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| <b>Maharashtra<br/>Minerals<br/>Corporation<br/>Limited (MMCL)</b> | Environmental Impact Assessment (EIA) & Environmental Management Plan (EMP) for Proposed Expansion of Silica Sand Mining and Washing with Production Capacity from 3,00,000 Ton per Annum (TPA) to 4,50,742 TPA and Extension of Mine Lease Period at Village: Kasarde, Tehsil: Kankavli, District: Sindhudurg, Maharashtra |
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## **EXECUTIVE SUMMARY**

### **1. INTRODUCTION**

Maharashtra Minerals Corporation Limited was promoted in 1961 and is engaged in the business of mining, mineral processing and sales of mineral products. This company was first joint sector enterprise in India where 26% capital was held by Government of Maharashtra & the balance 74% by promoter family, private enterprises and some esteemed industrialist houses. Government of Maharashtra still holds shares in the Company (11%).

The Corporation was founded & established by Shri GB Alias (Bhauasaheb) Newalkar, a renowned Freedom fighter & Visionary, who transformed small scale industry sector in India. Company has leases in four minerals, namely silica sand, kyanite, fluorspar & bauxite. One of these leases, at the village Kasarde, is located at about 25 km North-East of Kankavli town, which is Tehsil Headquarter on Mumbai-Goa highway NH 66 & is known as Kasarde silica Sand Mine. It is approachable by road going to village Phonda.

Lease area is divided into two parts. A Major Portion (Part I) has Survey Nos. 16, 115 (New 110), 117 (New 112) and 118 P (New 113) of Uttar Dakshin Gaothan village admeasuring 30.77 Ha, and a Minor Portion (Part II) on Survey No. 737 (New 7) of Awaleshwar village admeasuring area of 5.77 Ha. The distance between Part I and Part II is approx. 277 meters. The total lease is 36.54 ha.

### **2. PROJECT DESCRIPTION**

The nature of the project is Proposed Expansion of Silica Sand Mining and Washing with Production Capacity from 3,00,000 Ton per Annum (TPA) to 4,50,742 TPA and Extension of Mine Lease Period. Employment size for the project is envisaged as around **83** workers.

The cost of this proposed expansion project is estimated to be Rs. 381.60 Lakh.

As per the Environmental Impact Assessment (EIA) Notification No. S.O.3977(E) Dated 14<sup>th</sup> August, 2018 the Proposed Expansion of Silica Sand Mining and Washing with Production Capacity from 3,00,000 Ton per Annum (TPA) to 4,50,742 TPA falls under “**Category 1(a) B**” and requires Environmental Clearance (EC) from SEIAA / SEAC-1, Maharashtra before the commencement of any expansion activity.

Terms of Reference (ToR) has been issued to Lessee from the State Level Expert Appraisal Committee-1, Maharashtra on Day-3 during 207<sup>th</sup> Meeting of SEAC-1 from 11<sup>th</sup> October to 14<sup>th</sup> October, 2021.

The mining lease area is private land, and it is an expansion project. The study area lies in Seismic Zone III.

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Lease area is situated in between

- a. Latitude: 16°26'51.6220"N Longitude: 73°41'9.1460" E
- b. Latitude 16°26'8.8972" N Longitude: 73°41'26.9273" E
- c. Latitude 16°26'25.1473"N Longitude: 73°41'44.4327" E
- d. Latitude 16°26'48.5414"N Longitude 73°41'6.4766" E

Highest level of elevation of the project site is 118m MSL and lowest level is 100m MSL.

The latest Mining Plan and Progressive Mine Closure Plan has been approved by Directorate of geology and Mining; Govt of Maharashtra vide Letter No. STC / 852 / Part File / 2016 / 722 dated 14<sup>th</sup> March, 2019. The area falls in Survey of India Toposheet No.47H/11 (E43T11) on 1:50,000 scale.

### 3. GRADE OF SILICA SAND OF THE OF THE MINE

SiO<sub>2</sub> – 98%

Al<sub>2</sub>O<sub>3</sub> -3%

FE<sub>2</sub>O<sub>3</sub> – 0.10%

Threshold value for Silica sand is 90% of SiO<sub>2</sub>.

### 3.1 TOTAL GEOLOGICAL RESERVES

|                                 |                     |
|---------------------------------|---------------------|
| Total Geological reserves are - | 38,30,288 tons      |
| Proposed Production-            | 4, 50,000 tons/year |
| Life of Mine-                   | 8.51 years          |

### 4. PROVED MINERAL RESERVES

Proved Mineral Reserve is 38,30,288 Ton and Feasible Mineral Resource is 9,65,580 Ton.

### 5. METHOD OF MINING

Mine is being operated by Semi-mechanized Open cast method. It is found during the course of working that recovery of sand is about 70% and bulk density is 2.2. Mining / processing losses are negligible. Sectional area method is used to calculate the in-situ ore reserves. Six section lines (A-A` to F-F`) have been drawn through the potential area. Influence of each section line is 100m. A peripheral line joining the edges of the pits and the bore holes is considered for proved limit.

### 6. ULTIMATE PIT DEPTH

The Ultimate proposed depth of the pit / excavation depth is 62mRL as per data available.

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## 7. PROPOSED PRODUCTION

| Year         | Section | Sectional area in m <sup>2</sup> | Inf. M | B.D | Rec. | Tonnage         | Ass. Waste    |
|--------------|---------|----------------------------------|--------|-----|------|-----------------|---------------|
| 2019-2020    | A-A     | 838                              | 60     | 2.2 | 0.7  | 77431.2         | 22626         |
|              | B-B     | 605                              | 100    | 2.2 | 0.7  | 93170           | 27225         |
|              | C-C     | 869                              | 100    | 2.2 | 0.7  | 133826          | 39105         |
|              | D-D     | 860                              | 100    | 2.2 | 0.7  | 132440          | 38700         |
|              | E-E     | 64                               | 70     | 2.2 | 0.7  | 6899.2          | 2016          |
|              | F-F     | 68                               | 60     | 2.2 | 0.7  | 6283.2          | 1836          |
| <b>Total</b> |         |                                  |        |     |      | <b>450049.6</b> | <b>131508</b> |
| 2020-2021    | A-A     | 492                              | 60     | 2.2 | 0.7  | 45460.8         | 13284         |
|              | B-B     | 395                              | 100    | 2.2 | 0.7  | 60830           | 17775         |
|              | C-C     | 423                              | 100    | 2.2 | 0.7  | 65142           | 19035         |
|              | D-D     | 1542                             | 100    | 2.2 | 0.7  | 237468          | 69390         |
|              | E-E     | 368                              | 70     | 2.2 | 0.7  | 39670.4         | 11592         |
|              | F-F     | 16                               | 60     | 2.2 | 0.7  | 1478.4          | 432           |
| <b>Total</b> |         |                                  |        |     |      | <b>450049.6</b> | <b>131508</b> |
| 2021-2022    | A-A     | 751                              | 60     | 2.2 | 0.7  | 69392.4         | 20277         |
|              | B-B     | 395                              | 100    | 2.2 | 0.7  | 60830           | 17775         |
|              | C-C     | 529                              | 100    | 2.2 | 0.7  | 81466           | 23805         |
|              | D-D     | 1239                             | 100    | 2.2 | 0.7  | 190806          | 55755         |
|              | E-E     | 306                              | 70     | 2.2 | 0.7  | 32986.8         | 9639          |
|              | F-F     | 158                              | 60     | 2.2 | 0.7  | 14599.2         | 4266          |
| <b>Total</b> |         |                                  |        |     |      | <b>450080.4</b> | <b>131517</b> |
| 2022-2023    | A-A     | 332                              | 60     | 2.2 | 0.7  | 30676.8         | 8964          |
|              | B-B     | 307                              | 100    | 2.2 | 0.7  | 47278           | 13815         |
|              | C-C     | 327                              | 100    | 2.2 | 0.7  | 50358           | 14715         |
|              | D-D     | 1441                             | 100    | 2.2 | 0.7  | 221914          | 64845         |
|              | E-E     | 876                              | 70     | 2.2 | 0.7  | 94432.8         | 27594         |
|              | F-F     | 59                               | 60     | 2.2 | 0.7  | 5451.6          | 1593          |
| <b>Total</b> |         |                                  |        |     |      | <b>450111.2</b> | <b>131526</b> |
| 2023-2024    | A-A     | 127                              | 60     | 2.2 | 0.7  | 11734.8         | 3429          |
|              | B-B     | 394                              | 100    | 2.2 | 0.7  | 60676           | 17730         |
|              | C-C     | 1060                             | 100    | 2.2 | 0.7  | 163240          | 47700         |
|              | D-D     | 1015                             | 100    | 2.2 | 0.7  | 156310          | 45675         |

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|              |     |     |    |     |     |                 |               |
|--------------|-----|-----|----|-----|-----|-----------------|---------------|
|              | E-E | 489 | 70 | 2.2 | 0.7 | 52714.2         | 15403.5       |
|              | F-F | 58  | 60 | 2.2 | 0.7 | 5359.2          | 1566          |
| <b>Total</b> |     |     |    |     |     | <b>450034.2</b> | <b>131504</b> |

## 8. SUMMARY

| Year      | O/B waste + Ass.Waste tons | Production (in tonne) | Ratio  |
|-----------|----------------------------|-----------------------|--------|
| 2019-2020 | 156712+ 131508 = 288220    | 450188                | 1:0.64 |
| 2020-2021 | 26550 + 131508 = 158058    | 450742                | 1:0.35 |
| 2021-2022 | 64650 + 131517 = 196167    | 450342                | 1:0.44 |
| 2022-2023 | 36000 + 131526 = 167526    | 450711                | 1:0.37 |
| 2023-2024 | 27150 + 131504 = 158654    | 450311                | 1:0.35 |

## 9. DESCRIPTION OF THE ENVIRONMENT

### ➤ Topography

Most of the area is low lying along the south western boundary of the Western Ghat hill ranges except a few isolated hills. This entire alluvial plain tract contains paddy fields. The three major hills lying in the area strike in Northwest and Southeast direction. Two small hills about 60 m height from the ground level are prominently exposing kaladgi formations. They are called as Mahar Dongar and Wagh Dongar hills. The most prominent and highest of all the hills is the Salwa hill which is also composed of Kaladgi formations. The Salwa hill covers extensive area and it is about 260 mts high from ground level.

Lease area is almost flat in nature. The bench mark of the area is 105m MSL. It is in the south western portion of the lease area towards Kasarde co-op. society lease. The highest level is 115 MSL in the central part of the lease area, where as lowest level is 100MSL. towards nallah in northern side and also towards southern side. The difference between the top MSL. and bottom MSL. is 15m. The slope of the lease area is towards north east. There is a nallah is located in north eastern boundary of the lease area. It is seasonal in nature It flows from west to east in monsoon season and dries completely in summer season. Total two pits, are existed in the lease area.

### ➤ Meteorology

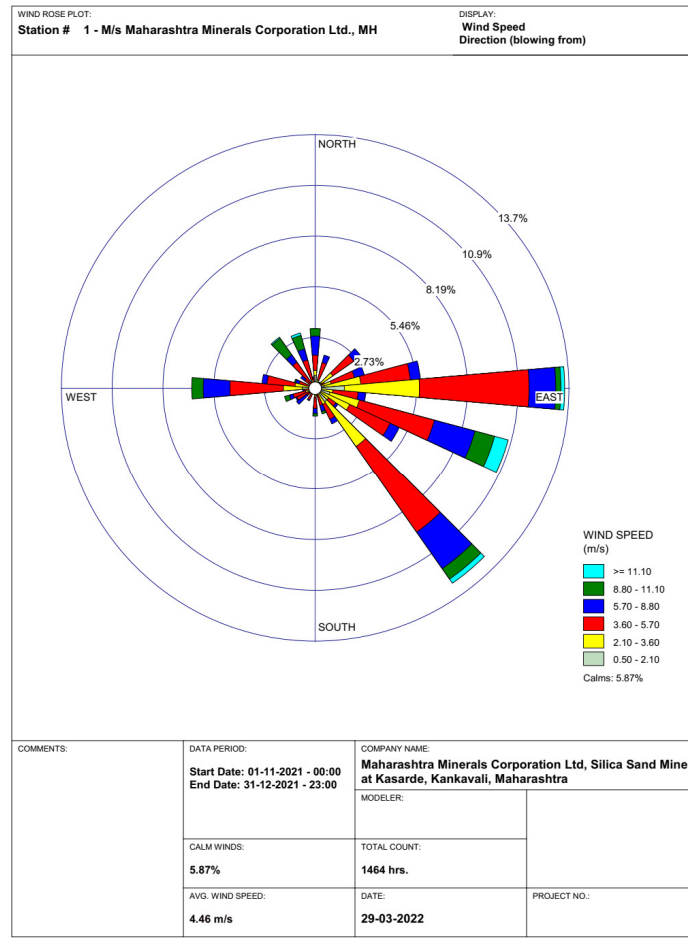
#### Micro-Meteorology at Site

##### Study Period - Post Monsoon Season (November to December, 2021)

| Date       | Temperature (°C) |      | Relative Humidity (%) |       | Wind at 08:30 hrs |              | Wind at 17:30 hrs |              |
|------------|------------------|------|-----------------------|-------|-------------------|--------------|-------------------|--------------|
|            | Max.             | Min. | 08:30                 | 17:30 | Direction         | Speed (km/h) | Direction         | Speed (km/h) |
| 01.11.2021 | 34.0             | 26.0 | 64                    | 76    | SE                | 06           | N                 | 07           |

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|            |      |      |    |    |      |    |      |    |
|------------|------|------|----|----|------|----|------|----|
| 04.11.2021 | 34.0 | 25.0 | 74 | 57 | CALM | 00 | NE   | 02 |
| 08.11.2021 | 32.0 | 24.0 | 81 | 58 | E    | 02 | W    | 06 |
| 11.11.2021 | 34.0 | 21.0 | 39 | 58 | SE   | 07 | N    | 07 |
| 15.11.2021 | 34.0 | 25.0 | 89 | 73 | NE   | 02 | NW   | 09 |
| 18.11.2021 | 32.0 | 25.0 | 80 | 75 | SE   | 06 | S    | 02 |
| 22.11.2021 | 31.0 | 24.0 | 77 | 75 | SE   | 04 | NW   | 06 |
| 25.11.2021 | 33.0 | 25.0 | 72 | 65 | SE   | 04 | NW   | 04 |
| 01.12.2021 | 27.0 | 23.0 | 87 | 83 | SE   | 11 | CALM | 00 |
| 04.12.2021 | 30.0 | 24.0 | 90 | 76 | SE   | 06 | W    | 07 |
| 08.12.2021 | 32.0 | 22.0 | 58 | 44 | SW   | 11 | CALM | 00 |
| 11.12.2021 | 32.0 | 23.0 | 65 | 81 | E    | 07 | N    | 04 |
| 15.12.2021 | 31.0 | 22.0 | 88 | 70 | CALM | 00 | N    | 11 |
| 18.12.2021 | 32.0 | 21.0 | 56 | 71 | SE   | 11 | N    | 06 |
| 22.12.2021 | 31.0 | 20.0 | 85 | 59 | SE   | 04 | NNW  | 07 |
| 25.12.2021 | 28.0 | 19.0 | 91 | 71 | E    | 04 | NNW  | 09 |



**Wind Rose**



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➤ **Ambient Air Environment**

**Locations of AAQ Monitoring Stations (November, 2021 to December 2021)**

| Station | Sampling Location    | Direction (Distance) from Plant Site | Direction (Distance) from Mine Site |
|---------|----------------------|--------------------------------------|-------------------------------------|
| A1      | Project Site         | -                                    | 0.0                                 |
| A2      | Village Devulkarwadi | East                                 | 0.42 km.                            |
| A3      | Village Sidachiwadi  | East                                 | 6.31 km.                            |
| A4      | Village Talere       | WNW                                  | 3.0 km.                             |
| A5      | Village Ozaram       | WSW                                  | 5.50 km                             |
| A6      | Village Asalade      | SW                                   | 6.0 km.                             |
| A7      | Village Kokisare     | NE                                   | 5.0 km.                             |
| A8      | Village Gadmath      | ESE                                  | 5.5 km.                             |

The ambient air quality monitoring was done to assess the ambient air quality in one season. Monitoring was carried out at eight stations for the month of November 2021 to December 2021. As far as the gaseous pollutants SO<sub>2</sub> and NO<sub>x</sub> are concerned, the CPCB limit of 80 µg/m<sup>3</sup> for residential and rural areas has never surpassed at any station. The SO<sub>2</sub> concentrations are in the range of 6.5 µg/m<sup>3</sup> to 18.2 µg/m<sup>3</sup> and the NO<sub>x</sub> concentration in the range of 7.3 µg/m<sup>3</sup> to 29.4 µg/m<sup>3</sup> for all the 8 AAQM stations.

➤ **Noise Environment**

**Locations of Noise Monitoring Stations (November, 2021 to December 2021)**

| Station | Sampling Location    | Direction from Site | Distance from Mine Site |
|---------|----------------------|---------------------|-------------------------|
| N1      | Project Site         | -                   | 0.0 km                  |
| N2      | Village Devulkarwadi | East                | 0.42 km.                |
| N3      | Village Sidachiwadi  | East                | 6.31 km.                |
| N4      | Village Talere       | WNW                 | 3.0 km.                 |
| N5      | Village Ozaram       | WSW                 | 5.50 km                 |
| N6      | Village Asalade      | SW                  | 6.0 km.                 |
| N7      | Village Kokisare     | NE                  | 5.0 km.                 |
| N8      | Village Gadmath      | ESE                 | 5.5 km.                 |

Ambient noise levels were measured at 8 locations around the proposed project site. Noise levels varied from 46.7 to 54.2 Leq dB(A) during day time and during night time noise levels ranged from 38.7 to 40.2 Leq dB(A). Thus, noise levels at all locations were observed to be within the prescribed limits. From the above study and interpretation, it can be concluded that noise levels in the study area are well within the prescribed limits as prescribed by the CPCB and State Pollution Control Board.

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➤ **Water Environment**

**Locations of Ground Water Sampling Stations**

| Station | Sampling Location              | Direction from Site | Distance from Mine Site |
|---------|--------------------------------|---------------------|-------------------------|
| GW1     | Village Kasarde                | ESE                 | 1.0 km                  |
| GW2     | Village Jambhalnagar           | NNE                 | 0.5 km                  |
| GW3     | Near Kasarde road Uttargavthan | WSW                 | 1.54 km                 |
| GW4     | Anand Nagar                    | WSW                 | 3.30 km                 |
| GW5     | Village Devulkarwadi           | E                   | 0.42 km                 |
| GW6     | Village Nandgaon               | S                   | 5.7 km                  |

**Ground Water Quality**

The quality of ground water was studied by collecting 6 water samples from representative open dug wells and tube wells. Chemical analysis reveals that there is not much variation in chemical composition of water tapped from shallow open wells and from tube wells. The ground water from all sources remains suitable for drinking purposes as all the constituents are within the limits prescribed by drinking water standards promulgated by Indian Standards IS: 10500. Analysis results of ground water reveal the following:

1. pH varies from 6.48 to 8.02
2. Total hardness varies from 202 mg/l to 378 mg/l
3. Total Dissolved Solids varies from 330 mg/l to 771 mg/l.

All parameter values in ground water sources are well and within the permissible limits laid by Ministry of Health, Govt. of India, for potable water.

**Locations of Surface Water Sampling Stations**

| Station | Sampling Location           | Direction from Site | Distance from Mine Site |
|---------|-----------------------------|---------------------|-------------------------|
| SW1     | Mine Pit                    | -                   | -                       |
| SW2     | Nadhawade dam               | NNW                 | 3.8km                   |
| SW3     | Water body near Khambalwadi | NNE                 | 8.40 km                 |
| SW4     | Dam near Anand nagar        | WSW                 | 4.85 km                 |
| SW5     | Piyali River                | SE                  | 3.0 km                  |

**Surface Water Quality**

The quality of Surface water was studied by collecting 5 water samples. pH varies from 6.48 to 8.02 Total hardness varies from 102 mg/l to 196 mg/l. Total Dissolved Solids varies from 162 mg/l to 330 mg/l. All parameter values in surface water sources are well and within the permissible limits laid by Ministry of Health, Govt. of India, for potable water.

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## ➤ Soil Environment

### Locations of Soil Sampling Stations

| Station | Sampling Location                           | Direction from Site | Distance from Mine Site |
|---------|---|---------------------|-------------------------|
| S1      | Mine Site                                   | -                   | --                      |
| S2      | Mine Site                                   | -                   | --                      |
| S3      | Village Kasarde                             | SSE                 | 0.91 km                 |
| S4      | Village Uttargavthan                        | SSW                 | 1.24 km                 |
| S5      | Village Dhareshwar<br>Near Dense Mix Jungle | NE                  | 2.00 km                 |
| S6      | Village Talere naka                         | W                   | 2.65 km                 |
| S7      | Nagasawantwadi                              | S                   | 2.66 km                 |
| S8      | Jambhalnagar<br>Near Dense Mix Jungle       | NW                  | 0.50 km                 |

Soil profile and quality was studied at 08 different locations. Augur method was used and samples were collected at 15 cm depth after removing the upper crust. Sample from each spot were well mixed with hand on a clean polythene sheet. About 1 kg of soil was retained after process of quartering.

**Core Zone:** Texture of soil is Clay Loam. Colour is dark Brown, Porosity 41.02 % to 42.15%, pH is 6.68 to 7.21. Amount of primary nutrients like Organic matter (0.33%-0.93%), the Total nitrogen (133 kg/ha - 378 kg/ha) is lower in range, the Total phosphorus (28.5 kg/ha -85.1 kg/ha) is in medium range and Total potassium (186.4 kg/ha - 355.8 kg/ha) is also lower in range, Primary nutrient profile shows that soil is low in fertility due to the availability of low amount of nitrogen, Potassium and phosphorus.

**Buffer Zone:** The result shows that texture of soil is Clay loam. Colour is Brown to Dark Brown, pH ranges from 5.48 to 6.92 Amount of primary nutrients like Organic matter 1.17 % to 3.83 %, the total nitrogen 476 kg/ha to 996 kg/ha, the total phosphorus 50.6 kg/ha to kg/ha mg/kg and total potassium 345.3 kg/ha to 448.2 kg/ha is lower in range, Primary nutrient profile shows that soil is average in fertility due to the availability of low amount of nitrogen and available potassium and medium amount of available phosphorus.

## ➤ Land Use Pattern

Resourcesat-2 satellite imagery has been used for development of Land use pattern map. Survey of India topo maps at 1:50,000 scale and ancillary data has been used as a reference data for preparation of land use and land cover map of 10 km radius study area. The Study area is dominated



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by Agricultural land (Crop + Fallow+ Plantation) which are covering 44.06% of total area. Wheat, sugarcane, jowar is grown in rabi season and rice in kharif. Some horticulture and fruit orchard plants are presented in study area Piyali River is passing at 3.0 km in S direction from project site. Deciduous forests are presented in study area. Some other mining activities are running nearby project site. The project site has slight slope from north to south and has elevation between 94m to 105m at msl.

## ➤ **Biological Environment**

### **Core Zone**

Floristic composition varies depending upon the site and its environmental features and it is one of the major characteristic features of any plant communities. The flora of the mine lease area dominated by shrubs and herbs vegetation consisted of approximately 16 species belonging to shrubs and 15 species belonging to herbs. Mainly 4 species of trees were seen in Core zone.

### **Buffer Zone**

In the buffer zone of 10 Km there is no Reserve Forest. The dominant species are Aegle marmelos (Bel), Zizyphus jujuba (Ber), Acacia catechu (Khair) etc.

**Agriculture:** Agriculture is mainly rain fed. Rice and nagali (a type of millet) are the principal food crops of the sindhudurg district.

**Fauna of Buffer Zone:** The buffer zone comprises diversity of animals. Among mammals Mongoose (Herpestes edwardsii), Macaca radiata (Monkey), Sus scrofa (Wild Boar) are also reported to have been seen by nearby villagers in the Buffer Zone. Among Domesticated animals cat, dog, cow, buffalo, dog etc are found. Among avifauna common birds like pigeon (Columba livia), Pavo cristatus (Indian Peafowl) etc. are reported.

### **Endangered and Threatened Species**

Endangered and threatened animals of India have been listed in the Schedule I and Schedule II of the Wildlife (Protection) Act, 1972 (amended in 2002). In buffer zone Schedule I species reported are Pavo cristatus (Indian Peafowl), Panthera pardus (Leopard) and Panthera tigris (Tiger).

### **Eco-sensitive Zone**

There is no Wildlife Sanctuary, National Park or Biosphere Reserves in the Core as well as buffer zone.

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➤ **Socio-Economic Environment**

The Socioeconomic study was conducted in the study area. It was found that 45 villages fall within the 10 km radius of industrial area. As per secondary data Census 2011, the population of buffer zone is 41858. The number of households found as 10692 implying that there was average 4 members per household. The total number of literate within the study area is 30215 which are 72.18% of total population. Male literacy rate of the study area is 52.65 % and female literacy rate is 47.34%. The number of total workers in the study area is 17057 which is 40.74 % of total population. Total workers are further divided into main workers & marginal workers.

➤ **Geology & Hydrogeology of the Area**

The mining site and the surrounding area under investigation is located in the western coastal region of the peninsular India. The eastern side represents the western slope of the Western Ghat escarpment and the western region is towards, the coastline of Arabian Sea. This region displays moderate to high hill ranges with low scattered plains. They are highly dissected and are drained by

number of rivers like Gad, Karli and Terekhol, joining the Arabian Sea. The terrain in general shows a high degree of lateralization and about 3-4m thick zone of weathering and soil. The area falls under Zone III in seismic hazard zoning categorization of India and relatively seismologically stable. Geologically, the region comprises a north-western most exposed part of the Dharwar craton.

Dug wells in the area show depth range of 7-14 meters which are mostly in the rock formations comprising of weathered and jointed basalts, laterites and sandstones. In post-monsoon season static groundwater level observed in the area is ranging from 2.5 to 10 meters. Groundwater movement follows the topographic gradient and flow westerly. The mine site and surrounding area fall under 'Safe' category.

**10. ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES**

|                          |   |
|--------------------------|---|
| <b>Water Environment</b> | <p>Possible impacts due to contamination on water quality due to runoff of storm water and mine seepage.</p> <ul style="list-style-type: none"> <li>• No effluent discharge from mine</li> <li>• No toxic chemicals in mineral to contaminate water.</li> <li>• Mining shall not intersect ground water table therefore no negative effect on ground water table is envisaged.</li> </ul> |
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| <b>Maharashtra Minerals Corporation Limited (MMCL)</b> | Environmental Impact Assessment (EIA) & Environmental Management Plan (EMP) for Proposed Expansion of Silica Sand Mining and Washing with Production Capacity from 3,00,000 Ton per Annum (TPA) to 4,50,742 TPA and Extension of Mine Lease Period at Village: Kasarde, Tehsil: Kankavli, District: Sindhudurg, Maharashtra |
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|                                    |  |
|------------------------------------|--|
|                                    | <p>There shall be generation of dust due to point and non-point sources thus following measures shall be adopted:</p> <ul style="list-style-type: none"> <li>• No mining is proposed during rainy days,</li> <li>• Regular water sprinkling</li> <li>• Plantation of trees</li> <li>• Vehicles shall have PUC certificate</li> </ul>   |
| <b>Noise Environment</b>           | <p>Ambient noise level in the core zone is likely to increase. To prevent noise pollution:</p> <ul style="list-style-type: none"> <li>• Plantation shall be done along the periphery,</li> <li>• Regular maintenance shall be done to reduce noise pollution.</li> </ul>   |
| <b>Biological Environment</b>      | <ul style="list-style-type: none"> <li>• In the core zone no ecologically diverse species were found. There will be no loss of flora and fauna.</li> <li>• Trees shall be planted and mined out land reclamation shall be done.</li> <li>• Conservation plan for Sc-I Species in buffer zone shall be prepared and duly approved from chief Wild life Warden.</li> </ul>   |
| <b>Socio-Economic Environment:</b> | <p>It is evident from social survey that population is mostly unemployed.</p> <ul style="list-style-type: none"> <li>• The project will generate direct employment for 83 people and indirect employment for many more.</li> <li>• Regular medical examinations, schooling, better infrastructure etc. shall benefit locals &amp; employees.</li> </ul>  |
| <b>Mine Waste Management</b>       | <ul style="list-style-type: none"> <li>• Mining shall not be done during rains and there shall be construction of retaining walls to prevent surface runoff.</li> <li>• Hazardous waste such as oil shall be stored properly and sold to registered re-processor.</li> <li>• Domestic wastes due to daily human activities shall be properly disposed off into septic tanks followed by soak pits. Wrappers, foils, leftover food material etc shall be collected in separate bins.</li> </ul> |

## 11. ALTERNATIVE SITE AND TECHNOLOGY

The lease has already been executed on the basis of mineral availability and mining plan has been prepared and approved to excavate the mineral therefore any change in site or technology is not envisaged.

## 12. ENVIRONMENTAL MONITORING PROGRAMME

Post project monitoring shall be done and the recorded data will be submitted half yearly by project proponent to MoEF & CC (Regional Office) and State Pollution Control Board (SPCB).

Following parameters shall be monitored.

- Ambient Air Quality
- Noise
- Surface & Ground Water
- Soil
- Plantation and Greenbelt

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- Occupational Health and Safety

➤ **Environmental Monitoring Schedule**

Environmental monitoring at various locations, within the ML area and in the study area of 10 km radius will be carried out on periodic basis. A comprehensive network for monitoring has been prepared. Sampling locations have been identified by considering the source of pollution due to mining operations, drainage pattern, topography of the area and biological environment. 1.5 Lakhs capital cost has been estimated and for that fund has been allocated towards environmental management and monitoring program of about 1.6 Lakhs as recurring cost.

➤ **Estimated Cost of Environment Monitoring**

| Sl. No.      | Environment Monitoring Parameters | Annual Cost (in Rs.) |
|--------------|-----------------------------------|----------------------|
| 1.           | Fugitive Monitoring               | 20,000.00            |
| 2.           | Ambient Air Quality Monitoring    | 30,000.00            |
| 3.           | Water Quality monitoring          | 50,000.00            |
| 4.           | Noise Quality Monitoring          | 4,000.00             |
| 5.           | Soil Quality Monitoring           | 6,000.00             |
| <b>TOTAL</b> |                                   | <b>1,10,000.00</b>   |

**13. ADDITIONAL STUDIES**

Public Hearing for this Proposed Expansion Project will be conducted. Minutes of the Public Hearing, Issues Raised by the Public and Commitment of the Project Proponent along with Budget will be presented within the Final EIA Report.

Risk Assessment & Disaster Management Plan have been prepared and shall be implemented during mining. The suggestions of the stake holders shall be duly complied with and half yearly report shall be furnished to SPCB.

Social Impact Assessment has been carried out regarding various socio-economic aspects in the area, which will result in different facilities e. g health services, school, drinking water etc. and above all it will also generate enhanced employment facilities for local people directly and indirectly.

Detailed Transport Impact Assessment has been carried out.

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#### 14. PROJECT BENEFITS AND COSTS EVALUATION

Mining activity and development go hand in hand. There are numbers of social and infrastructural development activities linked with mining. For example: provision of better infrastructure, schools, green belt development drive and organization of health camps not only for the mine workers but also for the people living in nearby villages under CSR responsibilities. Many ancillary activities bloom in the nearby areas such as opening of dhabas, tea stalls, and vehicle repair shops etc.

**Cost toward EMP and CER:** EMP 9.20 lakh Capital Cost and 9.50 Recurring Cost & CSR: Capital cost 15.75 lakh and Recurring Cost 7.75 lakh.

#### 15. IMPORTANT ASPECTS OF THE ENVIRONMENTAL MANAGEMENT PLAN

Environment Management Plan for the proposed project has been presented below -

**Land:** Systematic excavation has been proposed to prevent seasonal scouring and enhanced erosion. The top soil fertile excavated will be very less and it will be mainly used for plantation. Besides top overburden will be dumped in 0.60 ha area of already excavated land present in the eastern side of the proposed mining area.

**Geology & Hydrogeology:** Waste generation would be less in relation to the pit size. It is proposed to utilize the waste material to prepare/maintenance of the haul road within the lease area and remaining waste will be backfilled in the exhausted portion of the pit. The reclaimed portion will be leveled/ dressed to suit the overall topography of the area.

It is proposed to let the tailings go to the pit only and not to allow them to join the mainstream. Washing of sand is carried out from the water pumped out of the mine. Tailings of the same are diverted back to the pit and no other area is disturbed. Water from the pit is pumped out for washing purpose. The tailings generated during the course of washing is allowed to go the pit only through specially made drains. No other area is affected due to these tailings.

**Air Environment:** During the course of mining no toxic substances will be released into the atmosphere except dust and smoke. Smoke from the burning of diesel. Dust shall be stopped by sprinkling of water on stack and mining bench. There shall be regular maintenance of vehicle to control air pollution. Plantation will be carried out on approach roads & nearby area.

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**Water Management:** Ground water table shall not be intersected during entire span of mining. No mining shall be done during rainy season. Retaining wall shall be constructed to avoid silt runoff.

**Noise Environment:** Mechanized mining shall be the main source of noise. Proper maintenance of all machines will be carried out, which will help in reducing generation of noise during operations. Personal protective equipments shall be provided to all the workers.

**Solid Waste Management:** There shall be mining waste generation therefore backfilling is proposed in the existing pit. The area shall be planted as reclamation work. Hazardous waste such as used oil generated from mining machinery will be sold to authorized dealer.

**Biological Environment:** The mining lease area is in non-forest land where presence of fauna is very less and no adverse impact is envisaged on the terrestrial flora and fauna.

**Green Belt Development:** Maharashtra Minerals Corporation Limited has developed very organized Green belt at Kondye village. It has been named as Uttam Farm. It is about 12.90 km away from the boundary of the lease area towards South-East. This green belt has been developed on an area of 17 acre i.e 6.88 ha. Total 2000 Nos. (approx.) of trees are there. Different medicinal plants have been planted there. About 04 workers from local villages have been employed to maintain Uttam Farm. Another Green belt near Uttam Farm on a Devrai land has also been developed by Maharashtra Minerals Corporation Limited. This green belt has been developed on an area of 2.5 acre i.e 1.012 ha. Total 1050 Nos. of trees are there. Different medicinal plants have also been planted there. About 02 workers from local villages have been employed to maintain this green belt on this Devrai land.

**Socio – Economic Environment:** The socio-economic impact of mining procedure will bring positive impact such as development of roads, plantation near the haul roads, organization of vocational training to the villagers, opening of schools and direct or ancillary employment benefits. EMP 9.20 lakh Capital Cost and 9.50 Recurring Cost & CSR: Capital Cost 15.75 lakh and Recurring Cost 7.75 lakh. Apart from that there are provisions for:

- The locals shall be given employment opportunities.
- There shall be better infrastructure availability.
- Health camps, availability of clean drinking water & provision of schooling shall be the main focus of the company.

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#### 16. BUDGETARY PROVISION FOR ENVIRONMENTAL MANAGEMENT PLAN

| <b>ENVIRONMENTAL MANAGEMENT</b>                    |                                      |   |
|--|--------------------------------------|---|
| <b>Particulars</b>                                 | <b>Capital Amount (Rs. in Lakhs)</b> | <b>Recurring Amount (Rs. in Lakhs / year)</b> |
| Toe wall along Soil dump (both side)               | 1.00                                 | -   |
| Check-dams   | 1.20                                 | 1.00  |
| Wire-crate around Pit                              | -                                    | 4.00  |
| Plantation (including Protection)                  | 1.50                                 | 2.50  |
| Environment Monitoring                             | 3.50                                 | 2.00  |
| Blasting Parameters test through accredited agency | 2.00                                 | -   |
| <b>Total</b>                                       | <b>9.20</b>                          | <b>9.50</b>                                   |

#### 17. BUDGETARY PROVISION FOR CSR ACTIVITY

| <b>Sr. No.</b> | <b>Description</b>                                       | <b>Capital Cost (Rupees in Lakhs)</b> | <b>Recurring Cost (Rupees in Lakhs/year)</b> |
|----------------|--|---------------------------------------|--|
| 1              | Plantation   | 1.50                                  | 0.75   |
| 2              | Road Construction & Maintenance                          | 7.50                                  | 2.00   |
| 3              | Drinking Water Facility                                  | 1.00                                  | 0.50   |
| 4              | Storage Water Tank Facility                              | 1.00                                  | -  |
| 5              | Assistance for Education                                 | 1.50                                  | 1.00   |
| 6              | Sanitary Facilities, Toilets etc.                        | 2.00                                  | -  |
| 7              | Awareness for Cleanliness                                | -                                     | 0.50   |
| 8              | Free Education to Village Children for Higher Education. | -                                     | 1.50   |
| 9              | Assistance in Transportation to Hospital.                | 1.25                                  | 0.25   |
| 10             | Health Camp  | -                                     | 1.25   |
| <b>Total</b>   |  | <b>Rs. 15.75</b>                      | <b>Rs. 7.75</b>                              |