							
14	543289	Mangrul	Rural	**3**	**3**	**0**	**0**
Grand-total				**10783**	**9131**	**1652**	**11142**

Source: Primary census abstract 2011, Yawatmal, Maharashtra State

Table 21 : Main worker employment pattern

Sr. No.	Town/Village	Name	TRU	Main Workers Employment Pattern			
				Cultivator	Agriculture	Household	Other
Tehsil- Maregaon, District- Yavatmal, Maharashtra							
1	543784	Gawarala	Rural	144	251	1	46
2	543778	Chinchala	Rural	113	47	2	13
3	543774	Akapur	Rural	117	225	3	2
4	543782	Warud	Rural	207	152	1	17
5	543799	Wegaon	Rural	639	601	14	65
6	543764	Dongargaon	Rural	71	43	2	5
7	543797	Kolgaon	Rural	484	450	18	60
8	543781	Salebhatti	Rural	167	282	0	5
Sub-total				**1942**	**2051**	**41**	**213**
Tehsil- Wani, District- Yavatmal, Maharashtra							
9	543944	Bhandewada	Rural	120	119	3	185
10	544100	Rajur (CT)	Urban	137	364	63	2784
11	543954	Nimbala	Rural	111	373	7	26
12	543955	Somnala	Rural	107	182	1	18
13	543961	Zarpat	Rural	122	87	0	72
Sub-total				**597**	**1125**	**74**	**3085**
Tehsil- Arni, District- Yavatmal, Maharashtra							
14	543289	Mangrul	Rural	**0**	**3**	**0**	**0**
Grand-total				**2539**	**3179**	**115**	**3298**

Source: Primary census abstract 2011, Yawatmal, Maharashtra State

Table 22 : Infrastructure facilities details

Govt. Pre - Primary School (Nursery/LKG/UKG)	Private Pre - Primary School (Nursery/LKG/UKG)	Govt Primary School	Govt Middle School	Govt Secondary School	Private Secondary School
25	0	15	6	1	1

Community Health Centre	Primary Health Centre	Primary Heallth Sub Centre	Maternity And Child Welfare Centre	TB Clinic	Dispensary
0	1	3	1	1	1

Tap Water-Treated	Tap Water Untreated	Covered Well	Uncovered Well	Hand Pump	Tube Wells/Borehole	River/Canal
5	2	2	9	10	9	1

Open Drainage	No Drainage	Open Kuccha Drainage
5	8	5

Post Office	Sub Post Office	Post And Telegraph Office	Telephone (landlines)	Public Call Office /Mobile (PCO)
1	1	1	9	6

Public Bus Service	Auto/Modified Autos	Taxi	Black Topped (pucca) Road	Gravel (kuchha) Roads	Water Bounded Macadam	All Weather Road	Foothpath
5	11	1	12	8	10	13	13

Commercial Bank	Cooperative Bank	Agricultural Credit Societies	Self - Help Group (SHG)
0	0	1	6

Power Supply For Domestic Use	Power Supply For Agriculture Use	Power Supply For Commercial Use	Power Supply For All Users
13	12	12	12

Table 23 : Land use pattern (in Hectares)

Sr. No.	Sub District Name	Village Code	Village Name	Total Geographical Area (in Hectares)	Forest Area (in Hectares)	Area under Non-Agricultural Uses (in Hectares)	Barren & Un-cultivable Land Area (in Hectares)	Permanent Pastures and Other Grazing Land Area (in Hectares)	Land Under Miscellaneous Tree Crops etc. Area (in Hectares)	Culturable Waste Land Area (in Hectares)	Fallows Land other than Current Fallows Area (in Hectares)	Current Fallows Area (in Hectares)	Net Area Sown (in Hectares)
1	Maregaon	543784	Gawarala	839.59	0	29.6	15.95	27.6	0	38.7	7.74	0	720
2	Maregaon	543778	Chinchala	465.69	0	3.7	23.85	0	0	6.3	0	5.8	426.04
3	Maregaon	543774	Akapur	374.41	0	4.77	3.61	0	23.15	2.34	0	0	340.54
4	Maregaon	543782	Warud	646.13	206.79	6.75	8.17	0	0	21.2	3.22	0	400
5	Maregaon	543781	Salebhatti	558.22	252.58	7.88	5.36	0	0	15.25	7.15	0	270
6	Maregaon	543799	Wegaon	1642.95	0	9.13	12	5.81	10.15	28.81	20	18	1539.05
7	Maregaon	543797	Kolgaon	822.89	0	5.71	10.56	0	0	0	0	9.56	797.06
8	Maregaon	543764	Dongargaon	213.41	0	0.56	0	0.74	0	0	0	14.11	198
9	Wani	543944	Bhandewada	227.84	0	17.56	35.4	1.21	0	6.85	5.22	8.4	153.2
10	Wani	543954	Nimbala	517.83	63.55	20.78	0	15.47	0	12.33	0	69.7	336
11	Wani	543955	Somnala	505.96	0	2.92	30.04	0	0	43	0	0	430
12	Wani	543961	Zarpat	272.09	6.6	0	0	0	0	0	0	0	265.49
13	Maregaon	543289	Mangrul	1268.26	1221.95	0	0.85	0	0	1.46	0	0	44
				8355.27	**1751.47**	**109.36**	**145.79**	**50.83**	**33.3**	**176.24**	**43.33**	**125.57**	**5919.38**

Source: District census handbook 2011, Yavatmal, Maharashtra State

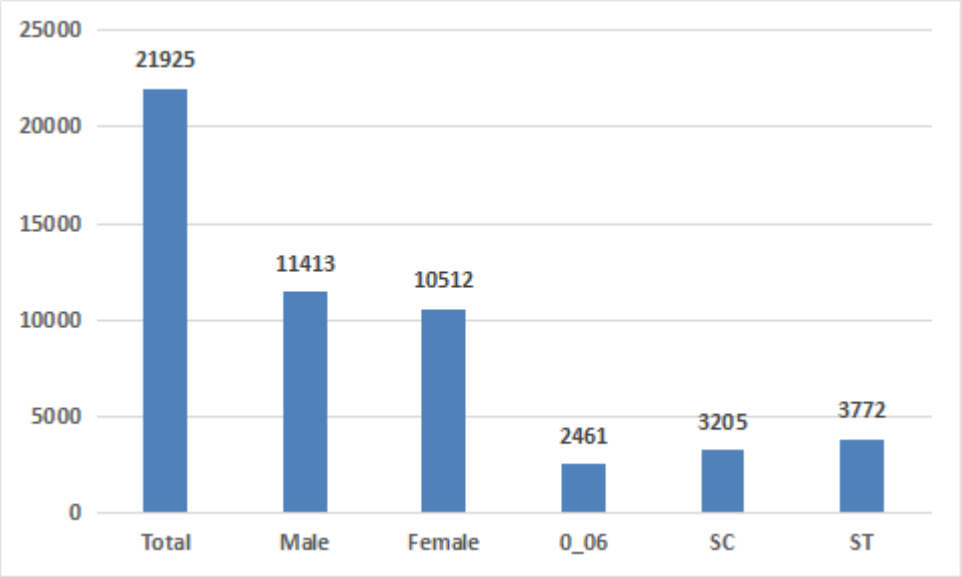


Figure 14 Population details

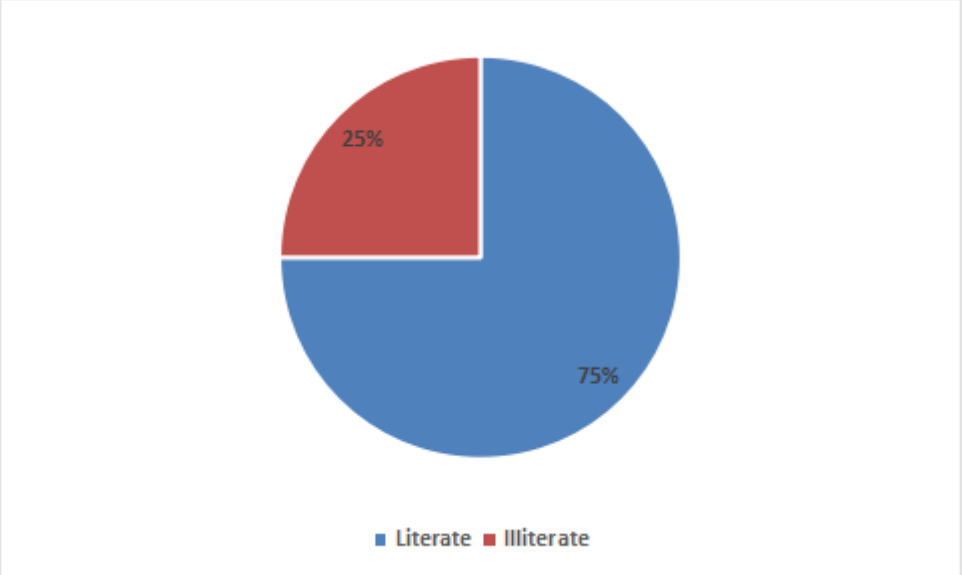


Figure 15 Literacy details

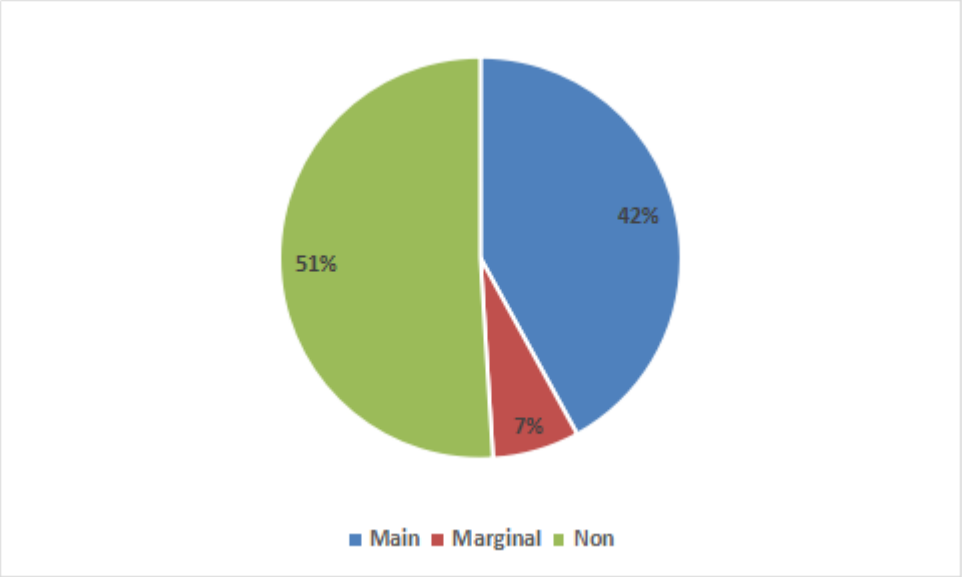


Figure 16 Employment pattern

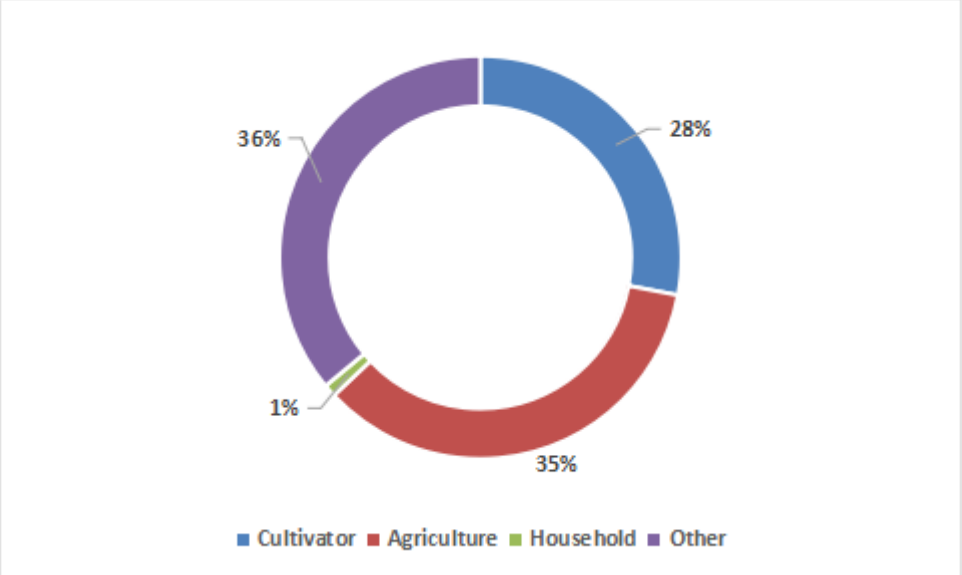


Figure 17 Main worker employment pattern

3.8 Waste generation:

3.8.1 Solid waste :

Mining plan was prepared for the period 2018-2019. Mineral rejects are estimated to be 24,998.6 T. Beneficiation is not planned. Rejects will be with CaO less than 34 per cent and subgrade material will contain CaO between 34 and 42 percent.

Rejects will be dumped at the dump site and its height will be 6 m. Dump site is within lease.

3.8.2 Leachates : Limestone rejects are not hazardous and do not contain any toxic elements. Leachates will be innocuous because all soluble material has been washed out.

3.8.3 Soil: Soil will not be generated.

3.9 Blasting Parameters :Specific inputs in the project:

Inputs will be with regard to blasting and blasting parameters will be decided as per norms by CMRS/DGMS so as to minimize noise and vibration. Gaurala village is at 1.5 km. Blasting will be in the pits below ground level.

PPV was calculated by the U.S. Bureau of Mines formula for peak particle velocity, $V= k\{(D/Q)^{1/3}\}^{-\beta}$, where Q is charge/delay(kg) , D is distance at which vibration is measured, V PPV in m/sec, k is coefficient depending on rock mass, β is slope of the best line of fit of V vs. $(D/Q)^{1/3}$. There would not be any adverse impact due to blasting because it is estimated that PPV will be 33.11 m/sec. at 20 m for charge of 13.75 kg proposed in the mining plan. Therefore, any structure like blaster's shed within lease will be unaffected. Also village Gaurala at 1.5 km will not be affected.

CHAPTER 4
Anticipated impacts and mitigation methods

4.1 Land environment:

4.1.1 Anticipated impact

i) On topography:

Lease area is 116.13 ha and is a part of plain topography. Land is not a grazing or forest or agriculture land. There are pits and dumps covering 55,205.05 m^2 and 29,568.13 m^2 respectively. There is no mining or agriculture over the land. There are no drains. Roads occupy 1.14 ha, plantation is over 0.29 ha and reject stacks/subgrade ore is over 0.2679 ha. Some structure is over 0.2238 ha.

Present appearance is shown below:

It is seen that there is no soil cover or agriculture. Such a pit will be deepened during the operational phase. Hence there would not be any adverse impact on a) topography/drainage or land use, b) agriculture etc.

This being an open cast mining proposal subsidence in the nearby area is not expected. Appearance will continue to be as it is.

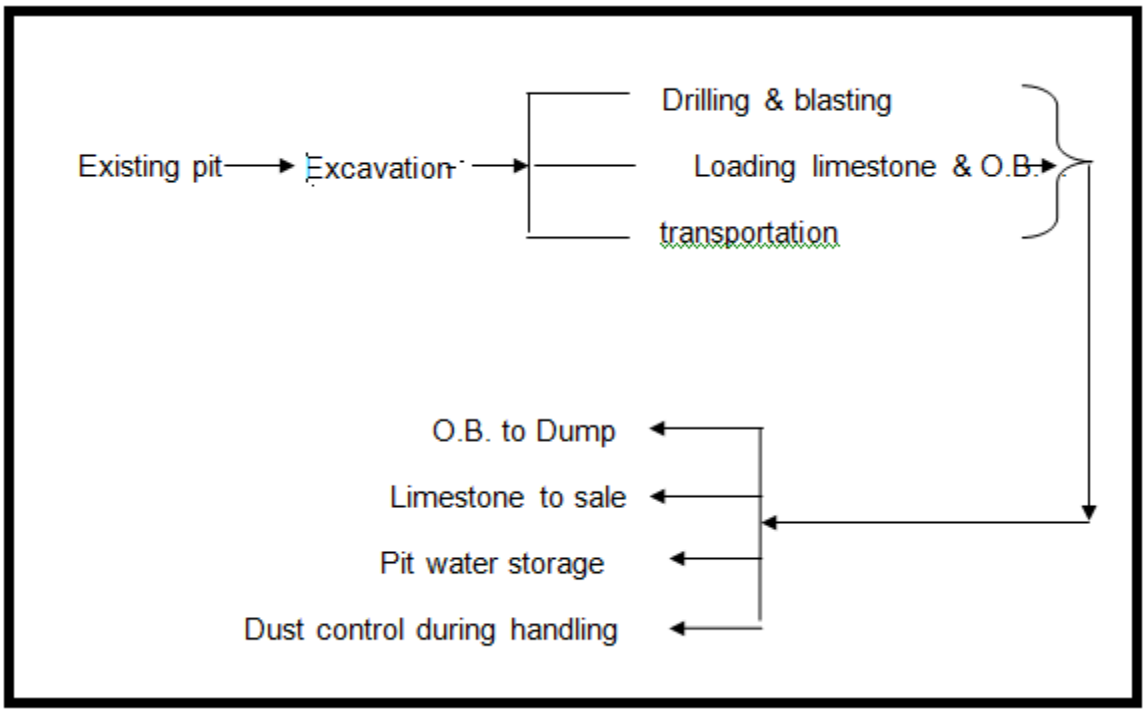
4.1.2 Mitigation:

Geological records on limestone deposits state that considerable limestone quantity would be left in the pit after extracting limestone as per approved mining plan which states that all recorded limestone deposits as 'proved mineable reserves' would not have been mined till the conceptual period of mine.

Hence backfilling or reclamation of the mined out area is not proposed. Mined out pit will be a "rainwater" storage structure till mining starts again. It is likely that recharge ground water aquifer takes place. Also reservoir water can be used for miscellaneous purposes like plantation, fish culture etc.

4.2 Air environment:

Flow chart for limestone production process at proposed at Gaurala lease is shown below:



4.2.1 Anticipated impact.

4.2.1.1 Emission inventory:

At present there is no activity over the lease. There are no sources of gaseous pollutants. Ore processing of limestone is not proposed. There will not be any crusher. Sulphur dioxide, nitrous oxides will not be contributed during these operations.

There is no fauna/flora over the lease.

4.2.1.2 Prediction of fugitive emissions in the project:

Flow chart for mining operations shows fugitive sources of particulate matter (PM). Emission factor approach was adapted to predict PM emissions during drilling, blasting, loading, transportation and unloading etc. Emission factor is statistical average of the rate at which a pollutant (PM) is released during mining activity.

Following factors suggested by USEPA for open cast mining were used:

Operation	Emission factor
Drilling	0.6 kg/hole
Blasting	formula 758{ $A^{0.8}$ / $W^{1.9}$. $D^{1.8}$ } kg/blast; A= area blasted, sq.m; D= depth of blast, m & W=% moisture
Loading	0.01kg/T
Movement on road	Macadamized
Emission factors for tipper trucks Pollutant Factor , g/km PM 0.75 SO_2 1.5 CO 12.75 HC 2.1 NOx 21.25	

Predicted emissions of PM on the day of blasting

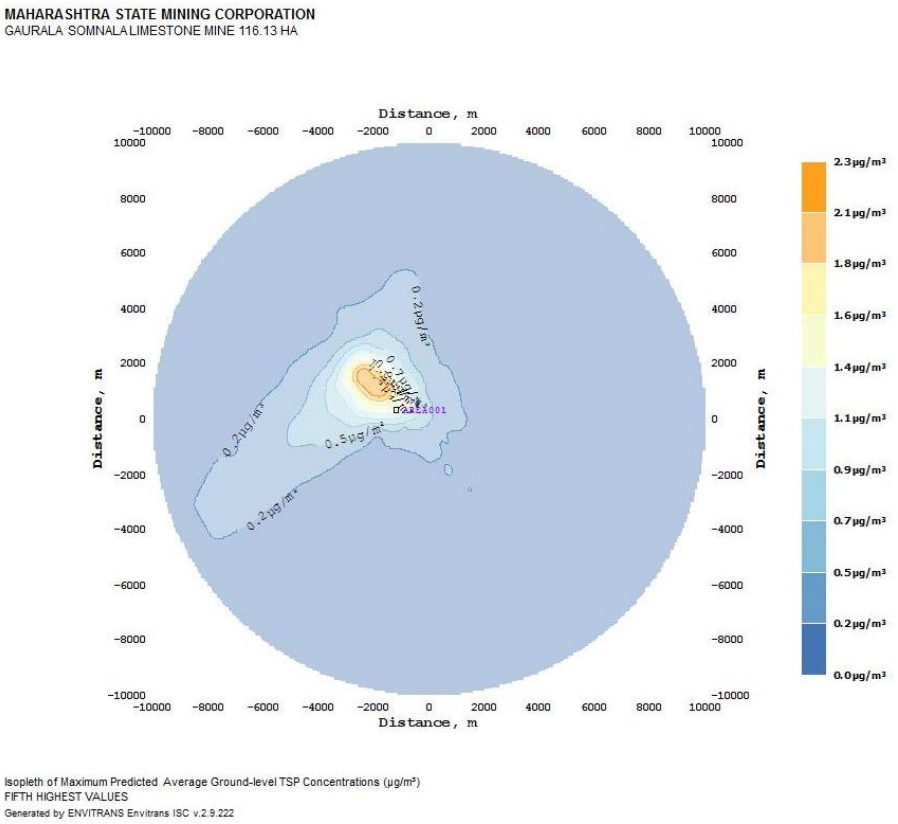
Activity	g/sec	kg/d= emission factor x level of activity e.g. handling 833 T limestone /day
Blasting	0.045g/sec ; area blasted A=18m^2**,** moisture W=10%;	3.9 (1.35 x10^{-4} kg)sec

	depth D=6.6 m	
Drilling,3 holes /day	0.0208 g/sec	3 holes/day x 0.6 kg (6.25 x10^{-5})kg/sec
Loading	0.039g/sec	32.487 g /day x 0.01(1.12 x 10^{-5}) /sec
Vehicles	traces	2.25 g/day from exhausts

These sources are located over lease measuring 24.54 ha. Cumulative emission "rate for the area source" would be (0.045+0.0208+0.039) 0.1048g/sec.

Dispersion rate for 'active mine lease area 24.54 ha' source would be 8.695x10^{-6} g/sec/m^2. Particulate matter would disperse from 'area source' in the downwind direction.

Iso-pleaths as per ISCST-3 model are given in **Figure 18** (Without Control Measures)



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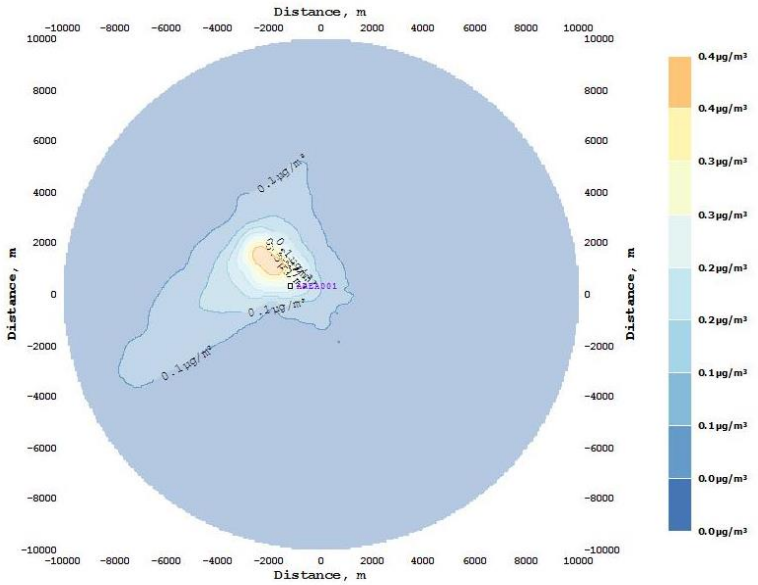
MAXIMUM AVERAGE GROUND LEVEL CONCENTRATION
MAHARASHTRA STATE MINING CORPORATION
GAURALA SOMNALA LIMESTONE MINE 116.13 HA

All coordinates are in meter
Concentrations are in µg/m³
Pollutant: TSP

SN	Predicted GLC	X	Y	Distance	Direction
1	2.26 µg/m³	-1732.1	1000	2000.0	WNW
2	2.12 µg/m³	-2598.1	1500	3000.0	WNW
3	2.03 µg/m³	-1532.1	1285.6	2000.0	NW
4	1.92 µg/m³	-2298.1	1928.4	3000.0	NW
5	1.88 µg/m³	-1879.4	684	2000.0	WNW
6	1.42 µg/m³	-866	500	1000.0	WNW
7	1.32 µg/m³	-1969.6	347.3	2000.0	W
8	1.28 µg/m³	-2819.1	1026.1	3000.0	WNW
9	1.24 µg/m³	-1285.6	1532.1	2000.0	NW
10	1.19 µg/m³	-766	642.8	1000.0	NW
11	1.16 µg/m³	-939.7	342	1000.0	WNW
12	1.12 µg/m³	-642.8	766	1000.0	NW
13	0.94 µg/m³	-2954.4	520.9	3000.0	W
14	0.93 µg/m³	-1928.4	2298.1	3000.0	NW
15	0.91 µg/m³	-2000	0	2000.0	W
16	0.91 µg/m³	-1000	0	1000.0	W
17	0.9 µg/m³	-984.8	173.6	1000.0	W
18	0.79 µg/m³	-500	866	1000.0	NNW
19	0.77 µg/m³	-1000	1732.1	2000.0	NNW
20	0.75 µg/m³	-3000	0	3000.0	W
21	0.64 µg/m³	-3758.8	1368.1	4000.0	WNW
22	0.64 µg/m³	-342	939.7	1000.0	NNW
23	0.64 µg/m³	-1500	2598.1	3000.0	NNW
24	0.63 µg/m³	-984.8	-173.6	1000.0	W
25	0.63 µg/m³	-4000	0	4000.0	W

With Control Measures

MAHARASHTRA STATE MINING CORPORATION
GAURALA SOMNALA LIMESTONE MINE 116.13 HA



Isopleth of Maximum Predicted Average Ground-level TSP Concentrations (µg/m³)
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  UAIRDATA   99991  2017
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**************************************
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OU FINISHED
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MAXIMUM AVERAGE GROUND LEVEL CONCENTRATION
MAHARASHTRA STATE MINING CORPORATION
GAURALA SOMNALA LIMESTONE MINE 116.13 HA

All coordinates are in meter
Concentrations are in µg/m³
Pollutant: TSP

SN	Predicted GLC	X	Y	Distance	Direction
1	0.45 µg/m³	-1732.1	1000	2000.0	WNW
2	0.42 µg/m³	-2598.1	1500	3000.0	WNW
3	0.4 µg/m³	-1532.1	1285.6	2000.0	NW
4	0.38 µg/m³	-2298.1	1928.4	3000.0	NW
5	0.38 µg/m³	-1879.4	684	2000.0	WNW
6	0.28 µg/m³	-866	500	1000.0	WNW
7	0.26 µg/m³	-1969.6	347.3	2000.0	W
8	0.26 µg/m³	-2819.1	1026.1	3000.0	WNW
9	0.25 µg/m³	-1285.6	1532.1	2000.0	NW
10	0.24 µg/m³	-766	642.8	1000.0	NW
11	0.23 µg/m³	-939.7	342	1000.0	WNW
12	0.22 µg/m³	-642.8	766	1000.0	NW
13	0.19 µg/m³	-2954.4	520.9	3000.0	W
14	0.19 µg/m³	-1928.4	2298.1	3000.0	NW
15	0.18 µg/m³	-2000	0	2000.0	W
16	0.18 µg/m³	-1000	0	1000.0	W
17	0.18 µg/m³	-984.8	173.6	1000.0	W
18	0.16 µg/m³	-500	866	1000.0	NNW
19	0.15 µg/m³	-1000	1732.1	2000.0	NNW
20	0.15 µg/m³	-3000	0	3000.0	W
21	0.13 µg/m³	-3758.8	1368.1	4000.0	WNW
22	0.13 µg/m³	-342	939.7	1000.0	NNW
23	0.13 µg/m³	-1500	2598.1	3000.0	NNW
24	0.13 µg/m³	-984.8	-173.6	1000.0	W
25	0.13 µg/m³	-4000	0	4000.0	W

4.2.2 Mitigation measures:

a) During mining

- Wagon drill of 100 mm diameter will be used. Wet drilling is proposed.
- Personal protection equipment will be issued to drillers.
- Road in lease will be macadamized.
- Rain water in abandoned pits will be used to moisten the ore during loading and transportation.
-Tipper trucks will be covered.

b) Green belt

- Existing trees over the lease are only babhool (acacia).
- Trees with wide canopy like gulmohor, neem will be preferred in the safety zone of the lease.

There is no soil over the lease to support trees. Weathered limestone will have to be mixed with organic matter e.g. domestic garbage from Gaurala village during plantation.

4.3 Water environment (surface & ground water) Impact on hydrology, alteration in natural drainage etc.

There is no river/drain flowing through the lease. There are a few pits in the lease some of them hold rain water depending on local runoffs. They have not intercepted ground water which is beyond 20 m below ground level. This water is unused.

Dewatering of working pits will not be required since the proposed pit has no water. Therefore ground water regime will be undisturbed.

Hydrology –

Average rainfall : 879.75 mm/year

Formation/aquifer	Basalt sand stone	46.95- 48 m bgl 86.25m bgl,
Seasonal water level	Basalt Sand stone	3.36 -14 m bgl 2.54 bgl
Discharge	5.94-14.5 L/sec.	
Zone	Basalt Sandstone	8- 19.6 m bgl 40.8- 87.0 m bgl

4.3.1 Anticipated impact :

There are no surface sources and ground water regime will not be altered during mining. There would not be any impact if stored rainwater in other abandoned pits is used for dust control.

4.3.2 Mitigation measures :

I. Entry to un-authorized persons will be prohibited.

II. Ground water in limestone deposit areas has to be verified for presence of fluoride. Fluoride is a health related parameter and is a bone seeker and is a cumulative element in physiology. It causes dental and skeletal fluorosis if its concentration in drinking water exceeds 1.5 mg/L.

III. A board would be put at mine that mine pit water is unfit for drinking. All well/hand pump water will be tested for fluoride and concentrations and suitability or otherwise will be displayed.

IV. In absence of alternate sources in nearby village, a fluoride removal plant will be installed at a hand pump for supply of drinking water. Treatment plant based on electrochemical method of treatment will be suitable.

V. Unused/abandoned pits will be converted in to rain water harvesting structures so that ground water recharge is assured.

VI. Mine water, if required for community drinking water supply ,will be treated by a water treatment plant with following flow sheet.

- Pump
- Alum dosing for fluoride removal
- Flash mixer
- Clari-flocculator
- Rapid sand filter
- Clear water tank storage after disinfection &
- Supply

4.3.3 Rainwater harvesting and plan for water conservation:

Ground water recharge rate by pit water is calculated as 1381 m^3/year. Considering average rainfall of 901 mm.

Rain water collected in abandoned part of the pit will be stored and used for dust control. Water quality will be similar to that encountered in existing tube wells i.e. it will be potable after disinfection. Ground water quality will be monitored quarterly as per CPCBs' notification 422(E) and drinking water parameters will be analyzed as per IS standards 10500 through accredited environmental consultant.

4.3.3.1 Rain water harvesting program:

Rainwater harvesting:

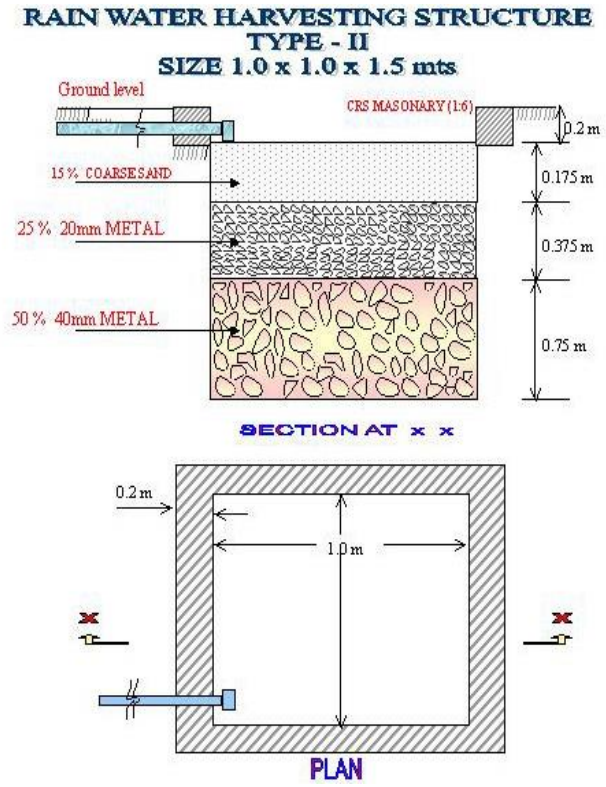
In the nearby villages open drains will be made to collect the storm waters for rain water harvesting. The designs and construction details that will be carried out is as follows:

Rain Water Harvesting Structure (RWHS) for Ground water Recharge:

Size: 1.0m x 1.0m x 1.5m

Construction Details of Rain Water harvesting system

Sr. No	Volume, Cu.m	Description
1	4.5	Excavation in Hard Gravelly and all available soils
2	2.25	65 mm metal
3	1.25	20 mm metal
4	0.675	Coarse sand
5	0.24	CRS masonry in 1:6 prop.
6	4.5	Carting of excavated earth for a lead of 8 km.



4.4 Noise environment:

4.4.1 Anticipated impact:

There are no industrial noise sources in the lease. There are no sensitive receptors like hospitals, schools, old people ashram etc. Only source during mine operation would be drilling and blasting. Drillers would be exposed to about 75-80 dB(A).

Blasting noise will be short lived. Levels are about 110 -120 dB(A) near the blast.

4.4.2 Mitigation:

In case of Gaurala blasting would be below ground level during day time. Pit-walls would absorb the noise waves. Hence, there would not be any adverse impact. Blasters would be given personal protection equipment.

There are no structures over the lease.

4.5 Biological environment:

4.5.1 Anticipated impact:

There is no sensitive fauna and flora or endangered species in 10 km radius of the lease. Lease is not a part of any forest area. This area is not known for its biodiversity.

4.5.2 Mitigation:

Project proponent will carry out plantation in scientific way. It will choose local species in consultation with local forest department. Secondly State Fisheries department will be requested to carry out fish culture in abandoned mine pits.

4.6 Socioeconomic & health:

4.6.1 Anticipated impacts:

There will not be any displacement on account of this project because land is in possession of MSMCL.

Land is non–agriculture and is not being put to any use.

4.6.2 Mitigation:

It is proposed to a) prefer employment to deserving local persons in mining related trades like loading/unloading of ore, its gradation, drilling etc., b) train residents of Gaurala for harvesting rain water, and sanitation practices etc., c) training in fish culture also is one activity which will be useful to local population.

4.7 Mine wastes:

4.7.1 Anticipated impacts:

There are already 11.265.97 m^3 of waste material stored in 13 old waste dumps in the lease. These dumps are of weathered limestone and some soil. Dumps' heights vary from 1.5 to 5.42 m.

They have not caused any adverse impact on prevailing mine lease environment. Leachates from dumps will not contain any toxic material.

4.7.2 Mitigation measures:

During proposed mining 9999.44 m^3 similar waste material viz. low grade limestone/rejects will be generated. It will be stored over 33508.28 m^2 area to a height of 6 m. Existing waste dumps area will be re-arranged and stabilized.

Physical stability of dump will be ensured since it will be designed as per I.B.M. norms.

A garland drain will be provided to collect runoff from the dumps.

Reclamation/closure plan:

All limestone would not have been exhausted at the end of mining plan and considerable limestone exists in the pit would be lost if mining is closed.

Reclamation or closure of mine will be planned only after all limestone is extracted/mined. There would not be any municipal waste since any residential colony is not proposed over the lease.

4.8 Occupational Health Hazards

Physical hazards:

1. Traumatic injury remains a significant problem and ranges from the trivial to the fatal. Common causes of fatal injury include rock fall, fires, explosions, mobile equipment accidents, falls from height, entrapment and electrocution.
2. Noise is almost ubiquitous in mining. It is generated by drilling, blasting, cutting materials handling, ventilation, crushing, conveying and ore processing. Controlling noise has proven difficult in mining and noise-induced hearing loss remains common.
3. Whole body vibration is commonly experienced whilst operating mobile equipment, such as load –haul –dump units, trucks, scrapers and diggers. This can cause or exacerbate pre-existing spinal disorders. Poorly maintained roads and vehicles contribute to the problem. Hand–arm vibration syndrome is also encountered with the use of vibrating tools such as air leg rock drills.

Biological hazards:

The risk of tropical diseases such as malaria and dengue fever is substantial at some remote mining locations. Leptospirosis and ankylostomiasis were common in mines, but eradication of rats and improved sanitation has controlled these hazards effectively.

Ergonomic hazards:

Although mining has become increasingly mechanized, there is still a substantial amount of manual handling. Cumulative trauma disorders continue to constitute the largest category of occupational disease in mining and often result in prolonged disability. Broken ground is often encountered and can cause ankle and knee injuries.

Psychosocial hazards:

Drug and alcohol abuse has been a difficult issue to deal with in mining. Debate continues about how to measure psychophysical impairment. Nevertheless, mining operations commonly require the measurement of urinary drug metabolites and breath or blood alcohol on pre-employment and following accidents. Remote locations are common in mining with mine employees separated from their families and communities during work periods.

Expatriate placements are also common in mining and the associated psychosocial hazards have been reviewed recently. Unfortunately, fatal and severe traumatic injuries continue to occur in mining and often have a profound impact on morale. Post-traumatic stress disorders sometimes develop in witnesses, colleagues and managers. Registered managers often feel personally responsible for such injuries, even in the absence of negligence, and face the ordeal of government inquiries and legal proceedings.

Mitigation measures:

Mining activities are associated with dust emissions and can be hazardous to workers particularly during drilling, blasting and loading. Also crusher-area may have dusty environment. Associated health hazards will be respiratory/ pulmonary and some injury to eye may be likely. Therefore health status before commencement of mining, record of each worker will be maintained. A competent doctor shall be engaged for bi-annual health evaluation during pre-mining and mining period. Data will be accrued and achieved as per the format mentioned below.

Name :

Present occupation: farmer, miner, any other specified.

Post applied for: miner, driller, blaster, sorter/hand picking, loaders etc.

Past history; pneumonia, T.B, HIV, asthma, cough, alcohol, tobacco, etc.

Blood pressure, pulse:

Eye sight:

Hearing test:

Chest X –ray:

Others (If any):

Occupational safety and health program is given in **Table 24.**

Table 24: Occupational Safety and Health Program

Program	Definition	Study Elements
Surveillance	Assessment for the condition of Occupational Hygiene and Factors in the organization with interpretation of health data.	Availability and use of PPE
		Appropriate workers exposure to the work zone
		Injury and illness
		Improvement of data collection and surveillance system
Health Effect Study	Determination of the health outcomes of plant related activities through study of individual workers.	Epidomology
		Toxicology
		Physical exposure (Heat, Noise, Vibration, Radiation, Others.)
Exposure Assessment Study	Measurement of the extent of exposure to Workers	Assessment tools
		Assessment strategies
Intervention Study	Study comprises of all approaches to identify and control accidental risks	Control system (Engineering, Administrative and PPE)
		Emergency preparedness and response (Communication, Escape ways, Others)
		Work Organization (Innovative work schedule, Plant characteristics, etc.)
		Policy and regulation
		Community participation

		Diffusion and dissemination (Effectiveness training and information)
Maintenance of data related to OH and S	Log book of workers health and available infrastructure	Training program
		Computer program
		Reports and papers
		Workshop and seminars

4.9 Traffic Density :

An addition of 14 tippers of 25 tonners over 12 hours working will be added to an existing traffic of 26 Heavy vehicles per hour.

1 tipper per hour will ply over the village road over the span of 250 m to connect to Wani-Yavatmal Highway.

Anticipated Impact:

Village road may be damaged due to plying of 25 tonner tipper over a span of 250 m on village road.

Here it is important to mention that State Highway is capable to accommodate the incremental traffic density of 14 tippers a day.

There may be spillage of minerals which will yield dust.

There may be hazard of traffic accidents.

Mitigation Measures:

Traffic will be regulated using flagging. All tippers will be covered with tarpaulin to avoid spillage of mineral. All tippers will be periodically checked to confirm exhaust norms. Traffic signage's will be provided. A flagger will manage traffic at convergence point of village road and Highway to avoid possible mishap. Village road will be strengthened.

4.10 Soil:

Anticipated Impact:

Already 82766.41 m^3 of waste material is stored in 14 old waste dumps in the lease. These dumps are of weathered limestone and some soil. Dumps' heights vary from 1.5 to 5.16 m.

They have not caused any adverse impact on prevailing mine lease environment. Leachates from dumps will not contain any toxic material.

During proposed mining 9999.44 m^3 similar waste material will be generated. It will be stored over 33508.28 m^2 area to a height of 6 m. Existing waste dumps over the area will be re-arranged and stabilized. Physical stability of dump will be ensured since it will be designed as per I.B.M. norms.

Mitigation Measures

A garland drain will be provided to collect runoff from the dumps. Also a storm water drain of 1m x 1mx1m will be provided along the lease area so that runoff during rainy season cannot flow in to nearby area. This water will be collected in one of the existing eight pits and utilized during mining operations.

There will be no potential of eroding in to and degrading any surface water.

Sum up:

- Mining activity will lead to creation of pits of 25501.39 m^2 with ultimate depth of 14 m.
- Creation of pits due to mining is irretrievable.
- Environmental impacts can be managed by implementation of management plan.
- Mining activity will create direct and indirect employment.
- Though interception of ground water is not involved, rain water accumulated will lead to recharge ground water.
- Mining activity will lead to creation of greenbelt.
- Up to some extent socioeconomic needs of village will be addressed through project activities.

CHAPTER 5

ANALYSIS OF ALTERNATIVES

5.1 Present proposal is for limestone mining from a 116.13 ha lease. Lease has been granted by State Government to MSMCL who have acquired 24.54 ha land and mining will be restricted to this area. MSMCL officials are professional mining personnel. As per regulations they had engaged a RQP to prepare a mining plan for approval by I.B.M. No choice for alternative for site is available due to identification and allotment of mineral lease to project proponent by State Government.

5.2 Both MSMCL officials and the RQM have inspected the site and studied the occurrence of limestone deposits at the site and other geological features in order that limestone could be mined safely, economically and in an environment friendly manner. Mapping of limestone was completed. Then section wise details of reserves were worked.

There is no mining over the lease at present.

It was decided that it would be appropriate to opt for "Category A mechanized method" which would enable economical mining @ 833.3 TPD or 2,49,986 TPA.

5.3 Other alternatives for method of opencast mining like manual mining would be unscientific and not suitable. Use of surface-miner equipment is not possible at Gaurala deposits.

CHAPTER 6

ENVIRONMENTAL MONITORING PROGRAMME

6.1 Environmental monitoring programme:

6.1 Water quality monitoring: It has been decided that present lease being a limestone deposit area water quality in pits, nearby wells and hand pumps will be regularly monitored for fluoride levels. Uses of water from these sources will be verified and mitigation measures will be implemented accordingly.

Water quality measurement will be monthly.

Particulate matter: PM emissions from fugitive sources will be quantified by measurement of ambient air quality during drilling and blasting by a competent agency. Dust control by water sprinkling will be ensured.

AAQ monitoring in lease will be regular.

Noise: A standard noise meter will be issued to mine manager who will measure noise levels and maintain a record.

Vibration analysis will be entrusted to CMRS, Nagpur via mine manager.

Health record of miners will be entrusted to a registered medical doctor. He will maintain record as per industrial/occupational hygiene requirements.

6.2 Programme:

Table 25 : Monitoring Programme

Env. Segment	Parameter	Frequency
Water quality	IS 10500	Monthly
G.W. table	Fluctuation in monsoon & post monsoon period	May & October
AAQ	Particulate matter PM_{10} & $PM_{2.5}$	Monthly
Noise	Equivalent noise levels	During drilling & blasting
Vibration	before starting mining	During blasting

		each month
Health	Pulmonary function, eye sight, audiometry, B.P., etc.	Annual record
Plantation		Annual survival rate
Data analyses	Efficiency of mitigation measures	Monthly

Monitoring and analysis will be carried out as per monitoring and testing methods prescribed by MoEFCC & CPCB.

Year	No. of trees	Location	Peripheral lease in ha.	Along haul road Area in ha.

A budget of 2.00 Lac is earmarked for the activity.

6.3 Plantation programme:

About 100 saplings will be planted in 7.5-10 m wide safety zone. One cubic metre pits will be made along the border and will be filled with local soils from lease. Refuse or garbage will be added as per availability. Growth in the first year will be observed. Species will be chosen from the following and depending on availability.

Common name	Botanical name
Nagamali	Millingtoniasp
Sunari	Cassia fistula
Kanchan	Bahuniavariegata & accuminate
Pink cassia	Cassia nodasa & javanca
Bahada	Ficusglomrata

Greenbelt programme :

Provision for green belt development @ about 75-100 trees will be made. A budget of Rs. 20,000/- is earmarked for implementation of plantation programme**.**

CHAPTER 7

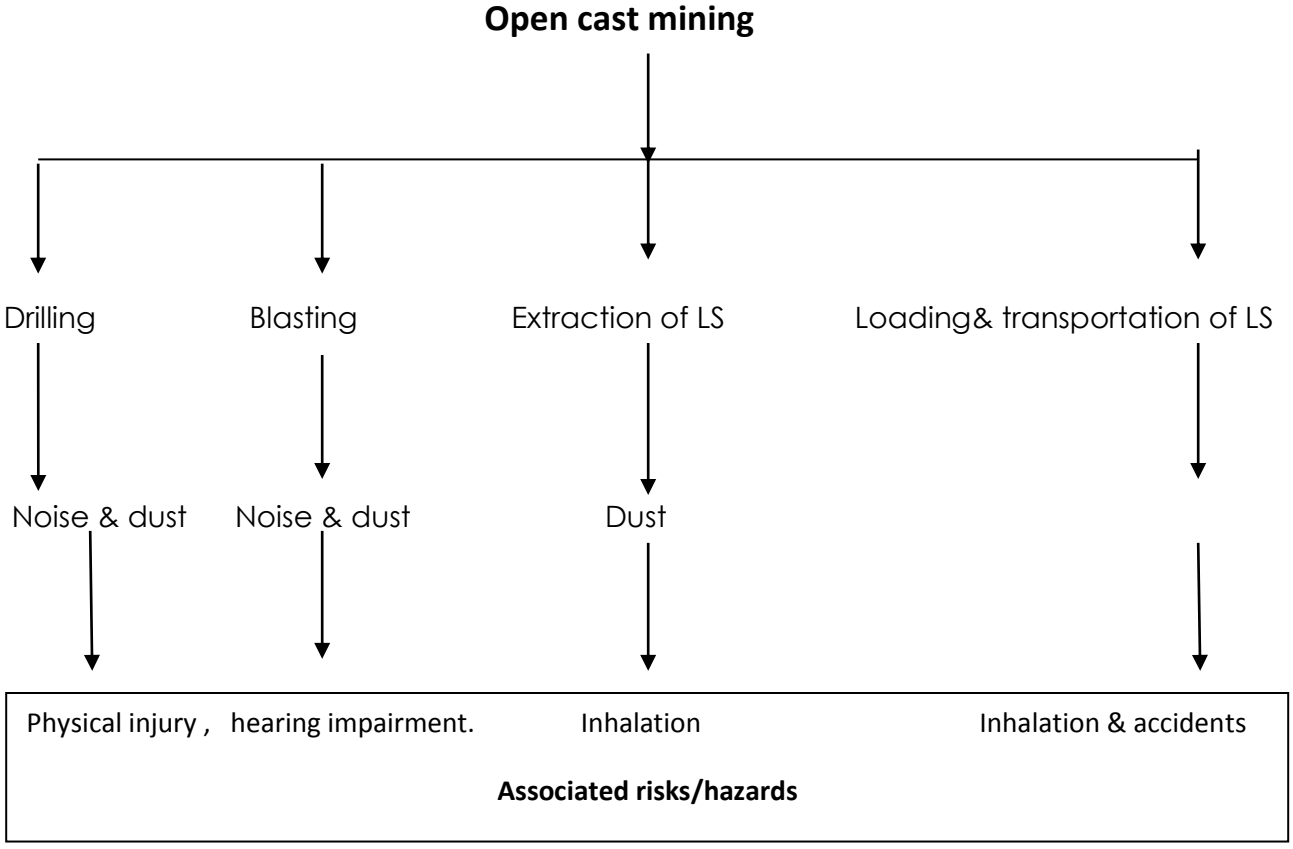
ADDITIONAL STUDIES

7.1 Public consultation:

This is a draft EIA report written with respect to TOR issued following EAC meeting on 19th September 2018. This report will be circulated prior to public hearing under the auspices of MPCB. Issues raised during public hearing will be addressed in the final EIA/EMP report.

7.2 Risk assessment & Disaster management plan:

7.2.1 Risks associated with mechanized open cast mining of limestone (LS) at Gaurala will be as shown below:



7.2.2 Safety measures

Blasting :

Shots will be muffled to avoid flying fragments beyond 10 m. Adequate warning by siren to reach 500 m. Protective shelters for workers, first aid facilities, dining facility with treated R.O. water, use of PPE will be compulsory.

Precautions during thunder sky conditions.

Transportation:

Transportation will be by direct supervision and control of management. Traffic signs will be installed at every turning of the road. Proper instructions will be given to drivers while reversing the vehicles.

Inhalation:

Use of PPE will be compulsory.

7.2.3 Emergency response system

A cell will be formed at MSMCL for disaster management. Mine manager will be the Secretary. He will formulate a policy for the purpose of a) emergency steps at site during lightening conditions, b) deal with accidents, c) labour unrest etc.

7.3 Natural resource conservation:

It has been decided to postpone mine closure plan in order to be able to conserve the limestone underneath the proposed depth in the present mining plan.

7.4 R & R, Corporate Social Responsibility action plan:

7.4.1 Expectations of the land losers from the 24.54 ha which is about 16 ha have been collected during land purchase. Main expectation was regular income from salary of selected persons or their siblings. Copies of 7/12 are included in **Annexure 6.**

7.4.2 Corporate Social Responsibility:

MSMCL is a State Government undertaking. It will abide by all requirements of social responsibility. A few are mentioned below:

- Supply of fluoride –free drinking water-

  Fluoride removal plants based on electrochemical method will be installed on fluoride infested hand pumps in nearby villages within 5 km radius. Approximate cost is Rs.50,000/- per unit.

- MSMCL will organize awareness camp amongst villagers to educate people on i) health - impact of excessive fluoride in water, ii) need for sound sanitation practice particularly with regard to water quality and sullage/gray water management, iii) narrow bore sewerage in suitable habitations etc. Appropriate allocation of funds on yearly basis will be requested from Government.

CSR - funds

Activity	Anticipated funds/year Rs
Supply of fluoride free water	Treatment plant -Rs 50,000-75,000/-/unit
Awareness camps	Rs. 50,000
Narrow bore sewerage	Survey- @ 6000/- /ha Execution Rs 6000/- per connection
Training for fish culture in pit water	Rs. 25,000

N.B. Costs are indicative

7.4.3 Corporate Environmental Responsibility:

As per the provisions of MOEFCC office memorandum F-22-65/2017IA.III dated 1.05.2018, a corporate environmental responsibility is spelled as.

A] Fund earmarked : 2 % of Capital Investment i.e. Rs 90,000.00

This budget is earmarked for carrying out sanitation work and solid waste management for the village Gaurala principally by project proponent which will be modified depending on suggestions received during public hearing in detail.

CHAPTER 8

PROJECT BENEFITS

8.1 Project benefits

● Limestone deposits at Gaurala are of good quality. It has high percentage of CaO and low silica. These have been lying unused for various reasons. There is market for limestone in and around deposits. Land is non- productive and unsuitable for agriculture.

Therefore mining will be in the interest of State revenue and of the people around. Direct and indirect employment to locals is assured.

● Improvement in Physical Infrastructure:

1. Implementation of time bound corporate social responsibility will lead to improve drinking water facility of the village.
2. A provision for implementation of fish culture activity will lead to improve the skills of local needy people.

● Employment :

Direct employment to 47 local people are expected. Out of which 40 will be semiskilled and unskilled. Indirect employment to 20 people is expected.

● Land Use

There will be a small change in Land Use of the area due to the proposed mining activity. But project activity will lead local socioeconomic benefit which will attract change in land use by developing small shops in the area, may be chance of developing better household infrastructures etc.

CHAPTER 9

ENVIRONMENTAL COST BENEFIT ANALYSIS

9.1 Environmental cost benefit

Lease is a waste land. It has no tree cover. There are abandoned pits. Water in pits is used. Therefore there would not any damage to environmental quality. Initiation of mining by MSMCL will improve revenue to the State without deterioration in environmental quality. On the contrary population in nearby villages will become aware of importance of potable water quality and sanitation.

Openings for indirect employment to locals in plantation, fish culture are possible. Additional water supply source in form of pit-water, recharge of aquifer is likely. Project will ensure plantation of trees. Apart from it project authority will assist any village biodiversity conservation plan to conserve village flora, faunas etc. Detailed budget is earmarked for the activities in Chapter 10.

CHAPTER 10

ENVIRONMENT MANAGEMENT PLAN

10.1 Administrative/ Technical Management

General Manager (Operations) MSMCL Nagpur will be the technical head for mining operations. There would be an independent mine manager at Gaurala. Mine manager will be qualified mining engineer who will be aware of prevailing environmental laws besides mining rules according to which open cast mining, management of wastes, water will have to be carried out.

Mine manager will adhere to the monitoring schedule included in Chapter 6. He will organize regular monitoring of ambient air and water quality and ensure enforcement of mitigation methods for control of particulate matter, blasting as per DGMS norms.

Mine manager will keep a record of ground water–fluoride concentration in Gaurala village. Awareness camps on water quality and sanitation will be organized by mine manager.

A competent agency will be retained for environmental monitoring and for reports thereof which will be forwarded to MPCB/MoEF as per EC conditions.

10.2 Dust Control Plan

Dust is the major pollutant generated from the mining operations. Dust would be generated during mining, handling and transportation of the material. The environmental control measures, which are being taken and proposed to control the fugitive emissions released during the ore production are given below:

Mines

- Dust masks will be provided to the workers especially working in the screening operations.
- Excavation operations are proposed to be suspended during periods of very strong winds
- Emission from exhaust of HEMM will be checked periodically to ascertain the engine efficiency

- Constant monitoring through fixed respirable dust sampler and random sampling through personal samplers shall be done to take corrective action.
- Plantation of wide leaf trees and tall grass along approach roads and on safety barrier zones will be done to suppress the spread of airborne dust.
- Afforestation over the inactive waste dump surfaces and over the backfilled areas shall be done
- Periodic health checkup for the workers as per OHS plan.

Haulage

- All haul roads will be maintained regularly.
- Asphalting of main approach roads will be carried out to reduce dust generation
- Water will be sprayed regularly on the roads by using water tankers. Carrying out experiments on dust suppressants and wetting agents and implementing the same if feasible.
- Regular and periodic maintenance of deployed machineries, to reduce smoke emission.
- Development of green barriers along the main approach roads.
- Avoiding over filling of tippers and consequent spillage on the roads
- Ore carrying trucks will be effectively covered by tarpaulin to avoid escape of fines to the atmosphere.
- Air quality will be regularly monitored both in the core zone and the buffer zone.

A summary of control measures is given below.

Table 26 : Summary of Control Measures

Sl. No	Dust Source	Control measure
1	Haul Road	• Compaction, gradation and drainage on both sides and development of green belts • Proper maintenance. • Regular water spraying. • The main approach roads to the mine and waste dumps will be black topped
2	Truck Movement	• No overloading of trucks. • Trucks to be covered with tarpaulin while transporting ore. • Enforcing speed limit.

		• Regular monitoring of the exhaust
3	Waste dumps	• Peripheral dumping and compaction. • Plantation on dumps. • Water spraying on dump roads.
4	Mine pit	• Regular water spraying in working areas. Nine Rain guns will be used • Proper maintenance of HEMM • Proper height exhaust chimney to air compressor • Green belt surrounding ML • Simultaneous backfilling of completely worked out portions and plantation over the backfilled surface. • Provision of dusk masks.

Location and specification details of rain guns are provided as below:

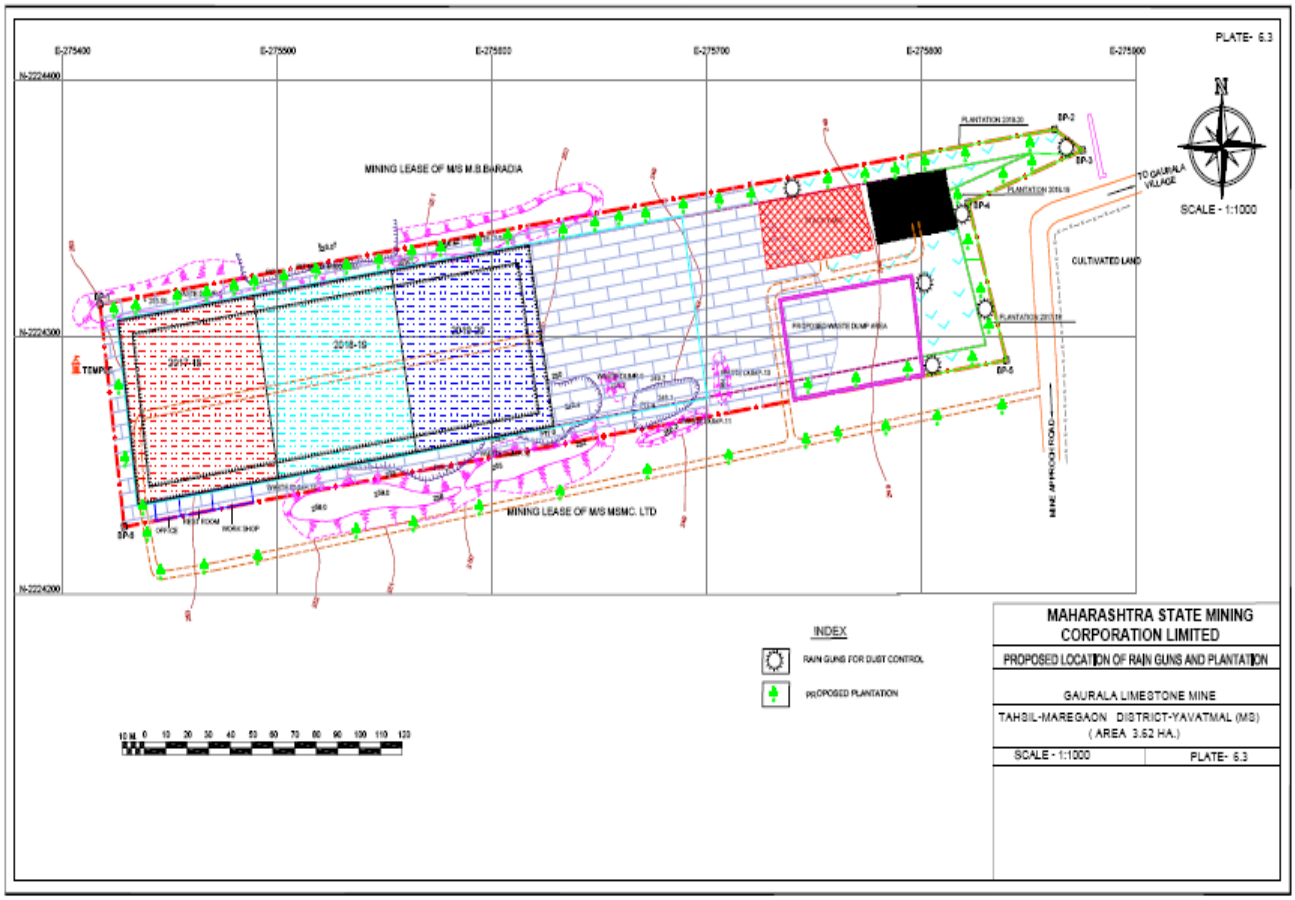
Table 27 : Proposed Location of Rain Guns

Proposed Location	No. of Rain Guns
Along village Road	03 nos. (Including entry point of Mine)
Along Waste Dump	01 no.
Along Reject Dump/Stock	01 nos.

Specification for proposed rain guns are as below

- Nozzle will be in 1 ½" BSP female thread connection.
- Will satisfy IS 12232 standards.
- Part circle and full circle adjustment.
- Adjustable jet breaker to fulfill uniform rain fall.
- Trajectory angle 23^0

Figure 19



Location of Rain Guns and Plantation

10.3 Village Biodiversity conservation plan:

A detailed survey is carried out for flora and fauna at Gaurala and peripheral area. Inventory of flora and fauna are listed below :

Lease Area :

Flora Observed	Tarota, Babool, Neem, Bor
Fauna Observed	Rats, dog, Grosshoppers, insects

Village Gaurala :

Flora Observed	Tarota,Bhoinim, Babool, Neem, Bor, Mango, Vad, Pimpal, Mahua, Khair, Jamb, Sitaphal,Karanj
Fauna Observed	Cow, Buffallow, goats, Rats, dog, Cat, Sasa, Rat snakes,Rohi, Grosshoppers ,insects, Zural , Sparrow, cuckoo, crow
Crops as per villagers	Cotton, Toor, Soyabean, Chana & wheat (in traces as second crop where irrigation is available)

List as per Forest department for the area is enclosed at Annexure 5.

Village Biodiversity Conservation Plan:

A program will be run by project proponent as a part of Environmental Responsibility based on villagers participation to conserve existing biodiversity of the village area.

Methodology :

A chawadi discussion will be called every year and village volunteers will be chosen. A list of species for plants, animals, birds, fishes according to their current status and importance will be prepared. This list will totally based on villagers observations. Some scientific inputs required will be shared from experts if required and species population will be conserved, farmed as per action plan suggested below.

Action Plan :

List of Species for conservation for a year will be tabulated as

Name of Species	Scientific Name	Villagers Observation	Expert Opinion (if required)	Whether Endangered or not

Analysis will be done as

Name of Species	Root Cause species in danger	Suggested Response	Action Plan

Action plan for Floral Species :

1] Awareness in local people for species to be conserved through meetings, volunteers & posters.

2] Target for plantation including identification of sites like road boundaries, waste lands, burial/crematorial area, grampanchayat, school peripheries etc.

3] Daily watering facility to planted saplings.

4] It will be ensured that no sapling will be planted below age of 2 years.

Action Plan for Fauna Species :

1] Awareness in local people for species to be conserved through meetings, volunteers, posters.

2] Awareness regarding importance of fauna in villagers. Advocacy to have good policy to save faunas.

3] Fauna habitat conservations.

4] Expert advice for conservation.

All these efforts will develop a culture to conserve village biodiversity apart from water, soil conservation.

10.4 Cost for implementation of Environmental Management Plan

Table 28 : Budget for implementation of Environmental Management Plan

Activity	Capital investment, Rs in lakhs	Recurring Budget , Rs.
Pollution control	1.0	100,000
Monitoring	-	100,000
Green plantation	0.50	20,000
Health & safety	0.50	50,000
CSR	0.75	80,000
CER	0.90	--
Total	Rs 3.65	Rs. 3,50000

CHAPTER 11

SUMMARY & CONCLUSION

11.1 Overall justifications for the project

Area around Gaurala village is known for limestone deposits which have remained unused. MSMCL has decided to mine the quality limestone and make it available to the industries near Chandrapur and Nagpur. MSMCL has other mining projects in the area and hence mining will be economical.

RQP has prepared a mining plan to suit the type of deposits which are in the existing pits and can be mined by category "A" mechanized mining method without altering any tenet of environment. Lease is not a part of any forest or agricultural land or residential area. It has been purchased by MSMCL.

Mining rate will be 833.3 tonnes per day with drilling and blasting. Blasting will be thrice a week as per DGMS norms.

11.2 Proponent and the need for the project

- Government of Maharashtra has granted a 116.13 ha limestone lease for 20 years to Maharashtra State Mining Corporation Limited (MSMCL) vide order no MMN1006/C.P. 2065/INd-9 dated Oct. 06, 2006.
- Maharashtra State Mining Corporation Limited (MSMCL). MSMCL is a limited company fully owned by Govt. of Maharashtra.
- The lease is near village Gaurala in Maregaon tehsil in Yavatmal district and MSMCL is in possession of land required for mining.
- Latitude and longitude of the lease are 20^0 05' 01 - 20^0 06' 19.1"N and 78^0 51'1.1"- 78^0 51'30.7" E respectively.
- Lease land is in possession of the project proponent. It is not a part of any forest. There is no agriculture on the land.
- EAC issued TOR following a presentation.
- M/s Enviro Techno Consult Private Limited of Nagpur, retained by MSMCL carried out environmental monitoring as per MOEF & CC norms for summer season (March to May, 2018).

- Present summary is of the EIA report as per TOR and has been prepared as per generic structure given in Appendix III of EIA notification 2006 by MOEF & CC.
- It is proposed to mine limestone @ 833.3 tonnes per day by Category 'A' mechanized open cast mining method.
- Limestone mining is important to Vidarbha region since there is perennial demand for quality limestone within economic distance from Gaurala. There are about 15-20 industries e.g. M/s Maharashtra Electro Smelt, M/s VinarIspatLtd., M/s Grace Industries, M/s ChamanMetallics in Chandrapur and M/s NECO, M/s FACOR etc.in Nagpur, which need limestone as raw material.
- This is a new project & RQP has prepared the mining plan for mining of limestone by maintaining proper safety standards.
- Life of the mine is 6 years, mineable reserves being 148,09,942 tonnes of proved category.

11.3 Lease details:

- Total reserves – 171,29,942 T; Proved – 148,09,942 T ; Blocked – 4,29,471 T
- Ore quality, % : CaO- 51.26- 51.54 ; SiO_2 - 2.64- 2.90 & MgO - 1.25 - 1.45
- Geology: Area around Gaurala comprises of limestone and dolomitic limestone of Penganga group (Precambrian age), sandstone and shales of Gondwana group, clay and sandstones of Lameta group and Deccan lava.
- Limestone is spread over central and north part of the lease. It is jet black to grey in colour, fine grained and compact. It occurs in bedded form and is intermixed with magnesium limestone. Veins of calcite are seen. Ore dolomite is not seen.
- There are no sensitive receptors or ecosystems or water bodies in core and buffer zones.
- Village Gaurala is at 1.5 km.
- There is no agriculture on the lease.
- There are no eco sensitive areas within 10 km of the lease. There are no industries within this area.
- Present appearance of lease is shown below:

11.4 Proposed mining

- Existing pit no.1 in the 24.54 ha part of the lease will be deepened and will join Pit no 2.
- Mechanical open - cast mining of limestone - @249,986 T / year
- Bench height will be six m and width will exceed 6 m. Three holes will be drilled in a day and three blasts per week are planned. Depth of each 100 mm -Ø hole will be 6.6 m and in burden it will be 2.5 m, space between two holes will be 3 m.
- Tree felling will not be required as area is devoid of any trees.
- Backfilling is not proposed. Limestone deposits continue below.
- There is no soil cover over the lease

11.5 EIA monitoring:

- Monitoring was conducted as per standard terms of reference for the mining industry and those mentioned in the TOR issued by EAC. Area within 10 km radius from the lease was examined. Baseline ambient air quality, information on hydrogeology and water quality, land use etc. was collected as per MOEF&CC criteria.
- Probable impacting activities during proposed mining activity have been identified. Particulate matter emissions were predicted by emission factor approach for drilling, blasting, transportation activities etc.
- Impacts on water quality quantity impacts were considered. Impact on land use, socio economic status during project activities have been considered.

11.6 Base line environmental quality:

- Air : There are no industrial gaseous -emission sources. Predominant wind directions in the order are NE(17%),ENE, S, &SSW(12 %). Average wind speed is 0.9 m/sec. Calm conditions are 10.4 per cent.
- Atmospheric stability class at Gaurala is “moderately unstable to slightly unstable” during the day. Area has rural setting.
- Concentrations of criteria pollutants were found to be well below National air quality criteria viz. PM_{10} ,$PM_{2.5}$, SO_2 and NOx which are respectively 100,60,80 and 80 µg/m^3.
- Predominant emissions during open cast mining project would be generate particulate matter likely during drilling, blasting, loading/unloading and transportation activities .

- Noise: Ld, Ln &Ldn values were typical of rural background

	Lease dB(A)	Gaurala dB(A)	Somnala dB(A)
Ld	51.1	52.7	53.4
Ln	52.4	53.8	52.3
Ldn	58.2	59.7	59.1

Sources of noise would be during drilling and blasting. Three holes will be drilled in a day and there would be three blasts per week.

- **Water**: There are no surface sources viz. rivers/ lake in the lease except abandoned pits occupying 55,205.05 m^2. Ground water from limestone deposit areas is known to contain higher fluoride. Ground water in such areas is alkaline. There is isomorphic replacement of fluoride ions in geology by hydroxyl ions. Fluoride was more in the tube well/hand pump water samples. Fluoride has to be removed from water if this water is to be used for drinking. Alum can be used for removing fluoride.

Surface runoffs during monsoon from lease will enter abandoned pits. Some water will evaporate and some can slowly percolate down.

Abandoned mine pit water quality meets the criteria A-II for surface water source viz. public water supply with approved treatment equivalent to coagulation, sedimentation & disinfection (Govt. of Maharashtra resolution no 2000/326/P.K .22/3 dated 15-07-2000). It would need disinfection if it is to be used for consumption. Suspended solids, if any will settle down during long detention in the pits.

Ground water potential : Maregaon region:

Net G.W. availability	5009.5 ha. m
Draft for irrigation	747.0 ha. m
Domestic	153.71 ha. m
Gross draft	901.43 ha. m
Provision for 2025	307.24 ha. m
Water availability for irrigation	3885.69 ha. m
G.W. development	(307.24/5009.50)x 100= 17.99%
Category	safe

Ground water recharge rate by pit- water was calculated using relation area x annual rainfall x coefficient 0.3 for limestone. It is likely to be 1381.5 m^3 /year. Water table is at 20 m below ground level near the lease.

Area under pits at the end of ensuing period would increase from 55,205.05 m^2 to 80,706.89 m^2. Ground water table will not be intercepted.

Dewatering of pits during mining will not be required. Sanitary wastewater will be generated. Toilet facility will be provided with septic tank and soak pit.

Soil:

Soil cover over the lease is scanty. Soils of area beyond lease are part of Wani series of soils. Ground water table is more than 10 m. Soils are moderately well drained and have slow permeability. Parent material is basalt /weathered basalt. Common use is for cotton and vegetation is neem, palas, mahua etc. Yield of cotton as per present farming practice by most land owners is one to two quintals per ha.

Biological :

Nearest sanctuary Tipeshwar is at 49 km to SW and Tadoba is to NE at 60 km of the lease. Gaurala lease is not a part of any forest. There is no tree cover over the lease. There is no wild life within 10 km. Seasonal shrubs occur over the lease during monsoon and dry out by month. Only thin soil cover is seen. Further, extraction of limestone will be from a pit. Only domesticated animals are seen.

Waste :

During mining plan period (2018-2019) mineral rejects are estimated to be 9999.44 m^3. Ore with CaO less than 34 per cent CaO will be rejects and subgrade material will contain CaO between 34 and 42 percent. Beneficiation is not planned.

Rejects will be dumped from east of the dump site and its height will be 6 m. Dump site is within lease. Leachates from limestone dumps will be innocuous . Soil will not be generated.

Blasting details:

Permission for blasting from DGMS has to be sought from DGMS before active mining has commenced. Mining cannot start and blasting cannot be carried without permission from DGMS. There would be three blasts per week. Blasting will be in the pits below ground level.

Peak particle velocity (PPV) will be calculated by U.S. Bureau of Mines formula for PPV

$V= k\{(D/Q)^{1/3}\}^{-\beta}$, where Q is charge/delay(kg) , D is distance at which vibration is measured, V is PPV in m/sec, k is coefficient depending on rock mass, β is slope of the best line of fit of V vs. $(D/Q)^{1/3}$. It is estimated that PPV will be 33.11 m/sec at 20 m for charge of 13.75 kg proposed in the mining plan. Therefore, any structure like blaster's shed within lease will be unaffected. Also village Gaurala at 1.5 km will not be affected.

11.7 Impacts

Land: There is no soil cover or agriculture. There are pits and dumps covering 5505.05 m^2 and 29568.13 m^2 respectively. There is no mining or agriculture over the land. One pit will be deepened during the operational phase. Hence there would not be any adverse impact on topography/drainage or on land use or agriculture. Appearance will continue to be as it is. Geological records on these limestone deposits state that considerable limestone quantity would be present in the pit after extracting limestone as per approved mining plan. Proved mineable reserves would not have been mined till the conceptual period of mine. Hence backfilling or reclamation of the mined out area is not proposed. Thus, mined out pit will be a " rainwater" storage structure till mining starts again. It is likely that recharge ground water aquifer takes place. Also reservoir water can be used for miscellaneous purposes like plantation, fish culture etc.

Already some waste material is stored in old waste dumps over the lease. These dumps are of weathered limestone and some soil. Dumps' heights vary from 1.5 to 5.42 m.

They have not caused any adverse impact on prevailing mine lease environment. Leachates from dumps will not contain any toxic material.

During proposed mining similar waste material will be generated. It will be stored within 24.54 ha plot of the lease and height will be 6 m . Physical stability of dump will be ensured since it will be designed as per I.B.M. norms. A garland drain will be provided to collect runoff from the dumps.

Land use in lease at the end of mining plan period

Land use	Area, m^2
Pit area	80,706.89
Waste dump area	33,508.28
Structure	2,286.92
Reject area	6,505.4
Plantation	3,176.16
Road	11,815.06
Stack yard area	3,493.98
Total	1,41,492.69

Air :

Ground level concentrations as per NCST model for dispersion of air pollutants for lease area source show that there would not be any adverse impact on ambient air quality .

Water :

There would not be any impact on aquatic environment including hydrology, drainage or quality because a) there is no drain in the lease, b) ground water table will not be intercepted, c) dewatering of pits will not be required and d) limestone pit water is suitable for irrigation. Regular monitoring for fluoride content is required.

Noise:

Sources during mine operation would be drilling and blasting. Drillers would be exposed to about 75-80 dB(A). Blasting noise will be short lived. Levels are about 110 -120 dB(A) near the blast. In this case blasting would be below ground level during day time. Pit-walls would absorb the noise waves. Hence, there would not be any adverse impact. Blasters would be given personal protection equipment. There are no structures over the lease

Biological:

There is no sensitive fauna and flora or endangered species in 10 km radius of the lease. Lease is not a part of any forest area. This area is not known for its biodiversity. Project proponent will carry out plantation in scientific way. It will choose local species in consultation with local forest department. Secondly State Fisheries department will be requested to carry out fish culture in abandoned mine pits.

Socioeconomic & health: There will not be any displacement on account of this project because land is in possession of MSMCL. It is proposed to a) prefer employment to deserving local persons in mining related trades like loading/unloading of ore, its gradation, drilling etc. , b) train residents of Gaurala for harvesting rain water, and sanitation practices etc., c) training in fish culture also is one activity which will be useful to local population.

Summary of measures to control of emissions :

Activity	Mitigation measures
Hole drilling	Wet drilling; Ø-100mm,Depth-6.6m in limestone, 2.5 in burden at 3m spacing
Blasting -Small Ø holes in weathered LS -Large Ø holes in LS	as per D.G.M.S norms Powder factor-0.49m^3 0.49 m^3 in 0.375 kg explosive, hence 1kg explosive =1.27 m^3 49.5 m^3 in 13.75 kg explosive, = 9 tonnes
O.B. generation no top soil	13,024 m^3 and will be stored over 2489 m^2, height- 6m.
Transportation	Will be in covered -tipper trucks (2 no.) over macadamized roads.
Plantation	Over 900-1000 $m^2$and in safety zone
Dewatering of pits	Ground water table will not be intercepted thus dewatering of pits will not be required. Rain water in pits will be used for dust control.

11.8 Monitoring schedule :

Env. segment	Parameter	Frequency
Water quality	IS 10500	Monthly
G.W. table	Fluctuation in monsoon & post monsoon period	May & October
AAQ	Particulate matter PM_{10} & $PM_{2.5}$	Monthly
Noise	Equi. noise levels	During drilling & blasting
Vibration	before starting mining	During blasting each month
Health	Pulmonary function, eye sight, audiometry,B.P., etc.	Annual record
Plantation	Survival	Annual survival rate
Data analyses	Efficiency of mitigation measures	Monthly

11.9 Plantation :

Saplings will be planted in 7.5-10 m wide safety zone. One cubic metre pits will be made along the border and will be filled with local soils from lease. Refuse or garbage will be added as per availability. Growth in the first year will be observed. Species will be chosen from the following and depending on availability.

Common name	Botanical name
Nagamali	Millingtoniasp
Sunari	Cassia fistula
Kanchan	Bahuniavariegata & accuminate
Pink cassia	Cassia nodasa&javanca
Bahada	Ficusglomrata

11.10 Safety measures:

Blasting : Shots will be muffled to avoid flying fragments beyond 10 m. Adequate warning by siren to reach 500 m. Protective shelters for workers. Use of PPE will be compulsory.

11.11 Corporate Social Responsibility:

A few are mentioned below:

- Supply of fluoride –free drinking water-

Fluoride removal plants based on electrochemical method will be installed on fluoride infested hand pumps in nearby villages within 5 km radius. Approximate cost is Rs.50,000/- per unit.

- MSMCL will organize awareness camp amongst villagers to educate people on i) health - impact of excessive fluoride in water, ii) need for sound sanitation practice particularly with regard to water quality and sullage/gray water management,
  iii) narrow bore sewerage in suitable habitations etc. Appropriate allocation of funds on yearly basis will be requested from Government.

CSR - funds

Activity	Anticipated funds/year Rs
Supply of fluoride free water	Treatment plant -Rs 50,000-75,000/-/unit
Awareness camps	Rs. 50,000
Narrow bore sewerage	Survey- @ 6000/- /ha Execution Rs 6000/- per connection
Training for fish culture in pit water	Rs. 25,000

N.B. Costs are indicative

11.12 Economics of project

Limestone deposits at Gaurala are of good quality. It has high percentage of CaO and low silica. These have been lying unused for various reasons. There is market for limestone in and around deposits. Land is non- productive and unsuitable for agriculture. Therefore mining will be in the interest of State revenue and of the people around. Direct and indirect employment to locals is assured.

Lease is an unused land with no tree cover. There are abandoned pits. Water in pits is used. Therefore there would not any damage to environmental quality.

Initiation of mining by MSMCL will improve revenue to the state without deterioration in environmental quality. On the contrary population in nearby villages will become aware of importance of potable water quality and sanitation.

Openings for indirect employment to locals in plantation, fish culture are possible. Additional water supply source in form of pit-water, recharge of aquifer is likely.

CHAPTER 12

DISCLOSURE OF CONSULTANTS

1.	Name of consulting firm	Enviro Techno Consult Private Limited 68, Mahakali Nagar 2, Near Manewada Square, Nagpur 440 024, Phone : 9595220277/288 E mail : etcpl@envirotechnoconsult.in
2.	Details Recognition & Accreditation	Enviro Techno Consult -Established -1993 Enviro Techno Consult Private Limited –January 2014 An ISO 9001-2008, 14001-2015 & OHSAS 18001-2007 certified company An In house R&D unit – recognized by Dept. of Scientific & Industrial Research (DSIR), Dept. of Science &Technology, GOI, New Delhi. Accredited by QCI/NABET vide their letter dated June 29, 2017 for Mining, Power Plant, Cement, Textile etc.

Enviro Techno Consult Private Limited (ETCPL), erstwhile an Enviro Techno Consult, Nagpur was established in the year 1993.

- It was recognized as Consultant by Maharashtra Pollution Control Board.
- As an R & D unit, ETC has offered feasible solutions on a few aspects of environment management to M/s Ispat Group of Industries Ltd., Kalmeshwar, M/s Indorama Synthetics Ltd., Nagpur, M/s Indoworth, Nagpur, M/s DCL Polyesters Ltd., (now IPCL), Mouda, M/s Murli Industries Ltd,, Nagpur, M/s Gujarat Ambuja Ltd., Kodinar, M/s Hindustan Lever Ltd. (Now Hindustan Unilever Ltd.), Chhindwara etc., MSEB (MAHAGENCO) etc.
- Laboratory practices in these industry were upgraded under the supervision of Enviro Techno Consult particularly with respect to water & wastewater analysis.
- ETC has conducted a number of training programmes for engineers and chemists of MAHAGENCO on various topics of environment management.
- ETC has been appointed by Govt. of Maharashtra, as consultant for their fluoride removal projects in rural Maharashtra and also in Jalmani programme of the State.
- Training programmes were conducted for chemists of MAHAGENCO which included modern trends in water & wastewater analyses, interpretation of results of analysis etc.

LIST OF EXPERTS INVOLVED

Functional area experts:

Sr. No.	Functional areas	Name of the expert/s	Involvement (period and task**)	Signature and date
1	AP	V.P. Thergaonkar *Prashil P. Shukla	TOR granted 18.05.2018 to till date Collation and interpretation of base line data by concerned FAE	
2	WP	V.P. Thergaonkar Amol Zilpe*	TOR granted 18.05.2018 to till date Collation and interpretation of base line data by concerned FAE	
3	SHW	V.P. Thergaonkar Amol Zilpe*	TOR granted 18.05.2018 to till date Collation and interpretation of base line data by concerned FAE	
4	EB	P.S. Umredkar Ashish Shukla*	TOR granted 18.05.2018 to till date Collation and interpretation of base line data by concerned FAE	
5	HG	T. Rajasekhar *A.P. Saraf	TOR granted 18.05.2018 to till date Collation and interpretation of base line data by concerned FAE	
6	GEO	T. Rajasekhar *A.P. Saraf	TOR granted 18.05.2018 to till date Collation and interpretation of base line data by concerned FAE	
7	AQ	V.P. Thergaonkar Prashil P. Shukla*	TOR granted 18.05.2018 to till date Collation and interpretation of base line data by concerned FAE	
8	NV	Ashish P. Shukla	TOR granted 18.05.2018 to till date Collation and interpretation of base line data by concerned FAE	

*One TM against each FAE may be shown.

**Please attach additional sheet if required.

2.2 Enviro Techno Consult Private Limited, Nagpur

The ACO has been assessed as per Version 3 of the Scheme. Result of the 1st Surveillance assessment (SA) is given below :

2.2.1 Category of Approval :

The ACO has scored more than 60% marks hence is upgraded with Cat. A.

2.2.2 Scope of Accreditation:

Sl. No.	NABET Scheme Sectors	Sector Description	Cat.	Sector No. (MoEFCC Notification dated Sep. 14, 2006 and Amendments)
1	1#	Mining of minerals including Open cast/ Underground mining	A	1 (a) (i)
2	4	Thermal Power Plants	A	1 (d)
3	9	Cement Plants	A	3 (b)
4	19	Textile- cotton and manmade fibres	B	5 (d)

Note (#) : Approval of this sector subject to coverage of significant functional area Vibration and SC as per Scheme for Accreditation of EIA Consultant Organizations- Version 3.

2.2.3 Sectors approved for EIA Coordinators (ECs)

a.Assessed as per SA norms – for ECs approved earlier:

S.No	Name	Earlier approval status (in IA/subsequently)		Approval status (after SA)		Remarks
		Sectors approved	Cat.	Sectors approved	Cat.	
In-house						
1	Ashish P Shukla	1 OC#	B	CA	B	None
2	V.P.Thergaonkar	1#	A	CA	A	None
		4	A	CD	A	
		9	A	CA	A	
		19	B	CD	B	
3	Prashil P Shukla	1 OC#	B	CA	B	None
Empanelled						
4	T R Rajsekar	1 OC#	A	CA	A	None

Note (#): Candidates are approved, ACO would be permitted to take up EIAs in this sectors on complying the requirements of approved significant functional area Vibration and SC as per Scheme for Accreditation of EIA Consultant Organizations- Version 3.

b. Assessed as per IA norms – for Approved ECs and Fresh ECs proposed :

Sl. No.	Name	Functional Area			Cat.	Remarks
		Applied	Recommended	Approved		
In-house						
1	Ashish P Shukla	1*#	Yes	Yes	B	*For opencast only.
2	Prashil P Shukla	1*#	Yes	Yes	B	*For opencast only.

CHAPTER 13
REMEDIATION PLAN

13.1 Introduction:

Chapter 3 of this report includes prevailing environmental quality data within buffer zone of this lease. Data in Chapter 3 is in terms of a) ambient air quality, b) water quality & water quantity, c) land use within the lease, d) noise levels etc. Prevailing environment in Guaral-Somnala was critically examined to see if there has been damage to the ecosystem at these villages. This status of environmental quality is resultant of all activities in vogue and those in the past which was mining only.

Gaseous, surface water, noise are dynamic systems whereas land, groundwater are not. Impacts on air, water, noise during mining since 1984-2011 have been temporary. Impacts appear to have been long term on terrestrial environment.

Mining was carried out over some part of the lease since 1985 and continued till 2011. There is no mining at all since 2011. There is no mining related activity at present.

Environmental setting in terms of a) land features, b) water bodies, c) human habitation, d) micro meteorology, e) human activities like industries, f) biota etc. were the same as they are today.

Agriculture if any, prior to 2011, must have been dependent on rain in absence of irrigation facilities and water availability. Area is semi-arid and has been known for limestone outcrops which still exist over the lease. Its designated use is limestone/dolomite mining as per State Government decision.

Soil is continues to be calcareous and has been formed due to weathering of limestone. It is suitable for only cotton. Only sparse bushes/scrub appear at places where thin soil cover exists.

There are no endangered floral or faunal species. There is no habitation over the lease. Villages Gaurala and Somnala have continued to exist since long. There are no water bodies.

Ecological changes due to mining in 1984-2011 period:

Land : Mining since 1985 to 2011 seems to have caused changes only in the surface features only in the lease area. There are 14 existing dumps. Total area is 2.9568 ha. Area of dumps varies between 0.014 to 0.48 ha, height varying from 1.51m to 5.8 m. Dumps consist of low grade limestone and rejects. Dumps have physical stabilized and untoward incident has been recorded. Limestone and rejects are insoluble and are not associated with any hazardous materials. Leachates follow the gradient and are probably stored in abandoned pits. Area under pits is 5.52 ha. Plantation area is about 0.3 ha.

Air quality : Air quality has remained unabated, serene and is without any pollutants. Mining in the past has not affected air quality. Stability class is highly to moderately "unstable" and there no built up of pollutants. Topography is flat without any undulation. There is no industrial or human activity.

Water quality : Quality of water particularly the ground water in lime stone-bearing area has fluoride as an inherent problem. Mining activity *per- se* has nothing to do with fluoride ion concentration. Dissolution of fluoride in more alkaline water is a natural process.

Blasting : During mining has not caused any detrimental effect on habitation and there are no structures nearby the mined area and in Gaurala and Somnala villages.

Socio economic : Changes during mining have been i) revenue to Government, ii) employment to a few local persons and reduced dependency on agricultural income, and iii) losing land by local land owners.

Above description on status of environment/ecology at Gaurala / Somnala limestone deposits during the post mining period from 1985-2011 is presented in following table

Environmental segment	Impact during mining	Present status
Air quality	temporary	meets national air quality criteria
Noise	only during blasting	typical rural area, no industrial sources
Land i) Use ii) Excavation iii) Dump iv) Plantation v) Use vi) Reclamation	 i.Rain-fed agriculture over soil patches ii. a.Lime stone extraction, revenue to State b. creation of pits iii.Creation of reject –dumps iv) tree felling not required v. Lease designated for mining vi. Substantial deposits unworked	 i. Agriculture over unexplored ii. a. Abandoned pits awaiting utilization of underneath deposits; b. rain water in pit & its use for agriculture, pit water can recharge ground water iii. Physically stabilized, can be re-handled iv. Special efforts required for plantation v. Awaits utilization of unworked deposits vi. Substantial deposits unworked
Water	Dewatering not required, no impact on water quality & quantity	Water meets criteria for a surface water source after de-fluoridation & disinfection
Socio economic	Revenue to State No R & R, Employment opportunities to locals	Deposits un used Revenue to State No R & R, Employment opportunities to locals

13.2 Remediation plan :

Remediation plan is based on i) the probability of any adverse impact during proposed mining for a period of one year and ii) status of environment after mining between 1984 and its cessation in 2011.

13.2.1 Road in lease will be macadamized.

- Rain water in abandoned pits will be used to moisten the ore during loading and transportation.

-Tipper trucks will be covered.

13.2.2. Green belt : Tree plantation of species with wide canopy in safety zone. Weathered limestone will be mixed with organic matter e.g. domestic garbage/ cow dung. Local horticulturists and forest officials will be consulted. Local persons will be encouraged to participate.

13.2.3. Backfilling or reclamation of the mined out area is not proposed since all recorded limestone deposits as 'proved mineable reserves' would not have been mined in plan period. Mined out pit will be a "rainwater" storage structure till mining starts again. It is likely that recharge ground water aquifer takes place. Also reservoir water can be used for miscellaneous purposes like plantation, fish culture etc.

13.2.4 Stored rainwater in other abandoned pits will be used for dust control. Prohibit un-authorized entry.

Ground water with high fluoride (>1.5 mg F/L) in well/hand pump water will be treated by a fluoride removal plant based on electrochemical method of treatment. Mine water, if required for community drinking water supply ,will be treated by a water treatment plant with following flow sheet.

- Pump
- Alum dosing for fluoride removal
- Flash mixer
- Clari-flocculator
- Rapid sand filter
- Clear water tank storage after disinfection &
- Supply

13.2.5 About 11,265.97 m^3 of waste material is stored in 13 old waste dumps in the lease. These dumps are of weathered limestone and some soil. Dumps' heights vary from 1.5 to 5.42 m. They have not caused any adverse impact on prevailing mine lease environment. Leachates from dumps will not contain any toxic material. During proposed mining 13,024 m^3 similar waste material will be generated. It will be stored over 2,489 m^2area to a height of 6. Existing waste dumps over 3.62 area will be re-arranged and stabilized. Physical stability of dump will be ensured since it will be designed as per I.B.M. norms. A garland drain will be provided to collect runoff from the dumps. This water will be collected in one of the existing eight pits and utilized during mining operations.

Lease is an unused land without any structures / trees etc. It has no tree cover. There are abandoned pits. Water in pits can be used. Therefore there would not be any damage to environmental quality. Initiation of mining by MSMCL will improve revenue to the State without deterioration in environmental quality. On the contrary population in nearby villages will become aware of importance of potable water quality and sanitation.

Openings for indirect employment to locals in plantation, fish culture are possible. Additional water supply source in form of pit-water, recharge of aquifer is likely. Project will ensure plantation 100 trees during the scheme period. Apart from it project authority will assist any village biodiversity conservation plan to conserve village flora, fauna etc.

ANNEXURES

ANNEXURE 1

GOVERNMENT OF MAHARASHTRA

No.MMN-1006/C.R.2065/Ind-9
Industries, Energy and Labour Department,
Mantralaya, Mumbai 400032.

Dated: - 13th October 2006

From,
Under Secretary,
Industries, Energy and Labour Department,
Mantralaya, Mumbai 400032.

To,
Maharashtra State Mining Corporation,
Udyog Bhavan,3rd Flor,Civil Lines,
Nagpur.

541
10-11-06

Subject : First Renewal of Mining lease for Lime stone and Dolomite for 116.13 Hect. in Village-Gaurala, Tah. Maregaon and Village-Somnala,Tah vani,Dist Yavatmal.

Sir,

With reference to your application, dated 9.12.2003 on the subject mentioned above, I am to enclose herewith Government order of even number, dated the 13 th October 2006 for your information. You are requested to approach to the District Mining Officer, Collectorate, Yavatmal. for execution of the lease. I am to add that you should also execute renewed mining lease within a period of six months form the date of the enclosed order.

2. The first renewal of mining lease should be executed in the model form of mining lease appended to the Mineral Concession Rules, 1960 with appropriate modifications.

Yours faithfully
(V.S.Kulkarni)
Under Secretary to Government.

Copy with the copy of the Government Order of even number, dated the 13 th October 2006 forwarded to the :

1. The Director, Geology and Mining, Maharashtra State, Nagpur
2. The Deputy Director, Geology and Mining ,Nagpur
3. The District Mining Officer, Collectorate,Yavatmal
4. The Controller General, Indian Bureau of Mines, Nagpur
5. The Finance Department

C:\Nanda/Gaurala-Renewal1

6. The Chief Inspector of Mines, Dhanbad, Zarkhand
7. Select file (Ind-9)

The District mining officer, Collectorate,Yavatmal should ensure that as soon as the renewed mining lease deed is executed, the information in the prescribed proforma is furnished to the Controller General, Indian Bureau of Mines, Nagpur-1 as desired by him.

A copy of the renewed mining lease when executed should be sent by the District Mining Officer, Collectorate, Yavatmal to the Controller General, Indian Bureau of Mines, Nagpur and Chief Inspector of Mines, Dhanabad, as required by Rule 57(1) of the Mineral Concession Rules, 1960.

The District Mining Officer, Collectorate, Yavatmal and the Director, Geology and Mining, Maharashtra State, Napgur should ensure that the Renewed Mining Lease executed in the model form of Mining Lease with appropriate modification but without clause 3 in part VIII therein relating to renewal.

The Director, Geology and Mining, Maharashtra State, Nagpur will please confirm whether the rates of royalty in the enclosed order are correct.

The Director, Geology and Mining, Maharashtra State, Nagpur and District Mining Officer, Collectorate,Yavatmal may kindly ensure before execution of renewed mining lease the compliance of the amended provisions of the Act and Rule and other applicable Acts and Rules including the Forest (Conservation) Act, 1980 and the Act and Rules enacted for environment purpose etc. before starting mining operation or giving work permission.

(V.S.Kulkarni)
Under Secretary to
Government.

ORDER

Industries, Energy and Labour Department,
Mantralaya, Mumbai 400032.
Dated the 13 th October 2006.

No.MMN-1006/C.R.2065/Ind-9 – In exercise of the powers conferred by sub-section (2) & of section 8 of the Mines and Minerals (Development and regulation) Act, 1957, Governm of Maharashtra is pleased to sanction to the Maharashtra State Mining Corporation,Udy Bhavan,3rd Flor,Civil Lines,Nagpur.the first renewal of mining lease for a period of (Twenty) years from the date 12.12.2004 for Limestonse and Dolomite minerals in respect the following area :-

District	*Tahsil*	*Village*	*Sr. No.*	*Area in Hects.*
Yavatmal	Moregaon	Gaurala	154	2.43
			155	6.84
			135	9.12
			162	8.21
			113/1	1.42
			113/1a	1.47
			113/1b	1.39
			113/2	1.27
			113/3	1.15
			113/4	1.77
			114	2.65
			115	6.07
			123	3.08
			116/1	2.00
			116/1a	3.87
			116/2	1.61
			118	4.58
			117	5.85
			121/1	1.60
			121/2	1.60
			122	5.46
			131	2.19
			132	1.21
			133	1.21
			127	1.61
			125	1.26
			124	1.26
			134	4.00
			112	2.12
			111	1.30
			164/1	5.1
			164/2a	
			164/2b	
			156	8.04
	Vani	Somnala	72/1	3.21
			72/2	3.21
			71	2.43
			73	4.54
		Total Area-		**116.13 Ha.**

C:\Nanda/Gaurala-Renewal3

A) Royalty at the following rates or the dead rent at the following rate per hectare per annum whichever is greater shall be charged.

Royalty :

1) Limestone

(a) L.D. grade (less than one and half percent Silica Content)	fifty five repees per tonne.
(b) others	Forty five rupees per tonne
(2) Dolomite	Forty five rupees per tonne

1) The rates of dead rent applicable to the leases other than those obtained of supply of raw material to the industry owned by the concerned leassee.

(Rates of Dead Rent in Rupees per hectare per annum)

First two years of Lease	3rd Year onwords
100/-	400/-

2) Two times the rates specified in under (1) above incase of lease granted for medium value mineral(s).

3) Three times the rates specified under (1) above in case of leases granted for high value mineral (s).

4) Four times the rates specified under (1) above in case of leases granted for precious metals and stones.

Note: For the purpose of this Notification-

(a) "precious metals and stones " means gold, silver, diamond, ruby, sapphire, emerald alexandrite and opal;

(b) "high value minerals"means semi-precious stones (agate, gem garnet) corundum,copper,lead,zinc,asbestos (chrysotile variety) and mica;

(c) " medium value minerals " means chromite, manganese ore, kyanite,sillimanite, vermiculite, magnesite, wollastonite, perlite, diaspore, apatite and rock phosphate, fluorite (fluorspar) and barytes.

(d) "low value minerals" means minerals other than precious metals and stones, high value minerals and medium value minerals.

Provided that the aforesaid rate of royalty payable at the rate for the time being specified in the second schedule to the Mines and Minerals (Development and Regulation) Act,1957, shall be revised as and when revised by the Government of India and aforesaid rate of dead rent shall revised from time to time as and when revised by the Government of India.

(B) Charging of Royalty in case of minerals subjected to processing. - (1) In case processing of run-of-mine mineral is carried out within the leased area, then, royalty shall be chargeable on the processed mineral removed from the leased area.

(2) In case run-of-mine mineral is removed from the leased area to a processing plant which is located outside the leased area, then, royalty shall be chargeable on the unprocessed run-of-mine mineral and not on the processed product.

(3) Royalty on tailings or rejects.- On removal of tailings or rejects from the leased area for dumping and not for sale or consumption, outside leased areas such tailings or rejects shall not be liable for payment of royalty:

Provided that in case so dumped tailings or rejects are used for sale or consumption on any later date after the date of such dumping, then, such tailings or rejects shall be liable for payment of royalty.

(4).**Guidelines for computing royalty on minerals on ad valorem basis :-** Every mine owner his agent, manager, employee.. contractor or **Sub-**lessee shall follow the following Guidelines for computation of the amount of royalty on minerals where the royalty is charged on ad valorem basis, namely

The Guidelines for calculation of royalty in typical cases are as follows, namely :-

Guidelines

The Guidelines for calculation of royalty in typical cases are as follows,namely:-

Case 1: All non atomic and non fuel minerals and minerals other than aluminium (bauxite and laterite despatched for use in alumina and aluminium metal extraction), primary gold, silver, copper, lead, zinc, nickel and tin -

The Indian Bureau of Mines publishes 'Monthly Statistics of Mineral Production' which contains state-wise total value of each mineral produced during a month **in** a State. The State-wise average value for different individual minerals as published by Indian Bureau of Mines in the ' Monthly Statistics of Mineral Production' shall be the bench mark for computation of royalty by the concerned State Government in respect of any mineral produced any time during a month in any mine **in** that State. For the purpose of computation of royalty the State Government shall add twenty per cent to this bench mark value. This value shall be reckoned to be the sale price for the purpose of computation of royalty. Also the value of the minerals published in the latest published issue of the 'Montlhly Statistics of Mineral Production' will be deemed to be applicable for the mineral mined in the previous month, irrespective of when the royalty actually accrues. If for a particular mineral, the information for a State is not published in a particular issue, the last information available for that mineral in the State in a previous issue shall be referred, failing which the latest published information for the mineral for all-India shall be referred.

Case 2: For Atomic minerals, prescribed under Atomic Energy Act, 1962 (33 of 1962)-

The minerals under this category include ilmenite, leucoxene, rutile and zircon obtained mainly from the beach sand deposits in the coastal states. The basis of collection of royalty shall be the actual mineral content in the beach sand mined.

(a) In case of sale in the domestic market, the per tonne sale price of the separated mineral actually realized, less the cost of transportation from the lease boundary to point of sale as

6.

shown by the mine owners in their sale vouchers, or bills or invoices shall be considered for computing ad valorem royalty. To avoid payment of taxes on royalty, the mine owners in their own interest record the price and royalty, separately in the sale vouchers or bills or invoices instead of indicating a composite price inclusive of rovalty. **In** case the price, royalty and transportation cost are not shown separately it shall be assumed that price indicated **in** the sale vouchers or bills or invoices is exclusive of royalty and transportation cost, and royalty shall be charged accordingly.

(b) In case of direct export by mine owners the sale value for the purpose of royalty shall ordinarily be the free on board (FOB) price realized less transportation charges from the lease boundary to the port, loading and unloading charges at the port, port charges (Including sampling and analysis and demurrage charges. if any), insurance charges, royalty, taxes and interest charges on loan for export. However, in case of cost insurance and freiht (CIF) sales, sea freight insurance and cost of unloading at the destination port shall also be deducted from such price. For such purposes the mine owner may prepare invoices or bills indicating the free on board price or cost insurance freight price as the case may be and each of the other charges separately.

Explanation -.For the purposes of calculation of royalty in case of minerals produced in captive mines [other than aluminium (bauxite and laterite despatched for use in alumina and aluminium metal extraction), copper, lead zinc, tin, nickel. gold and silver and those not actually sold, Case 1. and Case 2. shall be applicable.]

Case 3 : For aluminium '(bauxite and laterite despatched for use in alumina and aluminium metal extraction), primary gold, silver, copper, lead, zinc, nickel and tin - The total contained metal in the ore produced during the period for which the royalty is computed and reported in the statutory returns under Mineral Conservation and Development Rules, 1988 or recorded in the books of the mine owners shall be considered for the purposes of computing the royalty in the first place and then the royalty shall be computed as the percentage of the average metal prices in the London Metal Exchange (hereinafter referred to as the LME) for copper, lead, zinc, nickel, silver and tin and London Bullion Market .

Association price (commonly known as London price) for gold during the period of computation of royalty. The foreign exchange rate for conversion of rupee shall be the selling rate on the last date of the period of computation as published in newspaper namely,

(7)

The Economic Times. For the LME prices as well as for London price of the commodity, either of the following three sources shall be referred to, namelv

(i) Non-ferrous Report : Minerals and Metals Review,
28/30, Anantwadi, P.O. Box. 2749,
Mumbai - 400 002.

(ii) Metal Bulletin
16, Lower Marsh,
London, SE-17 RJ.

(iii) World Metal Statistics : (Monthly or Quarterly Summary),
by World Bureau of Metal Statistics,
27a High Street, Ware,
Herts SG 12 9BA,
United Kingdom.

Case **4** **For by-product gold and silver -**

The guidelines for computation of ad valorem royalty shall be linked to the total quatity of metal produced and the LME price for silver and London Bullion Market Association price (commmonly konwn as London price) for gold as in the case three above. However in this case, the actual production of the metal shall be considered instead of the metal content in the ore produced for the purposes of computing royalty.

Note : The State Governments may, if necessary, introduce system of advance payment for the purpose of royalty collection and they may also inpose any additional conditions in accordance with the law for the time being in force.

C) The lessee shall pay the following charges for the surface area used for mining operations.

I) Surface rent equal to non-agricultural assessment.
II) Water rate at the rate not exceeding land revenue.
III) Cesses assessable on the land.

D) If any 'Prescribed Substance' under Section 2 of the Atomic Energy Act of 1962 is found to occer in the property under the lease, the lessee shall take further action as required by the provisions of that Act.

E) The lease shall be subject to the provisions of the Mines and Minerals (Development and Regulation) Act, 1957 the Mineral Concession Rules, 1960 and the Mineral Conservation and Development Rules, 1988 as amended from time to time.

F) The lessee shall submit from time to time or when required progress report to the Director of Geology and Mining, Maharashtra State, Nagpur alongwith analysis and representatives samples of the ores collected during the mining operations.

8

G) The lessee shall employ a qualified Geologist or a mining Engineer after execution of the lease.

H) The lessee shall not be entitled, as a matter of right renewal of the lease.

I) The lessee shall obtain a certificate under Rule 29 A of MCR, 1960 issued by the Regional Controller of Mines IBM,before execution of the renewed lease deed.

J) The lessee should submit, Mining Plan duly approved by Indian Bureau of Mines,before the excution of lease deed.

K) The lessee should submit before execution of mining lease, the necessary clearance certificate from the competent authority wherever necessary under the relevant Acts/Rules, including the Forest (Conservation) Act, 1980 & Environment Protection Act, 1986 and Rules, 1986, Environmental Impact Assessment Notification 1994 and its subsequent amendments

By order and in the name of the Governor of Maharashtra.

(V.S.Kulkarni)
Under Secretary to Government.

ANNEXURE 2

REGISTERED A/D

भारत सरकार
GOVERNMENT OF INDIA
खान मंत्रालय
MINISTRY OF MINES
भारतीय खान ब्यूरो
INDIAN BUREAU OF MINES
नागपुर क्षेत्रीय कार्यालय
NAGPUR REGIONAL OFFICE

छटवीं मंजील,
बी एवं सी ब्लाक,
इंदिरा भवन,
सिविल लाइन्स
नागपुर - 440 001
6TH Floor, 'B' & 'C' Block
Indira Bhavan, Civil Lines
Nagpur-- 440 001
दुरभाष/Telephone 2562794,
2565089 (Tel/fax)

No. YTL/LST/MPLN-221/NGP/2018 Dated- 2nd July 2018

To

M/s Maharashtra State Mining Corporation Limited,
(A Government of Maharashtra Undertaking),
Kanikarm Bhawan, Plot No 7,
Ajni Square, Wardha Road,
Nagpur-440015
(Maharashtra)

Subject: Approval of Modification in Approved Mining Plan along with Progressive Mine Closure Plan in respect of **Gaurala Limestone Mine** over an area of **116.13 hectare** situated in Village Gaurala, Tehsil-Maregaon District-Yavatmal of Maharashtra State in favour of M/s Maharashtra State Mining Corporation Limited under Rule 17(3) of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016.

References: i) Your letter number MSMC/Mining/2018/610, dated 11/05/2018.
ii) This office letter of even number, dated 08/06/2018.
iii) Your QP's letter number nil, dated 13/06/2018.

Sir,

In exercise of the power conferred by the Clause (b) of Sub-section (2) of Section 5 of the Mines & Minerals (Development & Regulation) Act, 1957 read with Government of India Order No. S.O. 1872 (E) dated 18th May, 2016, I hereby **APPROVE** the above said Modification in Approved Mining Plan.

This approval is subject to the following conditions: -

1. The Modification in Approved Mining Plan is approved without prejudice to any other laws applicable to the mine area from time to time whether made by the Central Government, State Government or any other authority and without prejudice to any other order or direction from any court of competent jurisdiction
2. The proposals shown on the plates and/or given in the document is based on the lease map /sketch submitted by the applicant/ lessee and is applicable from the date of approval.
3. It is clarified that this approval of the "Modification in Approved Mining Plan" does not in any way imply the approval of the Government in terms of any other provisions of the Mines & Minerals (Development & Regulation) Act, 1957 or the Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016 and any other laws including Forest (Conservation) Act, 1980, Environment Protection Act, 1986 or the rules made there under, Mines Act, 1952 and the rule & regulations made there under.

.2

4. It is further clarified that this approval of the "Modification in Approved Mining Plan" is subject to the provision of Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981 and other relevant statutes, order and guidelines as may be applicable to the lease area from time to time
5. The Indian Bureau of Mines has not undertaken verification of the mining lease boundary on the ground and does not undertake any responsibility regarding correctness of the boundaries of the leasehold shown on the ground with reference to lease map & other plans furnished by the applicant/lessee.
6. At any stage, if it is observed that the information furnished, data incorporated in the document are incorrect or misrepresent facts, the approval of the document shall be revoked with immediate effect.
7. The provisions of the Mines Act, 1952 and Rules and Regulations made there under including submission of notice of opening, appointment of manager and other statutory officials as required by the Mines Act, 1952 shall be complied with.
8. The execution of the Modification in Approved Mining Plan shall be subject to vacation of prohibitory orders/notices, if any.
9. If anything found to be concealed as required by the Mines Act, 1952 in the contents of the above Modification in Approved Mining Plan and the proposal for rectification has not been made, the approval shall be deemed to have been withdrawn with immediate effect.
10. Yearly report as required under 26(2) of Mineral Conservation & Development rules, 2017 setting forth the extent of protective and rehabilitative works carried out as envisaged in the approved Progressive Mine Closure Plan and, if there is any deviation, reasons thereof shall be submitted before 1st July of every year to the Regional Controller of Mines, Indian Bureau of Mines, Nagpur.
11. Your attention is invited to the Supreme Court interim order in W. P.(C) No. 202 dated 12.12.1996 for compliance. The approval of Modification in Approved Mining Plan is therefore, issued without prejudice to and is subject to the said directions of the Supreme Court as applicable.
12. This approval is given for the received prospective proposals for **2018-19** as applicable from this date onwards. The earlier instances of irregular mining, if any, shall not be regularized through the approval of this document.
13. This approval of proposed mining operations and associated activities is restricted to the mining lease area only. The mining lease area as shown on the statutory plans under rule 32 of Mineral Conservation and Development Rules 2017 is by the lessee/applicant and Indian Bureau of Mines has not taken verification of mining lease boundary on the ground.
14. The approval of the Modification in Approved Mining Plan is subject to the compliance of Ministry of Mines letter no. F. No. 10/75/2008-MV, dated 23/12/2010 regarding exploration to be carried out as per UNFC norms within prescribed time limit as mentioned in the said letter.

15. The Environmental Monitoring Cell established by the company (if any) shall continue to monitoring ambient air quality, dust fall rate, water quality, soil sample analysis and noise level measurement at various stations established for the purpose both in the core zone and buffer zone as per requirement of Environment Guidelines and keeping in view IBM's circular No. 3/92 & 2/93 season wise every year by engaging the services of environmental Laboratory approved by MOEF/CPCB. The data so generated shall be maintained in a bound page register kept for the purpose and the same shall be made available to the inspecting officer on demand

16. A copy of Environment Impact Assessment –Environment Management Plan (EIA- EMP) as approved by Ministry of Environment & Forest (MOEF) shall be submitted to IBM immediately after approval by MOEF.

17. This approval is subject to comments of the State Government received, if any, which will be binding on you for implementation.

18. The next financial assurance shall be due for submission on or before **31.03.2023.**

19. The next Review of Mining Plan will be due for submission on **30/09/2018**.

Yours faithfully,

Encl.: One copy of Approved Modification in Approved Mining Plan (Text & Plates)

(Arun Prasad)
Regional Controller of Mines

Copy for kind information to:

1. The Director, Directorate of Geology &Mining, Government of Maharashtra, Khanij Bhawan, 27, Shivaji Nagar, Cement Road, Nagpur- 440010 (MS) along with one copy of Approved Modification in Approved Mining Plan (Text & Plates) **by <u>REGISTERED PARCEL</u>**.
2. Shri. M.S. Waghmare, QP, 33, Gedam Layout, Trimurty Nagar, Nagpur- 440022 (Maharashtra).

(S M Dorle)
Assistant Mining Engineer
for Regional Controller of Mines

ANNEXURE 3

13.4.5	**Gaurala & Somnala Limestone & Dolomite Mine (ML Area 116.13 Ha) at Village Gaurala, Tehsil Maregaon, Distrit Yavatmal, Maharashtra by M/s Maharashtra State Mining Corporation Ltd. - Terms of Reference** **[IA/MH/MIN/74203/2018 dated 11.04.2018] [F. No. 23-246/2018-IA.III (V)]**
13.4.5.1	**M/s Maharashtra State Mining Corporation Ltd.** has made online application vide proposal no. **IA/MH/MIN/74203/2018 dated 11.04.2018** seeking Term of References for the above mentioned proposed project. The proposed project activity is covered under 'A' category of item 1(a) of the Schedule to the EIA Notification, 2006 and the proposal was appraised at Central level.
13.4.5.2	**Details of the project as per the submission of project proponent:** **Project description:** The Proposal of M/s Maharashtra Mining State Corporation Ltd. is for Mining of limestone & dolomite from Gaurala &Somnala limestone & dolomite mine for Total Excavation of 2,49,986 Tonne per annum (TPA) [including limestone & dolomite @ 2,49,986 TPA , Waste, O.B, Inter Burden, Top Soil etc.] from mining lease area – 116.13 ha located at Villages Gaurala & Somnala,Tehsil Maregaon, District Yavatmal, State Maharashtra by M/s Maharashtra Mining State Corporation Ltd. **2. Project Background** The proposal of M/s Maharashtra Mining State Corporation Ltd.is for production of 2,49,986Tonne per annum of limestone & dolomite from Gaurala &Somanala limestone & dolomite mine – 116.13 ha, located at Survey Nos. 154, 155, 135, 162, 113/1-4, 114, 115,

116/1-2, 117, 118, 121/1-2, 122, 131-133, 124, 125, 127, 111, 112, 164/1, 164/2A-2B, 156 of Gaurala and 71, 72/1-2, 73 at SomnalaVillages,Tehsil Maregaon, DistrictYavatmal, State Maharashtra. The mining lease is located on Survey of India Topo-sheet No. 55 L/16 The area is bounded between the coordinates Latitude 20º 05' 01" to 20º 06' 19.1" °N and Longitude 78º 51' 1.1" to 78º 51' 30.7" °E.

3. Category of the project (Refer cluster certificate if applicable)

The said project/activity is covered under category 'A' of item 1(a) of the Schedule to the EIA Notification,2006 as amended, and requires prior EC from the MoEF&CC/SEIAA based on the appraisal by ExpertAppraisal Committee or the State Expert Appraisal Committee in different States/UTs.

4. Violation details and Sectorial EAC/SEAC comments :

MSMCL had carried out trial excavation for confirmation of ore quality for lime kiln module suggested by IIT Kharagpur and had not received any comments about violation or otherwise from any department because it had deposited royalty to the DMO office.

5. Application (Form 1 & PFR)

Fresh application was made online vide proposal No. IA/MH/MIN/74203/2018 dated 11.04.2018 under **violation category**for Term of References (ToR) in terms of provision of the Ministry's Notification S.O 804 (E) andsubmitted Form-1 and PFR . The proposed project activity is covered under 'Schedule 1(a)of EIANotification, 2006 and is a category 'A' project.

6. Letter of Intent (LoI)/Mining Lease Details:

Dept. of Industries, Energy and Labour of State Govt. had granted a lease of 203.85 ha for 20 years. Subsequently, a renewal letter for 116.13 ha was issued byGovt. of Maharashtra vide order no.MMN-1006/C.R.2065/IND dated 13.10.2006 and thelease deed was executed for 20 yearsw.e.f. f12.12.2004 and is valid till 11.12.2024.

7. Method of Mining & Mining Plan Details:

The Mining Plan was approved by IBMvide LR No. YTL/LST/MPLN-221/NGP/2018 dated 02.07.2018, as per which themethod of mining shall be opencast mechanized mining.

- Please provide the details of drilling & blasting, bench height and width, ultimate pit limit, ultimatepit slope, intersection of ground water table if any,

Drilling and blasting :

- Drilling :Ø 100 mm, depth 6.6 m in LS & 2.5 m in OB, spacing 3 m,
- Blasting : 7 holes will be blasted in a day for an yield of 50cum /hole.
- Bench height will be 6m, width < 6m.
- Ultimate pit limit – 10 m b.g.l
- Ultimate pit slope – 45°
- Intersection of ground water table - Not expected

- Number of top soil dumps with area and capacity, no of waste/reject dump with area and capacityduring the plan period and at the conceptual stage, backfilling plan if any,

- Soil dump : Nil,
- Waste/reject : 3.3 ha
- Back filling : not proposed since deposits continue below the ultimate depth

➢ Details of crushers plant if any with capacity and numbers, water requirementfor the project, plantation details, green belt details.

Crusher : Not proposed

- Water : 7-8 cum/day.
- Plantation : Will be worked out after EC over 0.3 ha.

➢ Land use as per mining

Land Use Pattern At The End Of Modified Period.

Sr. No.	land use Pattern	Existing Area (m^2)	End of plan period Area (m^2)
1	Area under Pits	55205.05	80706.89
2	Area under waste Dump	29568.13	33508.28
3	Structures	2237.94	2286.92
4	Area under reject	2679.30	6505.40
5	Area under Plantation	2926.16	3176.16
6	Area under Roads	11397.89	11815.06
7	Area under stack yard	--	3493.98
	Total	104014.47	141492.69

8. Other Waste Generation, if any: No waste except rejects will be generated

9. Land Use (Forest/Agricultural/Waste): Lease is not a part of forest or agriculture or waste land.

10. Applicability of General Condition & Status of SEIAA: Not applicable since there are no Wildlife Sanctuaries or Habitats for any Specific Wildlife within 10 km radius ofthe ML Area: Not applicable.

11. Aravalli/Doon Valley/ Western Ghats/Eco-Sensitive area: Not applicable

12. Project Cost & Employment:

- Employment : About 60 persons s
- Project cost : 85 Lakhs
- Other budgetary details will be worked out after obtaining TOR.

13.4.5.3 Observations and recommendations of committee:

The EAC observed that MSMCL had carried out excavation for confirmation of ore quality for lime kiln module suggested by IIT Kharagpur. EAC noted that as per past production detail authenticated by Maharashtra State Mining Corporation, PP had extracted mineral since 1983-84. Base year production noted was 16261.390 M.T in the year 1993-1994 and PP had exceeded base year production in the year 1995-1996. Also production was drastically increased from 2005-06 to 2007-08. Hence PP has violated the EIA notification 1994 & 2006 as amended time to time.

The EAC, after detailed deliberations on the proposal in terms of the provisions of the MoEF &CC Notification dated 14th March, 2017, confirmed the case to be of violation of the EIA Notification, 2006 and **recommended for issuing Standard Term of Reference** along with the following specific Term of Reference for undertaking EIA and preparation of Environmental Management Plan (EMP):

	(i) The State Government/SPCB to take action against the project proponent under the provisions of section 19 of the Environment (Protection) Act, 1986, and further no consent to operate to be issued till the project is granted EC. (ii) The project proponent shall be required to submit a bank guarantee equivalent to the amount of remediation plan and natural and community resource augmentation plan with the SPCB prior to the grant of EC. The quantum shall be recommended by the EAC and finalized by the regulatory authority. The bank guarantee shall be released after successful implementation of the EMP, followed by recommendations of the EAC and approval of the regulatory authority. (iii) Assessment of ecological damage with respect to air, water, land and other environmental attributes. The collection and analysis of data shall be done by an environmental laboratory duly notified under the Environment (Protection) Act, 1986, or an environmental laboratory accredited by NABL, or a laboratory of a Council of Scientific and Industrial Research (CSIR) institution working in the field of environment. (iv) Preparation of EMP comprising remediation plan and natural and community resource augmentation plan corresponding to the ecological damage assessed and economic benefits derived due to violation. (v) The remediation plan and the natural and community resource augmentation plan to be prepared as an independent chapter in the EIA report by the accredited consultants. (vi) The PP is required to conduct public hearing as per EIA notification, 2006. (vii) One season fresh base line data to be generated for EIA/EMP preparation. (viii) To submit the lease sketch/ lease co-ordinates approved by DMG, at the time of presentation before EAC for EC (ix) Fund allocation for Corporate Environment Responsibility (CER) shall be made as per Ministry's O.M. No. 22-65/2017-IA.III dated 1st May, 2018 for various activities therein. The details of fund allocation and activities for CER shall be incorporated in EIA/EMP report. (xiv) DGMS permission for blasting at project site. (xv) Detailed hydrological study to be carried out in core and buffer zone of the project as per GEC 2015 guidelines. (xvi) District survey report to be submitted for minor mineral Dolomite.

ANNEXURE 4

STANDARD TERMS OF REFERENCE

1. Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
2. A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
3. All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
4. All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
5. Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
6. Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
7. It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.
8. Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
9. The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period
10. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to

encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.

11 Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.

12 A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.

13 Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.

14 Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.

15 The vegetation in the RF / PF areas in the study area, with necessary details, should be given.

16 A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.

17 Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.

18 A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.

19 Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.

20 Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL. HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).

21 R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.

22 One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)]primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.

23 Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.

24 The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.

25 Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.

26 Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.

27 Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.

28 Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The

Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.

29 Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.

30 Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.

31 A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.

32 Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.

33 Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.

34 Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.

35 Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.

36 Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.

37 Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.

38 Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any,

occupational health impacts besides other impacts specific to the proposed Project.

39 Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.

40 Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.

41 The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.

42 A Disaster management Plan shall be prepared and included in the EIA/EMP Report.

43 Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.

ANNEXURE 5

LIST OF PLANTS AND WILD ANIMALS OCCURRING IN PANDHARKAWADA FOREST DIVISION

Trees

Local name	*Botanical name*	*family*
Ain	*Terminalia tomentosa*	*Combretaceae*
Ahl/Ahl/Bartondi	*Morinda tinctoria*	*Rubiaceae*
Amaltas/Bahawa	*Cassia fistula*	*Caesalpiniaceae*
Amta	*Bauhinia malabarica*	*Caesalpiniaceae*
Apta/Kachnar	*Bauhinia racemosa*	*Caesalpiniaceae*
Anoxia/Aonla	*Phyllanthus emblica*	*Euphorbiaceae*
Arjuna/Kahu	*Terminalia arjuna*	*Combretaceae*
Babul	*Acacia arabica*	*Mimoseae*
Bakain / Baka Neem	*Melia azedarach*	*Meliaceae*
Beheda	*Terminalia bellerica*	*Combretaceae*
Bel	*Aegle marmelos*	*Rutaceae*
Bhirra	*Chloroxylon swietenia*	*Rutaceae*
Biba/Bhilawa	*Semecarpus anacardium*	*Anacardiaceae*
Bija	*Pterocarpus marsupium*	*Fabaceae*
Bistendu	*Diospyros montana*	*Ebenaceae*
Bor/Ber	*Zizyphus mauritiana*	*Rhamnaceae*
Char	*Buchanania lanzan*	*Anacardiaceae*
Chandan	*Santalum album*	*Santalaceae*
Chichwa	*Albizzia odoratissima*	*Mimoseae*
Chinch	*Tamarindus indica*	*Caesalpiniaceae*
Dahipalas	*Cordia macleodii*	*Boraginaceae*
Dhaman	*Grewia kiliaefolia*	*Tiliaceae*
Dhaora/Dhawada	*Anogeissus latifolia*	*Combretaceae*
Dhoban/Phausi	*Dalbergia paniculata*	*Fabaceae*
Ghoti/Ghota	*Zizyphus xylopyra*	*Rhamnaceae*
Haldu	*Adina cordifolia*	*Rubiaceae*
Hiwar	*Acacia leucophloea*	*Mimoseae*
Hirda/Harra	*Terminalia chebula*	*Combretaceae*
Jambhul/Jamun	*Syzygium cumini*	*Myrtaceae*
Kalam.Mundi	*Mitragyna parvifolia*	*Rubiaceae*
Karanj	*Pongamia pinnata*	*Fabaceae*
Karu(Cassia)	*Cassia siamea*	*Caesalpiniaceae*
Khair	*Acacia catechu*	*Mimoseae*
Kusum	*Schleichera oleosa*	*Sapindaceae*
Kawat	*Limonia acidissima*	*Rutaceae*
Kulu	*Sterculia urens*	*Sterculiaceae*
Lendia/Lenda/Schena/Asah	*Lagerstroemia parviflora*	*Lythraceae*
Lokhandi	*Ixora parviflora*	*Rubiaceae*
Medsing	*Dolichandrone falcata*	*Bignoniaceae*
Mahua/Mahuwa	*Madhuca latifolia*	*Sapotaceae*
Mokha	*Schrebera swietenioides*	*Oleaceae*
Moyen/Mowai	*Lannea grandis*	*Anacardiaceae*
Neem/nim	*Azadirachta indica*	*Meliaceae*

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Pipal	*Ficus religiosa*	*Moraceae*
Rohan	*Soymida febrifuga*	*Meliaceae*
Sag/Sagwan/Teak	*Tectona grandis*	*Verbenaceae*
Saja/Ain	*Terminalia tomentosa*	*Combretaceae*
Salai	*Boswellia serrata*	*Burseraceae*
Semal(Borgu)	*Bombax malavaricum*	*Bombacaceae*
Shiwan/Siwan	*Gmelina arborea*	*Verbenaceae*
Sirus(Black)	*Albizzia adoratissima*	*Mimoseae*
Sirus(White)	*Albizzia procera*	*Mimoseae*
Sisoo	*Dalbergia latifolia*	*Fabaceae*
Sitafal	*Anona squamosa*	*Annonaceae*
Tendu	*Diospyros melanoxylon*	*Ebenaceae*
Tiwas/Tinsa	*Ougeinia oogeinensis*	*Fabaceae*

Shrubs

Local name	*Botanical name*	*family*
Bharati	*Gymnosporia montana*	*Celastraceae*
Chillari	*Mimosa rubicaulis*	*Leguminosae*
Chillati	*Caesalpineac spiaria*	*Leguminosae*
Dudhi/Kalakuda	*Wrightia tinctoria*	*Apocynaceae*
Dhayati	*Woodfordia floribunda*	*Lythraceae*
Kari Korando	*Carissa spinarium*	*Apocynaceae*
Karat	*Barleria prionitis*	*Acanthaceae*
Kuda, Indrajav	*Holarrhena antidysenterica*	*Apocynaceae*
Muradsheng/Marorphal	*Helicteres isora*	*Sterculiaceae*
Nirgudi	*Vitex negundo*	*Verbenaceae*
Sindhi/Chhindi	*Phoenix sylvestris*	*palmae*
Tarwad	*Cassia auriculata*	*Leguminosae*
Waghoti	*Capparis horrida*	*Bixaceae*
Zingrool/Pharsa	*Grewia orbiculata*	*Tiliaceae*

Herbs

Local name	*Botanical name*	*family*
Divali	*Tephrosia hamiltonii*	*Fabaceae*
Gajargawat	*Parthenium hysterophoru*	*Asteraceae*
Gokhru	*Tribulus terrestris*	*putaceae*
Hamata	*Stylosanthes hamata*	*Caesalpiniaceae*
Pivla Dhotra	*Argemone mexicana*	*Papaveraceae*
Pivili Tilwan	*Cleome viscosa*	*Cleomaceae*
Rantulsi/Bantulsi	*Hyptis suaveolens*	*Lamiaceae*
Rantur	*Atylosia scarabaeoides*	*Leguminosae*
Scabra	*Stylosanthes scabra*	*Caesalpiniaceae*
Tarota	*Cassia tora*	*Leguminosae*

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D. Grass and bamboo

Local name	Botanical name	family
Bans/Bamboo	*Dendrocalamus strictus*	Poaceae(Gramineae)
Bharbhusi	*Eragrostis tenella*	Poaceae
Daswa/Haryalli/Doob	*Cynodon dactylon*	Poaceae
Dongri Gavat	*Chrysopogon montana*	Poaceae
Gahar, Marwel	*Andropogon annulatus*	Poaceae
Kans	*Saccharum spontaneum*	Poaceae
Kus	*Vetiveria zizanioides*	Poaceae
Lodmor	*Apluda varia*	Poaceae
Kanda	*Ischaemum pilosum*	Poaceae
Kusal	*Heteropogon contortus*	Poaceae
Marhan	*Iseilema laxum*	Poaceae
Purvia	*Sehima sulcatum*	Poaceae
Sabai Or Sum	*Ischaemum angustifolium*	Poaceae
Sveta	*Schima nervosum*	Poaceae
Vikhadi/Rusa/Rosha	*Cymbopogon martini*	Poaceae

E. Climbers

Local name	Botanical name	family
Baichand/Baichend	*Dioscorea daemona*	Dioscoreaceae
Chilati	*Acacia pennata*	Mimoseae
Eruri	*Zizyphus oenoplia*	Rhamnaceae
Gunchi/Gunj	*Abrus precatorius*	Papilionaceae
Ghaguri	*Mucuna pruriens*	Fabaceae
Kanchanbel/Mahul	*Bauhinia vahlli*	Caesalpiniaceae
Palasvel	*Butea superba*	Fabaceae
Pivarvel	*Combretum ovalifolium*	Combretaceae
Satavar/Satawari	*Asparagus racemosus*	Liliaceae
Kawalvel.Dudhi(Nagvel)	*Cryptolepis buchanani*	Asclepiadaceae

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Pandharkawada Division

ANNEXURE 6

(4)

गांव नमुना सात

(अधिकारी अभिलेख पत्रक)

(महाराष्ट्र जमिन अधिकारी अभिलेख आणि नोंदवह्या (तयार करणे व सुरक्षित ठेवणे) नियम १९७१ यातील नियम३,५,६ आणि ७ पहा.)

गांव — गौराळा ग्रा.नं. ६० तालुका — [illegible]

भुमापन क्रमांक	भुमापन क्र. उपविभाग	भुधारणा पध्दती	भोगवटदाराचे नांव	खाते क्रमांक १९९
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लागवडीचे योग्य क्षेत्र	हेक्टर	आर		कुळाचे नांव / खंड रुपये पैसे
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जुडी कींवा विशेष आकाराणी	५	५०		सिमा व भुमापन चिन्ह.
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गांव नमुना बारा

(पिकांची नोंद वही)

(महाराष्ट्र जमिन अधिकारी अभिलेख आणि नोंदवह्या (तयार करणे व सुरक्षित ठेवणे) नियम १९७१ यातील नियम२९ पहा.)

वर्ष	हंगाम	पिकाखालील क्षेत्रांचा तपशिल: मिश्र पिकाखालील क्षेत्र — मिश्रणाच्या संकेत क्रमांक	जल सिंचीत	अजल सिंचीत	घटक पिके व प्रत्येक खालील क्षेत्र — पिकांचे नांव	जल सिंचीत	अजल सिंचीत	निर्भेळ पिकाखालील क्षेत्र — पिकांचे नांव	जल सिंचीत	अजल सिंचीत	लागवडसाठी उपलब्ध नसलेली जमिन — स्वरुप	क्षेत्र	जल सिंचनाचे साधन	जमिन करणाराचे नांव	शेरा
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गांव नमुना सात

(13)

(अधिकारी अभिलेख पत्रक)

(महाराष्ट्र जमिन अधिकारी अभिलेख आणि नोंदवह्या (तयार करणे व सुरक्षित ठेवणे) नियम १९७१ यातील नियम३,५,६ आणि ७ पहा.)

गांव [illegible] तालुका [illegible]

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एकुण	0	60
	रुपये	पैसे
आकाराणी जुडी कींवा विशेष आकाराणी	6	34

इतर अधिकारी :-

सिमा व भुमापन चिन्ह.

गांव नमुना बारा

(पिकांची नोंद वही)

(महाराष्ट्र जमिन अधिकारी अभिलेख आणि नोंदवह्या (तयार करणे व सुरक्षित ठेवणे) नियम १९७१ यातील नियम२९ पहा.)

81
.27

वर्ष	हंगाम	पिकाखालील क्षेत्रांचा तपशिल: मिश्र पिकाखालील क्षेत्र			घटक पिके व प्रत्येक खालील क्षेत्र			निर्भळ पिकाखालील क्षेत्र			लागवडसाठी उपलब्ध नसलेली जमिन				शेरा
		मिश्रणाच्या संकेत क्रमांक	जल सिचीत	अजल सिचीत	पिकांचे नांव	जल सिचीत	अजल सिंचीत	पिकांचे नांव	जल सिंचीत	अजल सिंचीत	स्वरुप	क्षेत्र	जल सिंचनाचे साधन	जमिन करणाराचे नांव	
१	२	३	४	५	६	७	८	९	१०	११	१२	१३	१४	१५	१६
			हे.आर.	हे.आर.		हे.आर.	हे.आर.		हे.आर.	हे.आर.		हे.आर.			
2006 / 2007	[illegible]	-	-	-	-	-	-	-	-	-	[illegible] पोटखराब [illegible]	0.06 0.60 2.30 3.16		महा. स्टेट [illegible] कॉर्पो.	

[illegible] प्रमाणित प्रत साठा का म्हणून ...५ वेळ ..... [illegible]
रुपये
दिनांक 17/1/07
(स्वाक्षरी) तलाठी सा. [illegible]

गांव नमुना सात

(अधिकारी अभिलेख पत्रक)

(महाराष्ट्र जमिन अधिकारी अभिलेख आणि नोंदवह्या (तयार करणे व सुरक्षित ठेवणे) नियम १९७१ यातील नियम ३,५,६ आणि ७ पहा.)

(२)

गांव गवराळा मा.न. ८० तालुका मारेगाव

गट भुमापन क्रमांक	भुमापन क्र. उपविभाग	भुधारणा पध्दती	भोगवटदाराचे नांव	खाते क्रमांक १६६
१५५		भो. १	मधराष्ट्र स्टेट मायनिंग कार्पोरेशन अभ्यंकर नगर नागपूर ६५५ / ३०१५१०९	
शेतीचे स्थानिक नांव				कुळाचे नांव खंड रुपये पैसे
लागवडीचे योग्य क्षेत्र	हेक्टर	आर		
जिरा	६ = ८४			
एकुण	६ = ८४			इतर अधिकारी :- जि.खि.अ. यवतमाळ यांचे उ.वि.अ. वणी यांचे आदेशानुसार महा. स्टेट माय. कार्पो. ला. २० वर्षांचे लिजवर चुना दगड डोलोमाईट करीता दिला फे.न. ४०३
पोटखराब (लागवडी योग्य नसलेले) वर्ग - अ —— वर्ग - ब ——				
एकुण				
आकाराणी	रुपये	पैसे		
जुडी कींवा विशेष आकाराणी	९१२००			
	९१२००			सिमा व भुमापन चिन्ह.

गांव नमुना बारा

(पिकांची नोंद वही)

(महाराष्ट्र जमिन अधिकारी अभिलेख आणि नोंदवह्या (तयार करणे व सुरक्षित ठेवणे) नियम १९७१ यातील नियम २९ पहा.)

84

वर्ष	हंगाम	पिकाखालील क्षेत्रांचा तपशिल: मिश्र पिकाखालील क्षेत्र: मिश्रणाच्या संकेत क्रमांक	जल सिंचीत	अजल सिंचीत	घटक पिके व प्रत्येक खालील क्षेत्र: पिकांचे नांव	जल सिंचीत	अजल सिंचीत	निर्भेळ पिकाखालील क्षेत्र: पिकांचे नांव	जल सिंचीत	अजल सिंचीत	लागवडसाठी उपलब्ध नसलेली जमिन: स्वरुप	क्षेत्र	जल सिंचनाचे साधन	जमिन करणाराचे नांव	शेरा
१	२	३	४	५	६	७	८	९	१०	११	१२	१३	१४	१५	१६
			हे.आर.	हे.आर.		हे.आर.	हे.आर.		हे.आर.	हे.आर.		हे.आर.			
०६/०७	रब	—	—	—	—	—	—	—	—	—	पुप [illegible] [illegible]	०-१४ ६-२० ०-५० ६-८४		महा. स्टेट माय. कार्पो. नागपूर.	

[illegible]

खरी प्रमाणित नक्कल ... मिळाली
दिनांक १८/१/०६
(स्वाक्षरी) तलाठी

0·06

गांव नमुना सात

(3)

(अधिकारी अभिलेख पत्रक)

(महाराष्ट्र जमिन अधिकारी अभिलेख आणि नोंदवह्या (तयार करणे व सुरक्षित ठेवणे) नियम १९७१ यातील नियम३,५,६ आणि ७ पहा.)

गांव गवराळा गा.न. १० तालुका मोरेगाव

गट भुमापन क्रमांक	भुमापन क्र. उपविभाग	भुधारणा पध्दती	भोगवटदाराचे नांव	खाते क्रमांक ८४
१३५		भो १	किसन गणपती ढेंगळे रा. मांगरुळ	
शेतीचे स्थानिक नांव			५५४ / ५१११/६६	कुळाचे नांव — खंड रुपये पैसे
लागवडीचे योग्य क्षेत्र	हेक्टर	आर		
जिरा	०.४९			बि.जि. अ. यवतमाळ लक्षेन्य उ.वि.अ. वणी यांचे आदेशा: महाराष्ट्र... इतर अधिकारी :- ...ला २०० लिटवर जुना ... करिता दिली: फे.न. ३८३
एकुण	०.४९			
पोटखराब (लागवडी योग्य नसलेले) वर्ग - अ	०.८३			
वर्ग - ब				
एकुण	०.८३			
	रुपये	पैसे		
आकाराणी				
जुडी कींवा विशेष आकाराणी	२२.३०			सिमा व भुमापन चिन्ह.
	२२.३०			

0·06

गांव नमुना बारा

(पिकांची नोंद.वही.)

(महाराष्ट्र जमिन अधिकारी अभिलेख आणि नोंदवह्या (तयार करणे व सुरक्षित ठेवणे) नियम १९७१ यातील नियम२९ पहा.)

वर्ष	हंगाम	मिश्रणाच्या संकेत क्रमांक	जल सिंचीत	अजल सिंचीत	पिकांचे नांव	जल सिंचीत	अजल सिंचीत	पिकांचे नांव	जल सिंचीत	अजल सिंचीत	स्वरुप	क्षेत्र	जल सिंचनाचे साधन	जमिन करणाराचे नांव	शेरा
		पिकाखालील क्षेत्रांचा तपशिल — मिश्र पिकाखालील क्षेत्र			घटक पिके व प्रत्येक खालील क्षेत्र			निर्भेळ पिकाखालील क्षेत्र			लागवडसाठी उपलब्ध नसलेली जमिन				
१	२	३	४	५	६	७	८	९	१०	११	१२	१३	१४	१५	१६
			हे.आर.	हे.आर.		हे.आर.	हे.आर.		हे.आर.	हे.आर.		हे.आर.			
२००६ / २००७	ख	—	—	—	कापुस / तुर	— / —	४.६५ / ०.५० / ५.३५	सोयाबीन / ज्वारी	— / —	२.०० / ०.४० / २.४०	पुप / पो.ख	०.१९ / ०.८३ / ०.५५ / १.३७	—	किसन गणपत ढेंगळे	

(२१-२...)

सत्यप्रत ... प्रमाणित ... ९/८/०७ (तलाठी) ... सा. ...

0.20

गांव नमुना सात

(80)

(अधिकारी अभिलेख पत्रक)

(महाराष्ट्र जमिन अधिकारी अभिलेख आणि नोंदवह्या (तयार करणे व सुरक्षित ठेवणे) नियम १९७१ यातील नियम ३,५,६ आणि ७ पहा.)

गांव गवराळा गाव नं. ८० — तालुका मारेगाव

भुमापन क्रमांक	भुमापन क्र. उपविभाग	भुधारणा पध्दती	भोगवटदाराचे नांव	खाते क्रमांक ४८
१११	—	भोवर्ग १	रामचंद्र विठु कोल्हे रा. मांगरूळ १.१० हे महाराष्ट्र स्टेट मायनिंग कॉर्पोरेशन अभ्यंकरनगर नागपूर ०.२० हे ६६७ ३०.५५९	
शेतीचे स्थानिक नांव				कुळाचे नांव — खंड रुपये पैसे

लागवडीचे योग्य क्षेत्र	हेक्टर	आर
१३० जिरा	१	२२
एकुण	१	२२
पोटखराब (लागवडी योग्य नसलेले)		
वर्ग - अ	०	०८
वर्ग - ब		
एकुण	०	०८
	रुपये	पैसे
आकाराणी	३	३०
जुडी कींवा विशेष आकाराणी	३	३०

इतर अधिकारी :- [illegible] तसेच वि. अ. यांचे आदेशानुसार [illegible] माय कॉपी [illegible] २० वर्षाचे लीजवर चुनखडी [illegible] करीता [illegible] फेर ३८५

वि. [illegible] मारेगाव यांना [illegible] बोजा रु. २०,०००/- [illegible]

सिमा व भुमापन चिन्ह.

0.20

गांव नमुना बारा

(पिकांची नोंद वही)

(महाराष्ट्र जमिन अधिकारी अभिलेख आणि नोंदवह्या (तयार करणे व सुरक्षित ठेवणे) नियम १९७१ यातील नियम २९ पहा.)

वर्ष	हंगाम	मिश्रणाच्या संकेत क्रमांक	जल सिंचीत	अजल सिंचीत	पिकांचे नांव	जल सिंचीत	अजल सिंचीत	पिकांचे नांव	जल सिंचीत	अजल सिंचीत	स्वरुप	क्षेत्र	जल सिंचनाचे साधन	जमिन कसणाराचे नांव	शेरा
		पिकाखालील क्षेत्रांचा तपशिल — मिश्र पिकाखालील क्षेत्र			घटक पिके व प्रत्येक खालील क्षेत्र			निर्भेळ पिकाखालील क्षेत्र			लागवडसाठी उपलब्ध नसलेली जमिन				
१	२	३	४	५	६	७	८	९	१०	११	१२	१३	१४	१५	१६
			हे.आर.	हे.आर.		हे.आर.	हे.आर.		हे.आर.	हे.आर.		हे.आर.			
2005/2006	खरीप	—	—	—	सोयाबीन	—	०९०	—	—	—	पडीत पोटख.	००२ ००८ ०१०	—	१.१० हे रामचंद्र विठु	
					तूर	—	०१० १.००								
	—	—	—	—	—	—	—	—	—	—	ऑफीस संडास	०.२०	—	महा. स्टेट	

[illegible]

सत्य प्रतिलिपी
दिनांक ९.६.२००६

8.15

गांव नमुना सात

(34)

(अधिकारी अभिलेख पत्रक)

(महाराष्ट्र जमिन अधिकारी अभिलेख आणि नोंदवह्या (तयार करणे व सुरक्षित ठेवणे) नियम १९७१ यातील नियम३,५,६ आणि ७ पहा.)

तालुका मारेगाव

गांव गवराळा गा.न. ८०

भुमापन क्रमांक	भुमापन क्र. उपविभाग	भुधारणा पध्दती	भोगवटदाराचे नांव	खाते क्रमांक ३४
गट १५६		भो १	① सुलोचना ज. विठ्ठलराव कोडापार रा. वणी ९८८६ ② महाराष्ट्र स्टेट मायनिंग कार्पोरेशन अभ्यंकर नगर नागपुर ६-९५ हे. आर ९४ २३।८।९०	
शेतीचे स्थानिक नांव				कुळाचे नांव / खंड रुपये पैसे
लागवडीचे योग्य क्षेत्र		हेक्टर आर		
जिरा		८-०४		
एकुण		८-०४		इतर अधिकारी :- जि.जि.अ. यवतमाळ तसेच उ.वि.अ. वणी यांचे आदेशानुसार म.रा.-स्टेट माय कार्पो. ला २० वर्षाच्या लिजवर चुना दगड कोळसा करीता दिला फे.न. ४०४
पोटखराब (लागवडी योग्य नसलेले) वर्ग - अ वर्ग - ब				
एकुण				
आकाराणी		रुपये पैसे ९४-६६		
जुडी कींवा विशेष आकाराणी		९४-६६		सिमा व भुमापन चिन्ह.

8.15

गांव नमुना बारा

(पिकांची नोंद वही)

(महाराष्ट्र जमिन अधिकारी अभिलेख आणि नोंदवह्या (तयार करणे व सुरक्षित ठेवणे) नियम १९७१ यातील नियम२९ पहा.)

वर्ष	हंगाम	पिकाखालील क्षेत्रांचा तपशिल: मिश्र पिकाखालील क्षेत्र: मिश्रणाच्या संकेत क्रमांक	जल सिंचीत	अजल सिंचीत	घटक पिके व प्रत्येक खालील क्षेत्र: पिकांचे नांव	जल सिंचीत	अजल सिंचीत	निर्भेळ पिकाखालील क्षेत्र: पिकांचे नांव	जल सिंचीत	अजल सिंचीत	लागवडसाठी उपलब्ध नसलेली जमिन: स्वरुप	क्षेत्र	जल सिंचनाचे साधन	जमिन करणाराचे नांव	शेरा
१	२	३	४	५	६	७	८	९	१०	११	१२	१३	१४	१५	१६
			हे.आर.	हे.आर.		हे.आर.	हे.आर.		हे.आर.	हे.आर.		हे.आर.			
२००६ २००७											धुप / पुनाव	०-९५ / ६-०० / ६-९५	—		मरा स्टेट माय को
—॥—	—	—	—	—	—	—	—	—	—	—	धुप / पडित	१-८८ / १-८८	—		सुलोचना विठ्ठल कोडापार

ही प्रत मुळ बरहुकुम आहे असे प्रमाणपत्र देण्यात येते... निघाले
दिनांक १८/१२/०७
(स्वाक्षरी) तलाठी सा. क्र. २०

ANNEXURE 7

MAHARASHTRA STATE MINING CORPORATION LTD.
(A Government of Maharashtra Undertaking)
Khanikarm Bhavan, Plot No.7, Ajni Square, Wardha Road, Nagpur – 440015 (M.S.).
Tel.No. 0712-2253204 to 2253207 Fax : 0712-2253203
Email : info@msmc.gov.in Website: www.msmc.gov.in

GAURALA & SOMNALA LIMESTONE & DOLOMITE MINE : 116.13 Ha.

Statement showing the Production, Despatch & Development

Year	Production in M. T.	Despatch in M. T.	Development in Cu. Mtrs.
1994-95	13246.860	25173.570	4943.430
1995-96	17553.260	20215.800	6098.600
1996-97	11621.010	10418.540	5350.690
1997-98	7310.420	5775.050	3783.140
1998-99	9075.880	9531.910	2733.600
1999-2000	8522.120	9158.860	3189.590
2000-01	8819.120	10686.520	3525.470
2001-02	7538.370	5374.960	2454.560
2002-03	6256.930	4422.580	2085.910
2003-04	8884.980	9084.070	1461.430
2004-05	8434.570	4932.990	1403.840
2005-06	26777.770	-	-
2006-07	29821.560	-	-
2007-08	25035.080	-	-
2008-09	1719.020	-	-
2009-10	2131.040	-	-
2010-11	525.715	-	-
2011-12	0.000	0.000	0.000
2012-13	0.000	0.000	0.000
2013-14	0.000	0.000	0.000
2014-15	0.000	0.000	0.000
2015-16	0.000	0.000	0.000
2016-17	0.000	0.000	0.000
2017-18	0.000	0.000	0.000

Maharashtra State Mining Corporation Ltd. MSMC Nagpur

(P. Y. Tembhare)
General Manager (Operations)
M.S.M.C. Limited, Nagpur

ANNEXURE 8

GREEN CIRCLE, INC.

Integrated HSEQR Consulting Engineers, Scientists & Trainers
ISO 9001:2008, 14001:2004 & OHSAS 18001:2007 Certified Organisation
(MoEF Recognised Environmental Laboratory)

HSEQR Consulting, Environmental Laboratory & Training Services Offered

- Environmental Clearances-Industrial, Infra & CRZ (MoEF/SEAC/SEIAA/CRZ)
- Environmental Impact Assessment & EMP
- Environmental Due Diligence
- Environmental site Assessment (Level I,II)
- Environmental Monitoring & Analysis / Work place Monitoring
- Feasibility & Treatability Study
- Rain Water Harvesting & Water Audit
- ETP/STP Turnkey Solutions, O & M Annual Contracts
- HAZOP, HAZROP, HAZAN & Job Safety Analysis (JSA)
- HSE System Gap Assessment & Industrial Hygiene Services
- Process Hazard Analysis, HAZID, PSM
- Safety Report, Risk Analysis / Assessment & QRA
- On-Site & Off-Site Emergency Plan DMP & Mock Drill
- Environmental & Safety Management In-Plant training
- ISO 9001, 14001, OHSAS 18001 - Consultancy & Training

TO WHOMSOEVER IT MAY CONCERN

Certified that the samples collected by M/s Enviro Techno Consult Private Limited, Nagpur towards ambient air quality monitoring of Gaurala Limestone Mine 116.13 ha for the period from March 05, to April 19, 2018 were received for analysis of air quality parameters vide their letter No. ETCPL/GCILET/2018-19/010 dated April 21, 2018.

Soil and preserved water samples were analyzed in June 2018 respectively for their physical-chemical analysis and routine water quality parameters received vide their letter No. ETCPL/GCILET/2018-19/072 dated May 31, 2018.

For GREEN CIRCLE, INC.

AUTHORISED SIGNATORY

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Email: info@greencircleinc.com **Website:** www.greencircleinc.com
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Tel.: 022-28943090 / 60

: ALSO AT :
NEW DELHI HYDERABAD PUNE RAIPUR KOLKATA

: OVERSEAS AT :
AUSTRALIA OMAN KUWAIT AFRICA VIETNAM