filed in Hon. Supreme Court against the NGT order by the opponent and the matter is sub-judice, there is no stay in the matter.

As per the direction of Hon. Gujarat High Court vide order dated: 26.04.2010, 100 Ha plant land was surrendered and required to be deepen to store more fresh water. Some part of this surrendered land is falling in mining lease area which will be deepen in process of mining with consultation of irrigation dep't and surrendered to the State Government.

CHAPTER 2
PROJECT DESCRIPTION

The project Vangar & Madhiya Limestone Mine is located at Villages Vangar & Madhiya, Taluka Mahuva, District Bhavnagar, Gujarat.The proposed production capacity is 1.6 MTPA R.O.M in the total ML area of 612.1336 ha. The data used in this EIA/EMP Report has been taken from approved Review of Mining Plan with Progressive Mine Closure Plan of Vangar & Madhia Limestone mine. The approval letter dated 05.08.2021 of Review of Mining Plan with Progressive Mine Closure Plan issued by IBM is attached as **Annexure XXII.**

2.1 GEOLOGY

2.1.1 Regional geology

The Saurashtra coastal tract is composed extensively of tertiary sediments, which are mostly calcareous in nature. The mainland however, is covered by extensive flows of basalt and its derivatives, developed over a period of time. These basalts have been intersected by a number of acidic and basic dykes. The regional geological setup of the region is defined by the stratigraphic sequence given in **Table No. C2-1**.

TABLE NO. C2-1: REGIONAL GEOLOGICAL SEQUENCE OF THE AREA

Formation	Age
Alluvium and Blown Sand	Recent
Loose Grits and Conglomerates	Sub-Recent
Miliolitic Limestone	Late Tertiary
Gaj sediments comprising of limestone and clays	Miocene
Lateritized/ Bauxitized Volcanics	Post Eocene
Basalt and its variants forming regional bed rock	Eocene to Cretaceous

Source: Table A1.1 of Review of Mining Plan with Progressive Mine Closure Plan approved on 05.08.2021

2.1.2 Local geology

The area under reference forms part of the Late Tertiary Miliolitic Limestone, which is believed to have been deposited under a marine transgressive environment. Apart from the miliolitic limestone, lithological units of recent age are also seen in the area under reference.

The deposit forms part of a vast flat plain, which has very gentle undulations and is seen to be overlain by the alluvium and windblown sand of recent origin. The deposit is underlain by the Gaj Limestone and clays that have been encountered in the boreholes drilled in the adjoining areas which have similar geological setup.

The following rock types are encountered over the lease area:

- Wind Blown Sand/Overlain soil
- Miliolitic Limestone
- Marly Limestone/ Marl

Wind Blown Sand / Overlain Soil

The deposit is covered by soil upto 1.0m thick. The soil is reported to be calcareous in nature. The limestone lies concealed beneath a thin over burden layer of soil.

Miliolitic Limestone

The limestone is not well exposed in the entire area under reference but can be seen in the trenches, old pits and open dug wells in the area. The Miliolitic Limestone of the area can be divided into two major units:

- Limestone
- Marly limestone/ marl

Being immature shoreline shallow water deposition, the different units are expected to show extreme variations in thickness and chemical behaviour. The contacts between the different limestone units are sharp but irregular.

Limestone

This unit is dull white to cream in colour, compact in nature and is medium hard to hard. It comprises of thin to thick beds, with intermittent layers of hard colored limestone. The pink limestone often shows tubular cavities, which are generally filled up the small amounts of clay. The thickness of this formation varies from 2.00 m to 4.50 m.

The compact limestone is essentially composed of angular and in-equigranular calcite, which is made up of the shells and tests of the foraminifer fossil, the miliolite. Accessory minerals viz. quartz and iron oxide can also be seen within the calcite matrix, which is held together by calcareous cement. The limestone shows that high amounts of inter granular spaces, thus indicating higher porosity. In the central, slightly depressed portion of the area, the compact limestone is underlain beneath a thin layer of soil varying up to 1.0 m.

Marly Limestone/ Marl

Dull white to earthy brown in colour, the marly limestone is similar in its physical character to the limestone. However, this unit is more porous and cavernous, with the cavernous portions being filled up with argillaceous material. Generally occurring below the compact limestone, its contact with the overlying compact limestone is inconspicuous on the surface because of the similar nature of both the units. However, this contact can be observed in pits

or open dug wells on the basis of the clay content resulting from the replacement of this limestone. The extent of replacement varies considerably with the result that concentrated clay pockets can be observed in several areas while no replacement is seen in others. The thickness of this formation varies up to 19.5 m as observed from the open dug wells.

General Structure

The deposit exhibits a simple structural setup. The dip of the area appears to be almost horizontal.

The present surface plan is shown in **Fig No. C2-1**. The geological map of the mine lease is shown in **Fig No. C2-2** while the geological sections are shown in **Fig No. C2-3**.

2.2 DETAILS OF EXPLORATION

2.2.1 Previous exploration

The area was explored on regional basis by CGM, (Commissioner of Geology & Mining), GoG (Govt. of Gujarat) in two phases i.e. in the year 1989-1991 on regional basis of south-eastern coastal part of Saurashtra. The area is covered in Toposheet No. 46 C/1,2,3,4,5,6 & 7 and in 41 O/15 covering various villages of Mahuva Taluka.

ONGC carried out Geological Mapping of Saurashtra during 1957-64 with the emphasis on parts of coastal tracts where exposed sedimentary sequences held prospects of containing oil and gas. GSI once again, revived their systematic geological mapping in this area in 1975 and covered Mahuva amongst various villages.

In order to find out further extension of reported occurrence of various lithos, Directorate of Geology & Mining took up systematic geological mapping in parts of the area in focus. The same was verified by the Asstt. Geologist, District Office, Bhavnagar during inspection of the area on 13.04.2004.

M/s Holtec Consultancy has also conducted field studies and has collected samples from excavated pits and accordingly feasibility report for cement plant was prepared.

Other than these, 64 numbers of open dug wells are seen throughout the ML area in which presence of Limestone/ Marly Limestone was observed. The depth of the open dug well is variable. The study of open dug wells was carried out in terms of the following:-

1. Mapping of open dug well/ tube well
2. Mapping of old pits
3. Measurement of open dug wells

FIG NO. C2-1: SURFACE PLAN

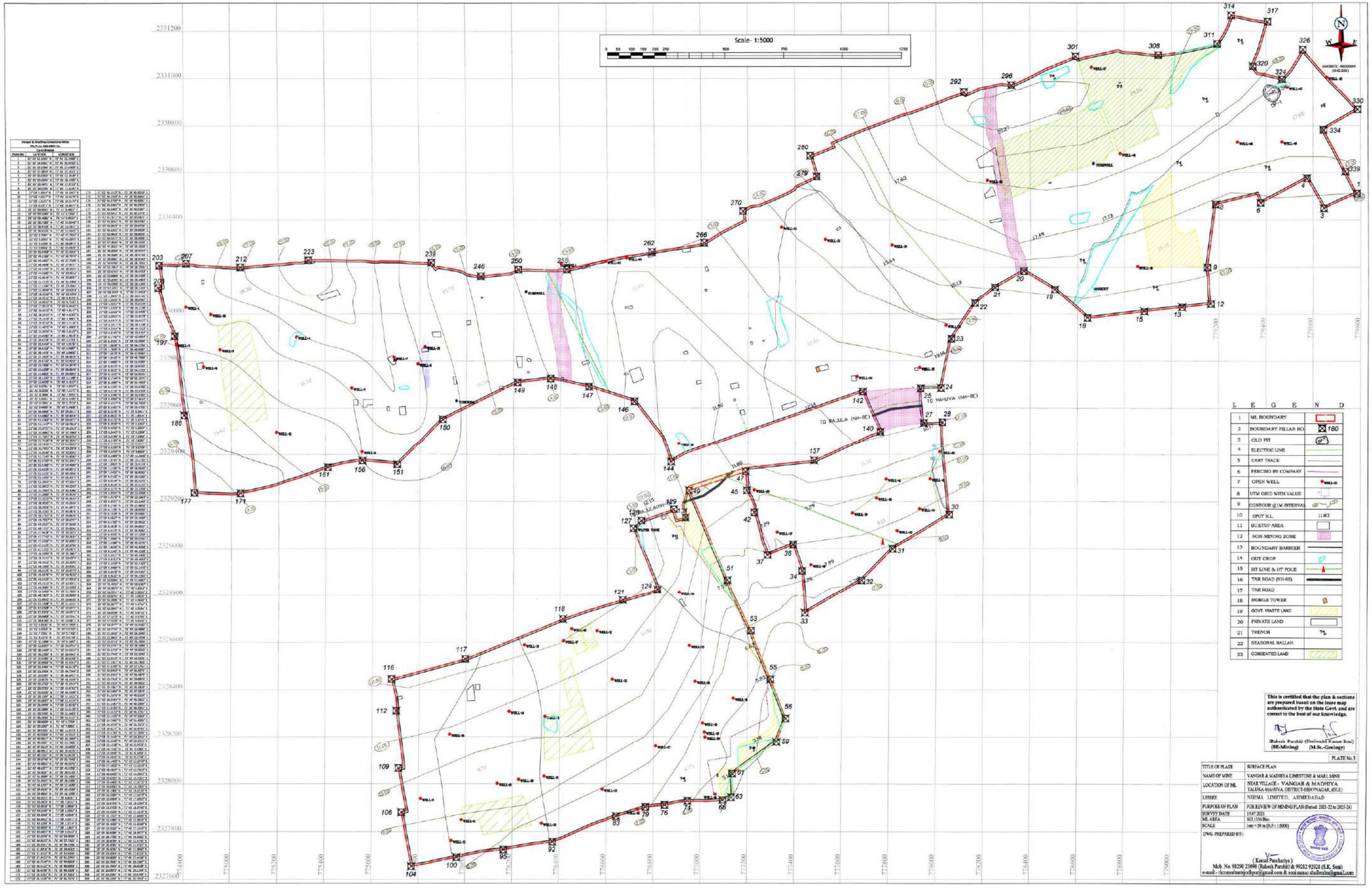


FIG NO. C2-2: GEOLOGICAL PLAN

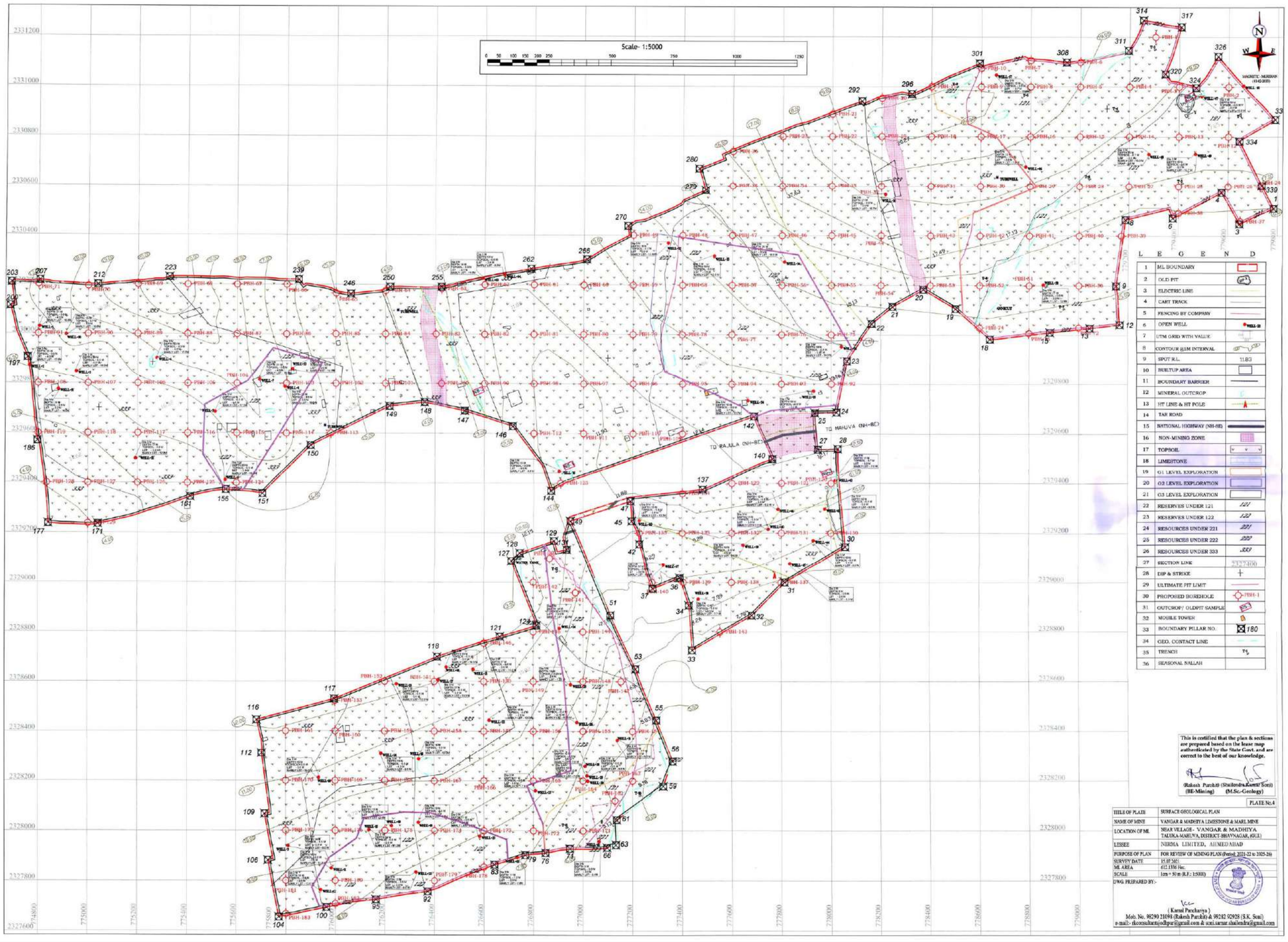
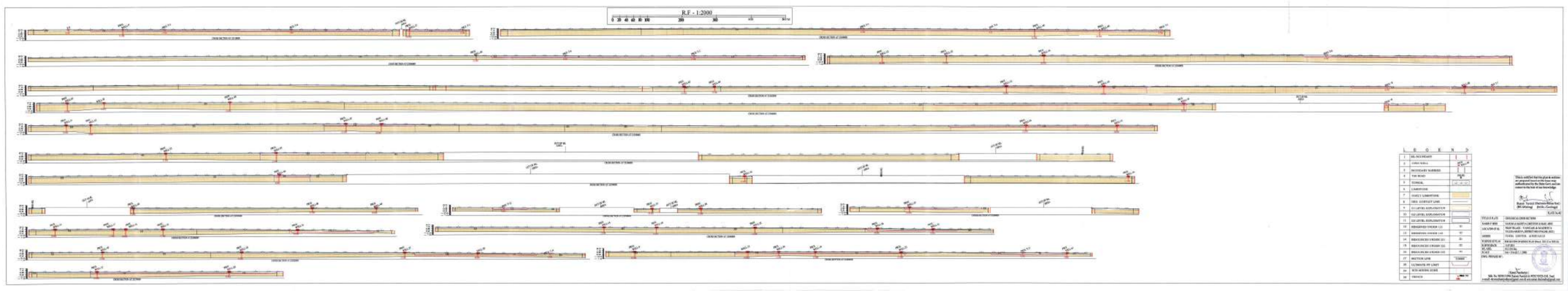


FIG NO. C2-3: GEOLOGICAL SECTIONS OF ML



Looking at the trenches, open dug wells as well as older excavations in the ML area, the area comes under various geological axis i.e. G1, G2 & G3 based on the interval under the provision of Minerals (Evidence of Mineral Contents) Rules, 2015. Being sedimentary occurrence, the mineral also categorized bedded Stratiform and tabular deposits of irregular habit.

2.2.2 Year wise Future programme of exploration

Some part of ML area is already considered under G1 level of exploration by means of trenches, open dug wells and old pits so far. Many parts of the ML area is under narrow spaces, area in the ambit of various barriers where mining is not possible. In such area, proposal of exploration is not tenable in order to avoid doing unnecessary expenses. Otherwise entire ML area is provided under future exploration. Looking towards the systematic exploration of entire ML area, core boreholes are proposed in order to bring the ML area within G1 stage in accordance with MEMC Rules'2015 and MCDR'2017.

The deposit is of sedimentary origin and simple in nature. Therefore, boreholes are kept at an interval of 200 m at grid pattern. A total of 183 BH are proposed up to a level of +1.0 m RL each. The depth of BH shall initially be kept up to 10 m wherever possible. If potentiality of BH in terms of limestone quality is observed, the depth shall be increased till the prescribed level. Initially the BH drilling shall be at about 400 m interval (as shown in **Table No. C2-2**). If limestone potentiality proves, then further BH can be carried out closely at 200 m interval (as shown in **Table No. C2-2**). All the proposed BH shall be drilled vertically. The exploration is proposed to be carried out in five years of working. Last years shall be for BH (as shown in **Table No. C2-2**) at 200m interval. The programme is given in **Table No. C2-2**.

TABLE NO. C2-2: PROGRAMME OF FUTURE EXPLORATION

Year	No. of boreholes	Grid interval	Total Meterage	No. of Pits, dimensions and volume	No. of Trenches, dimensions
2021-22 to 2025-26	PBH-1 to PBH-119	400m & 200m	Till level +1.0mRL	-	-
	PBH-120 to PBH-183	200m	Till level +1.0mRL	-	-

Source: Table A1.8 of Review of Mining plan with Progressive Mine Closure Plan approved on 05.08.2021

Location of boreholes have been shown earlier in **Fig No. C2-2** on the Geological plan of the mine lease area.

2.3 RESERVES ESTIMATION

Earlier estimation of resources/ reserves was carried out based on the limited data i.e. limited number of open dug wells over a huge area. In due course of time, part area deletion took place along with more finding of trenches, old pits,

outcrops and open dug wells so re-estimation is felt necessary in accordance with MEMC Rules'2015.

The re-estimation of resources/ reserves has been carried out by cross-sectional area method considering the existence of trenches, old pits, outcrops and open dug wells.

For estimation of geological resources, the depth encountered in each open dug well has been considered. The entire limestone irrespective of grades, have been considered as usable limestone for manufacture of quality Ordinary Portland Cement (OPC). Thus the cut off limit has been set as prescribed by CCOM Circular (>34% CaO and <5% of MgO) during estimation of limestone resources/reserves. The ultimate pit limit has been restricted up to level +1.0m AMSL. The overall tonnage factor of mineral is considered as 1.92.

Reserves/resources estimation depending upon nature of exploration is placed under different categories given in subsequent paragraphs.

2.3.1 Geological Reserves

2.3.1.1 Inferred resources (G3 level axis)

The first estimate of grade and amount of limestone in a deposit has been calculated purely based on data available and supplemented by surface features i.e. widely spaced open dug wells etc. Such an estimate is based on assumed surface continuity and width of the bed on geological evidences.

2.3.1.2 Indicated resources (G2 level axis)

The phase of resources estimation is carried out partly on geological grounds as collected by dug wells. The grade and tonnage of the ore body has been calculated on geological grounds based on open dug wells and/ or pits at or within 400 m interval.

2.3.1.3 Measured resources (G1 level axis)

The resources/ reserves estimated of proved mineralized zone by gathering information of trenches, old pits and outcrops placed conforming to the type of deposit explored. In case, the trenches, old pits and outcrops which are falling within the command length of 200 m on either side of the trenches and old excavation and upto depth of the limestone/ Marly Limestone encountered has been classified as measured category of resources.

Area covered under various axis are as follows:-

1. G3 level axis: 171.10 ha
2. G2 level axis: 104.39 ha
3. G1 level axis: 108.81 ha

Based on area of influence and extent of ore body, total 35.539 million tonnes of geological resource are present in the Lease area and is given in **Table No. C2-3**.

TABLE NO. C2-3: SUMMARIZED GEOLOGICAL RESERVE OF LIMESTONE

Level of exploration	Geological Reserves (million tonnes)		Grade
	Limestone	Marly Limestone	
G1 - Detailed exploration	5.318	2.295	Cement grade
G2 - General Exploration	5.674	3.127	Cement grade
G3 – Prospecting	12.523	6.603	Cement grade

Source: Table given on page 54 of Review of Mining plan with Progressive Mine Closure Plan approved on 05.08.2021

2.3.2 Mineable reserves

Total mineable reserve is 14.913 Million Tonne. The ROM quality of mineral is quite good CaO >43% of mineable reserves under UNFC code 121 & 122. This quality is an average of mineral limestone based on dug wells falling in the area. The mineable reserves are in accordance with threshold value issued by IBM i.e. CaO >34% & MgO <5%. The entire mineable reserves under UNFC 121 & 122 shall be made usable. Summary of reserves as per UNFC as on 01.04.2021 is given in **Table No. C2-4**.

TABLE NO. C2-4: UNFC CLASSIFICATION OF RESOURCES/ RESERVES

	UNFC Code	Quantity of Limestone (Million Tonne)			Average Grade	
		Limestone	Marly limestone	Total	LST (CaO%)	Marly LST (CaO%)
A. Total Mineral Reserve						
Proved Mineral Reserve	111	-	-	-	-	'
Probable mineral Reserve	121	4.731	2.022	6.753	48.63	40.71
	122	5.266	2.894	8.160	47.33	40.12
B. Total Remaining Resources						
Feasibility mineral Resource	211	-	-	-	**-**	**-**
Prefeasibility mineral resource	221	0.587	0.273	0.860	49.67	39.54
	222	0.408	0.232	0.640	48.72	40.75
Measured mineral resource	331	-	-	-		
Indicated mineral resource	332	-	-	-		
Inferred mineral resource	333	12.523	6.603	19.126	43.70	40.65
Reconnaissance mineral resource	334	-	-	-	**-**	**-**
Total Reserves + Resources		**23.515**	**12.024**	**35.539**	**-**	**-**

Source: Table A1.12 of Review of Mining plan with Progressive Mine Closure Plan approved on 05.08.2021

Summary of reserves and life is as follows:

- Total mineable reserve is 14.913 million tonne
- Next Five years production target: 1.77 million tonne
- Remaining mineable reserves: 13.143 million tonne
- At the production rate of 1.60 million TPA,

  Total life of mine is 5+8.21 = 13.21 say 13 years considering next Five years.
- Life of mine may be increased subject to conversions of resources under 333 category to category of reserves 111.

2.4 QUALITY PARAMETERS

The limestone is of the best quality and is followed by Marly Limestone/ Marl down the quality parameter. The quality of limestone is high grade, the Marly Limestone is cement to marginal/ low grade in terms of the CaO content of these litho-units.

The desired cement grade limestone can be obtained by exploiting Marly Limestone independently or by blending all these litho-units in suitable proportions. The anticipated Run-of-Mine (RoM) quality of different types of limestone, in the area, is given in **Table No. C2-5**.

TABLE NO. C2-5: ANTICIPATED ROM QUALITY OF DIFFERENT LIMESTONE

Constituents	Limestone	Marly Limestone/ Marl
LOI	38.31	31.94-34.49
SiO_2%f	8.07	14.25-18.26
Al_2O_3%	2.03	3.20-4.58
Fe_2O_3%	1.80	2.88-3.85
CaO%	47.98	39.10-42.84
MgO%	0.53	0.69-0.77
K_2O	0.02	0.04
Na_2O	0.16	0.27-0.34
Cl	0.01	0.01
SO_2	0.02	0.02

Source: Table given under Section 1.1 of Review of Mining plan with Progressive Mine Closure Plan approved on 05.08.2021

Expected ROM quality, considering the above all limestone grades in the same proportion is given in **Table No. C2-6**.

TABLE NO. C2-6: EXPECTED RUN OF MINE QUALITY (%)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	LOI	Na_2O	K_2O	SO_2	Cl
12.60	2.92	2.60	44.20	0.69	35.51	0.24	0.03	0.02	0.02

Table A1.6 of Review of Mining Plan with Progressive Mine Closure Plan Approved on 05.08.2021

The limestone produced from all ML areas will be used, mixed in a certain ratio to maintain the required quality of limestone to raw mill. During mining, adequate care is to be taken to remove clay capping as reject at the mine itself so that there is no contamination of limestone quality. Major portion of soil cover varying in thickness. Therefore, in order to win the limestone in the top bench, the capping of topsoil will have to be removed.

The ROM quality of mineral is quite good about CaO>43% of mineable reserves under UNFC code 121 & 122. The mineable reserves are in accordance with threshold value issued by IBM i.e. CaO>34% & MgO<5%. The entire mineable reserves under UNFC 121 & 122 shall be made usable. Proper blending of limestone reserves containing CaO>45% and CaO<45% & above IBM threshold of CaO will be utilized by proper blending for cement manufacturing. The limestone containing CaO >48% is of high quality found in the ML area along with Cement Grade Limestone which can be usable in boiler of Power Plant for de-sulfurization process and can also for manufacturing of Soda Ash in company's own Soda Ash plant in Gujarat for captive purpose. During development phase, practically somewhere and sometimes all the grades are not feasible to mine out in required proportionate. In such a situation, until mine is fully developed, limestone digging should have weighted average equally in terms of desired CaO% without blending of all grades. The weighted average shows the quality, nearly the desired one to be sent directly to the proposed plant for clinker production/soda ash plant.

2.5 MINING

It is a virgin area, therefore mine working is yet to be started after getting various clearances/ approvals as applicable.

2.5.1 Proposed method of mining

The Vangar and Madhiya deposit will be worked out by fully mechanized opencast method using Continuous Surface Miner (CSM) with combination of excavator/ loader and dumpers. Conventional method i.e. drilling and blasting shall be proposed for handling of limestone as well for 50% of total handling. Surface miner is environment friendly machine and is used in order to avoid blasting as far as possible.

The cutting depth of surface miner is 250-300 mm and product size generated after cutting and milling in the required range. The loading is proposed to be carried out by hydraulic excavator and pay loader for lifting sized limestone and

transportation shall be done by means of dumper/tippers of 25 tonnes capacity. The destination of mined out limestone is proposed clinkerization unit with crushing unit for crushed material only. Ex-surface miner material needs no further crushing.

The face shall be oriented in east-west direction. The bench height is proposed 6.0 m. Due to absence of waste, no handling of waste is required as pre-production development except top soil removal and preparation of haul/ mine road. Soil shall be removed first in order to remove the Limestone. Benches of 6 m height and working width 12-15 m (as per MMR) maintaining working bench slope of 80-85^0 in limestone.

Use of surface miner is eco-friendly mining operation specifically in area near road, habitation and boundary areas. The salient features of surface miner are safe and steady operation, minimum dust generation and low noise. It strips the strata in slices of 25-30 cm thick and wide 2.0m-2.2 m.

Topsoil is loose material, therefore it will require pay loader for loading in dumper/ tipper. Entire ROM limestone is proposed to be fed to the proposed cement plant directly for further process. Initially, limestone may be stacked temporarily depending upon plant demand. The excavation and loading is proposed to be carried out by Surface Miner and by occasionally drilling/ blasting, hydraulic excavator, loader, dumpers.

Company will explore the possibility of reducing the mining with drilling & blasting by using ripper-dozer combination to eliminate the drilling & blasting for limestone use in cement plant.

For soda ash plant, Company needs sized limestone, i.e. 25-100 mm for which drilling & blasting is essential to break in-situ limestone rock for required size. However, Company shall also explore the possibility to deploy rock breaker to eliminate the drilling & blasting. Rock breaker can be installed in excavator by replacing it bucket and can be used as per the requirement.

Pay loader of capacity 5.76 cum shall be used for loading of fragmented rock mass of mineral and transported to the proposed cement plant/Soda Ash Plant at Kalatalav, Bhavnagar. Crusher is required for material fragmented by drilling and blasting for cement plant and crushing of the blasted material will take place at the proposed cement Plant. Crusher is proposed in proposed cement plant in the vicinity of ML area. For use in Soda ash plant, excavated limestone mineral (ROM) shall be sent directly to the soda Ash Plant located at Kalatalav, Bhavnagar where further breaking of limestone into required size will be done before the feed.

Mine office with all necessary facilities shall be in nearby mine of the company. Based on the similar deposit working mine, the bench geometry has been designed. The upper sandy material is loose whereas limestone is semi-solid.

The Broad parameters of mining operation will be as below:

Number of working days	300 days/year
Working shift/day	2 shifts of 8 hours each
No. of benches	1
Height	6.0 m (max.)
Width	For working bench 12-15 m and for closing (conceptual) bench Optimum
Bench slope	80-85^0
Ultimate Pit slope	~ 45^0
Gradient of ramp	1 in 16

The Production is being proposed nil for year 2021-22 and 2022-23, 0.01 million tonne/annum for 2023-24, 0.16 million Tonne/year for 2024-25 and 1.60 million Tonne/year in 2025-26.

2.6 TENTATIVE YEARWISE DEVELOPMENT PROGRAMME

The mining operations shall be with opencast method fully mechanized means with surface miner and drilling & blasting/Ripper – Dozer / Rock breaker. The bench height of 6.0m (Max.) and sloping bench at about 80-85 degree and working bench width 12-15 m shall be maintained. The mine working is proposed to be worked in 2 shifts of 8.0 hr each.

2.6.1 Tentative Development programme for FY 2021-22

In this year, only pre-development and pre-production work shall be there. Other than this, greenbelt shall be developed in routine. The haulage roads will be as shown in the plan for future use. Greenbelt/ plantation is proposed to be covered in 1.00ha within the road barrier followed by fencing for safety of plants. Fencing shall have length of about 1173 m all around the greenbelt/ plantation for safety. Tentative excavation for this year is shown in **Fig No. C2-4**.

2.6.2 Tentative Development programme for Financial Year: 2022-23

In this year, only pre-development and pre-production work shall be there. Other than this, greenbelt shall be developed in routine. The haulage roads will be as shown in the plan for future use. Greenbelt/ plantation is proposed to be covered in 1.00 ha within the road barrier followed by barbed fencing for safety of plants. Fencing shall have length of about 980 m all around the greenbelt/ plantation for safety. Tentative excavation for this year is shown in **Fig No. C2-5**.

2.6.3 Tentative Development programme for FY 2023-24

New bench shall be created for working towards NE of the ML near boundary pillars 324 to 326. Total developmental and production level shall be from 17 m AMSL to 16 m AMSL in a single bench. Upper parts shall be common for both i.e. developmental as well as production. Soil removal is envisaged of quantum 22000 cum. Limestone working shall be from 16.0 m AMSL to 13.0 m AMSL. Ramp shall be created to the lower benches having of gradient 1 in16 for safe movement in fresh area. The proposed direction of working is towards SW. Mineral to be produced shall be about 0.01 million tonnes. As it is under developing stage, quality of limestone produced may be slightly lower than desired. Quality attention is required. During this year, no stacking of limestone is required as entire ROM is proposed to be sent to plant for further processing. Soil stacking is proposed covering an area about 1.66 ha attaining reaching top level 20 mRL hardly near boundary pillar 7-8. The stack shall temporary in nature. Garland drain shall be constructed as and when required. The haulage roads will be as shown in the plan for convenience of handling the limestone. Greenbelt/ plantation is proposed to cover an area of 1.0 ha within the road barrier followed by barbed fencing for safety of plants. Fencing shall have length of about 1034 m all around the greenbelt/ plantation for safety.

Tentative excavation for this year is shown in **Fig No. C2-6.**

2.6.4 Tentative Development programme for FY 2024-25

Already advanced bench shall be extended further for working towards South direction. Total developmental and production level shall be from 16 m AMSL to 13 m AMSL in a single bench. Soil removal is not envisaged. Limestone is from 16.0 m AMSL to 13.0 m AMSL. The ramp shall be extended to the lower benches of gradient 1 in 16 for safe movement in fresh area. Mineral to be produced shall be about 0.16 million tonne of limestone. As it is under developing stage, quality of limestone produced may be slightly lower than desired. No stacking is required as entire ROM is proposed to be sent to plant for further processing.

Construction of a retaining wall of length 968 m is proposed during this year around the proposed soil stack to check spreading of soil in the nearby ground. Greenbelt/ plantation is proposed to cover an area of 1.0 ha within the road barrier at two locations followed by fencing for safety of plants. Fencing shall have length of about 498 m all around the greenbelt/ plantation for safety.Tentative excavation for this year is shown in **Fig No. C2-7.**

2.6.5 Tentative Development programme for FY 2025-26

Already advanced bench shall be extended further for working towards east and south. Total developmental and production level shall be from 17 m AMSL to 16 m AMSL and 16 m AMSL to 13 m AMSL in a single bench. Soil removal is

envisaged from level 17 m AMSL to 16 m AMSL. Limestone is from 16 m AMSL to 13 m AMSL. As such, a total of 133670 cum topsoil shall be removed which shall be disposed by means of stacking within earmarked area as discussed above. The stack shall temporary in nature. Soil stacking is proposed covering a total area about 4.63 ha attaining reaching top level 25 mRL near boundary pillar no. 7-8. Also a little part of topsoil may be spread within 7.5 m boundary barrier for plantation purpose, if required. Garland drain shall be constructed as and when required.The ramp shall be extended to the lower benches of gradient 1 in 16 for safe movement in fresh area. Mineral to be produced shall be about 1.60 million tonne of both the grades. As it is under developing stage, quality of limestone produced may be slightly lower than desired. During this year, no stacking is required as entire ROM is proposed to be sent to plant for further processing.The haulage roads will be as shown in the plan for convenience of handling the limestone. Greenbelt/ plantation is proposed to cover an area of 1.0 ha within the road barrier followed by fencing for safety of plants. Fencing shall have length of about 572 m all around the greenbelt/ plantation for safety.

Tentative excavation for this year is shown in **Fig No. C2-8.**

2.6.6 Conceptual Mine planning up to end of life

Company is proposing to operate mines on the concept of utilization of mineral of all grades. Company is in the process of planning to extract the mineral up to +1.0/+2.0 m AMSL up to conceptual stage i.e. end of mine life as per known mineral reserves so far. The conceptual plan has been discussed for a period of 13 years from now onwards which is well before end of lease period. Proposed exploration may change the conceptual scenario drastically further as the lessee have already proposed exploration programme to bring entire area within G1 level as per provision of MEMC Rules, 2015 during next five years. Consequently significant conversion will be observed in reserves under UNFC 111 category to sustainable mine life at ultimate limestone production target of 1.60 million TPA.

2.6.7 Drilling & Blasting

Drilling/ blasting will be carried out for almost half of the proposed production. Multi-row drilling and V-pattern drill holes shall be practiced for deep hole drilling and blasting. Deep hole blasting shall be carried out after getting legal permission from competent authority. Utmost efforts shall be taken towards proper fragmentation in order to minimize blasting cost and risk.

The drilling shall be done with crawler mounted wagon drill fitted with DTH hammer. The diameter of the hole drilled shall not be more than 4”. Since the proposed height of the benches is 6 m, depth of the drill holes shall be kept 6.6 m (about 10% extra taken as sub grade drilling).

FIG NO. C2-4: TENTATIVE EXCAVATION PLAN AT THE END OF YEAR 2021-22

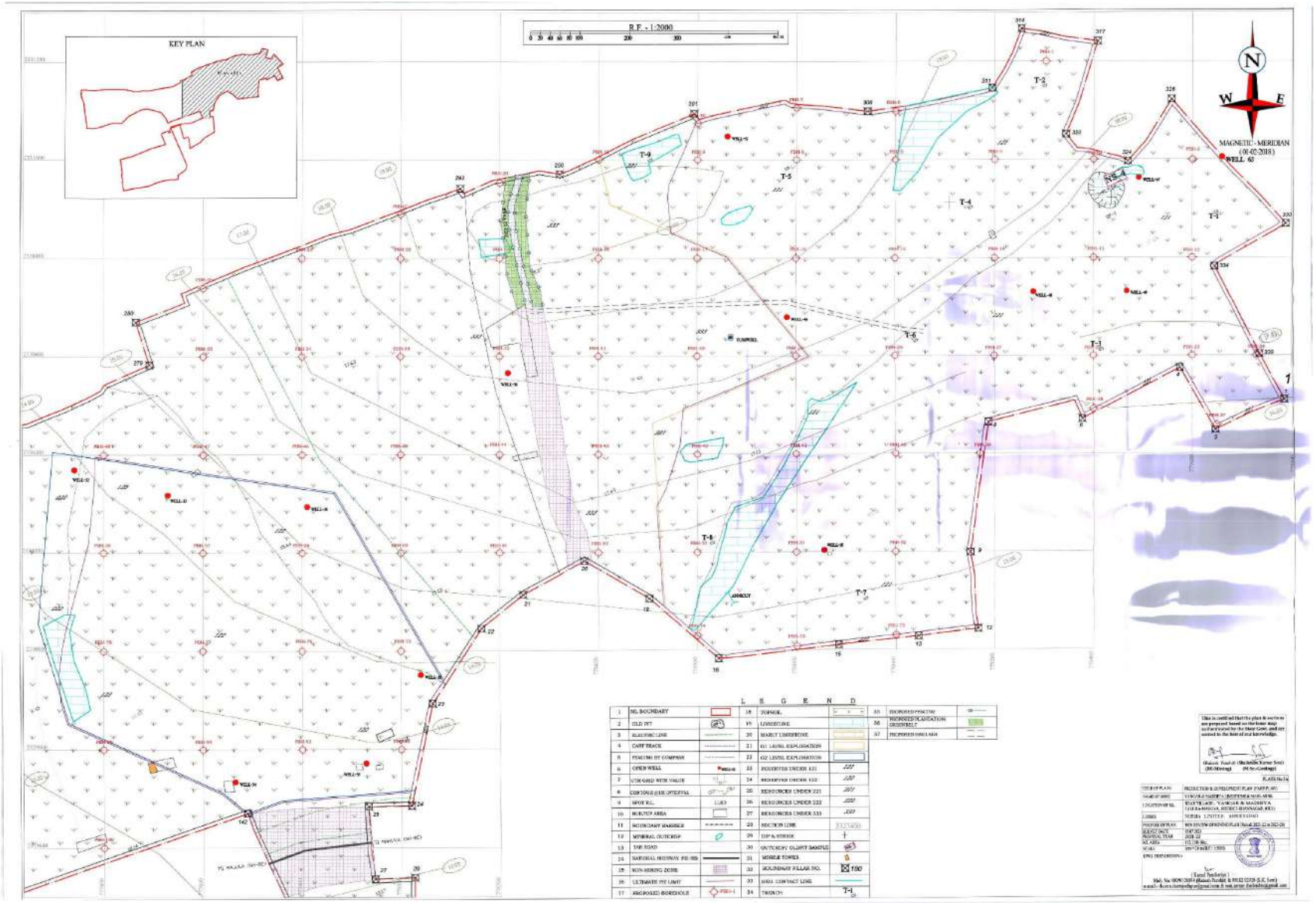


FIG NO. C2-5: MINE STAGE PLAN AT THE END OF YEAR 2022-2023

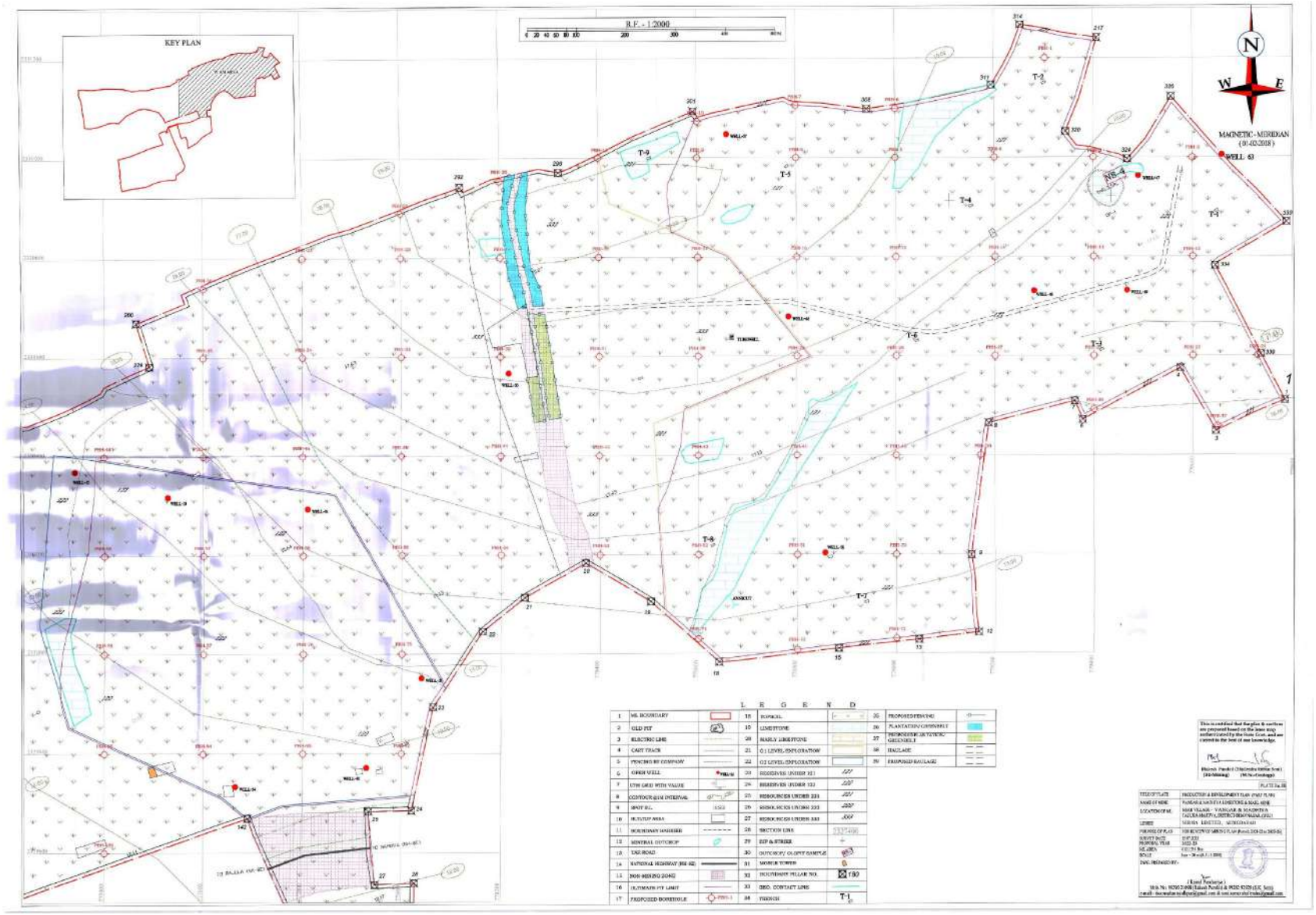


FIG NO. C2-6: TENTATIVE EXCAVATION PLAN AT THE END OF YEAR 2023-24

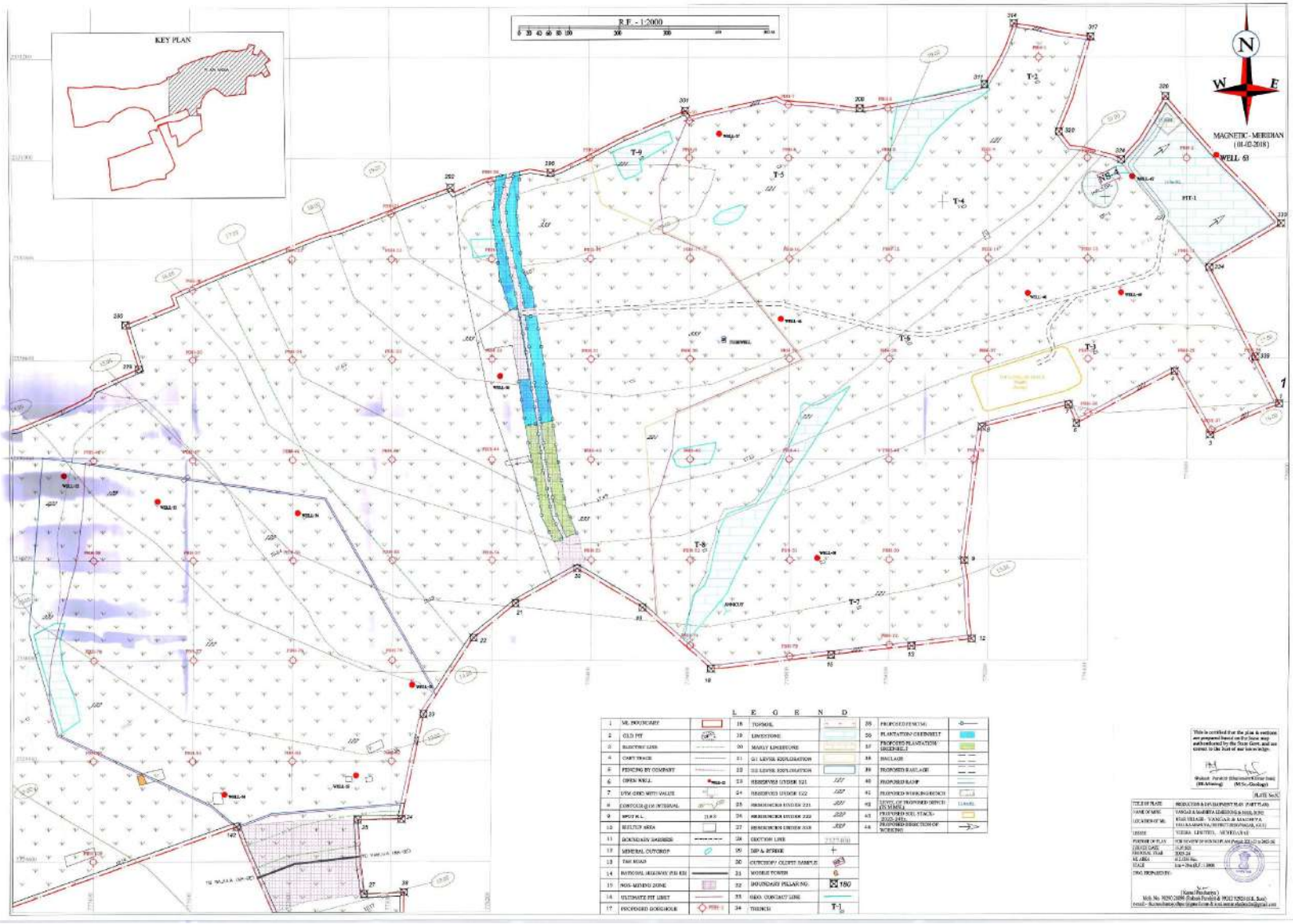


FIG NO. C2-7: TENTATIVE EXCAVATION PLAN AT THE END OF YEAR 2024-25

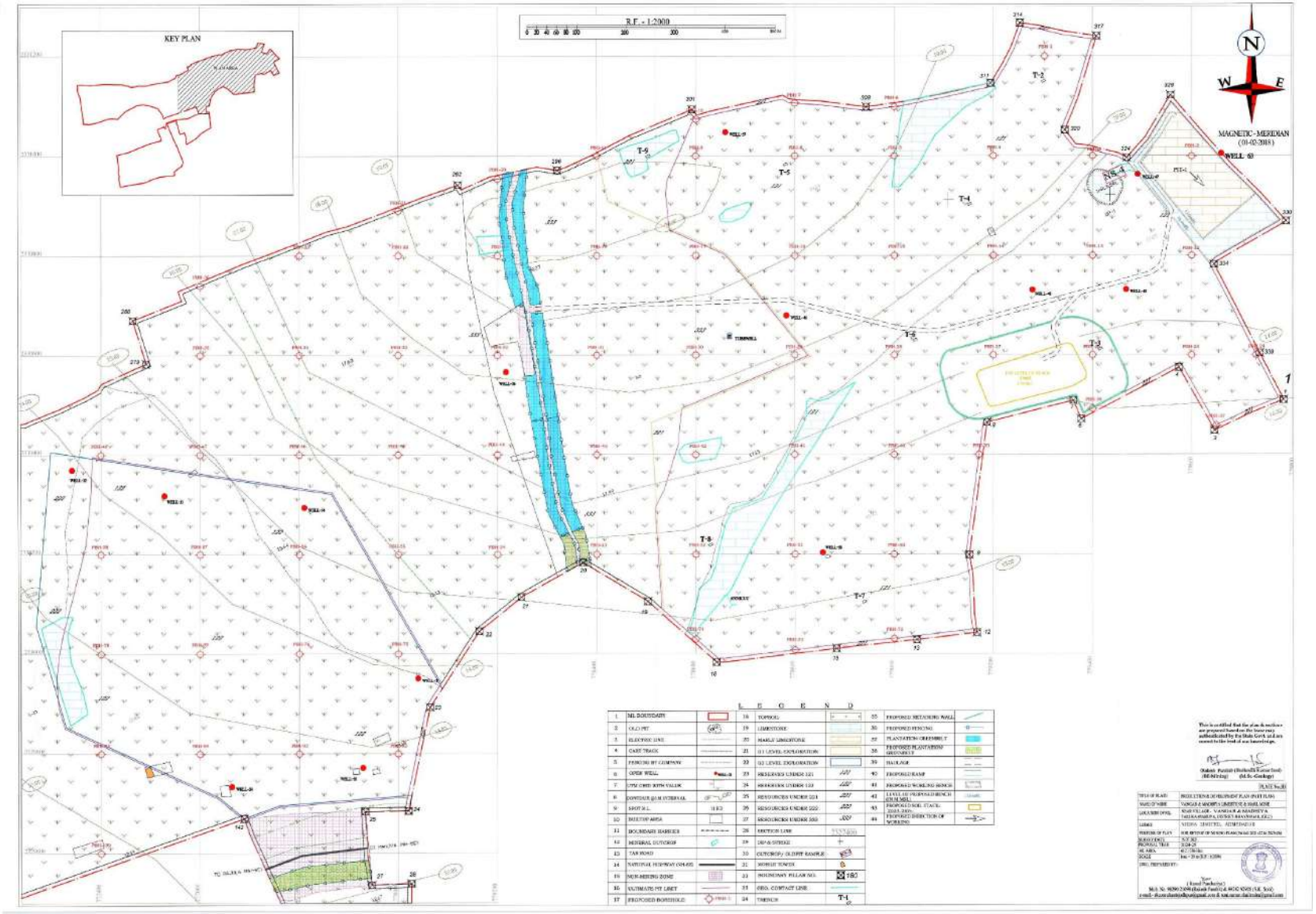
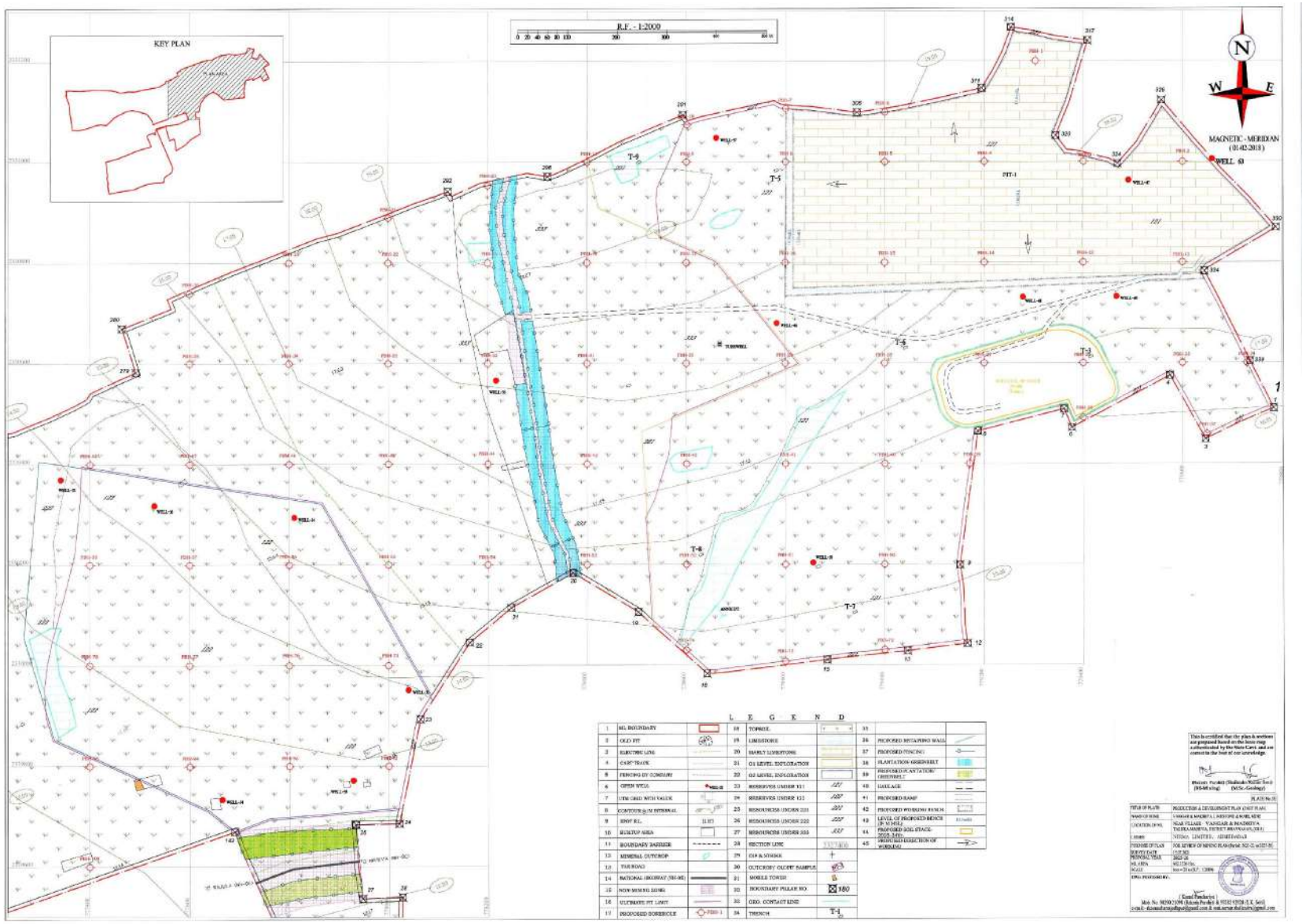


FIG NO. C2-8: TENTATIVE EXCAVATION PLAN AT THE END OF YEAR 2025-26



Spacing and burden shall be 4.0 m and 3.0 m respectively in order to avoid fragmentation of over size material. Inclination of the drill holes shall be along the slope of the bench. If required, rock breaker shall be engaged to avoid secondary blasting. Charging operations shall commence after completion of all drill holes. The cord relays of different delays shall be used to restrict the charge per delay.

An Explosive Magazine under Explosive Rules 2008 for the storage and use of explosives will be provided and maintained in nearby lease hold area in Gujarda mine which shall be common for all the three mines.

The blasting parameters are given in **Table No. C2-7**.

TABLE NO. C2-7: BLASTING PARAMETERS FOR LIMESTONE

Item	Limestone bench
Bench height (m)	6 (Max.)
Hole depth (m)	7
Hole Burden (m)	3.0
Hole Spacing (m)	4.0
Volume (m^3)	72
Inclination of hole	5° to 10° from vertical
Bulk density (gm/cc)	1.92
Explosive efficiency (T/Kg)	8.0

Vibration study will be carried out after commencement of mining operation to suggest the measures to mitigate the adverse effect, if any, and to carry out safe and smooth blasting operation.

2.6.8 Transportation

From the mine faces, the limestone will be transported by dumpers (25 tonne) to the earmarked sites temporarily and ultimately to the crusher site. Blasted material may require crusher for proper fragmentation to meet feed size. Crushing of the blasted material will take place at the proposed cement Plant otherwise for soda ash plant use. Excavated limestone mineral (ROM) shall be sent to the soda Ash Plant at Kalatalav, Bhavnagar where the further breaking into required size will be done before the feed. For cement plant, no crushing is required for ex-surface miner material as ex-surface miner will be within the required/ desired feed size.

The movement of trucks will be on internal roads and parallel to the highway and crossing of highway will be done at selected location(s) only.

Limestone will be excavated by combination of surface miner-dumper and excavator-dumper. Blasted rock will be loaded by hydraulic excavators (2.0 m^3) into the dump trucks (capacity 25 tonnes) for onward dispatch to the crusher.

2.7 PRODUCTION

The expected excavation plan for the next 5 years is given in **Table No. C2-8**.

TABLE NO. C2-8: QUANTUM OF SOIL, WASTE ROCK AND LIMESTONE PRODUCTION (CUM)

Year	Pit No	Total Tentative Excavation	Top Soil	OB/ SB/ IB	ROM (in cum)		Mineral reject	Ore:OB
					Ore	Mineral reject		(cum: cum)
2021-22	-	nil	nil	nil	nil	nil	nil	-
2022-23		nil	nil	nil	nil	nil	nil	
2023-24	New Pit (Pit-1)	27238	22000	nil	5238	nil	nil	1:0.00
2024-25		83403	nil	nil	83403	nil	nil	1:0.00
2025-26		967003	133670	nil	833333	nil	nil	1:0.00
Total	**-**	**1077644**	**155670**	**nil**	**921974**	**nil**	**nil**	**1:0.00**

Source: Table A2.2 of Review of Mining Plan with progressive Mine Closure Plan approved on 05.08.2021

The life of the mine anticipated is 13 years. The expected excavation during next 5 year plan period is given in **Table No. C2-9**.

TABLE NO. C2-9: EXPECTED EXCAVATION DURING FIRST PLAN PERIOD (MILLION TONNE)

Year	ROM	Usable/ Saleable
2021-22	nil	nil
2022-23	nil	nil
2023-24	0.01	0.01
2024-25	0.16	0.16
2025-26	1.60	1.60
Total	**1.77**	**1.77**

Source: Table A2.3 of Review of Mining Plan with progressive Mine Closure Plan approved on 05.08.2021

The production of limestone is proposed to be achieved at target capacity of 1.60 million tonne/ annum during next five years of working. The conceptual plan is discussed based on proposed production rate. The area have also been identified 5 years block wise working up to conceptual period as given in **Table No. C2-10**.

TABLE NO. C2-10: PHASEWISE WORKING PROGRAMME FOR MINE LIFE

Sl. No.	Phase	Duration (in years)	Proposed production (million tonne)	Proposed excavation area (ha.)
1.	From 2021-22 to 2025-26	5	1.77	31.71

Sl. No.	Phase	Duration (in years)	Proposed production (million tonne)	Proposed excavation area (ha.)
	(Plan period)			
2.	From 2026-27 to 2030-31	5	8.0	93.75
3.	From 2031-32 to 2033-34 (End of Mine life)	3	5.143	71.54
	Total	**13**	**14.913**	**197.00**

Source: Table A2.13 of Review of Mining Plan with progressive Mine Closure Plan approved on 05.08.2021

2.7.1 Top Soil Stacking & Backfilling

There will be no over-burden/waste to be excavated, hence, no waste dump shall be there.

However, there will be around 1.37 mi. cu.m. top soil, which will be removed by the end of conceptual stage in 13 years. In the 1st plan period top soil removal shall be 1,50,000 cu.m. top soil will be removed and will be stacked near boundary (pillar no. 6-8) in a temporary stack. The top soil shall be utilized for plantation purpose near mine boundary and safety barrier of the road simultaneously to the extent possible.

The excess soil has been proposed for filling in 36.36 ha of mined out pits where mineral will be exhausted (which will be proven through additional exploration in working pit), having shallow depth upto 4 m. Hence, at the conceptual stage, the temporary top soil stack will be completely removed and the area shall be available for extraction of limestone below it.

It is submitted that the entire lease area is mineral bearing. Hence, there is no non-mineralized zone where the temporary soil stack can be relocated. As per best practice in the mining industry under such scenario, temporary storage within mine lease followed by utilization for plantation purpose, rehandling and filling back the mined out pits is the best option.

TABLE NO. C2-11: REMOVAL OF SOIL AND ITS DISPOSAL

Year	Removal of soil (mio. cum)	Means of disposal	Location	Area covered under stacking (ha)
FY 2021-22 to FY 2025-26	0.15	Temporary stacking at one location till 7th year now onwards and after that for simultaneously backfilling	Near boundary pillar no. 6 to 8	4.63
FY 2026-27 to FY 2030-31	0.84		2026-27 and then backfilling	nil
FY 2031-32 to FY 2033-34 (end of mine life)	0.38		No stacking	nil
Total	**1.37**	**-**	**-**	**nil**

TABLE NO. C2-12: PROGRAMME OF BACKFILLING

Year	Soil to be utilized for tentative backfilling (cum)	Location	Phase wise Area to be backfilled (ha)
FY 2021-22 to FY 2025-26 (Plan period)	No proposal	-	nil
FY 2026-27 to FY 2030-31	0.99 mio cum	Shallow depth pits (pit no. 04 & 05) in the entire ML area	26.17 Ha.
FY 2031-32 to FY 2033-34 (end of mine life)	0.38 mio cum		10.19 Ha.
Total	**1.37 mio cum**		**36.36 Ha.**

The void area is proposed to be utilized for accumulation of rainwater which shall be useful for the local in replenishment of ground water.

2.8 LIST OF MINING EQUIPMENT

Like any other industry, the proper selection of heavy earth moving machinery in an opencast mine plays an important role in its overall success. Type of equipment, suitable for a specified job & its capacity, depend entirely on the size of the project, material to be handled, site conditions, availability of equipment, comparative price etc. Mechanized mining operation is envisaged for production of Limestone and removal of topsoil.

The list of mining equipment required are given in **Table No. C2-13**.

TABLE NO. C2-13: LIST OF OTHER MISCELLANEOUS MINING EQUIPMENT

Sl. No.	Description	Nos.	Size/Capacity	Make	Motive Power	H.P.
1.	Surface Miner	1	Drum width 2500 mm	Wirtgen	Diesel Engine	950
2.	Front End Loader	1	5.76 cubic meter	Komastu	Diesel Engine	315
3.	Shovel/ excavator with rock breaker	2	3.5 cubic meter	L&T	Diesel Engine	350
4.	Dumpers	14	25 tonne	MAN	Diesel Engine	120
5.	Riper-Dozer	1	D-8L	CAT	Diesel Engine	250
6.	Drill machine	2	15 m/hr	ICM260	Diesel Engine	215
7.	Water Tankers/ Sprinklers	1	20000 liters	TATA	Diesel Engine	120

Source: Table A2.6 of Review of Mining Plan with progressive Mine Closure Plan approved on 05.08.2021

The following auxiliary operations shall also be carried out:

(i) Cleaning, leveling and dozing of debris from bench floors and haulage roads.

(ii) Formation of soil stack.

(iii) Water spraying for dust suppression on roads.

(iv) Explosive transport.

(v) Over size boulder breaking after primary blasting.

(vi) Repair and maintenance of equipment at site.

(vii) Stores, food services to employees, First aid services etc.

(viii) Men and material transport (welfare facilities).

List of equipment's required to carry above auxiliary operations is given in **Table No. C2-14**.

TABLE NO. C2-14: LIST OF MACHINERY/ EQUIPMENT REQUIRED FOR SITE SERVICES

Sl. No.	Machinery	No.	Make	Motive Power	H.P.
1.	Diesel tanker (5000 litre cap.) (Truck mounted) (common for all mines)	1	TATA/ Ashok Leyland	Diesel Engine	120
2.	Mobile service van and garage equipment (common for all mines)	1	TATA/ Ashok Leyland	Diesel Engine	120
3.	Diesel Jeeps	1	Mahindra	Diesel Engine	45 to 60
4.	Ambulance van (common for all mines)	1	Mahindra/ TATA	Diesel Engine	45 to 60
5.	Explosive van (common for all mines)	1	Mahindra	Diesel Engine	45 to 60

Source: Table A2.7 of Review of Mining Plan with progressive Mine Closure Plan approved on 05.08.2021

Above all machinery shall be on hired (contractual) basis. Make and capacity may differ/ change as per specific requirement.

2.9 SITE SERVICES AND INFRASTRUCTURES

The following Site services is proposed to be developed at proposed mining site:-

A. First aid room

A First Aid Room will be constructed at the proposed mine with the equipment as specified in the Second Schedule of Mines rules. A qualified and experienced person will be in-charge of the First Aid Room for attending to persons during any accident.

B. Canteen / rest shelter

Canteen will be provided for the employees to take food and rest to be located at adjacent Dudhala, Dudheri & Gujarda mine of the company which shall be common for all three mines. The canteen will be well equipped and shall provide services at subsidized rates. In addition to this, washing places will also be provided in the canteen. Suitable steps will be taken to maintain the canteen in a clean and hygienic condition. Temporary rest shelters shall be constructed in the mine site.

C. Drinking water

In order to cater to the needs of the drinking water, sufficient; water will be made available to the mines workmen. A number of outlets for water will be provided at the mines office, canteen (proposed at site) and steps will be taken to ensure that water is always available during the working hours. One mobile water tanker will be provided for water spraying and supply of the water in case of any off site work.

D. Urinal & lavatory

Sufficient number of urinals and lavatories will be provided at mines.

E. Adequate lighting arrangement

Adequate lighting arrangements (including portable lighting towers) will be made at quarry face, haulage roads, and stacks as per the statutory requirement.

F. Other facilities

The necessary Mines office for managerial staff will be provided in the lease area.

G. Group Vocational Training Centre

Vocational training centre common for all the 3 mines will be provided.

Machine required for mining and allied activities shall be hired and their maintenance shall be within the scope of contractor. Therefore no workshop shall be there.

2.10 FUEL AND STORAGE OF EXPLOSIVES

As per Mining Plan approved on 05.08.2021 diesel for mine machinery will be required at the rate of 208 Liter per hour. Generally, Diesel will be drawn from nearby HSD pump. Explosive will be stored in the proposed magazine approved

by Chief controller of explosives and transported through approved explosive van.

2.11 POWER REQUIREMENT

100 KW from Gujarat State Electricity Board / Captive Power Plant located at Cement Plant near Padhiyarka. D.G set of 5 KVA will be installed for emergency purpose.

2.12 WATER REQUIREMENT

Total water requirement for the mines will be 42 KLD and water balance diagram is given in **Fig No. C2-9**. The source of water will be:

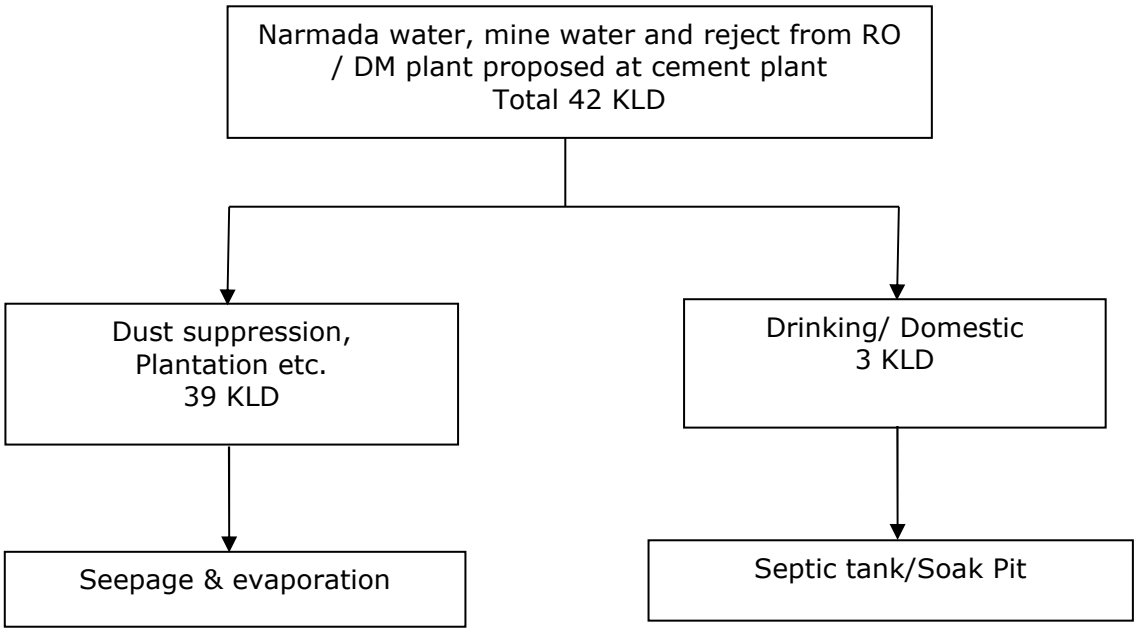
For drinking water	:	Narmada water pipeline/ Water tanker
For Dust Suppression & Plantation	:	Reject water of RO /DM plant (proposed at Cement plant) & mine water

Total water requirement for the mines will be 42 KLD. The breakup of water requirement is given in **Table No. C2-15** and shown in **Fig No. C2-9.**

TABLE NO. C2-15: WATER REQUIREMENT

Purpose	Avg. Requirement
Mining (Dust suppression and plantation)	39.0 KLD
Drinking / Domestic	3.0 KLD
Total	**42.0 KLD**

FIG NO. C2-9: WATER BALANCE DIAGRAM (KLD)



2.13 EMPLOYMENT POTENTIAL

Persons required will be of both technical and non-technical background. Mine will work for 300 days in a year. There shall be two shift operation per day and six days working per week. There will be one Head (Mines) who will be common for all the three adjacent mines of Nirma.

Managerial, supervisory technical and other staff required for the operation of mine for 6 days per week and two shift per day working is given in **Table No. C2-16**.

TABLE NO. C2-16: MANPOWER DETAILS

Sl. No.	Manpower	Numbers
1.	Mines Manager	1
2.	Asst. Mine Manager	1
3.	Geologist	1
4.	Mining Engineer	2
5.	Mines Foreman	2
6.	Mining Mate	2
7.	Surveyor	1*
	Total	**9**
1.	Highly Skilled (officers and staff)	9
2.	Skilled	38
3.	Semi-skilled	6
4.	Unskilled	5
	Total	**58**

Note: *Surveyor (Common for all 03 mines, accounted in Gujarada, Dudhala & Dudheri Mine)

CHAPTER 3
DESCRIPTION OF THE ENVIRONMENT

3.1 GENERAL

For the purpose of assessing impacts of any development project, the baseline status of environmental factors in the project area and its surrounding is to be established.

3.1.1 Sources of environmental data

The baseline information with respect to micro-meteorological data, ambient air quality, water quality, noise levels, soil quality and traffic density have been collected by NABL accredited and MOEF&CC recognised M/s Min Mec R&D Laboratory, New Delhi (NABL certificate no. TC-6337 valid upto 16.03.2024 and MoEF&CC Notification no. SO 3744(E) at Sl. No. 97 valid upto 16.10.2024). The long term meteorological data recorded at the nearest IMD station, Bhavnagar was taken from "Climatological Normals (1991-2020)" issued by Office of The Additional Director General of Meteorology (Research), IMD, Pune. Micro-meteorological data was recorded at the site using an automatic weather monitoring station. Apart from these, secondary data have been collected from Registrar of Census 2011, Central Ground Water Board/ Authority, Survey of India Open Series Map, satellite images from Google Earth, information from Forest Department, etc.

Micro-meteorological data was recorded at the site using an automatic weather monitoring station. The generation of primary data as well as collection of secondary data and information from the site and its surroundings was carried out during summer season from 1st March 2021 to 02nd June 2021 in anticipation of applying for fresh ToR. The data was generated in line with Terms of Reference from Ministry of Environment, Forest & Climate Change vide letter no. J-11015/152/2018-IA-II(M) dated 3rd January, 2017. The same has been extended till 12th November 2021 vide letter no. F.No. J-11015/152/2016-IA-II (M) dated 16.03.2020 by MoEF&CC. Further, in view of the nation wide lockdown due to COVID19 pandemic and obstructions triggered by it, MoEF&CC had issued a notification vide S.O. 221(E) dated 18th January 2021 and accordingly the validity of ToR may be considered upto 12.11.2022. However, the company has applied for fresh Terms of Reference and has received the same vide letter no. J-11015/152/2016-IA. II(M) dated 23.12.2022.

3.1.2 Study area

For the description of baseline environmental scenario, the lease area has been considered as the "core zone". The area falling within a distance of 10 km from the boundary of the core zone has been considered as the "buffer zone". The

core zone and the buffer zone together have been termed as "study area". The core zone falls within Vangar and Madhiya villages of Mahuva Tehsil of District Bhavnagar, Gujarat. Study area covers two sub-districts i.e. Rajula sub-district of District Amreli and Mahuva sub-district of District Bhavnagar. The study area is shown in **Fig No. C3-1**.

3.2 TOPOGRAPHY AND DRAINAGE

3.2.1 Topography

Core zone: The mining lease area is characterized by flat topography with minor undulations. The area comprises of surface soil /Dry alluvium, Marl / Milliolite Limestone,etc. Western and eastern part is comparatively elevated from central and southern parts. No hilly terrain is seen in and around the area of mining lease. Slight slope can be seen from NW portion towards centre and from NE portion towards south. The overall slope is towards south i.e. Arabian Sea. The core zone elevations range between 05 to 20.27 m above mean sea level with vegetation is sparse. Few electric lines with one HT line are passing through the ML area for supplying power to the various wells/ tube wells and few of them are through National Highway NH-8E/51. As per surface plan given in approved review of mine plan, outcrops and one old pit with shallow depth can be seen at various locations.

Buffer Zone: The topography of the study area is generally plain with minor undulations. The general altitude of buffer zone area varies between 0 m amsl to 68 m amsl. The general physiographic gradient is towards south.

3.2.2 Drainage

Core zone: Rainwater flows as per natural slopes in the nearby fields of the area. Few small seasonal streams can be seen originating within the ML area. These streams ultimately dissipate into the vast saline plain that is seen in the south-western part of the area. Rainwater flows as per natural slopes in the nearby fields of the area. There are a few first and second order seasonal streams passing from North towards South, through the lease area, between Vangar and Madhiya villages. All streams ultimately lead to Samdhiyala salinity ingress control bund, which overflows into the sea. The drainage pattern is dendritic in nature. These are shown in **Fig No. C3-1**.

Buffer Zone: In the study area, there exist some surface water bodies. The area has dendritic drainage pattern with general flow direction from north to south. The storm water flows through these rivers and finally drains out to sea. There is a bund near Samdhiyala village for prevention of the saline water ingress in the western/ south-western side of the project area and the water from the seasonal streams is partly flowing into its catchment and ultimately into the harvesting pond i.e. Samdhiyala salinity ingress control bund. List of rivers/nala present in 10 km radius of mine is given in **Table No. C3-1**.

FIG NO. C3-1: TOPOGRAPHY & DRAINAGE MAP IN 10 KM RADIUS AROUND THE PROJECT

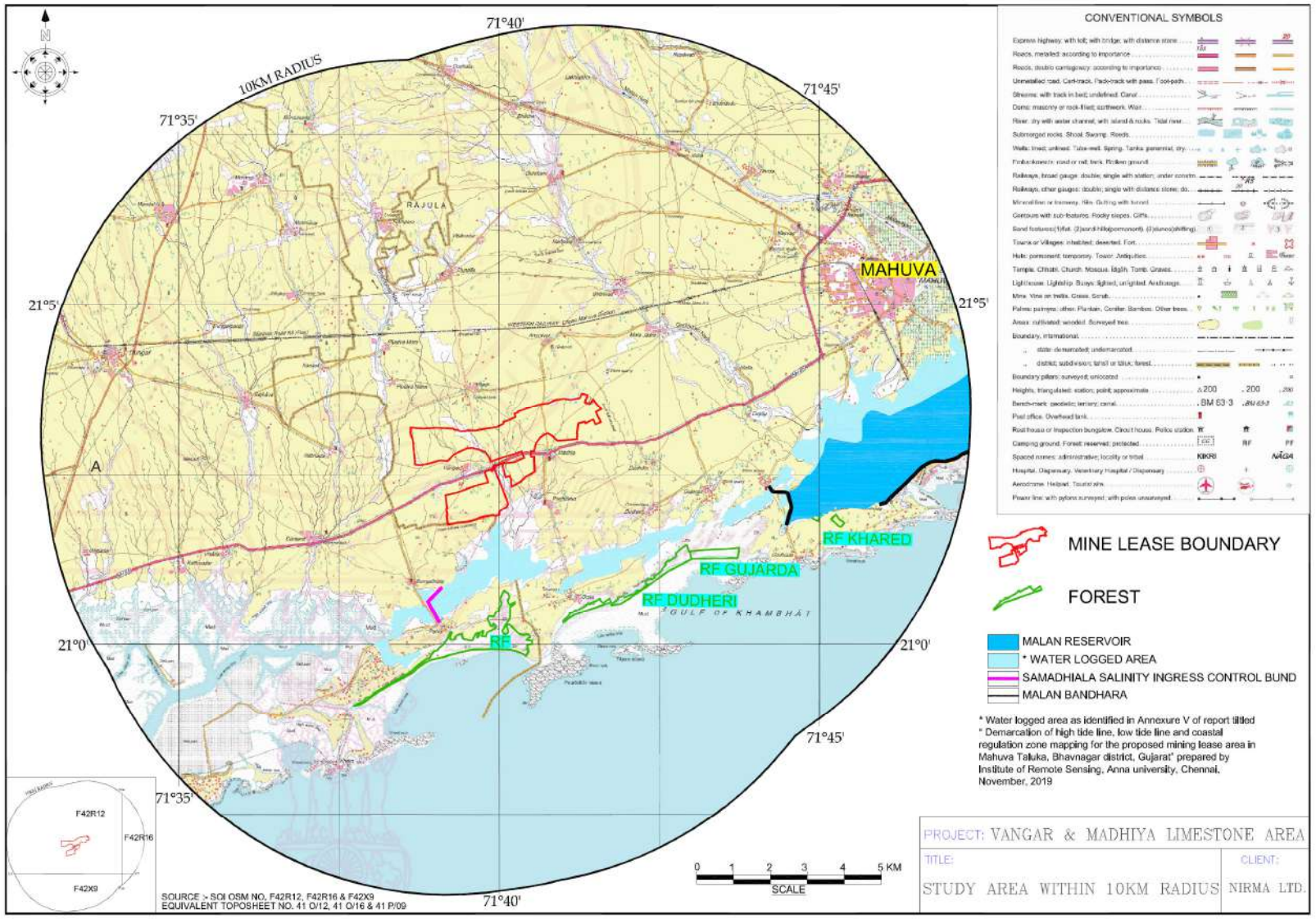


TABLE NO. C3-1: LIST OF WATER BODIES IN 10 KM RADIUS OF MINE

Sl. No.	Water Body	Distance (km), Direction
1.	Arabian Sea Coast	3.4 km to the HTL
2.	Malan Bandhara	5.4 km, SE
3.	Malan River	7.4 km, E
4.	Garasawo river	2.5 km, NE
5.	Samdhiyala salinity ingress control bund	2.3 km, SSW
6.	Bhambhali River	0.9 km, W

3.3 CLIMATE AND METEOROLOGY

3.3.1 Climate

The climate of the district is arid with large annual variations in rainfall and moderate humidity. The area experiences extreme climate conditions. January is the coldest month, with the temperature falling to 14°C. May is the hottest month of the year, when the maximum ambient temperature reaches 39°C. As per the Climatological table for Bhavnagar Meteorological station, the average annual rainfall (1991 to 2020) in the area is 718.0 mm. The period from June to September accounts for more than 95.5% of total annual rainfall.

3.3.2 Long-term meteorology

Long term meteorological data is available from IMD station - Bhavnagar, located at a distance of approximately 100 km in north-east direction of the project. Data is available for the period of 30 years i.e. 1991 - 2020 from "Climatological Normal (1991 - 2020)" issued by Office of the Additional Director General of Meteorology (Research), India Meteorological Department. The data in respect of various parameters are briefly discussed in the following paragraphs.

3.3.2.1 Temperature, Relative Humidity and Rainfall

Temperature

The monthly average of daily maximum and minimum temperatures for the period 1991 to 2020 have been furnished in **Table No. C3-2** visualized in **Fig No C3-2.** The mean of monthly minimum temperature recorded at IMD station Bhavnagar ranges from 14°C in January to 27.5°C in June. The mean of monthly maximum temperature ranges from 27.9°C in January to 39.8°C in May.

Rainfall

The average monthly rainfall for the period 1991 to 2020 at IMD station Bhavnagar is given in table below and the monthly average values of rainfall is shown in **Fig No. C3-3**. The average annual rainfall was recorded as 718.0 mm

Relative Humidity

The average monthly relative humidity data has been studied at IMD station, Bhavnagar for the period 1991 - 2020 and is given in **Table No. C3-2** and shown in **Fig No. C3-4**. The relative humidity at 08:30 hrs ranges between 46% in March to 83% in August, while the relative humidity at 17:30 hrs varies from 23% in March to 72% in August.

TABLE NO. C3-2: MONTHLY AVERAGE MAXIMUM AND MINIMUM TEMPERATURE (°C), RELATIVE HUMIDITY (%) AND RAINFALL (MM) AT IMD STATION, BHAVNAGAR (1991-2020)

Month	Mean Temperature (°C)		Relative Humidity (%)		Mean Total Rainfall (mm)
	Minimum	Maximum	At 08:30 hrs	At 17:30 hrs	
Jan	14.0	27.9	59	36	1.8
Feb	16.4	30.7	53	28	0.0
Mar	20.9	35.1	46	23	0.9
Apr	24.6	38.2	48	27	1.7
May	26.9	39.8	61	39	2.2
Jun	27.5	37.4	72	54	141.6
Jul	26.2	33.5	81	70	239.0
Aug	25.2	32.4	83	72	163.6
Sep	24.7	33.3	81	65	142.2
Oct	23.2	35.0	66	41	20.9
Nov	19.1	32.5	58	36	2.9
Dec	15.3	29.2	60	38	1.1
Annual Average	**22.0**	**33.8**	**64**	**44**	**Total = 718.0**

Source: Climatological Normal (1991 - 2020)

FIG NO. C3-2: MONTHLY AVERAGE MAX. & MIN TEMPERATURE (°C) AT IMD STATION, BHAVNAGAR (1991-2020)

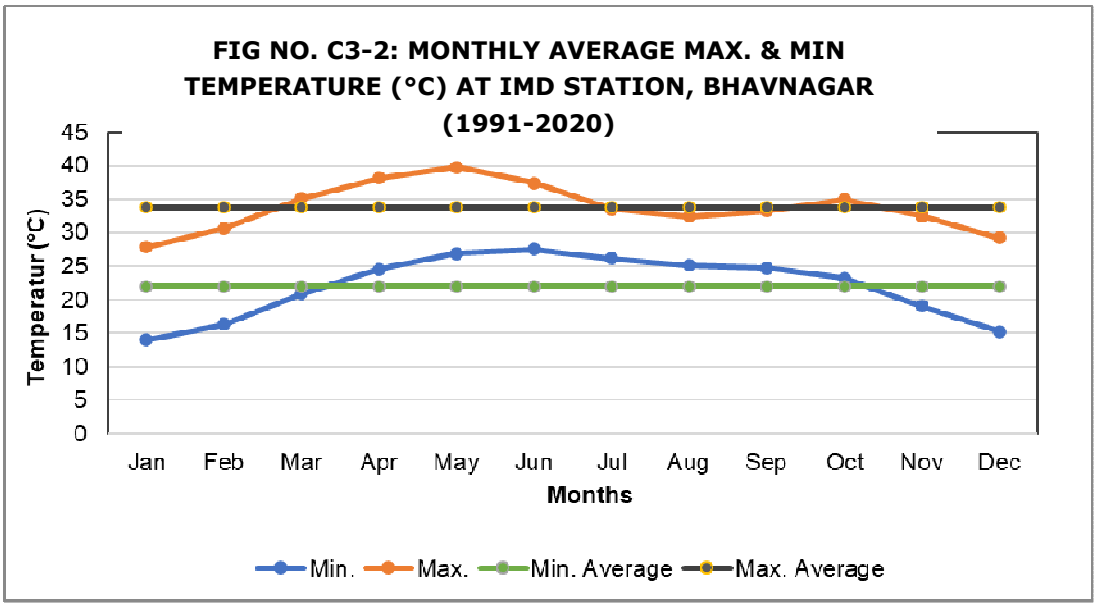


FIG NO. C3-3: MONTHLY AVERAGE RAINFALL (MM) AT IMD STATION, BHAVNAGAR (1991-2020)

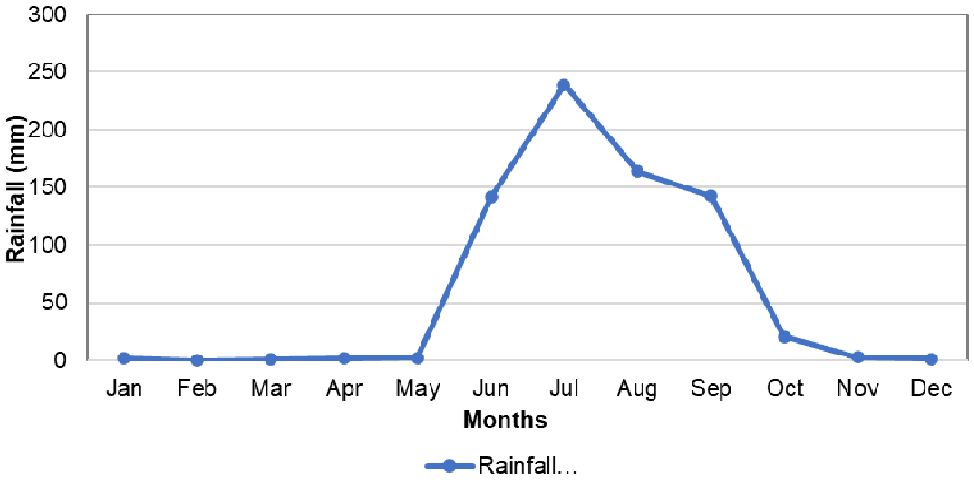
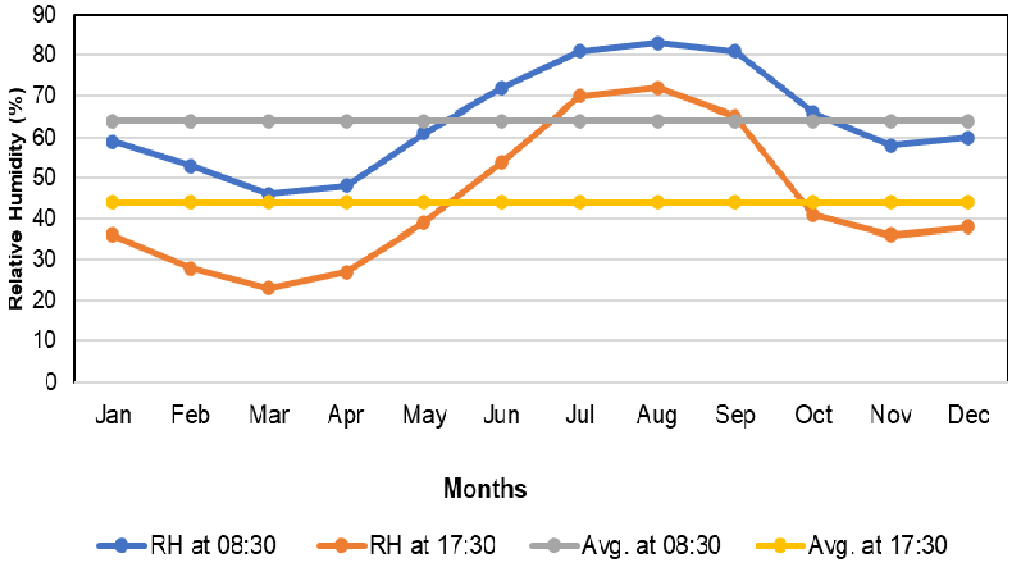


FIG NO. C3-4: MONTHLY AVERAGE RELATIVE HUMIDITY (%) AT IMD STATION, BHAVNAGAR (1991-2020)



Wind speed and wind rose

The nearest station in similar climatological condition is Bhavnagar where wind speed and direction data is recorded. The windrose diagram for the period from 1991 to 2020, has been prepared based on the data available for IMD Bhavnagar, are presented in **Fig No. C3-5** and **Fig No. C3-6** for 8.30 hrs and 17.30 hrs respectively. The morning windrose diagram given in **Fig C3-5**, shows that wind flows predominantly from the directions north-west and west in the months of October to March and from north west, west and south-west in the months of April to September. The evening windrose diagram given in **Fig C3-6** shows that wind is predominantly flowing from north-east, east and south-east except in October-March and from south west, south-east and south from April to June and south west, south and west from July to October.

FIG NO. C3-5: WINDROSE DIAGRAM AT IMD STATION BHAVNAGAR AT 8:30 HRS

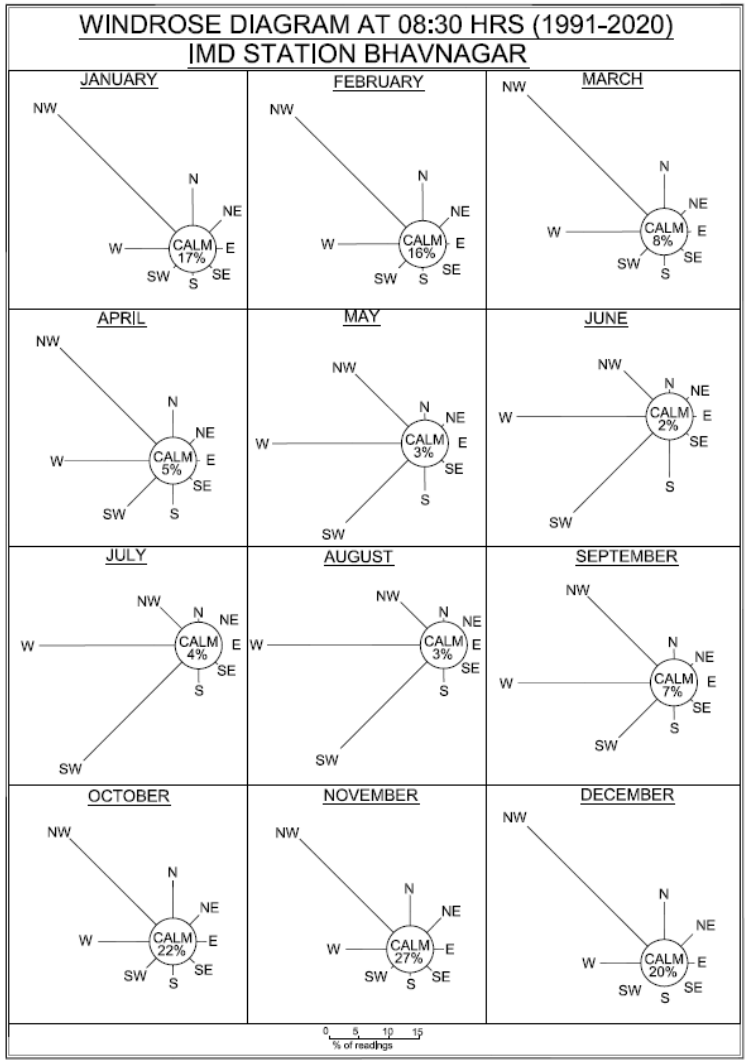
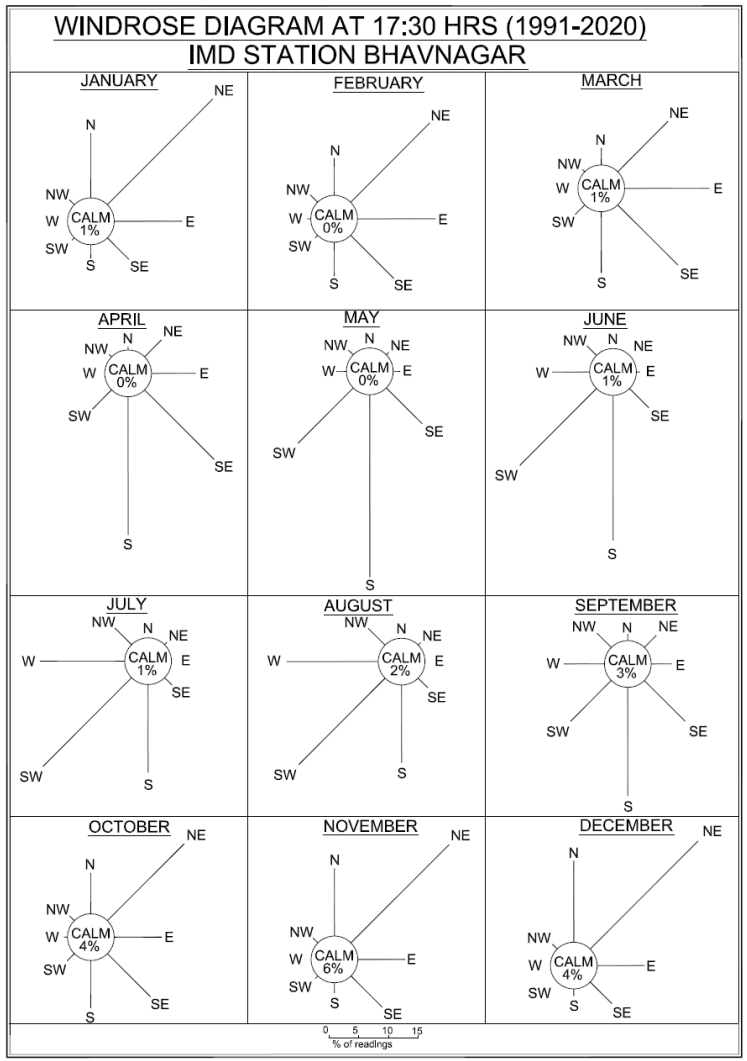


FIG NO. C3-6: WINDROSE DIAGRAM AT IMD STATION BHAVNAGAR AT 17.30 HRS



3.3.3 Micro-meteorology

The micro-meteorological data of the study area have been recorded by Min Mec R&D Laboratory, New Delhi with an Automatic Weather Station for the summer season from March 1st 2021 to 2nd June, 2021 as due to TAUKTAI cyclone, equipment was shut down for safety reason on 17/05/2021 at 4 PM and restarted on 19/05/2021 at 10 AM. Therefore, for a complete period of three months data were recorded till 2nd June 2021 instead of 31st May 2021. The daily average of the monitored micro-meteorological data is given in **Annexure IV** and summarized in **Table No. C3-3**. The various parameters are discussed in subsequent paragraphs.

TABLE NO. C3-3: SUMMARY OF MONITORED MICRO-METEOROLOGICAL DATA, 1ST MARCH - 2ND JUNE, 2021

Parameter	Maximum	Minimum	Mean
Temperature (°C)	42.63	20.00	30.25
Relative Humidity (%)	78.10	38.80	56.00
Wind speed (km/h)	28.52	0.00	13.07
Wind direction	South (18.08% Readings)		

The above table shows that temperature was recorded as a minimum of 20.00°C and maximum of 42.63°C, relative humidity as a minimum of 38.80% and maximum of 78.10% during the monitoring period. There was no rainfall during the monitoring period exceot for approximately 24 hours continuously during the passage of Cyclone Taukte from evening of 17th May 2021 to evening of 18th May 2021. The gusting winds peaked upto 80 kmph and 12 hour rainfall was 161 mm upto 6 pm of 18th May 2021. The wind speed varies between 0 to 28.52 km/hr and the predominant wind direction was observed from S with 18.08% of occurrences. The wind frequency table is given in **Table No. C3-4** and the corresponding wind rose diagram is shown in **Fig No. C3-7**.

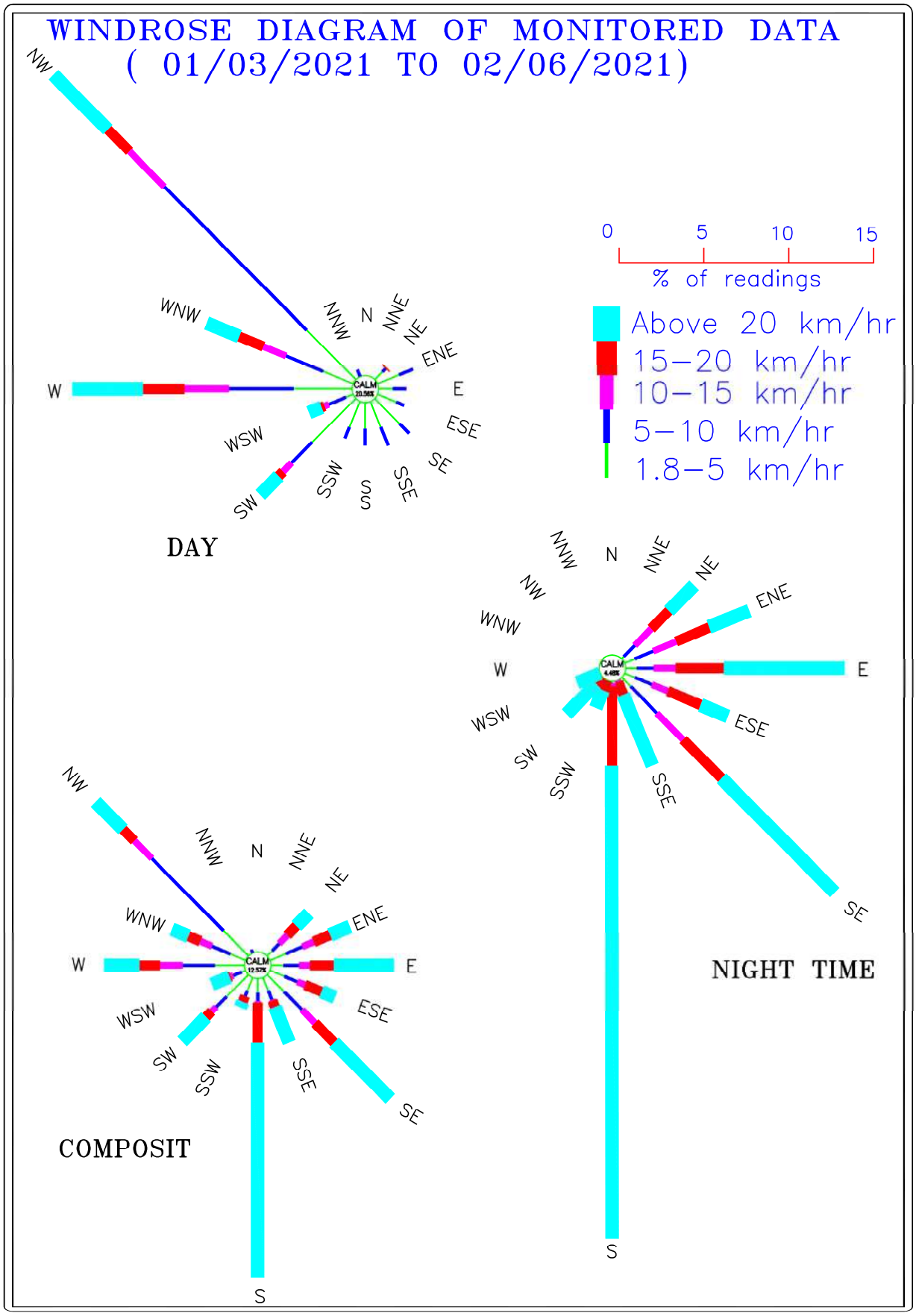
TABLE NO. C3-4: WIND FREQUENCY OF MONITORED DATA AT SITE (01/03/2021-02/06/2021)

Wind direction from	% of readings in different ranges of wind speed (km/hr)							
	Calm	1.8-5	5-10	10-15	15-20	>20	Total	Ex-calm
	DAY (6 hrs to 17 hrs)							
E	1.27	0.82	0.82	0.00	0.00	0.00	2.91	1.64
ENE	0.54	1.36	0.91	0.00	0.00	0.00	2.81	2.27
NE	4.35	0.63	0.27	0.00	0.09	0.00	5.34	0.99
NNE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NNW	0.00	0.00	0.45	0.00	0.00	0.00	0.45	0.45
NW	2.08	4.08	11.87	2.90	1.81	4.53	27.27	25.19
WNW	1.18	1.90	2.36	1.45	1.54	2.08	10.51	9.33
W	1.90	3.44	3.80	2.63	2.45	4.17	18.39	16.49
WSW	0.27	0.45	1.09	0.27	0.18	0.82	3.08	2.81

Wind direction	% of readings in different ranges of wind speed (km/hr)							
	Calm	**1.8-5**	**5-10**	**10-15**	**15-20**	**>20**	**Total**	**Ex-calm**
SW	5.25	3.62	1.72	0.72	0.36	1.54	13.21	7.96
SSW	0.82	1.63	0.72	0.00	0.00	0.00	3.17	2.35
S	0.82	1.54	1.00	0.00	0.00	0.00	3.36	2.54
SSE	1.18	1.63	1.18	0.00	0.00	0.00	3.99	2.81
SE	0.54	2.08	0.82	0.00	0.00	0.00	3.44	2.90
ESE	0.36	1.18	0.54	0.00	0.00	0.00	2.08	1.72
Total	**20.56**	**24.36**	**27.55**	**7.97**	**6.43**	**13.14**	**100.00**	**79.45**
from	**NIGHT (18 hrs to 5 hrs)**							
E	1.19	0.64	1.01	1.28	2.84	7.14	14.10	12.91
ENE	0.64	0.64	1.19	1.47	2.11	2.56	8.61	7.97
NE	0.27	0.18	0.92	1.37	1.47	2.11	6.32	6.05
NNE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NNW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WNW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WSW	0.18	0.00	0.00	0.00	0.00	1.47	1.65	1.47
SW	0.09	0.00	0.00	0.00	0.55	2.47	3.11	3.02
SSW	0.18	0.00	0.00	0.00	0.64	1.10	1.92	1.74
S	0.37	0.09	0.00	0.18	4.67	27.66	32.97	32.60
SSE	0.18	0.00	0.00	0.09	0.82	4.49	5.58	5.40
SE	0.92	0.73	2.20	2.20	3.21	9.43	18.69	17.77
ESE	0.46	0.64	1.10	1.01	2.11	1.74	7.06	6.60
Total	**4.48**	**2.92**	**6.42**	**7.60**	**18.42**	**60.17**	**100.00**	**95.53**
	COMPOSITE							
E	1.23	0.73	0.91	0.64	1.41	3.55	8.47	7.24
ENE	0.59	1.00	1.05	0.73	1.05	1.28	5.70	5.11
NE	2.32	0.41	0.59	0.68	0.77	1.05	5.82	3.50
NNE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NNW	0.00	0.00	0.23	0.00	0.00	0.00	0.23	0.23
NW	1.05	2.05	5.97	1.46	0.91	2.28	13.72	12.67
WNW	0.59	0.96	1.18	0.73	0.77	1.05	5.28	4.69
W	0.96	1.73	1.91	1.32	1.23	2.09	9.24	8.28
WSW	0.23	0.23	0.55	0.14	0.09	1.14	2.38	2.15
SW	2.69	1.82	0.87	0.36	0.46	2.00	8.20	5.51
SSW	0.50	0.82	0.36	0.00	0.32	0.55	2.55	2.05
S	0.59	0.82	0.50	0.09	2.32	13.75	18.07	17.48
SSE	0.68	0.82	0.59	0.05	0.41	2.23	4.78	4.10
SE	0.73	1.41	1.50	1.09	1.59	4.69	11.01	10.28
ESE	0.41	0.91	0.82	0.50	1.05	0.87	4.56	4.15
Total	**12.57**	**13.71**	**17.03**	**7.79**	**12.38**	**36.53**	**100.00**	**87.44**

Note: Calm is cut off at wind speed <1.8 km/hr as per CPCB

FIG NO. C3-7: WINDROSE DIAGRAM OF MONITORED DATA



3.4 AMBIENT AIR QUALITY

3.4.1 Ambient air sampling

The ambient air quality survey was conducted during winter season from 1st March, 2021 to 2nd June, 2021.

3.4.2 Location of ambient air sampling stations

The air sampling stations were established in and around the core and buffer zone to study the present ambient air quality. It may be noted that there are also two other mines proposed by Nirma Ltd. in the vicinity of Vangar & Madhiya Limestone Mine i.e. (1) Padhiarka & Doliya Limestone mine in South and (2) Gujarda, Dudheri & Dudhala Limestone Mine in South East direction. EIA/ EMP is also being prepared for the other two mines together. Thus, to study the baseline environment condition, air quality stations were established giving due consideration to all three mines in core zone and buffer zone on the basis of predominant directions, location of habitation, sensitive receptors, industrial activity, etc. A study of the composite wind frequency in **Table No. C3-4** shows that the first three predominant wind direction are from South, North-West & South-east. A map of the study area showing the locations of these sampling stations, as mentioned in **Table No. C3-5**, is presented in **Fig No. C3-8**.

3.4.3 Sampling schedule and air quality parameters

The study was carried out for 3 months with a frequency of twice a week at each site. 24-hour average samples for PM_{10}, $PM_{2.5}$, SO_2 and NO_2 were collected from each station. Heavy metals (Ni, Pb, and As) & silica were analysed from sample of Core Zone of all three mines. These samples were analyzed in laboratory by adopting the methods specified in National Ambient Air Quality Standards. The following air pollution parameters were monitored during the sampling periods.

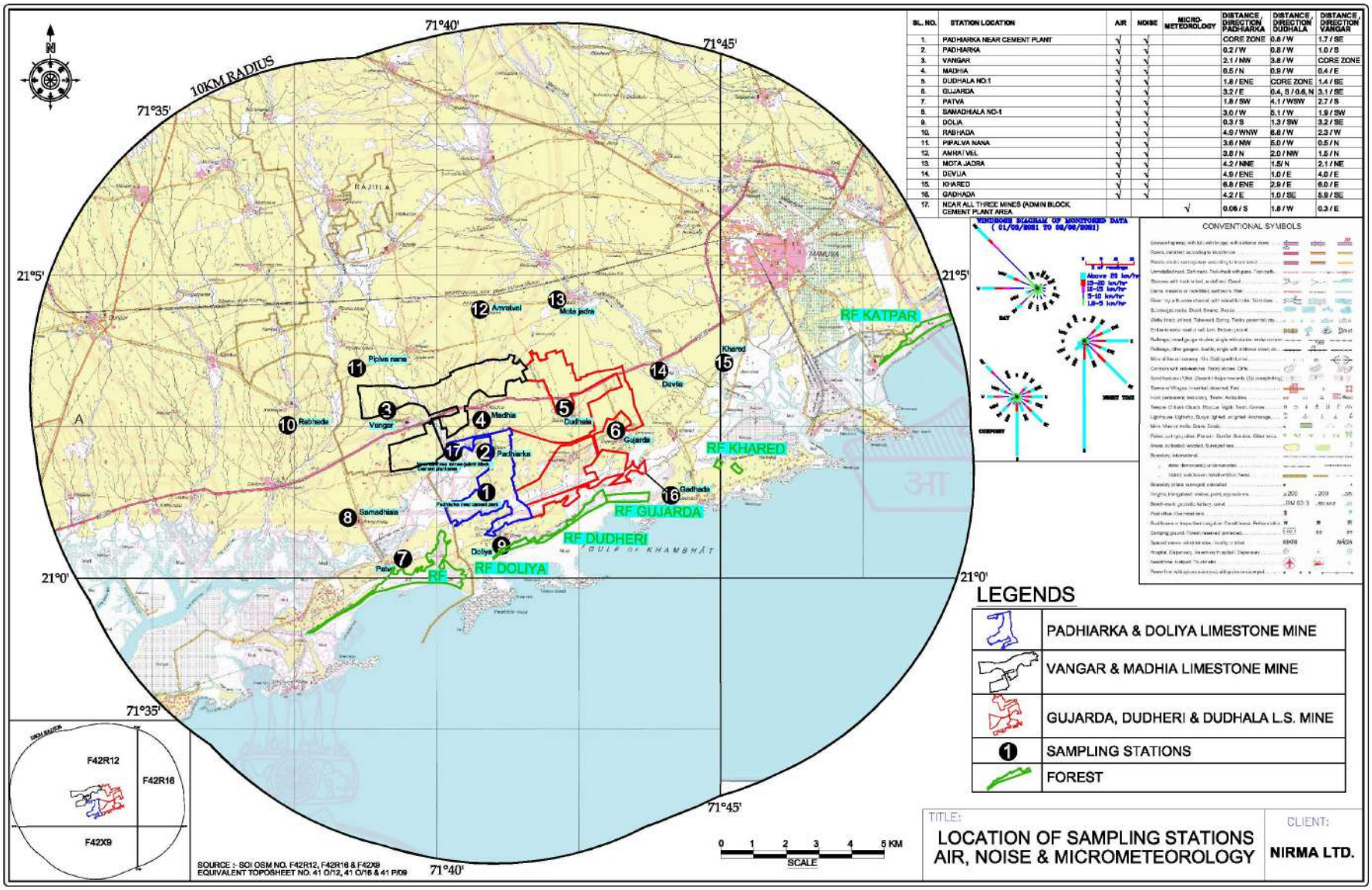
- Fine Particulate matter ($PM_{2.5}$)
- Respirable Particulate matter (PM_{10})
- Sulphur dioxide (SO_2)
- Oxides of nitrogen (NO_2)
- Heavy Metals (Pb, As & Ni)
- Silica (SiO_2)

TABLE NO. C3-5: LOCATION OF AIR SAMPLING STATIONS

Station code	Location of ambient air monitoring stations	For Vangar & Madhiya Limestone Mine		Padhiarka & Doliya Limestone Mine		Gujarda, Dudheri & Dudhala Limestone Mine	
		Distance (km) & Direction from project site	Justification of station selection	Distance (km) & Direction from project site	Justification of station selection	Distance (km) & Direction from project site	Justification of station selection
1	Near Cement Plant, Padhiarka	1.17, SE	1st predominant upwind direction	Core Zone	Within the mine lease area to establish pre-mining air quality condition	0.8, W	3rd pre dominant upwind direction & nearer habitation in West
2	Padhiarka	1.0, S	1st predominant upwind direction	0.2, W	Adjacent habitation and falling on 1st predominant downwind direction	0.8, W	3rd pre dominant upwind direction
3	Vangar	Core Zone	Within the mine lease area to establish pre-mining air quality condition	2.1, NW	Second predominant upwind	3.8, W	2nd pre dominant upwind direction
4	Madhiya	0.4, E	1st predominant upwind direction, 2nd predominant downwind direction and habitation surrounded by all three mines.	0.5, N	First predominant Downwind	0.9, W	2nd pre dominant upwind direction
5	Dudhala No.1	1.4, SE	2nd predominant downwind direction	1.8, ENE`	Crosswind	Core Zone	Within the mine lease area to establish pre-mining air quality and habitation in 1st predominant downwind direction w.r.t. south part of ML

Station code	Location of ambient air monitoring stations	For Vangar & Madhiya Limestone Mine		Padhiarka & Doliya Limestone Mine		Gujarda, Dudheri & Dudhala Limestone Mine	
		Distance (km) & Direction from project site	Justification of station selection	Distance (km) & Direction from project site	Justification of station selection	Distance (km) & Direction from project site	Justification of station selection
6	Gujarda	3.1, SE	2nd Predominant downwind direction	3.2, E	3rd predominant downwind direction	0.4, S w.r.t. Uper half portion of ML 0.6, N w.r.t. SE corner of ML	1st predominant upwind & downwind direction as the habiation is surrounded by ML.
7	Patva	2.7, S	1st predominant upwind direction	1.8, SW	Crosswind	4.1, WSW	Crosswind
8	Samadhiyala No. 1	1.9,SW	Crosswind direction	3.0, W	3rd predominant upwind direction	5.1, W	3rd predominant upwind direction
9	Doliya	3.2, SE	1st predominant upwind direction	0.3, S	1st predominant Upwind direction & nearest village in south	1.3, SW	Crosswind
10	Rabhada	2.3, W	Crosswind direction	4.9, WNW	2nd predominant Upwind direction	6.8, W	3rd predominant upwind direction
11	Nana Pipalva	0.5, N	1st predominant downwind direction at NW corner of the mine	3.6, NW	2nd predominant Upwind direction	5.0, W	2nd predominant upwind direction
12	Amrutvel	1.5, N	1st predominant downwind direction	3.8, N	1st predominant Downwind direction	2.0, NW	2nd predominant upwind direction
13	Mota Jadra	2.1, NE	Crosswind direction	4.2, NNE	Crosswind	1.5, N	1st predominant downwind direction
14	Devalia	4.0, E	3rd predominant downwind direction	4.9, ENE	3rd predominant Downwind direction	1.0, E	3rd predominant downwind direction
15	Khared	6.0, E	3rd predominant downwind direction	6.8, ENE	Crosswind	2.9, E	3rd predominant downwind direction
16	Gadhada	5.9, SE	2nd predominant downwind direction	4.2, E	2nd predominant Downwind direction	6.4, SE	2nd predominant downwind direction

FIG NO. C3-8: LOCATION OF AIR & NOISE SAMPLING STATIONS



SL. NO.	STATION LOCATION	AIR	NOISE	MICRO-METEOROLOGY	DISTANCE, DIRECTION PADHIARKA	DISTANCE, DIRECTION DUDHALA	DISTANCE, DIRECTION VANGAR
1.	PADHIARKA NEAR CEMENT PLANT	√	√		CORE ZONE	0.8 / W	1.7 / SE
2.	PADHIARKA	√	√		0.2 / W	0.8 / W	1.0 / S
3.	VANGAR	√	√		2.1 / NW	3.8 / W	CORE ZONE
4.	MADHIA	√	√		0.5 / N	0.9 / W	0.4 / E
5.	DUDHALA NO.1	√	√		1.8 / ENE	CORE ZONE	1.4 / SE
6.	GUJARDA	√	√		3.2 / E	0.4, S / 0.6, N	3.1 / SE
7.	PATVA	√	√		1.8 / SW	4.1 / WSW	2.7 / S
8.	SAMADHIALA NO-1	√	√		3.0 / W	5.1 / W	1.9 / SW
9.	DOLIA	√	√		0.3 / S	1.3 / SW	3.2 / SE
10.	RABHADA	√	√		4.9 / WNW	6.8 / W	2.3 / W
11.	PIPALVA NANA	√	√		3.6 / NW	5.0 / W	0.5 / N
12.	AMRATVEL	√	√		3.8 / N	2.0 / NW	1.8 / N
13.	MOTA JADRA	√	√		4.2 / NNE	1.5/ N	2.1 / NE
14.	DEVLIA	√	√		4.9 / ENE	1.0 / E	4.0 / E
15.	KHARED	√	√		6.8 / ENE	2.9 / E	6.0 / E
16.	GADHADA	√	√		4.2 / E	1.0 / SE	5.9 / SE
17.	NEAR ALL THREE MINES (ADMIN BLOCK, CEMENT PLANT AREA			√	0.06 / S	1.8 / W	0.3 / E

The sampling and testing of ambient air quality parameters was carried out as per relevant Parts of IS: 5182 and CPCB guidelines. The brief details of testing procedure adopted are given in **Table No. C3-6**.

3.4.4 Methodology

Respirable Particulate matter 10 (PM_{10})

The sampling of ambient air was carried out using a Respirable Dust Sampler, which is primarily a high volume sampler fitted with a cyclone separator for pre-separation of particles larger than 10 microns diameter. Ambient air is drawn at a measured rate through the separator followed by a pre-weighed glass fibre sheet of 20 cm x 25 cm sizes (Whatman, EPM-2000 or equivalent). 0.3 LPM pressure is maintained in the manometer to suck the air. The PM_{10} concentrations are determined gravimetrically from the average airflow rate, sampling period and the mass of particulate matter collected over the GF filter surface.

Fine Particulate matter 2.5 ($PM_{2.5}$)

The sampling of ambient air has been carried out using Fine Particulate Sampler. Ambient air is drawn at a measured rate and the air stream leaving the WINS Impact or consists of only fine particulate with an aerodynamic diameter smaller than 2.5 microns. These fine particulate are collected on a special Teflon (PTFE) membrane filter of 47 mm diameter. The $PM_{2.5}$ concentrations are determined gravimetrically from the constant airflow rate, sampling period and the mass of particulate matter collected over the PTFE filter surface.

Sulphur dioxide (SO_2)

The sampling of ambient air for evaluating SO_2 concentrations was performed with a Multigas Sampler, using the vacuum created by the Respirable Dust Sampler for drawing the air samples through the impingers. Air is drawn at a measured and controlled rate of 300 ml/min through a solution of potassium tetrachloromercurate.

After completion of sampling, the used absorbing reagent is treated with dilute solutions of sulfamic acid, formaldehyde and para rosaniline hydrochloride. The absorbance of the intensely coloured para rosaniline methyl sulphonic acid is measured and the amount of SO_2 in the sample is computed from graphs prepared with standard solutions. The ambient SO_2 concentrations are computed from the amount of SO_2 collected and the volume of air sampled.

Oxides of Nitrogen (NO_2)

The sampling of ambient air for evaluating NO_2 concentrations was performed with a Multigas Sampler, using the vacuum created by the Respirable Dust

Sampler for drawing the air samples through the impingers. Air is drawn at a measured and controlled rate of about 300 ml/minute through an orifice-tipped impinger containing solutions of sodium hydroxide and sodium arsenite. After completion of the sampling, an aliquot of the used absorbing solution is treated with solutions of H_2O_2, sulphanilamide and NEDA.

The nitrite ion present in the impinger is calculated from the absorbance of the resulting solution and from the graphs prepared with standard solutions. The ambient NO_2 concentrations were computed from the total nitrite ion present in the impingers, overall efficiency of the impinger and the procedure, and the volume of air sampled.

Lead, Nickel and Arsenic

The sampling of ambient air for evaluating lead, nickel and arsenic is done by collection of the particulate matter on glass fibre filter (EPM 2000 or equivalent) using PM_{10} sampler. Filter paper is divided in two equal parts. Half portion of filter paper is used for the measurement of lead, nickel and arsenic. The sample is extracted by hot plate procedure and the digested sample is analysed using ICP. The concentration is calculated using calibration graph.

A summary of the methodology is given in **Table No. C3-6**.

TABLE NO. C3-6: PROCEDURE FOR DETERMINING VARIOUS AIR QUALITY PARAMETERS

Parameters	Testing Procedure
PM_{10}	IS:5182 (Part 23) using respirable dust sampler (RDS), gravimeteric analysis
$PM_{2.5}$	Adapted from CPCB guidelines using fine particulate sampler, gravimeteric analysis
SO_2	Absorption in Sodium Tetra Chloro-mercurate followed by Colorimetric estimation using P-Rosaniline hydrochloride and Formaldehyde (IS:5182 (Part 2):2001)
NO_2	Absorption in dil. NaOH and then estimated colorimetrically with sulphanilamide, NEDA and Hydrogen Peroxide (IS:5182 (Part 6): 2006)
Arsenic, Nickel, Lead	Collection on filter paper using respirable dust sampler followed by digestion and ICP analysis (IS 3025 (Part 2))
Silica	APHA 4500-SiO_2 Digestion followed by analysis

The summarised results of the air quality studies are given in **Table No. C3-7** and the details are given in the form of **Annexure V** and National Ambient Air Quality Standard (NAAQS) is given in **Annexure VI.**

TABLE NO. C3-7: SUMMARY OF AMBIENT AIR QUALITY MONITORING RESULTS (1ST MARCH- 2ND JUNE 2021)

Code	Pollutants → / Locations of sampling station ↓	24 hours average concentrations (µg/m³)											
		PM_{10}			$PM_{2.5}$			SO_2			NO_2		
		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
1	Near Cement Plant, Padhiarka	38.2	64.8	54	14.6	32.6	24.3	3.2	5.7	4.8	4.4	7.8	6.3
2	Padhiarka	33.1	61	50	16.3	34.5	22.9	3.2	6.8	5.3	5.3	10.9	8.4
3	Vangar (core zone)	40.8	68.8	59.2	21.7	37.4	27.8	4.8	7.7	5.8	4.9	10.5	8.4
4	Madhiya	42.6	71.1	60.7	17.5	40	28.5	5.3	10.2	8	6.5	14.5	10.9
5	Dudhala No. 1	40.9	66.3	58.1	22.1	35.5	28	3.7	6.8	5.3	5.3	9.7	8.2
6	Gujarda	37.2	68	58.9	18.4	36.6	28.3	3.2	6.8	5.4	3.6	7.8	6.3
7	Patva	34.6	59.8	49.8	16.3	32.1	24.5	3.7	6.8	5.4	4.9	8.1	6.9
8	Samadhiyala No. 1	34	63.4	53.7	17.5	36	26.6	2.7	6.8	5	4.9	8.9	7.3
9	Doliya	35	59.4	51.8	14.1	32.5	25.8	4.8	7.7	6.7	6.1	10.9	8.8
10	Rabhada	34.2	57.5	48.5	15.8	30	22.9	3.2	7.2	5.4	4.9	8.5	6.9
11	Nana Pipalva	37.3	59.2	50.7	15.9	29.1	23.8	3.7	7.2	5.5	4.5	8.5	6.8
12	Amrutvel	38.3	61.9	55.4	19.6	33.7	26.6	3.7	8.2	6	5.7	9.7	8.1
13	Mota Jadra	38.3	59.8	53.1	16.6	32.1	24.6	4.3	7.5	5.8	4.9	9.3	7.5
14	Devalia	35.3	64.7	52.7	18	34.3	25.3	4.1	7.2	5.5	4	8.1	6.7
15	Khared	39.8	62.5	52.4	16.3	31.2	23.9	3.7	7.2	5.7	3.6	8.1	6.6
16	Gadhada	27.6	48.6	41.2	11.2	25.9	20.2	3.2	6.8	5.1	3.6	7.4	6.1
	Standards as per NAAQS 2009	**100**			**60**			**80**			**80**		

Source: Test report no. MMA/06-2021/68 dated 18.06.2021 by Min Mec R&D Laboratory, New Delhi.

TABLE NO. C3-7 (CONTD.)

Code	Location	24 hours average concentrations			
		Pb (µg/m³)	As (ng/m³)	Ni (ng/m³)	Silica (µg/m³)
1.	Near Cement Plant, Padhiarka	BDL	BDL	BDL	1.1
3.	Vangar (core zone)	BDL	BDL	BDL	0.9
5.	Dudhala No.1	BDL	BDL	BDL	1.2
	Permissible Limits, NAAQS 2009	1.0 (24 hrs)	06 (annual)	20 (annual)	-

Source: Test report no. MMA/06-2021/69 & 70 dated 18.06.2021 by Min Mec R&D Laboratory, New Delhi

Note: BDL (Below Detection Limit) of Pb<0.07µg/m³; As<0.4 ng/m³; Ni<0.6 ng/m³

The results from **Table No. C3-7** show that the concentration of PM_{10} range from 27.6 to 71.1 µg/m³, while that of $PM_{2.5}$ ranges from 11.2 to 40.0 µg/m³. The concentration of SO_2 is found between 2.7 to 10.2 µg/m³ and NO_2 concentration ranges from 3.6 to 14.5 µg/m³. Heavy metals i.e. Pb, Ni and As

have been found below detectable limits. All the parameters are within the prescribed limits as per National Ambient Air Quality Standards (NAAQS) given in **Annexure VI**.

Concentration of Silica in the PM_{10} sample of core zone are found as 1.1 µg/m^3, 0.9 µg/m^3 and 1.2 µg/m^3 in sample collected from Near Cement Plant, Padhiarka, Vangar and Dudhala No.1, respectively.

3.5 WATER RESOURCES

M/s Ground Water & Mineral Investigation Consultancy Centre (P) Ltd., Jaipur has prepared "Report on hydrogeological & hydrological studies of core and buffer zone of Vangar & Madhiya limestone mine and impact of mining on water regime near village Vangar & Madhiya, taluka Mahuva, district Bhavnagar, Gujarat" in January 2022. The report has assessed the hydrogeological conditions with special reference to impact of mining on water regime in and around its proposed limestone mine, Taluka – Mahuva, District Bhavnagar, Gujarat covering 10 km radius buffer area around proposed mining lease.

3.5.1 Surface water

In the study area, there exist some surface water bodies. There are rivulets Garasawo, Bhambhali & Malan River in the buffer zone, which are seasonal river and flow roughly in south-easterly direction. The drainage pattern is dendritic with general flow direction from north to south.

The storm water flows through these rivers and finally drains out to sea. There are no water body in the core zone, except for few rainwater storage ponds in the vicinity of the proposed mining area. There is a Salinity Ingress Control bund near Samdhiyala village for prevention of the saline water ingress in the western/ south-western side of the project area and the water from the seasonal streams is partly flowing into its catchment and ultimately into the harvesting pond i.e. Samdhiayala salinity ingress control bund. Some of these streams ultimately dissipate into the vast saline plain/Samdhiyala salinity ingress control bund that is seen in the south-western part of the area.

3.5.2 Ground water

Core zone: Depth to Water level in the area in vicinity of core zone ranges between (-) 3.0 to (+) 3.0 m amsl. The average seasonal fluctuation at average rainfall is about 2 m as reported. Groundwater flow direction is from North to south.

Buffer zone

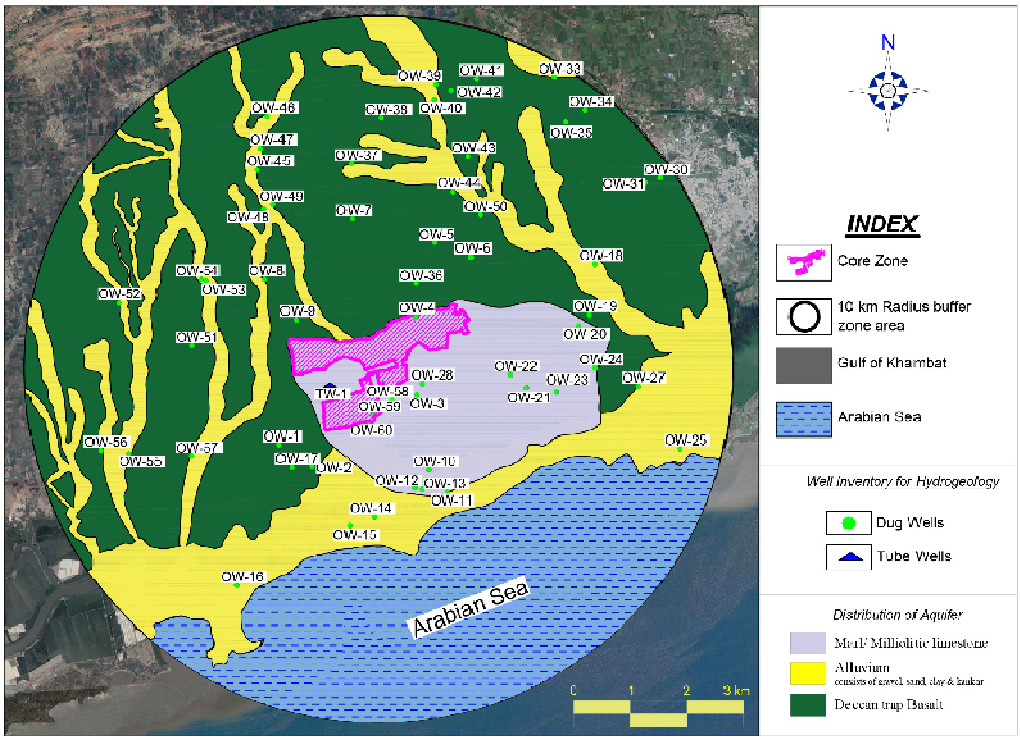
Hydrogeology: The area is mainly covered by coastal sediments of Recent time comprising gravel, sand, clay & kankar; whereas, the limestone bearing formations are of Quaternary era. The deposits are sedimentary in nature. This

limestone is generally overlain by recent coastal sediments. The Deccan traps of Cretaceous-Eocene age form the basement. Ground water is the major source of water for irrigation as well as for drinking purpose in the study area. The area consists of three aquifers viz: alluvium starts form the surface up to 12 m depth. It's mainly consists of gravel, sand, clay & kankar. The other aquifers of the areas are discontinuously occupied by Marl/Milliolite limestone followed by Deccan trap up to 60 meters below ground level. The ground water in Marl/Milliolite limestone occurs in unconfined condition whereas in Deccan trap, it occurs in both unconfined and semi confined conditions.

Groundwater occurs under water table and semi confined conditions. Dug and dug cum bore well are common structures used for groundwater extraction. The aquifer map of the study area has been prepared and shown in **Fig C3-8A**. The map shows that deccan trap basalt is the dominant aquifer of the study area with significant portions of limestone as well as alluvium.

Fig C3-8A: Map showing distribution of Aquifer in study area

Fig.- 6: Map showing Distribution of Aquifer in 10 km radius buffer zone.



Source: Fig 6 of "Report on hydrogeological & hydrological studies of core and buffer zone of Vangar & Madhiya limestone mine and impact of mining on water regime near village Vangar & Madhiya, taluka Mahuva, district Bhavnagar, Gujarat" in January 2022, by M/s Ground Water & Mineral Investigation Consultancy Centre (P) Ltd., Jaipur

The yield of wells in alluvium aquifers generally ranges between 10 and 820 m^3/day.[1]

The yield of water from wells and tube wells in the investigated area varies from 2 cum/day to 672 cum/day for aquifer tapping down to 60 m depth. Open wells yield quantity of water with yield of 2 cum to 360 cum/day from depths ranging from 8 m to 30 m. However tube wells may yield water as high as 672 cum/day.

The qualitative aspects of ground water shows that salinity ingression from sea has taken place up to over 3 km from Arabian sea reaching center of buffer zone. As per report i.e. Hydrogeological & Hydrological studies of core and buffer zone of Vangar & Madhiya Limestone Mine and impact of mining on water regime near village Vangar & Madhiya, Taluka-Mahuva, district Bhavnagar,Gujarat of January 2022 prepared by Ground Water & Mineral Investigation Consultancy Centre Pvt. Ltd. the ground water level of area in pre-monsoon varies from 3.65 m (at Doliya) to 25.55 m bgl (at Amrutvel) and the average seasonal fluctuation at average rainfall is about 2 m as reported in the field as seen in **Table C3-8**. The ground water flow direction is towards south in general.

TABLE NO. C3-8: HYDROGEOLOGICAL WELL INVENTORY IN THE BUFFER ZONE OF VANGAR-MADHIYA LIMESTONE MINE.

Type of well	Village Name	Location	Dia (In m)	Depth (In m)	Collar Elevation (In m AMSL)	Water Level (In m BGL)	Water Level (In m AMSL)	Yield m^3/day	Quality	Aquifer
OW-1	Samadhiyala No-1	21° 1'30.98"N 71°38'25.11"E	3	14	15	13.85	1.15	-	Brackish	Deccan trap Basalt
OW-2	Samdhiyala No.-1	21° 1'11.23"N 71°38'35.90"E	3	-	10	6.9	3.1	-	Saline	Deccan trap Basalt
OW-3	Padhiarka	21° 2'17.90"N 71°40'38.77"E	2.5	11	7	7.3	-0.3	192	Brackish	Marl/ Milliolitic limestone
OW-5	Amrutvel	21° 4'37.17"N 71°40'57.01"E	4	27.3	36	25.55	10.45	15	Fresh	Deccan trap Basalt
OW-6	Amrutvel	21° 4'24.48"N 71°41'32.85"E	3	-	30	21.8	8.2	6	Fresh	Deccan trap Basalt
OW-7	Dundas	21° 4'58.47"N 71°39'34.67"E	3	-	33	16.7	16.3	-	Fresh	Deccan trap Basalt
OW-8	Mota Pipalva	21° 4'1.26"N 71°38'10.84"E	3	26	24	19.81	4.19	12	Fresh	Alluvium
OW-9	Nana Pipalva	21° 3'28.38"N 71°38'40.85"E	4	-	22	21.5	0.5	-	Brackish	Deccan trap Basalt
OW-10	Doliya	21° 1'7.24"N 71°40'49.68"E	3	-	2	4.2	-2.2	7	Brackish	Marl/ Milliolitic limestone
OW-11	Doliya	21° 0'39.95"N 71°41'12.16"E	-	8.5	6	7	-1	2	Fresh	Marl/ Milliolitic limestone
OW-12	Doliya	21° 0'44.49"N	5.5	10	3	4.35	-1.35	112	Brackish	Marl/

[1] Source : https://cgwb.gov.in/District_Profile/Gujarat/Bhavnagar.pdf accessed 25.07.2023

Type of well	Village Name	Location	Dia (In m)	Depth (In m)	Collar Elevation (In m AMSL)	Water Level (In m BGL)	Water Level (In m AMSL)	Yield m^3/day	Quality	Aquifer
		71°40'44.37"E								Milliolitic limestone
OW-13	Doliya	21° 0'43.94"N 71°40'42.40"E	-	11	3	3.65	-0.65	40	Fresh	Marl/ Milliolitic limestone
OW-14	Patva	21° 0'23.71"N 71°39'56.68"E	4	25	16	12.65	3.35	64	Brackish	Alluvium
OW-15	Patva	21° 0'17.57"N 71°39'32.40"E	3.5	28	15	10.89	4.11	128	Saline	Alluvium
OW-16	Khera	20°59'22.72"N 71°37'42.08"E	3	16	6	5.8	0.2	104	Brackish	Alluvium
OW-17	Samadhiyala No-1	21° 1'11.25"N 71°38'55.38"E	3.5	-	10	6.95	3.05	96	Saline	Deccan trap Basalt
OW-18	Maliya	21° 4'19.12"N 71°43'36.02"E	4	15	15	11.85	3.15	-	Saline	Alluvium
OW-19	Devaliya	21° 3'28.34"N 71°43'27.52"E	3.8	-	12	8.5	3.5	-	Brackish	Deccan trap Basalt
OW-20	Devaliya	21° 3'21.60"N 71°43'17.55"E	-	25	13	9.85	3.15	144	Saline	Marl/ Milliolitic limestone
OW-21	Dudhala No.1	21° 2'35.11"N 71°42'11.72"E	3.5	25	12	11.1	0.9	144	Brackish	Marl/ Milliolitic limestone
OW-22	Dudhala No.1	21° 2'24.92"N 71°42'25.77"E	3.5	28	12	12.2	-0.2	-	Saline	Marl/ Milliolitic limestone
OW-23	Gujarda	21° 2'19.74"N 71°42'55.56"E	3.2	25	13	11.95	1.05	-	Brackish	Marl/ Milliolitic limestone
OW-24	Gujarda	21° 2'42.55"N 71°43'35.27"E	4	-	10	6.92	3.08	168	Brackish	Marl/ Milliolitic limestone
OW-25	Gadhada	21° 1'28.08"N 71°44'57.78"E	3	-	16	12.5	3.5	70	Fresh	Alluvium
OW-26	Gadhada	21° 1'37.49"N 71°45'43.70"E	3	12.85	14	9.7	4.3	40	Fresh	Alluvium
OW-27	Khared	21° 2'29.52"N 71°44'13.13"E	2.5	-	8	4.3	3.7	-	Fresh	Alluvium
OW-28	Madhiya	21° 2'25.20"N 71°40'39.49"E	4	19	8	8.55	-0.55	-	Saline	Marl/ Milliolitic limestone
OW-29	Mahuva	21° 4'5.89"N 71°44'45.75"E	4	-	11	10.5	0.5	64	Brackish	Deccan trap Basalt
OW-30	Mahuva	21° 5'36.54"N 71°44'35.96"E	4.01	23	21	15.95	5.05	-	Fresh	Deccan trap Basalt
OW-31	Mahuva	21° 5'31.99"N 71°44'24.76"E	4	25	21	17.2	3.8	128	Fresh	Deccan trap Basalt
OW-33	Nana Jadara	21° 7'7.07"N 71°42'53.39"E	3	28	37	26.5	10.5	192	Fresh	Alluvium
OW-34	Taveda	21° 6'36.05"N 71°43'22.87"E	-	27	32	24.93	7.07	144	Fresh	Deccan trap Basalt
OW-35	Taveda	21° 6'26.74"N 71°43'6.45"E	4	27	31	22.32	8.68	48	Fresh	Deccan trap Basalt
OW-36	Amrutvel	21° 4'0.25"N 71°40'38.42"E	4	26	29	25.15	3.85	-	Fresh	Deccan trap Basalt

Type of well	Village Name	Location	Dia (In m)	Depth (In m)	Collar Elevation (In m AMSL)	Water Level (In m BGL)	Water Level (In m AMSL)	Yield m^3/day	Quality	Aquifer
OW-37	Dundas	21° 5'48.29"N 71°39'33.41"E	5	23	42	16.5	25.5	4	Fresh	Deccan trap Basalt
OW-38	Visavadar	21° 6'30.40"N 71°40'4.20"E	4	22	41	14.3	26.7	84	Fresh	Deccan trap Basalt
OW-39	Gundarani	21° 6'54.59"N 71°41'12.16"E	3	-	37	15.05	21.95	48	Fresh	Alluvium
OW-40	Gundarani	21° 6'55.19"N 71°41'11.88"E	3	-	37	16.7	20.3	-	Fresh	Alluvium
OW-41	Gundarani	21° 7'6.85"N 71°41'36.98"E	4	18	40	17	23	40	Fresh	Deccan trap Basalt
OW-42	Gundarani	21° 6'44.07"N 71°40'54.42"E	2.5	-	35	13.4	21.6	148	Fresh	Deccan trap Basalt
OW-43	Haripara	21° 5'54.92"N 71°41'29.07"E	4	26	32	17.04	14.96	288	Fresh	Deccan trap Basalt
OW-44	Bhanvad	21° 5'21.94"N 71°41'16.47"E	3	-	29	10.82	18.18	-	Fresh	Deccan trap Basalt
OW-45	Lusadi	21° 5'44.28"N 71°38'7.19"E	4	-	42	22.85	19.15	50	Fresh	Alluvium
OW-46	Lusadi	21° 6'32.19"N 71°38'12.69"E	4.5	31.75	50	24.36	25.64	36	Brackish	Deccan trap Basalt
OW-47	Lusadi	21° 6'3.50"N 71°38'10.71"E	0.06	31	44	21.95	22.05	5	Brackish	Alluvium
OW-48	Zinzka	21° 5'11.31"N 71°38'20.19"E	0.06	-	34	20.3	13.7	96	Fresh	Alluvium
OW-49	Zinzka	21° 5'8.30"N 71°38'4.04"E	0.06	23	37	21.7	15.3	128	Fresh	Alluvium
OW-50	Bhanvad	21° 5'2.36"N 71°41'41.63"E	4	24.75	27	15.25	11.75	144	Fresh	Deccan trap Basalt
OW-51	Rabhada	21° 3'3.27"N 71°36'58.66"E	3.5	20	20	17.9	2.1	104	Fresh	Deccan trap Basalt
OW-52	Sajanavav	21° 3'42.87"N 71°35'41.54"E	3	-	27	20.45	6.55	-	Fresh	Alluvium
OW-53	Kankot	21° 4'2.66"N 71°37'8.89"E	1.5	28	30	25.05	4.95	20	Fresh	Alluvium
OW-54	Kankot	21° 4'2.61"N 71°37'10.22"E	3	30	30	25.4	4.6	8	Fresh	Alluvium
OW-55	Visaliya	21° 1'23.47"N 71°35'56.81"E	4	15.25	10	6.1	3.9	96	Brackish	Alluvium
OW-56	Visaliya	21° 1'26.39"N 71°35'28.70"E	4	18.3	12	8.1	3.9	192	Fresh	Deccan trap Basalt
OW-57	Datardi	21° 1'21.27"N 71°36'57.70"E	4	18.54	11	6.75	4.25	360	Fresh	Alluvium
OW-58	Padhiyarka	21° 2'13.57"N71°40' 14.47"E	4	27.45	7	7.41	-0.41	192	Brackish	Marl/ Milliolitic limestone
TW-1	Vangar	21° 2'24.74"N 71°39'12.27"E	0.2	60	20	24.38	-4.38	672	Fresh	Marl/ Milliolitic limestone

Source: Hydrogeological& Hydrological studies of core and buffer zone of Vangar & Madhiya Limestone Mine and impact of mining on water regime near village Vangar & Madhiya,Taluka-Mahuva, district Bhavnagar,Gujarat of January– 2022 prepared by Ground Water & Mineral Investigation Consultancy Centre Pvt. Ltd.

3.5.3 Ground water resource

The rainfall is the only source for recharge to groundwater storage over the area. The groundwater resource potential and the utilization for the study area has been worked out by CGWB, Ahmedabad, GOI in their "Ground Water Brochure, Bhavnagar District" as per the methodology of GWRE 2011 (Ground Water Resource Estimation). The stage of ground water development for Mahuva Taluka, where the project falls is as follows:

- Available Ground Water Recharge = 141.18 MCM / Year
- Existing Gross Ground Water Draft for all uses = 85.66 MCM / Year
- Stage of Ground Water Development = 63.87%
- Category = Safe

In fact it may be noted that as per CGWB, the stage of ground water development at year 2011, for all the talukas of the Bhavnagar district computed range from 40.74 % to 69.72 % and all units of assessment (talukas) have been categorized as Safe, based on the stages of ground water development and the long-term trend of pre and post monsoon ground water levels. The average for district is 64.06%.

3.5.3.1 Annual ground water resource in study area

The groundwater resource potential and the utilization for the study area has been worked out as per the methodology suggested by Groundwater Estimation Committee (GEC-2015) which has been briefly discussed in following paragraphs.

The monsoon rainfall (June-September) as per long term IMD Bhavnagar records from 1991-2020 works out as 686.4. The annual rainfall is 718.0 mm. The non monsoon rainfall works out to be 31.6 mm, which is 4.4 % of the annual rainfall. As per the GEC report, the recharge from rainfall during the non-monsoon season may be estimated provided the normal rainfall in the non-monsoon season is greater than 10% of the normal annual rainfall. Hence, the recharge is being estimated for monsoon season only since non-monsoon rainfall is less than 10%. The entire study area is suitable for groundwater recharge. The recharge works out as under.

A. **By rainfall infiltration method**

Total study area (as per Census 2011)	-	460.44 km^2
Area suitable for ground water recharge as per Census 2011 (all areas except Area under `Non-Agricultural Uses)	-	306.32km^2
Annual Rainfall (IMD Bhavnagar)1991-2020, as per Climatological Normals)	-	718 mm
Rainfall infiltration index (avg.) as per Table 8,	-	~11%

GEC-2017 recommendation- weighted average for coastal alluvium (west coast) (8%-12%; ~24% land area), Limestone miliolitic (5-7%; ~11% land area), Basalt (12-14%; ~45% land area)		
Annual groundwater recharge	-	**24.457 MCM**

B. **By water table fluctuation method**

Total study area (as per Census 2011)	-	460.44 km^2
Area suitable for ground water recharge (as per Census 2011)	-	306.32km^2
Average seasonal change of water table (average as per Water level Fluctuation data taken from field data)	-	2 m
Specific yield as per GEC-2017 recommendation- weighted average for coastal alluvium (west coast) (8%-12%; ~24% land area), Limestone miliolitic (1-3%; ~11% land area), Basalt (1-3%; ~45% land area)	-	~4.4%
Monsoon groundwater recharge	-	**26.772 MCM**

The difference between the two expressed as a percentage of the rainfall infiltration method is 9.47 %, thus, the rainfall recharge for normal monsoon is to be taken as equal to the value estimated by the water table fluctuation method as per the recommendations on ground water resource estimation methodology. Thus, 26.772 MCM per annum is the estimated annual ground water recharge.

C. Return flow from surface irrigation

Total irrigated area (as per Census 2011)	-	6961.48 Ha.
Surface water irrigated area (as per Census 2011)	-	729.11 Ha.
Applied water / Ha.	-	0.5 m/Ha.
Total applied water	-	3.65 MCM
Return seepage, Average 30%	-	1.095 MCM

D. Recharge due to perennial and seasonal fresh water bodies/ water logged areas

Area of reservoir/ lake	-	921 Ha.
Area of water logged area	-	1144 Ha.
Norms for Recharge due to Tanks & Ponds (Section 5.14.5 of Report of GEC 2015)	-	1.4 mm/day
Annual recharge due to fresh water bodies (12 months for lakes and 6 months for water logged)	-	4.99 MCM

Thus, annual ground water recharge.

26.772+1.095+4.99 = 32.857 MCM

D. Ground Water Use

There are four major consumer of ground water in the area (i) Domestic (ii) Irrigation (iii) Livestock and (iv) industries/mines.

D.1. Domestic

Total population as per Census 2011	-	161707
Decadal growth rate (Census 2001-2011 for Bhavnagar District)	-	16.63 %
Present population (2022) estimated on basis of decadal growth rate	-	197099
Population dependent on Ground water (82.5%)	-	162706
Per capita domestic need	-	70 LPD
Total annual ground water use	-	4.157 MCM

D.2. Irrigation

As per Census 2011, the total irrigated area was 6961.48 ha out of which 729.11 ha was irrigated by surface water and 6232.37 ha is irrigated by ground water. Annual net ground water withdrawal after seepage has been calculated as 21.813 MCM.

D.3. Livestock

The water consumption for livestock has been empirically considered as 5% of human consumption, which comes to 0.208 MCM.

D.4. Industries

There are no working mines or industries present 10 km radius using ground water.

D.5. Annual ground water use

4.157MCM + 0.208MCM + 21.813 MCM = 26.178MCM

E. Ground water balance

Sl. No.	Particulars	Million Cubic Meter (MCM)
1.	Total annual replenish-able recharge • By rainfall infiltration factor method (million m^3/year) • By groundwater table fluctuation method (million m^3/year)	 24.457 26.772

Sl. No.	Particulars	Million Cubic Meter (MCM)
2.	Estimated annual ground water recharge including return seepage and recharge (million m^3/year)	32.857
3.	Estimate Annual draft (million m^3/year)	26.178
4.	Net annual ground water availability (million m^3/year)	6.679
5.	Stage of ground water development in %	79.67
6.	Category as per GEC	Safe

3.5.4 Water quality

To evaluate the physico-chemical characteristics of the water resources existing in the study area, water samples from surface and ground water sources were collected during the summer season (1st March to 2nd June 2021) and analyzed for physico-chemical parameters.

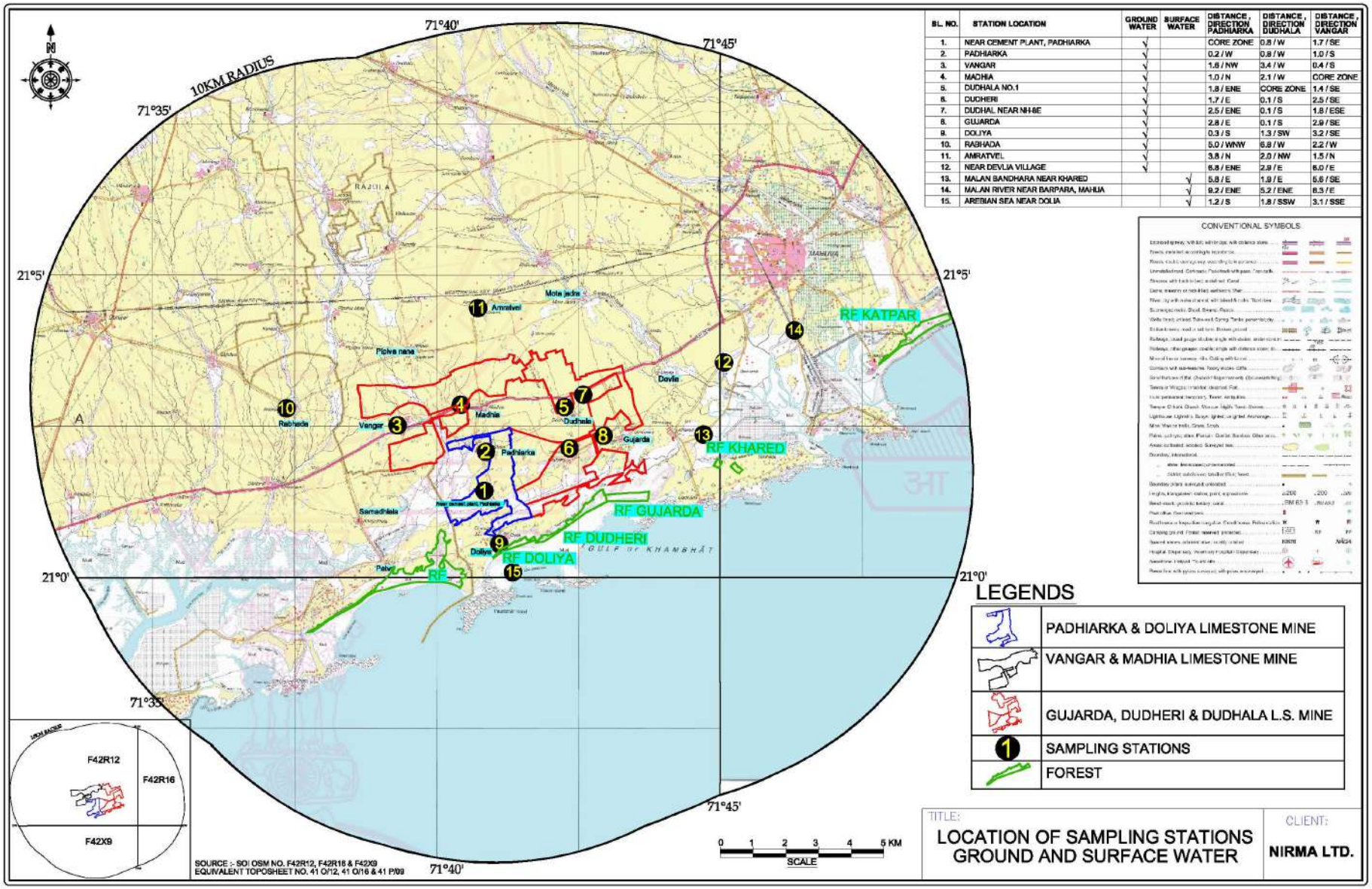
To assess the water quality of the area 15 water sample were collected and analyzed in the laboratory. Water samples from 12 ground water sources and 3 surface water sources were characterized. The details of water monitoring locations are shown in **Fig No. C3-9** and given in **Table No. C3-9**.

TABLE NO. C3-9: LOCATION OF WATER SAMPLING STATIONS

Station code	Location of sampling stations	Water Source	Distance from project site (km)	Direction from project site
1.	Near Cement Plant, Padhiarka	Ground water	1.7	SE
2.	Padhiarka	Ground water	1.0	S
3.	Vangar	Ground water	0.4	S
4.	Madhiya	Ground water	Core Zone	
5.	Dudhala no. 1	Ground water	1.4	SE
6.	Dudheri	Ground water	2.5	SE
7.	Dudhala near NH-8E/51	Ground water	1.8	SE
8.	Gujarda	Ground water	2.9	SE
9.	Doliya	Ground water	3.2	SE
10.	Rabhada	Ground water	2.2	W
11.	Amrutvel	Ground water	1.5	N
12.	Near Devlia	Ground water	6.0	E
13.	Malan Bandhara near Khared	Surface water	5.6	SE
14.	Malan River Near Barpara, Mahuva	Surface water	8.3	E
15.	Arabian Sea Near Dolia	Surface water	3.1	SSE

The physico-chemical characteristics of ground and surface water samples have been presented in **Annexure VII and** summarised in **Table No. C3-10**. To facilitate comparison with drinking water standards, characteristics for drinking water as per IS 10500: 2012, has been given in the **Annexure VIII**.

FIG NO. C3-9: LOCATION OF WATER SAMPLING STATIONS



SL. NO.	STATION LOCATION	GROUND WATER	SURFACE WATER	DISTANCE, DIRECTION PADHIARKA	DISTANCE, DIRECTION DUDHALA	DISTANCE, DIRECTION VANGAR
1.	NEAR CEMENT PLANT, PADHIARKA	√		CORE ZONE	0.8 / W	1.7 / SE
2.	PADHIARKA	√		0.2 / W	0.8 / W	1.0 / S
3.	VANGAR	√		1.8 / NW	3.4 / W	0.4 / S
4.	MADHIA	√		1.0 / N	2.1 / W	CORE ZONE
5.	DUDHALA NO.1	√		1.8 / ENE	CORE ZONE	1.4 / SE
6.	DUDHERI	√		1.7 / E	0.1 / S	2.5 / SE
7.	DUDHAL NEAR NH-8E	√		2.5 / ENE	0.1 / S	1.8 / ESE
8.	GUJARDA	√		2.8 / E	0.1 / S	2.9 / SE
9.	DOLIYA	√		0.3 / S	1.3 / SW	3.2 / SE
10.	RABHADA	√		5.0 / WNW	6.8 / W	2.2 / W
11.	AMRATVEL	√		3.8 / N	2.0 / NW	1.5 / N
12.	NEAR DEVLIA VILLAGE	√		6.8 / ENE	2.9 / E	6.0 / E
13.	MALAN BANDHARA NEAR KHARED		√	5.8 / E	1.9 / E	5.6 / SE
14.	MALAN RIVER NEAR BARPARA, MAHUA		√	9.2 / ENE	5.2 / ENE	8.3 / E
15.	ARABIAN SEA NEAR DOLIA		√	1.2 / S	1.8 / SSW	3.1 / SSE

TABLE NO. C3-10: WATER TEST RESULTS

Parameters	Desirable limit IS 10500: 2012	Permissible Limit IS 10500: 2012	Ground Water Range	Surface Water Range
Turbidity, NTU	1	5	BDL- 3.56	5.346 - 7.099
pH value	6.5-8.5	No relaxation	7.0 - 7.9	7.3 - 7.8
Specific conductance, µS/cm	-	-	1032 - 13265	1752 - 25481
Total Dissolved Solids, mg/l	500	2000	602 - 9360	1018 - 16050
Total Suspended Solids, mg/l	-	-	8 - 718	18 - 760
Total hardness (as $CaCO_3$), mg/l	200	600	280 - 3880	360 - 8300
Alkalinity, mg/l	200	600	100 -1150	275 - 500
Sulphate, mg/l	200	400	21 - 270	54 - 2303
Phosphorous as P, mg/l	-	-	-	0.010 - 1.417
Chloride as Cl, mg/l	250	1000	129 - 5062	437 - 7345
Nitrate as NO_3, mg /l	45	No relaxation	BDL - 29.90	0.38 - 3.00
Dissolved Oxygen, mg/l	-	-	-	5.8 - 6.3
Calcium as Ca, mg/l	75	200	32 - 745	40 - 1571
Biochemical Oxygen Demand (BOD), mg/l	-	-	-	15 - 180
Sodium as Na, mg/l	-	-	77 - 1655	220 - 2044
Potassium as K, mg/l, mg/l	-	-	5 - 38	16 - 390
Magnesium as Mg, mg/l	30	100	38 - 494	62 -1051
Iron as Fe, mg/l	1.0	No relaxation	BDL - 0.10	0.14 - 3.31
Fluoride as F, mg/l	1.0	1.5	0.24 - 1.25	0.35 - 1.26
Chemical Oxygen Demand (COD), mg/l	-	-	-	36 - 410
Silver as Ag, mg/l	0.1	No relaxation	BDL - 0.071	0.010 - 0.056
Barium as Ba, mg/l	0.7	No relaxation	BDL- 0.553	BDL - 0.037
Cadmium as Cd, mg/l	0.003	No relaxation	BDL	BDL
Chromium as Cr, mg/l	0.1	No relaxation	BDL	BDL
Copper as Cu, mg/l	0.05	1.5	BDL - 0.015	BDL
Manganese as Mn, mg/l	0.1	0.3	BDL- 0.050	BDL - 0.041

Parameters	Desirable limit IS 10500: 2012	Permissible Limit IS 10500: 2012	Ground Water Range	Surface Water Range
Nickel as Ni, mg/l	0.02	No relaxation	BDL	BDL
Selenium as Se, mg/l	0.01	No relaxation	BDL	BDL
Arsenic as As, mg/l	0.01	No relaxation	BDL	BDL
Zinc as Zn, mg/l	5	15	BDL- 1.698	BDL - 0.138
Acidity mg/l	-	-	7.5 - 50 at pH 8.3	17.5 - 52.5 at pH 8.3
Hexavalent Chromium, mg/l	-	-	BDL	BDL
Total Coliform (MPN/100 ml)	-	-	-	21 - 140
E.Coli	-	-	-	Present

Source: Test report no. MMW/06-2021/63 dated 18.06.2021 & MMW/06-2021/64 dated 18.06.2021 by Min Mec R&D Laboratory, New Delhi.

Note: BDL (Below Detection Limit) of Cr<0.01, Cd<0.002, Cu<0.01, Mn<0.01, Ni<0.01, Se<0.01, As<0.01, Zn<0.01 and Cr6+<0.01mg/l

Observation

The analysis results of ground water & surface water quality in the study area are summarised in **Table No. C3-10** and given in detail in **Annexure VII.**

Ground water

- The total dissolved solids is exceeding the desirable limits and permissible limits at all sample locations.
- Total hardness is exceeding desirable limits at all stations and permissible limits at all except Vangar, Dhudhla, Rabdha, Amrutvel & near Devlia village.
- Alkalinity is within desirable limit at Dudhala village, near NH-8E/51 and Doliya village. At the rest of the locations, it is exceeding the limit. Alkalinity is within permissible limits at Madhiya, Gujarda, Rabdha and near Devlia village and at remaining locations it was found to be exceeding.
- Sulphate is within desirable limits except at Padhiarka near cement plant and Dudheri village. It is found within permissible limits at all locations.
- Chloride is exceeding desirable limits at all locations except at Amrutvel village. It is found within permissible limits at Dudhala, Gujarda, Rabdha, Amrutvel and near Devalia village. At rest of the locations it is exceeding the permissible limits.

- Calcium was found within desirable limits at 4 locations that are Dudhala, Rabdha, Amrutvel and near Devila village. Remaining locations were found with exceeding limits. 5 locations were found that were exceeding permissible limits of calcium in water. These locations are Padhiarka near cement plant, Padhiarka village, Dudheri, Dudhala, Gujarda village.
- Magnesium is exceeding desirable limits at all locations. Its is exceeding permissible limits at 5 locations that are Padhiarka near cement plant, Padhiarka village, Dudheri, Dudhala and Doliya village.
- Fluoride is exceeding desired limits at 6 locations that are Padhiarka near cement plant, Vangar, Madhiya, Gujarda, Amrutvel and near Devila village. It is found to be within permissible limits at all locations.

Surface water

- Turbidity is exceeding both desirable and permissible limits. Total Dissolved Solids are found exceeding desirable limit and one location exceeds permissible limits.
- Alkalinity is exceeding the desirable limits at all stations but it is within permissible limits.
- Sulphate is exceeding both desirable & permissible limit at Doliya village near Arabian Sea. It is within the limits at remaining two locations.
- Total Hardness, Chloride, Calcium, Magnesium is exceeding desirable limits at all locations and it is exceeding permissible limits at one location that is Doliya village near Arabian Sea.
- Iron, Fluoride is within desirable limits at Khared village and in Malan River near Barpara village and exceeding permissible limits at Doliya village near Arabian Sea.

3.6 LAND ENVIRONMENT

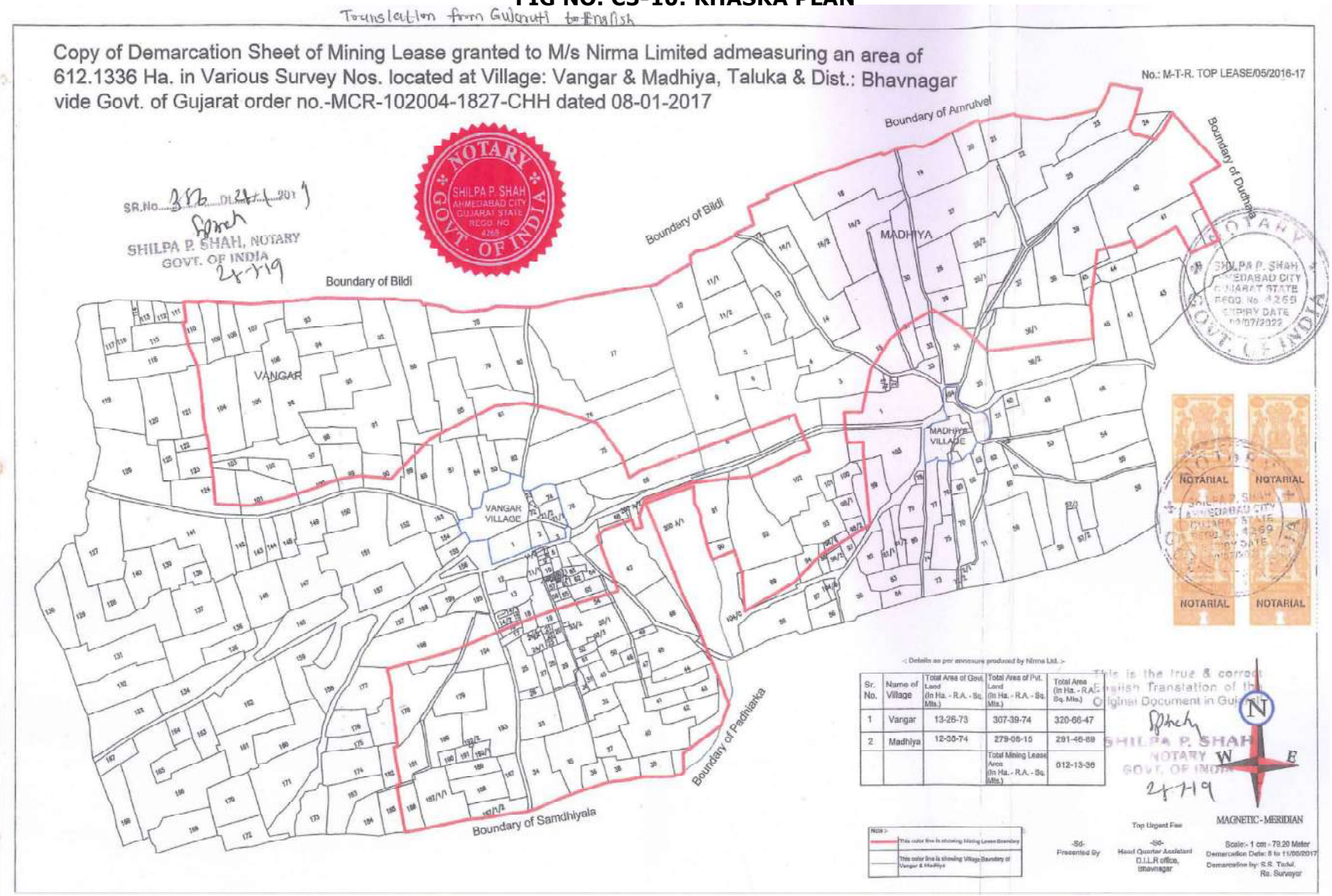
3.6.1 Land use in core zone

Total Mine lease area is 612.1336 ha. There is no reserve forestland present within core zone. Out of 612.1336 ha ML area, Government land is 25.6547 ha and private agricultural land is 586.4789 ha. The mine lease land ownership is tabulated in **Table No. C3-11**. The Khasra plan or land ownership map of the proposed ML area is given in **Fig No. C3-10**.

TABLE NO. C3-11: PRE-OPERATIONAL LAND OWNERSHIP IN CORE ZONE (IN HA)

Village	Forest Land	Govt. Land	Private Land	Total Area
Vangar	Nil	13.2673	307.3974	320.6647
Madhiya	Nil	12.3874	279.0815	291.4689
Total	**Nil**	**25.6547**	**586.4789**	**612.1336**

FIG NO. C3-10: KHASRA PLAN



3.6.2 Land use in buffer zone

The study area falls in 2 districts namely Amreli and Bhavnagar of Gujarat. There are 49 inhabited villages in the buffer zone of the study area. The number of villages falling in different talukas and the corresponding areas are given in **Table No. C3-12** and land use pattern of study area as per Census 2011 is given in **Annexure IX** and Summarised in **Table No. C3-13**.

TABLE NO. C3-12: DISTRICTS/TALUKA WISE VILLAGES IN BUFFER ZONE

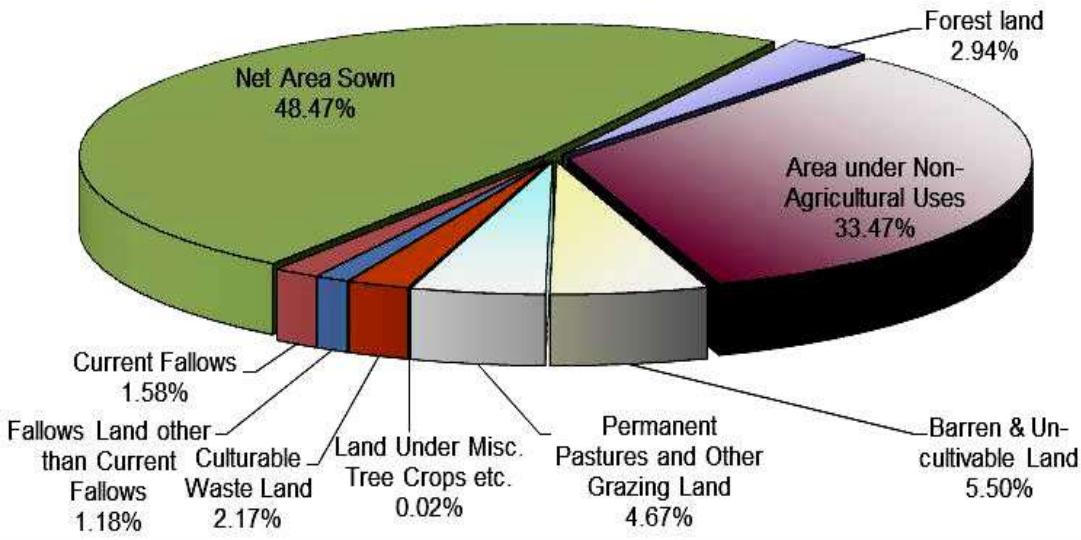
District	Taluka	No. of villages	Area (ha.)
Amreli	Rajula	18	14476.54
Bhavnagar	Mahuva	31	19067.32
Gulf of Khambhat			12500.00
Total		**49**	**46043.86**

TABLE NO. C3-13: LAND USE PATTERN IN STUDY AREA (AS PER CENSUS 2011)

Land use	Area (Ha)	%
Forest land	1353.11	2.94
Area under non-agricultural use	15411.81	33.47
Barren and un-cultivable land	2532.13	5.50
Permanent pastures and other grazing land	2149.41	4.67
Land under Miscellaneous tree crops	6.98	0.02
Culturable waste land	999.99	2.17
Fallow land other than current fallow	545.56	1.18
Current fallow	727.58	1.58
Net sown area	22317.29	48.47
Total	**46043.86**	**100**

A perusal of **Fig No. C3-11** shows that the area under net sown area accounts for a major portion (48.47%) followed by area under non-agricultural use (33.47%). Forest land in the study area is only 2.94%.

FIG NO. C3-11: LAND USE PATTERN IN THE STUDY AREA (CENSUS 2011)



The land use of the study area has been interpreted using recent satellite imagery, can be seen in **Fig No. C3-12**. The satellite imagery is of May 2021, summer season, hence, the water logged areas of Bandharas are low. The extent of water logged has been studied by Anna University, Chennai and that extent has been superimposed upon the SOI open series map and given earlier in **Fig No. C3-1**. Land use break up of study area is based on the village records and sourced from the Census of India 2011 data. The land use classification used in the census land use data is different from the classification used in satellite imagery interpretation. The Satellite Imagery interpretation is sourced through QGIS (Image captured by spacecraft SENTINAL- 2A) on 12.05.2021. So these two data are incomparable due to their different land use classification and date of data collection.

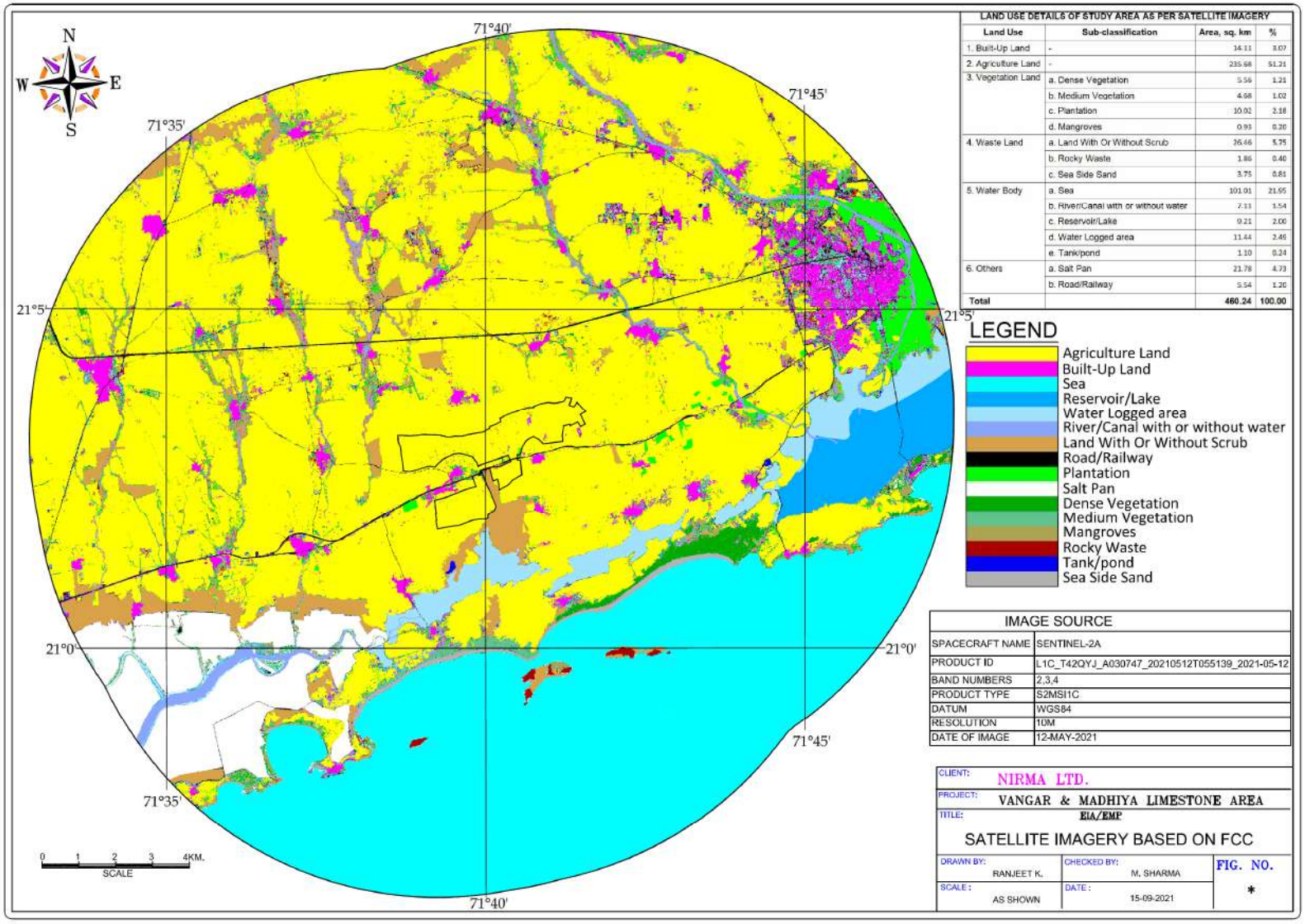
3.7 SOIL QUALITY

As per "Ground Water Brochure, Bhavnagar District" by CGWB Ahmedabad (2013), the soils of Bhavnagar district may be broadly classified into following categories:

i) Medium black soils
ii) Alluvial soils
iii) Alkaline soils.

Medium black soils are wide spread and are found in all the talukas of the district. They are more productive and are rich in lime, magnesium and alumina and poor in phosphorous, nitrogen and organic matters. They can retain considerable moisture and are much suitable for agriculture.

FIG NO. C3-12: MAP SHOWING SATELLITE IMAGERY INTERPRETATION FOR 10 KM RADIUS



Alluvial soils are found along the Shetrunji River covering parts of Gariyadhar and Palitana taluka. Soils in this area are less productive as they are saline. Alkaline soils are found in the parts of Gariyadhar taluka. They consist of both productive and non productive soils.

To establish the baseline characteristics with respect to soil quality in the study area, characterization of soil sample from the area was performed during the monitoring season.

3.7.1 Soil Sampling Location

One soil sample from core zone and 11 soil samples from buffer zone were collected and analysed in Min Mec R&D Laboratory. Details of soil sampling station is given in **Table No. C3-14** and shown in **Fig No. C3-13**. The soil test report is given in **Annexure XV.**

TABLE NO. C3-14: LOCATION OF SOIL SAMPLING STATIONS

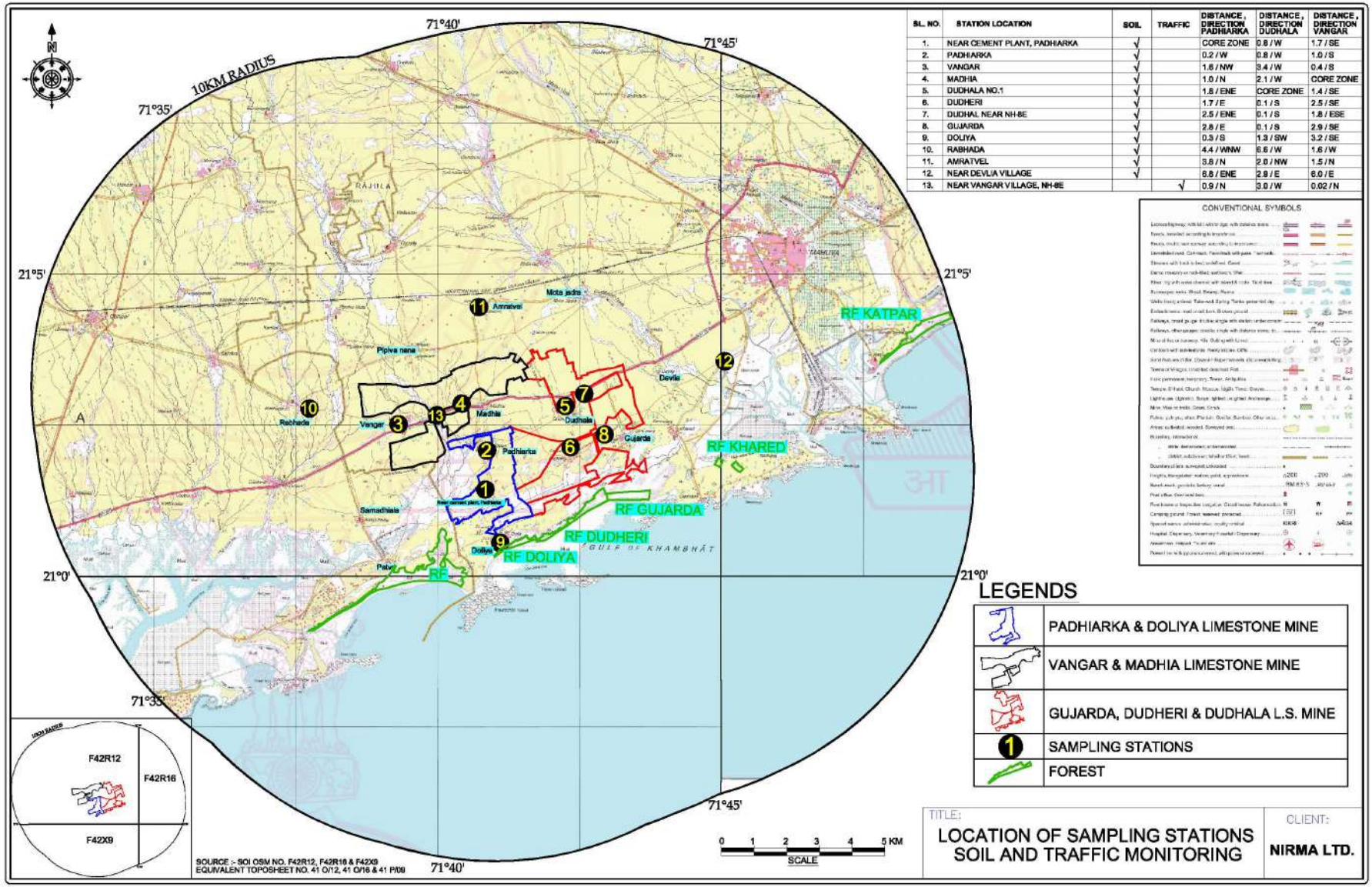
Location Code	Location	Distance (km)	Direction
1.	Near Cement Plant, Padhiarka	1.7	SE
2.	Padhiarka	1.0	S
3.	Vangar	0.4	S
4.	Madhiya	Core zone	-
5.	Dudhala no. 1	1.4	SE
6.	Dudheri	2.5	SE
7.	Dudhala near NH-8E/ 51	1.8	ESE
8.	Gujarda	2.9	SE
9.	Doliya	3.2	SE
10.	Rabhada	2.2	W
11.	Amratvel	1.5	N
12.	Near Devlia	6.0	E

3.7.2 Methodology

Soil samples were collected by digging a pit of 15,30,45 cm depth at the appropriate location with the help of a spade and a 'Khurpi'. The excavated soil from each location was mixed thoroughly and about 1 kg of mixed sample was collected by 'Cone & Quartering method'. The sample was packed in a polyethylene bag, sealed and brought to the laboratory.

After drawing sample for measurement of moisture content, the remaining sample was air dried for few days. For chemical characteristics, air-dried sample was ground in an agate mortar with the help of a wooden hammer and passed through a 2-mm (10-mesh) sieve. The coarser materials were rejected and the sieved material was sampled by the standard 'cone and quartering' method. Characterization of soil sample was performed by adopting methods prescribed under relevant parts of IS: 2720, "Indian Standard Methods of Test for Soils".

FIG NO. C3-13: LOCATION OF SOIL SAMPLING STATIONS & TRAFFIC CENSUS



SL. NO.	STATION LOCATION	SOIL	TRAFFIC	DISTANCE, DIRECTION PADHIARKA	DISTANCE, DIRECTION DUDHALA	DISTANCE, DIRECTION VANGAR
1.	NEAR CEMENT PLANT, PADHIARKA	√		CORE ZONE	0.8 / W	1.7 / SE
2.	PADHIARKA	√		0.2 / W	0.8 / W	1.0 / S
3.	VANGAR	√		1.6 / NW	3.4 / W	0.4 / S
4.	MADHIA	√		1.0 / N	2.1 / W	CORE ZONE
5.	DUDHALA NO.1	√		1.8 / ENE	CORE ZONE	1.4 / SE
6.	DUDHERI	√		1.7 / E	0.1 / S	2.5 / SE
7.	DUDHAL NEAR NH-8E	√		2.5 / ENE	0.1 / S	1.8 / ESE
8.	GUJARDA	√		2.8 / E	0.1 / S	2.9 / SE
9.	DOLIYA	√		0.3 / S	1.3 / SW	3.2 / SE
10.	RABHADA	√		4.4 / WNW	6.6 / W	1.6 / W
11.	AMRATVEL	√		3.8 / N	2.0 / NW	1.5 / N
12.	NEAR DEVLIA VILLAGE	√		6.8 / ENE	2.9 / E	6.0 / E
13.	NEAR VANGAR VILLAGE, NH-8E		√	0.9 / N	3.0 / W	0.02 / N

LEGENDS

	PADHIARKA & DOLIYA LIMESTONE MINE
	VANGAR & MADHIA LIMESTONE MINE
	GUJARDA, DUDHERI & DUDHALA L.S. MINE
1	SAMPLING STATIONS
	FOREST

TITLE:
LOCATION OF SAMPLING STATIONS SOIL AND TRAFFIC MONITORING

CLIENT:
NIRMA LTD.

3.7.3 Observation

The analysis results of soil quality of the study area is summarised in **Table No. C3-15** and given in detail in **Annexure XV**.

TABLE NO. C3-15: SOIL ANALYSIS RESULT

Parameters	Unit	Result range
Textural Classification		Fine - Medium Grained
pH		7.7 - 8.2
E.C.	mS/cm	0.190 - 1.739
CaCO3	% by mass	2.5 - 40.5
Specific Gravity		1.86 - 3.56
Moisture	% by mass	11.024 - 33.82
Organic Carbon	% by mass	0.22 - 2.24
Organic Matter	% by mass	0.50 - 5.02
Available Phosphorous	mg/kg	0.16 - 0.97
Nitrate-Nitrogen	mg/kg	0.01 - 12.57
Sodium	kg/ha	378.6 - 2044.0
Potassium	kg/ha	157.0 - 845.0
Calcium^{2+}	me/100gm soil	11.6 - 23.9
Magnesium^{2+}	me/100gm soil	2.1 - 21.5
Colour	-	Blackish

Source: Test Report no. MMS/06-21/65 & MMS/06-21/66 dated 18.06.2021 by Min Mec R&D Laboratory, Delhi.

The pH of soils is mildly alkaline in the Amrutvel, Vangar and Rabhda Village and Moderately alkaline at other locations. The electrical conductivity varies from 0.190 to 1.739 mS/cm in study area. Soil is normal at all locations except for one location at Vangar village where EC reaches 1.739 mS/cm and found to be critical for germination. The soils have organic carbon varying from 0.22 to 2.24 which shows that soil is rich in organic carbon at 4 locations that are Madhiya, Dudhala, Dudhala near NH-8E & Amrutvel village. Optimum at Dudheri & near Devlia village. At rest of the locations the soil is found deficient in organic carbon content. The colour of the soil was blackish at all 12 locations.

3.8 NOISE ENVIRONMENT

3.8.1 Monitoring locations

Ambient noise levels were also measured at sixteen locations in and around the site using a sound level meter along with filter. The locations are given in **Table No. C3-16** along with results and shown in **Fig No. C3-8** above.

3.8.2 Observations

Results of ambient noise measurements of noise sampling stations are presented in **Annexure X** and summarized in **Table No. C3-16**. The Ambient Air Quality Standards in respect of Noise is given in **Annexure XI**.

TABLE NO. C3-16: AMBIENT NOISE LEVELS IN THE STUDY AREA (IN LEQ DB(A))

Station code	Name of Monitoring Station	Distance (Km) and direction from project	Category of area	Permissible levels as per AAQS for Noise, Leq dB(A)		Observed Noise Levels, Leq dB(A)	
				Day	Night	Day	Night
1	Near Cement Plant, Padhiarka	1.17, SE	Residential	55	45	47.57	40.09
2	Padhiarka	1.0, S	Residential	55	45	52.46	42.89
3	Vangar	Core Zone	Residential	55	45	48.95	41.42
4	Madhiya	0.4, E	Residential	55	45	50.11	39.93
5	Dudhala No.1	1.4, SE	Residential	55	45	50.34	40.96
6	Gujarda	3.1, SE	Residential	55	45	48.20	40.11
7	Patva	2.7, S	Residential	55	45	48.65	41.35
8	Samadhiyala No. 1	1.9,SW	Residential	55	45	49.85	39.42
9	Doliya	3.2, SE	Residential	55	45	50.51	39.36
10	Rabhada	2.3, W	Residential	55	45	50.72	41.76
11	Nana Pipalva	0.5, N	Residential	55	45	48.96	41.62
12	Amrutvel	1.5, N	Residential	55	45	51.86	40.75
13	Mota Jadra	2.1, NE	Residential	55	45	49.97	40.27
14	Devalia	4.0, E	Residential	55	45	48.69	40.01
15	Khared	6.0, E	Residential	55	45	50.07	40.89
16	Gadhada	5.9, SE	Residential	55	45	51.83	40.40

Source: Test Report no. MMN/06-21/67 dated 18.06.2021 by Min Mec R&D Laboratory, Delhi

The noise levels were measured at sixteen stations located near residential area, which varied between 47.57 to 52.46 dB(A) during day time and 39.36 to 42.89 dB(A) during night time. Noise level in the area are found within the limit as specified for residential area.

3.9 TRAFFIC VOLUME SURVEY

The traffic volume survey was conducted on Bhavnagar to Una Road (NH-8E/ 51) Near Vangar Village. The location of station is shown in **Fig No. C3-13**

above. The monitoring was performed on 27-28/05/2021 for 24 hours by visual observation and counting of vehicles under different categories viz. cycles, Motor Cycles & Scooters, light motor vehicle (L.M.V.) and heavy motor vehicles (H.M.V.) i.e. buses & trucks, Animal drawn vehicles and others. The details are given in **Annexure XII** and summarised in **Table No. C3-17**.

TABLE NO. C3-17: TRAFFIC VOLUME SURVEY

Date	Cycles	Two/ Three wheelers	LMV	Bus	Trucks	Animal Drawn Vehicles	Others	Total
Equivalency factor	0.5	0.5	1	3	3	8	4.5	
Bhavnagar to Una Road: NH-8E/51 (Near Vangar Village)	65	3045	1872	164	1334	15	298	**6793**
Equivalent PCUs	32.5	1522.5	1872	492	4002	120	1341	**9382**

It is observed that the traffic volume of Heavy Motor Vehicles is highest followed by Light Motor Vehicles and two/three wheelers. Total numbers of vehicles were found as 6793 per day and equivalent PCUs is 9382 per day.

3.10 ECOLOGY

A strategic balance between physical and biological environment is vital for human survival. Abiotic factors as air, water, soil, climate needs to be maintained for having a vibrant atmosphere. Imparity in any aspect of sustainable environment can lead to long term damages to the environment. A delicate balance needs to be built between the developmental vision and the temperament to conserve the environment at the same time.

This necessitates the need for having a thorough survey of floral and faunal species and the current status of flora and fauna of the region constitutes a vital part of this overall study.

3.10.1 Forest

The reserve forests in the study area are as follows and shown in **Fig No. C3-8** above:

- RF near Patva (2.1 km, S)
- RF near Dudheri village (3.9 km, SE)
- RF near Gujarada village (4.3 km, SE)
- RF near Doliya village (3.3 km, SSE)
- RF near Khared village (6.3 km, ESE)

As per Census 2011, 1353.11 Ha land is under forest cover which is 2.93% of the total study area. No National Park, Wildlife Sanctuary, Ramsar sites, corridor etc exists within the ML area and also within 10 km radius of ML area. Nearest National Park & Wildlife Sanctuary is the GIR National Park, GIR Wildlife Sanctuary & Mitiyala Wildlife Sanctuary located at a nearest distance of 76.0 km, 44.2 km and 43.5 km respectively. There is no Forest land in project area i.e. core area. The Principal Chief conservator of Forest, Gandhi Nagar, Gujarat State has authenticated that no national parks, sancturies, biosphere reserves, wildlife corridor etc. fall in study area. (Copy of map given in **Annexure XIV**).

The area of Amreli District belong to the sub group Type 5A "Tropical Dry Deciduous Forests" and that of Bhavnagar District Type 6A "Northern Tropical Thorn Forest", as per the revised classification of forest types of India by Champion and Seth. Depending mainly upon the topography, edaphic factors and past treatments given to the area, composition of the crop varies considerably. Local variations in the altitude do not influence the distribution of various species.

3.10.2 Flora

The absence of floral diversity is due to high salinity in the study area, only few salinity resistant species were recorded namely, *Prosopis julifiora, Aloe barbadensis, Salvadora persica, Moringa oleifera* and *Zizyphus sp* The reasons for the loss of biodiversity richness as well as density can also be traced to biotic pressures such as expansion of agricultural usage of land and forests, urbanization, industrial and developmental projects that destroy or usurp natural habitats, over exploitation of natural resources, over grazing and above all, pollution. Man-made alterations of the habitats also produced an imbalance that upset the ecosystem and the age old interrelationships. Loss of vegetational cover, green house effect, erosion and loss of top soil too contributed to habitat destruction.

Core Zone: The core zone is virgin land where mining is proposed to be carried out. The natural vegetation in the core area includes trees, shrubs, herbs etc. List of flora in core zone is given in **Annexure XIII** and the same has been authenticated by the Forest Department**.**

Buffer zone: *Various types of plant species and cropping pattern are discussed below:*

Cropping pattern: Total agricultural land of the area is not sown since it is dependent on the rainwater. The tube well/ openwell is the major source followed by seasonal streams of irrigation for agriculture. There are three seasonal crop seasons in area viz. Kharif, Rabi and summer. The main food crops of the district are Bajra, Wheat, Onion and Maize. The main non-food

crops are Cotton, Groundnut, Til and Fodder. Pulses are also grown in the study area. Cropping pattern is shown in **Table C3-18**.

TABLE NO. C3-18: AREA UNDER MAJOR FIELD CROP AND HORTICULTURE IN BHAVNAGAR DISTRICT

Sl.	Particulars	Total Area (in '000 Ha)			
		Kharif	Rabi	Summer	Total
	Major Field Crop Cultivated				
1.	Cotton	306.2	-	-	306.2
2.	Groundnut	102.7	-	22.5	125.2
3.	Bajra	44.4	-	3.5	47.9
4.	Wheat	-	33.9	-	33.9
5.	Pulses	7.0	3.0		10.0
	Horticulture Crops - Fruits				
1.	Mango	5.5			
2.	Citrus	5.4			
3.	Sapota (Chiku)	2.7			
4.	Banana	1.8			
5.	Others	6.2			
	Horticulture Crops - Vegetables				
1.	Onion	32.3			
2.	Garlic	0.6			
	Medicinal and Aromatic Crops (Amla)				
1.	Cumin	5.6			
	Plantation Crops				
1.	Coconut	3.8			
	Fodder crops				
1.	Sorghum	21.8			
2.	Maize	1.6			
3.	Lucerne	0.7			
4.	Total fodder crop area	24.1			
5.	Grazing land	61.1			

(Source: Table 1.7 of Agriculture Contingency Plan for District Bhavnagar available at http://www.jau.in/attachments/AgriConti/Bhavnagar.pdf accessed 28.07.2023)

Plantation on roads: Plantation of species on the roadside are Azardirachta indica, Cocos nucifera, Dalbergia sissoo, Mangifera indica, Tamarindus indica, Cassia auriculata, Zizyphus nummularia etc. apart from natural vegetation of Prosopis juliflora.

Vegetation in the Hamlets: The species composition near the hamlets is different from those found in the natural environmental conditions. The vegetation structure surrounding the hamlets reflects a typical character of habitation. The trees in the settlement area are catering to the needs of local population such as fodder, fuel-wood, fruit, and timber and for religious

purposes. Some of the common species found in the hamlets comprise *Mangifera indica, Syzygium cumini, Terminalia bellerica, Ficus religiosa etc.*

Medicinal plant species: The study area is also endowed with several medicinal plants. Many medicinal plants are found in the study area which is used by the people of villages for their daily use and minor ailments. The common medicinal plants of the region are *Azadirachta indica, Cassia fistula, Ficus benghalensis, Ficus racemosa, Ficus religiosa, Mangifera indica, Ocimum sanctum, Syzigium cuminii, Terminalia catappa, Zizyphus mauritiana etc.*

Fuel wood plant species: Villagers collect dry leaves, stems and log to fulfill their daily need for fuel wood requirement. *Acacia nilotica* (Babool), *Syzygium cumini (*Jamun*), Mangifera indica* (Mango*)* etc. are the species, used for fuel wood.

Gulf of Khambat: The coastal mudflat areas of Arabian sea present at a distance of 0.5 km, S from HTL are predominantly covered by *Avicennia marina.* Higher density of Avicennia may cause reduction in plant growth due to competition for limited resources *Besides this,* species of *Suaeda* are predominantly covered by *Kandella candel and Rhizophora mucronata* (mangrove species) were also reported. Mangrove in the Gulf of Khambhat has suffered severe degradation over a span of time. Other species includes Hydrilla *etc.* As per report on "Demarcation of High Tide Line, Low Tide Line and Coastal Regulation Zone Mapping for the proposed Mining Lease area in Mahuva Taluka, Dist Bhavnagar, Gujarat" by Institute of Remote Sensing, Chennai mangrove areas have been identified and 50 m buffer have been drawn from the proposed mining area.

The detailed list of flora found in the study area is given in **Annexure XIII.**

3.10.2.1 Primary survey

Phyto-sociological study

To understand the attribute of communities, a phyto-sociological study of vegetation was conducted all through, wherever small patches of *Acacia nilotica* growth were present. The sites were selected on the basis of vegetation component and their importance for project view point. An attempt has been made to study only for tree flora because herbaceous flora was not identifiable. A list of flora for trees, shrubs and herbaceous plant species are listed separately in **Annexure XIII.**

At each selected site random vegetation sampling was done with the help of 10 m X 10 m quadrate size. Presence and absence of species, number of individual species and basal area of each plant species in each quadrate was recorded. Frequencies and densities were calculated following Curtis and Mc. Intosh

(1951) method. Species diversity index was estimated using Shannon-Weiner index (1963).

Shanon Weiner diversity Index was calculated by following formula:

$$H = -\sum Pi \text{ Log } Pi$$

Where : H = Shanon Weiner diversity index

Pi = ni/N where ni is number or biomass or IVI of individual species and N is the total number or biomass or IVI of all individuals.

In the present study IVI (Importance Value Index) has been taken into consideration for evaluation of diversity index. IVI gives total performance of individual species at a particular site. IVI is the total of relative frequency (RF), relative density (RD) and relative dominance (RDO). Since IVI includes many of the attributes at a time, therefore consideration of IVI was preferred on number for evaluation of Shannon-Weiner diversity index. This diversity index includes both richness of species and apportionment of species at any particular site. Higher the value of index more is the stability of that community. Thus Shannon-Weiner diversity index is an indication of goodness of community.

Phyto- sociological study of tree layer vegetation was conducted at various sites; however more emphasis was given on study around the proposed project site. The parameters such as frequency, density, abundance, relative frequency, relative density, relative dominance and IVI were evaluated at each forest stand. Shanon-Weiner diversity index was also calculated for each studied stand. A general description of forest stands, where classified forest is not present, has also been covered in following paragraphs:

Reserved or Protected forests are usually identified from the toposheet, which is restricted in this case. Therefore, Census 2011 data has been used to know the total area of forests in the study area. 0.55% revenue forest is present within the study area. However, there is no forest land in the core zone as per the revenue records.

The vegetation is observed in the study area is with low diversity index. According to revised classification of forest type by Champion & Seth, it is Tropical Dry Thorn Forest ($6/E_3$). The vegetation is like *Acacia Senegal, Prosopis juliflora, Acacia leucophlea, Acacia nilotica etc.* The study area has scrub like vegetation of *Prosopis juliflora, Zizyphus nummularia* etc.

Canopy density (Canopy area of trees/Total ground cover area) of the forested area is very low. The value is never exceeding 0.2. General canopy density is below 0.1. Tree heights vary from 1.5 to 4.5m. Canopy diameter of tree species varies from 1.0 to 3.6m. The forest stands are dominated mostly by a

leguminous tree species of *Acacia nilotica*. Very few stands are dominated by *Acacia leucophloea* tree species. Overall forest areas are characterised by low species diversity. Number of total plant species is limited to seven only. All the stands are dominated by either *Acacia nilotica* or *Acacia leucophloea*. A detailed vegetation study was done for the following sites.

There are four analytical sites i.e. Doliya, Padhiarka, Dundas and Dudheri. Tree flora vegetation analysis results are shown in **Table No. C3-19** to **C3-22**.

TABLE NO. C3-19: TREE FLORA AT DOLIYA

Name of species	F	D	AB	RF	RD	RDO	IVI
Acacia nilotica	60.00	1.20	2.00	18.75	19.67	24.18	62.60
Cocos nucifera	20.00	0.80	4.00	6.25	13.11	28.66	48.02
Acaica leucophloea	50.00	1.40	2.80	15.63	22.95	3.13	41.71
Dalbergia sissoo	20.00	0.30	1.50	6.25	4.92	9.70	20.87
Ficus religiosa	20.00	0.20	1.00	6.25	3.28	7.53	17.06
Zizyphus mauritiana	30.00	0.30	1.00	9.38	4.92	2.18	16.47

Diversity Index = 0.86

TABLE NO. C3-20: TREE FLORA AT PADHIARKA

Name of species	F	D	AB	RF	RD	RDO	IVI
Acacia nilotica	70.00	1.30	1.86	22.58	18.31	33.00	73.89
Acacia leucophloea	50.00	1.90	3.80	16.13	26.76	9.12	52.01
Azadirachata indica	50.00	0.50	1.00	16.13	7.04	21.60	44.77
Ficus racemosa	20.00	0.20	1.00	6.45	2.82	11.10	20.36
Zizyphus mauritiana	30.00	0.40	1.33	9.68	5.63	3.25	18.56
Prosopis juliflora	20.00	0.30	1.50	6.45	4.23	4.66	15.34

Diversity Index = 0.77

TABLE NO. C3-21: TREE FLORA AT DUNDAS

Name of species	F	D	AB	RF	RD	RDO	IVI
Acacia nilotica	90.00	1.30	1.44	28.13	20.31	39.25	87.68
Azadirachta indica	40.00	0.40	1.00	12.50	6.25	12.80	31.55
Zizyphus mauritiana	40.00	0.40	1.00	12.50	6.25	3.77	22.52
Ficus benghalensis	20.00	0.20	1.00	6.25	3.13	11.05	20.43
Mangifera indica	20.00	0.20	1.00	6.25	3.13	7.54	16.92

Diversity index = 0.75

TABLE NO. C3-22: TREE FLORA AT DUDHERI

Name of species	F	D	AB	RF	RD	RDO	IVI
Acacia nilotica	50.00	0.90	1.80	17.24	13.04	22.80	53.08
Acacia leucophloea	40.00	1.20	3.00	13.79	17.39	4.02	35.20
Zizyphus mauritiana	40.00	0.60	1.50	13.79	8.70	7.38	29.87
Mangifera indica	20.00	0.30	1.50	6.90	4.35	14.13	25.37
Cassia fistula	20.00	0.40	2.00	6.90	5.80	9.53	22.22
Syzygium cumini	20.00	0.30	1.50	6.90	4.35	9.04	20.29
Ficus recemosa	20.00	0.20	1.00	6.90	2.90	7.44	17.24
Albizzia lebbeck	20.00	0.30	1.50	6.90	4.35	5.47	16.71

Diversity index = 0.96

Note : F - Frequency D - Density
AB - Abundance RF - Relative Frequency
RD - Relative Density RDO - Relative Dominance
IVI - Importance Value Index

3.10.3 Fauna

Core and Buffer zone were taken into consideration while preparing a list of faunal species. Field survey (line transect method) and discussions with local people including compilation of data from online sources were used as a tool while conducting the faunal studies. Field visit was conducted in the early morning hours at 5 am (at dawn) and the second around 7 pm (at dusk). Dawn and dusk are the periods when the maximum movement of animal takes place. Normally best results are obtained at the dawn.

Core zone: Common avifauna found in the core zone includes dove, kingfisher, ibis, Indian myna, hoopoe, crow, etc. and mammals such as Jungle Cat, Five Striped Palm Squirrel, Mongoose, wild boar could be seen. Amongst reptiles, blind snake, wolf snake, cat snake, Indian Krait were seen.

Buffer zone: A total of about 70 faunal species were recorded during the field survey, comprising 11 species of mammals, 06 species of Reptiles & 53 Avifaunal species. The dominant mammalian faunal species observed in the study area was Bluebull besides five stripped palm squirrel, mongoose, etc. The common bird species i.e. avifauna recorded during the survey in the study area are House Sparrow, Painted stork, Indian Mayna, Pigeon and Parakeet etc. The list of fauna is given in **Annexure XIII.**

The project site surroundings does not support any habitat for any group of wild animal except few animals such as mongoose and porcupine species, which are well adapted to desert areas.

Rare, Endangered and Vulnerable Faunal Species: In the study area, peafowl, Chinkara and Asiatic Lion are reported under Schedule-I of the Wildlife Protection Act, 1972 amended uptill 2019. On the basis of the fauna study findings & list of fauna authenticated by Forest Department, Wildlife Conservation Plan was prepared and submitted for approval. The same had been approved by the Forest Department on 20.12.2021. Approval letter & conservation plan are given in **Annexure XXIII.** After the amendments vide Act 18 of 2022, a number of additional species have been added into Schedule-I such as Leopard, Striped hyaena, Jackal, Bengal fox, Indian porcupine, Jungle cat, Grey wolf, Dog faced water snake, Russell viper, Checkered Keelback, Indian Rat snake, Red sand boa and Naag/cobra.

Animal Husbandry: Animal husbandry occupies an important place in the rural economy of Bhavnagar and Amreli districts. It provides them with the draught power required for cultivation and an additional means of supplementing their income. To the farmer, cattle are a valuable form of wealth. The live-stock plays a vital role in the agricultural economy of the district, because it not only supplies milk, meat, manure, bones, hides and skins, hoofs and horns but also serves as draught cattle for drawing carts, ploughs and is also used for drawing water. The livestock in the district could be divided into three classes such as (1) Bovine comprising cattle and buffaloes, (2) Ovine comprising sheep and goats, and (3) Others like horses and ponies, pigs and poultry. Live-stock products in the district comprise milk, eggs, skins and hides, wool, manures, etc.

Fishery: Fishing is one of main occupation of people in the region. Mudskipper, clupeids, mullets and catfish are the main fish catch of the Gulf. Mudskippers (*Boleopthalmus dussumieri*) form an important fishery in the intertidal mudflats all over the coast. Coastal areas of Bhavnagar district harbors wide range of ichthyofaunal diversity and diverse fisheries resources. The fishermen in this area use wide range of fishing methods and gears, which evolved traditionally and being adept extensively in Bhavnagar coastline. Livelihood of these fishermen is almost entirely depends on mudskipper fishing and they employ three types of fishing methods to catch them i.e. direct catch through digging the burrow, stick traps around mudskipper holes, and by nylon net. Fishing by using nylon net is the most commonly used method compared to others.

Migratory birds : Due to the presence of water bodies in the study area, migratory birds, especially water birds are frequently observed. Some of these as listed in **Annexure XIII** are greater flamingo (*Phoenicopterus roseus*), Black-headed Ibis (*Threskiornis melanocephalus*), Blue tailed bee-eater (*Merops phillppinus*), Black winged stilt (*Himantopus Himantopus*), Common hoppoe (*Upupa epops*), Rosy starling (*Pastor roseus*), Western yellow wagtail (*Motacilla flava*), cattle egret (*Bubulcus Ibis*), little egret (*Egretta garzetta*) etc.

Marine animals: Marine animals reported from Gulf of Khambat in Bhavnagar district includes molluscs (Lyrodus, Dicyathifer, etc.), crustaceans (Metapograpsus, Nanosesarma etc.) and prokaryotes (Bacillus, pseudomonas, Moraxella etc.). Besides this fishes are also found. These include mainly Bombay duck, mullet, catfish, hilsa, shrimp, etc. Species of marine turtles such as green sea turtles and olive ridley nest in large numbers on Piram Island located at a distance of 92 km aerially, north east from the mine site. The species was previously documented in the Gulf of Khambhat. Deputy Conservator of Forests, Bhavnagar has provided details vide letter dated 27.01.2023 that turtle rearing/breeding site is located at a distance of about 70 km away from project site at Hathab, Taluka: Bhavnagar. There is no turtle area in 10 km area from our lease area (refer **Annexure XXV**). Also as per report on "Demarcation of High Tide Line, Low Tide Line and Coastal Regulation Zone Mapping for the proposed Mining Lease area in Mahuva Taluka, Dist Bhavnagar, Gujarat" by Institute of Remote Sensing, Chennai turtle breeding sites are not in the vicinity of proposed site. Whale is reported in coastal talukas of Junagadh District and not in Bhavnagar.

Bruhad Gir concept: Government of Gujarat was pursuing lion conservation in Greater Gir Region adopted as a Brihad Gir concept. The region includes Gir National Park, Gir Wildlife Sanctuary, Paniya Wildlife Sanctuary, Mithiyala Wildlife Sanctuary, Girnar Wildlife Sanctuary, Coastal area in the region and Grass lands in Savarkundla, Liliya and Gariadhar talukas of Amreli districts and Mahuva and Palithana talukas of Bhavnagar district. There was great enthusiasm among the local people to support this initiative2.

As per the latest resolution 3 by Forest and Environment Department, Gandhinagar which provides for the protection of lion and other wild animals in the Gir Sactuary, National Park and revenue areas around its border, to reduce the friction between wildlife animals and people, to create awareness of wildlife protection among farmers and people and to cooperate in conservation, for this, in around 300 revenue villages around Jungadh, Amreli and Bhavnagar district of Bruhad Gir, which are particularly frequented by lions, Wildlife Friends have been sanctioned.

In line with the spirit of the State Government and local people for conservation of Lions and other wild animals, the Company has prepared and got approved conservation plans from the forest department.

[2] Minutes of the 12th Meeting of the Standing Committee of National Board for Wildlife (NBWL) convened on 18th August, 2008 accessed at https://parivesh.nic.in/writereaddata/Order%20and%20Release/12th_Minutes_Standing_Committee.pdf

[3] https://forests.gujarat.gov.in/government-resolutions.htm

3.11 SOCIO-ECONOMIC CONDITIONS

3.11.1 Demographic details of core zone

Although, the main habitation of villages are outside the ML area, few house/hutments can be seen in the core zone. These house/hutments will get disturbed during mining.

The core zone is comprising of land of two villages- Vangar and Madhiya. Core zone is having 95.8% private land, 4.19% government land and no forest land is involved. The social impact in the core zone will be directly related to the area that will be acquired. When the area to be acquired has households, then displacement, resettlement and rehabilitation will occur while when only land is being acquired then the livelihood of the persons dependent on that land will get affected. These affected persons may also have dependency on common community resources. It may be noted that land will be required for the pit area of 197.0 ha only as per the approved mining plan. In view of this, the baseline of the core zone comprises of following:

Within the private land in conceptual pits, as per latest survey carried out there are 24 houses/hutments in land of Vangar (17 nos.) & in land of Madhiya (7 Nos.) villages. There will be direct purchase or leasing of private land, with the willing consent of the private land owners. The number of plots (khasras) and their land owners are summarised in **Table No. C3-23**.

TABLE NO. C3-23: SUMMARY OF LAND

At Intial stage**						
Village Name	**Only Land losers**			**Homestead losers**	**Landlosers**	**Total**
	Area, ha*	**No. Plots under pit area**	**No. of Land owners**			
Vangar	63.59	81	221	17	221	238
Madhiya	133.41	126	273	7	273	280
Total	**197.0**	**207**	**494**	**24**	**494**	**518**

Note*: Mine life – upto lease period after exploration in entire lease area
**Area requirement based on conceptual plan of Review of Mining Plan

3.11.2 Demographic details of buffer zone

The village wise population is given in **Annexure XVI** and the same is summarized in **Table No. C3-24**. Distribution of population along with percentage of SC and ST population and percentage of literates are presented through pie chart/diagram in **Fig No. C3-14** and **Fig No. C3-15**. The present population for 2023 based on the decadal growth rate of 2001-2011 (i.e. 16.63%) has also been estimated and given in **Table No. C3-24**.

TABLE NO. C3-24: DISTRICT AND SUB-DISTRICT WISE POPULATION IN THE STUDY AREA

District	Sub-District	No. of villages	No. of households	Total population	Male	Female
Amreli	Rajula	18	6097	36296	18270	18026
Bhavnagar	Mahuva	31	21443	125411	64197	61214
Total		**49**	**27540**	**161707**	**82467**	**79240**
Percentage				**100%**	**51.00**	**49.00**

The village wise additional demographic details including family size, sex ratio, schedule caste, schedule tribe, literacy level, etc. are given in **Annexure XVI** and summarised in **Table No. C3-25**.

TABLE NO. C3-25: DEMOGRAPHIC DETAILS OF THE STUDY AREA (AS PER CENSUS 2011)

Description	As per Census 2011		Projected for 2023
	Total	Percentage	
No. of Households	27540		33567
Total population	161707	100	197099
Male population	82467	51	100516
Female population	79240	49	96583
Schedule Castes	6568	4.06	8005
Schedule tribes	209	0.13	255
Total Literate	95046	58.78	115848
Female Literate	38985	24.11	47517
Male Literate	56061	34.67	68331

The percentage of Scheduled Tribes is 0.13% and Schedule Castes is 4.06% of the total population. There are 961 women against every 1000 men in the study area. The average family size is 5-6 persons per family. The literacy level s 58.78% and it is lower among females (24.11%) compared to males (34.67%).

FIG NO. C3-14: BREAK UP OF SC & ST IN THE STUDY AREA (CENSUS 2011)

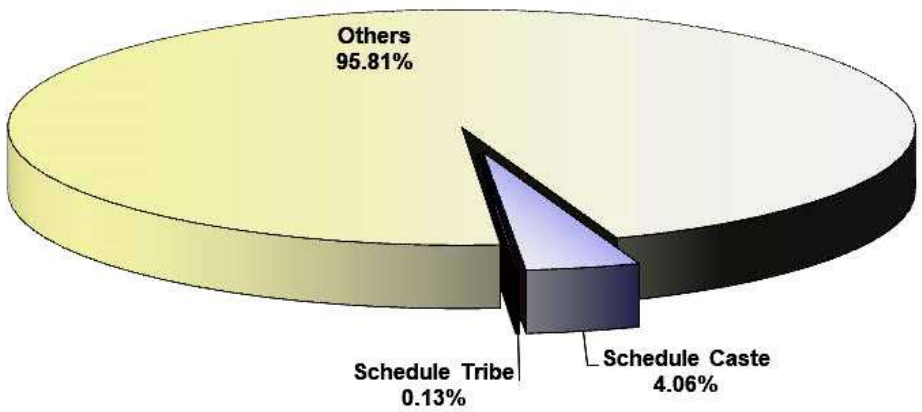
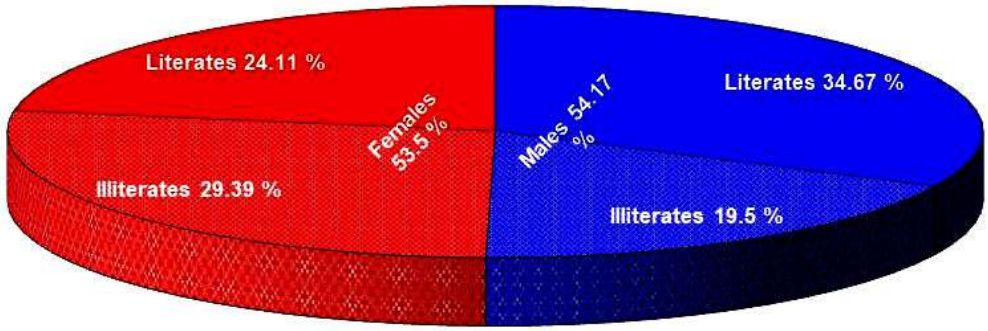


FIG NO. C3-15: LITERACY LEVEL IN THE STUDY AREA (CENSUS 2011)



3.11.3 Employment and occupation

Employment pattern and occupation are the two main indicators of the economic profile and the same for the individual villages, based on 2011 Census data, are presented in **Annexure XVII.** A summary of employment pattern and occupation for the study area is presented in **Table No. C3-26**. While the employment pattern, breakup of main & marginal workers, breakup of main workers and breakup of marginal workers are also depicted in **Fig No. C3-16, C3-17,** and **C3-18,** respectively. The present working and non working population for 2023 based on the decadal growth rate of 2001-2011 (i.e. 16.63%) has also been estimated and given in **Table No. C3-26**.

TABLE NO. C3-26: EMPLOYMENT PATTERN IN THE STUDY AREA

Description	As per Census 2011		Projected for 2023
	Total	%	
Total workers	63148	39.05	76969
Main workers	53567	33.13	65291
Marginal workers	9581	5.92	11678
Non workers	98559	60.95	120130
Break up of Main workers			
Cultivators	8692	16.93	10594
Agricultural Labourers	21228	39.63	25874
Household industries	665	1.24	811
Other workers	22983	42.91	28013
Break up of Marginal workers			
Cultivators	1525	15.92	1859
Agricultural Labourers	5462	57.01	6657
Household industries	203	2.12	247
Other workers	2392	24.97	2916

It can be seen from the above table that main worker and marginal workers form 33.13% and 5.92% respectively of the total population. Other workers account for 42.91% of the main workers and 24.97% of the marginal workers.

FIG NO. C3-16: EMPLOYMENT PATTERN IN THE STUDY AREA (CENSUS 2011)

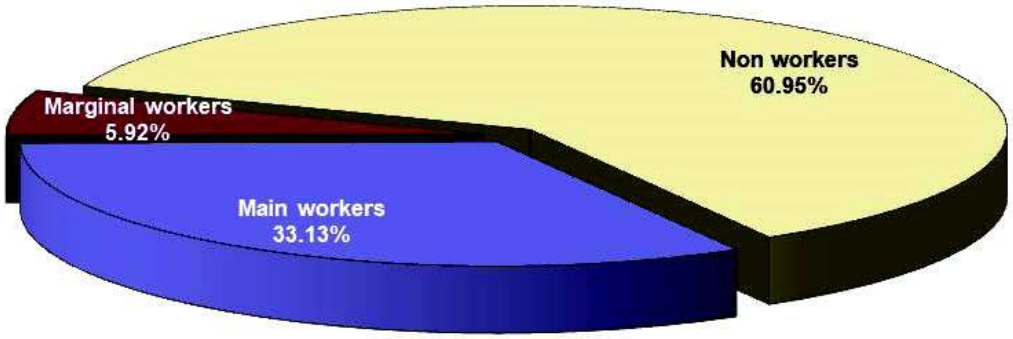


FIG NO. C3-17: BREAK UP OF MAIN WORKERS IN THE STUDY AREA (CENSUS 2011)

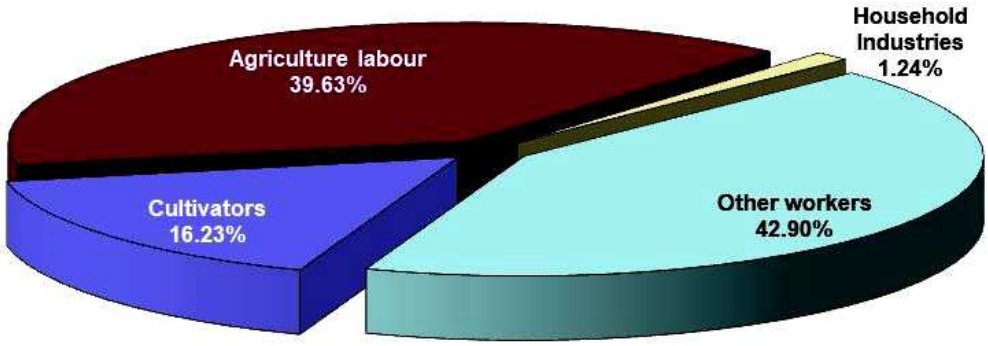
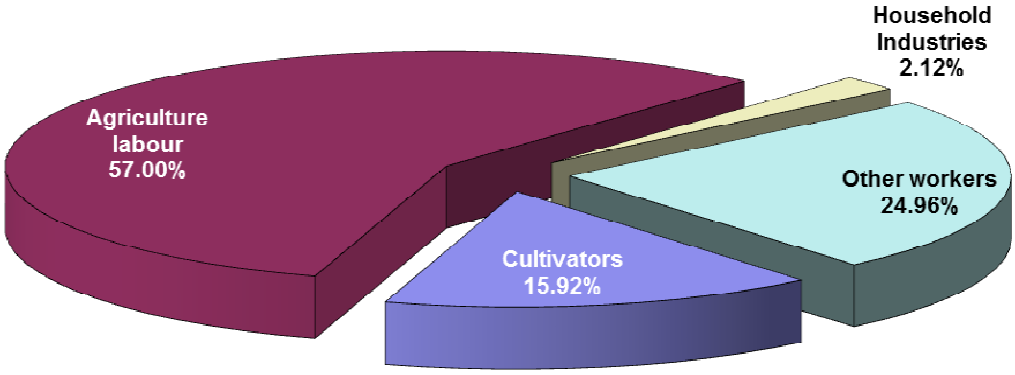


FIG NO. C3-18: BREAK UP OF MARGINAL WORKERS IN THE STUDY AREA (CENSUS 2011)



3.12 AMENITIES

Details of amenities available in individual villages are given in **Annexure XVIII**. A summary of the same is given in **Table No. C3-27**. The present situation with respect to various amenities has been assessed in the need based assessment study given in Section 8.4 of Chapter 8.

TABLE NO. C3-27: AMENITIES AVAILABLE IN VILLAGES AND TOWNS WITHIN THE STUDY AREA (AS PER CENSUS 2011)

Education	Villages	63 Primary school, 4 Secondary school and 2 Sr. Sec. School
	Towns	10 Govt. Primary School, 11 Private Primary School, 3 Govt. Secondary School, 2 Private Secondary School, 2 Govt. Senior Secondary School, 2 Private Senior Secondary School, 1 Govt. Degree College-Art, Science and Commerce, 1 Govt.-Management Institute, 1 Private-Shorthand, 1 Private-Typewriting, 1 Govt.-Vocational (Others) and 1 Govt.-Non Formal Education
Medical and health care	Villages	3 Primary Health Centre, 17 Primary Health Sub-Centre, 1 Veterinary Hospital, 2 Mobile Health Clinic, 1 Non Govt. Med. facilities Out Patient, 2 Non Govt. Med. facilities Medical Practitioner with other Degree, 12 Non Govt. Med. facilities Traditional Practitioner and Faith Healer and 3 Non Govt. Med. facilities Medicine Shop
	Towns	1 Hospital Allopathic, 1 Hospital Alternative Medicine, 1 Dispensary/ Health Centre, 1 Family Welfare centre, 1 Maternity and Child Welfare Centre, 1 Maternity Home, 1 Veterinary Hospital, 15 Non-Government Out-Patient, 4 Non-Government In and Out Patient, 10 Non-Government Charitable-Hospital/Nursing Home and 28 Non-Government Medicine Shop
Power Supply	Villages	48 Power Supply For Domestic Use (nos.), 48 Power Supply For Agriculture Use (nos.) and 48 Power Supply For All Users (nos.)
	Towns	10283 Electricity-Domestic Connection (nos.), 424 Electricity-Industrial Connection (nos.), 3139 Electricity-Commercial Connection (nos.), 1931 Electricity-Road Lighting Connection (nos.) and 13 Electricity-Others Connection(nos.)
Water supply and Sanitation	Villages	38 Tap Water Untreated, 4 Covered Well, 28 Uncovered Well, 37 Hand Pump, 16 Tube Wells/Borehole, 17 River/Canal, 8 Tank/Pond/Lake and 1 Others

	Towns	5765 Latrines-Flush/Pour Flush (Nos.), 9 Latrines-Others (Nos.) and 2962 Capacity Source-1 (KL)
Banks and Commercial Societies	Villages	3 Commercial bank, 2 Co-operative bank, 35 Agricultural Credit Societies, 46 Self-Help Group (SHG), 35 Public Distribution System (PDS), 2 Mandis/ Regular Markets, 1 weekly Haat, 1 Agricultural Marketing Society, 48 Nutritional Centre-Anganwadi Centre, 48 Nutritional Centre-Others, 40 ASHA and 5 Community Centre with/without TV)
	Towns	5 Nationalised Bank (Nos.), 2 Commercial bank, 2 Co-operative Bank (Nos.), 1 Agricultural Credit Societies and 5 Non-Agricultural Credit Society (Nos.)
Transport and Approaches	Villages	48 Public Bus Service, 10 Private Bus Service, 3 Railway station, 13 Auto/Modified Autos, 10 Vans, 28 Tractors, 16 Cycle-pulled Rickshaws (machine driven) and 35 Carts Driven by Animals Approach to village **-** 11 nos. of villages which have access to National Highways, 8 nos. of villages have access to State Highway, 15 Major District Road, 38 Other District Road, 45 Black Topped (pucca) Road, 43 Gravel (kuchha) Roads, 12 Water Bounded Macadam, 39 All Weather Road and 48 Foot Path
	Towns	42.3 Pucca Road Length (in kms.) and 18.63 Kutcha Road Length (in kms.)
Sports and Entertain-ment	Villages	2 Public Reading Room, 48 Daily Newspaper Supply, 48 Assembly Polling Station and 48 Birth and Death Registration Office
	Towns	1 Private-Stadium (Nos.), 1 Private-Cinema Theatre (Nos.), 2 Private-Auditorium/Community Hall (Nos.), 1 Private-Public Library (Nos.) and 1 Private-Public Reading Room (Nos.)
Communicati on System	Villages	1 Post Office, 18 Sub Post Office, 48 Village PIN code, 39 Telephone (landline), 21 Public Call Office/ Mobile PCO, 48 Mobile phone coverage and 48 Internet Cafes/Common Service Centre
	Towns	No such facilities in town portion of study area.

3.12.1 Health issues

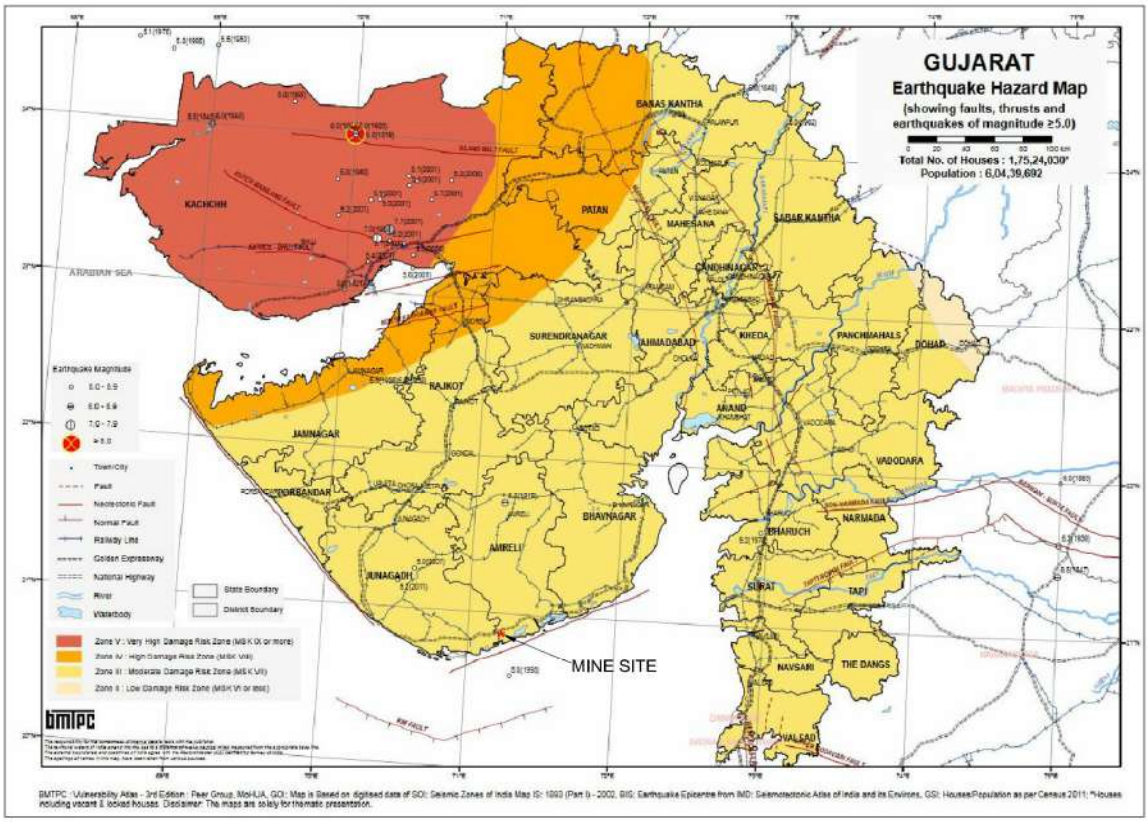
Diabetes, hypertension, fever and dysentery/ diarhoea are the common diseases prevalent in the project-impacted villages. There are many government and private hospitals available in the area. Medical facilities are

available in villages of the study area, where the people can have medical check-ups. Almost all facilities are available in these hospitals and private clinics.

3.13 SEISMICITY

The proposed project site of Vangar and Madhiya Limestone Mine falls in Zone III of the seismic zoning map of India prepared under the auspices of Bureau of Indian Standards (BIS Code: IS 1893: Part-I: 2002). The Earthquake Hazard Map of Gujarat is shown here in **Fig No. C3-19.**

FIG NO. C3-19: EARTHQUAKE HAZARD MAP



3.14 INDUSTRIES OR POLLUTED AREA AROUND THE PROJECT AREA

There exist no major industries, except some salt pans i.e. salt manufacturing industries, cotton gin mills in the study area. Few wind mills are also present in study area. The proposed industries are as follows:

1. 1.91 MTPA cement plant of M/S Nirma Ltd.(proposed)
2. 1.5 MTPA Padhiarka & Doliya limestone mine of M/s Nirma Ltd. (proposed)
3. 2.6 MTPA Dudhala, Gujarda & Dudheri limestone mine of M/s Nirma Ltd.(proposed)

There are no critically or severely polluted areas within 10 km radius of the project. The nearest critically polluted area is Gujarat Industrial Development Corporation, Chitra, Bhavnagar present at a distance of 89 km, NE.

3.15 PLACES OF TOURIST/RELIGIOUS/HISTORICAL INTEREST/ NATIONAL PARK/SANCTUARY

There is no such place within core zone or in the study area of tourist, or historical importance or National Park/Sanctuary. Few small temples are present in buffer zone and local people visits there for worship.

3.16 CRZ, COASTAL FEATURES, MANGROVES, ETC.

The high tide line, low tide line and the CRZ line have been demarcated by Institute of Remote Sensing, Anna University, Chennai. Copy of the CRZ map along with the report is enclosed as **Annexure XIX.** The ecologically sensitive areas such as sand dunes and Turtle breeding sites are not in the vicinity of the mines. However, Mangrove areas have been identified and 50 m buffer also have been drawn which are away from the proposed mining area as shown in **Annexure XIX**.

CHAPTER 4
ENVIRONMENTAL IMPACT ASSESSMENT AND MITIGATION MEASURES

4.1 GENERAL ASPECTS

The environmental baseline scenario as detailed in Chapter 3 and the proposed mining and its associated activities as described in Chapter 2, are used to assess the likely impact and its extent on various environmental parameters in this chapter. The parameters, which are relevant within the context and are likely to be affected, are as listed below:

- Topography and drainage
- Climatic conditions
- Air quality
- Water resources
- Water quality
- Land use
- Solid Waste
- Noise levels and ground vibration
- Traffic
- Ecology
- Socio-economic
- Occupational Health and Safety

The Environmental Management Plan has been developed with a view to minimize adverse impacts. In each of the areas of impact, measures have to be taken to mitigate adverse impacts and where these are beneficial in nature such impacts are to be enhanced/ augmented so that the overall adverse impacts are reduced to as low a level as possible.

4.2 TOPOGRAPHY AND DRAINAGE

4.2.1 Impact and management on topography

Core zone: The mining lease area is characterized by flat topography with minor undulations. As per Approved Review of Mining Plan for reduced area, the maximum elevation in the ML area is 20.27 m AMSL and minimum is 5.0 m AMSL. Outcrops and one old pit with shallow depth can be seen at various locations. At the end of life of mine, out of total ML area, 197.00 Ha. of land shall be excavated, 410.5336 Ha shall remain undisturbed while rest shall be used for infrastructure and road. The maximum depth of working as per presently approved review of mine plan will be at +1 m AMSL.

This impact will be of permanent in nature and will not be reversed, as there is insufficient material for backfilling to restore the land upto its original level. However shallow depth mined out area shall be backfilled and utilized for agricultural/plantation use as the case maybe and rest of mined out area shall

be converted into water reservoir. Another activity affecting the topography will be construction of various buildings and infrastructures, which will be removed on abandoning the mine except some, which are useful for the surrounding villages.

At the end of life of mine, 36.36 ha. of land shall be backfilled and converted into agricultural land/utilized for plantation work. Pits and voids will be generated after completion of mining process at the conceptual stage. The shallower pits where the limestone will get exhausted can be reclaimed. Mostly voids be left, which will be utilised for storing the rain water which will help in recharging the ground water table. The sweet water so collected can be used by villagers for agriculture and cattle rearing.

Buffer zone: The deposit forms part of the coastal belt of Saurashtra in Gujarat State and exhibits slightly undulated topography. The general elevation of the area ranges from 0 m to 68 m AMSL. The area of the deposit presents as area of low relief covered by agricultural fields. The mining activity will not affect the topography outside of the project area as all the activities will be carried out within the project area.

4.2.2 Impact on drainage and its management

Core zone: The drainage has been discussed in section 3.2.2 of Chapter 3 earlier. There are few second order streams, passing close to each other, through the lease area. Some of seasonal streams may get affected due to excavation and the passage of water will be affected when the area is excavated as shown in **Fig No. C4-1**.

There will be disturbances to the seasonal streams within mine lease as follows:

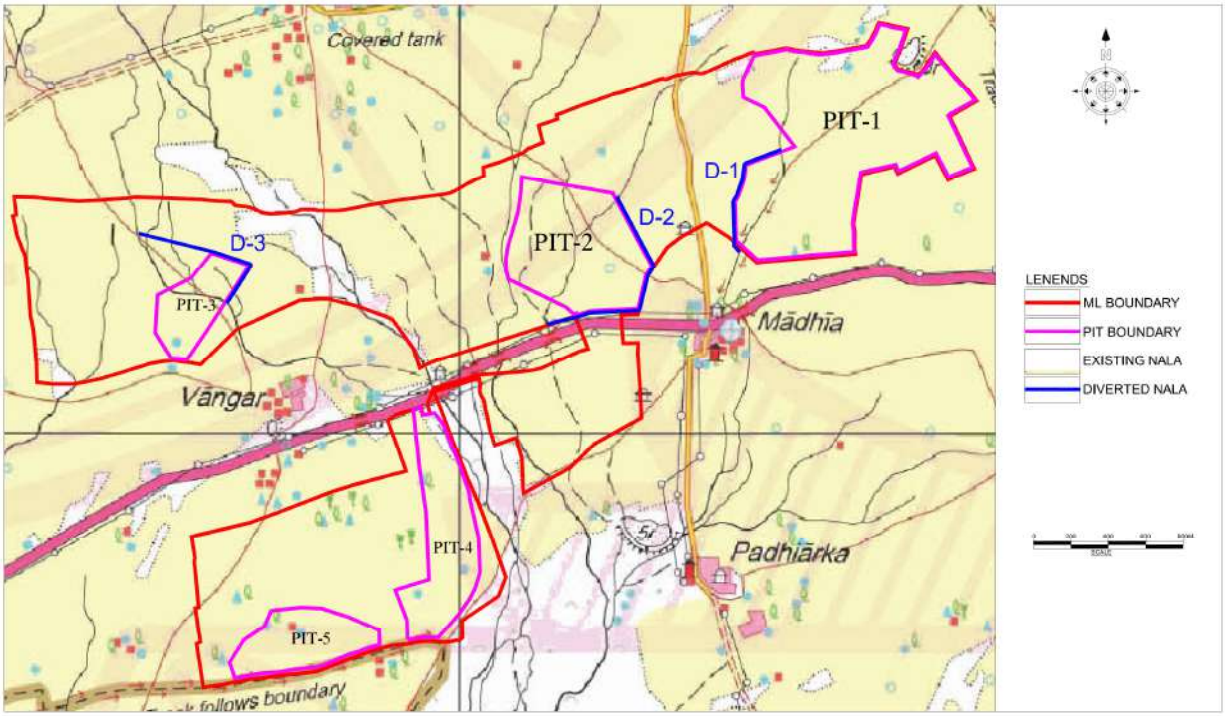
- Due to excavation in proposed pit no. 1 in north corner of lease, 1074 m length of second order drain will get disturbed. However, to ensure uninterrupted evacuation of water from upstream of the pit location to downstream of the pit location, in view of the natural slope and topography, a garland drain (D1 as seen in **Fig No. C4-1**) will be made. Its shall be of 703 m length. It will ensure that the volume of water flowing from upstream to downstream shall remain unaffected. This measure is also necessary to protect mine pit from inundation.

- Due to excavation in proposed pit no. 2 also in north side of lease area, 1567 m length of second order drain will get disturbed. However, to ensure uninterrupted evacuation of water from upstream of the pit location to downstream of the pit location, garland drain/diverted water channels of 1176 m (D2) length shall be built along the pit boundary.

- Due to excavation in pit no. 3 in west corner of the lease area, 556 m length of second order drain will get disturbed. However, to ensure uninterrupted evacuation of water from upstream of the pit location to

downstream of the pit location, garland drain/diverted water channels of 869 m (D3) length shall be built along the pit boundary.

FIG NO. C4-1: PROPOSED DIVERSION CHANNELS



On all other pits, garland drains will be provided as mitigation measures. The garland drains/ diverted water channel will be designed to accommodate the anticipated rain water. The garland drains on the downstream sides can be further optimised according to the topography of the lease. Hence, detailed designing can result in minor alteration of layout of garland drains.

Water from the garland drain/diverted water channels will flow to the salinity control bund i.e. Samdhiyala salinity ingress control bund, area to ensure better runoff harvesting and collection company will deepen the salinity control bund to improve the water storage capacity after consultation with Irrigation Department. Three canals will be constructed to enhance smooth flow of incoming water towards Samdhiayala salinity ingress control bund. As per suggestion/ consultation with Irrigation Department, the Company will deepen the suggested landside upstream of bandhara to improve the water storage. Additionally, the water from the garland drains will flow to the salinity control bund, ensuring better runoff harvesting and collection. Since limestone is non-toxic in nature and the settlement of any suspended solids will occur due to control measures, thus the runoff will be prevented from contamination.

Buffer zone: No impact is envisaged on the drainage pattern of the buffer zone as the entire activity of mining and related services shall be undertaken within the mine lease area. The catchment area of Samadhiyala water shed is 4795 ha and the excavated area at the end of life of Vangar and Madhiya Mine

shall be 197.0 ha. However, monsoon runoff volume may marginally reduce (4 %) due to excavated pit areas.

4.3 CLIMATE

4.3.1 Impact on climate

The climatic conditions including temperature variations, wind direction and speed, rainfall and humidity are governed by regional factors and the monsoons. As such, mining and other allied activities will not tend to influence the climate.

During the construction and development phase, the activities will be restricted to construction of roads, buildings, plants and machinery, layouts of stock piles and dumps, fuel storages, etc. Thus, no effect on climate and meteorology of area is expected due to the construction activities. However, carbon dioxide (greenhouse gas) contributing fossil fuel in the form of diesel will be used to operate DG sets, trucks, dumpers and other heavy earth moving machinery, which will be a necessity. Hence, although no effect on meteorology of area is anticipated due to operation activities, there will be contribution in global warming due to carbon dioxide emissions. Hence, mitigation measures to minimise carbon dioxide will have to be taken.

4.3.2 Mitigation measures

The operations are to be carried out in a limited area on the surface. As a result no large scale climatological impacts are anticipated. Development of greenbelt, afforestation and rehabilitation work in the project area will contribute in a positive manner towards mitigation of greenhouse gases. Global warming is a global concern and hence, the company will be undertaking all possible measures to minimize the CO_2 emissions. These include regular maintenance of all fossil fuel based machinery and equipment and ensuring their emissions remain within limits at all times.

4.4 AMBIENT AIR QUALITY

Any surface mining, including opencast limestone mining has always been a dusty business. Sources of particulate matter in open cast mine is due to excavation, transportation, handling, loading and hauling operation. Dust generation due to mining operation occurs within the mine pit, from over haul roads as well as dumping areas. At the same time, gaseous pollutants like hydrocarbons, NO_2, CO, CO_2, SO_2, etc. are also generated from the vehicle exhaust and due to blasting.

Operations that will cause increase in pollution load in air within the area are:

- Operation of diesel based equipment and vehicles.

- Removal of vegetation and soil from excavation, infrastructure and dumping areas.
- Handling of mineral and waste material.
- Transportation of mineral & waste material
- Dumping activities.
- Drilling and blasting.
- Sulphur dioxide, oxides of nitrogen etc. will be generated due to exhaust from fossil fuel based machines and vehicles as well as due to blasting.

The specific issues pertaining to various mining activities are as follows:

1) **Material handling** by heavy equipment will re**l**ease large amounts of dust if no action is taken for suppressing it at source, while the immediate effects will be poor visibility but intake of dust through inhalation and oral route can have health impacts at the secondary stage.

2) **Blasting operation** will result in the generation of dust and fumes. There will be generation of fly rocks, which can be controlled by management measures. Blasting operations will generate noise and cause ground vibrations. However, the noise duration will last for few moments, hence, will not pose problem in case blasting is conducted during day time when back ground noise levels are higher than night. The ground vibrations are anticipated to cause negative impact if the charge per delay is not rationalised.

3) Transport vehicles will generate dust and gaseous emission while plying on haul roads. The loading and dumper transport operations are anticipated to add to air pollution in core zone if appropriate control measures like spraying of water are not adopted.

4.4.1 Impact on air environment

(a) From Vangar & Madhiya Limestone Mine

For estimating the increase in the air pollutants level, air quality prediction modelling has been carried out in two part as follows:

(i) Due to mining and associated activity and transportation on haul roads, for which ISCST3 model has been used.

(ii) Due to road transportation of limestone by road to cement plant, for which CALINE 4 model has been used.

The above are discussed in subsequent paragraphs:

(i) ISCST 3 Model

ISCST3 is a steady-state Gaussian plume model which can be used to assess pollutant concentrations from a wide variety of sources associated with an industrial complex. This model can account for the following: settling and dry deposition of particles; downwash; point, area, line, and volume sources; plume rise as a function of downwind distance; separation of point sources; and limited terrain adjustment. ISCST3 operates in short-term mode.

Model Input Data:

Fugitive emission from mining operation & material handling: For the modeling purpose, the total fugitive particulates (suspended particulate matter i.e. SPM) has been estimated based on the following assumptions:

i. Annually 300 working days with two shift (8 hourly) has been considered as per approved Mining Plan.

ii. Mine working stage has been identified during which maximum production level, material handling, dumping is anticipated i.e. Development year 2025-26.

iii. Thereafter, TSPM have been calculated for each sources (area, line, etc.) based on the emission factor recommended for each type of location/source in EPA document AP-42, chapter-11, Sub- Section 11.9, Table-11.9-4.

iv. Further, effectiveness of control measures has also been taken into consideration for each location/ sources as per section 5.3 of National Pollutant Inventory Emission Estimation Technique Manual for Fugitive Emissions, Australia, 2012. which says 50-99% emissions can be controlled at source itself after applying suggested control measures.

v. **Normative scenario:** Production considered 1.6 MTPA in a year. Overburden/ soil considered 133670 cum/ annum and 12 hours operation

vi. **Peak Productuion:** 20% daily over production (peak) have been considered to cover production losses which may incur due to unforeseen circumstances like lock down, natural hazardous, temporary shutdown due to legal issue etc. The mine operation time has also been considered 20% extra from 12 hours of actual operational hours. This situation will be the worst case situation during which impact will be more. In normal production scenario, impact will always be lower than that of peak.

vii. **Cumulative scenario :** cumulative impact assessment for peak scenario has been carried out considering activities in all the three proposed mining leases including the transport scenario of the mines in the study area for

the following capacities of each mine considered for prediction of air quality modeling:

- Vangar & Madhiya Limestone Mine : 1.6 MTPA
- Padhiarka & Doliya Limestone Mine : 1.5 MTPA
- Gujarda, Dudheri & Dudhala Limestone Mine : 2.7 MTPA

Thus, considering the above assumptions, total fugitive particulates (SPM) has been estimated and proportions of that has been considered as PM10 and PM2.5, SO_2 and NO_2 from blasting and machinery operation have also been modelled.

The assumptions, input data and other details are given in **Annexure XX** along with GLC isopleth maps and the top 10 results are summarized in **Table No. C4-1** for PM_{10}, $PM_{2.5}$, SO_2 and NO_2.

TABLE NO. C4-1: PREDICTED INCREMENTAL GROUND LEVEL CONCENTRATION BY ISCST3 MODEL (µg/m³)

Rank	With Control Measures		X (UTM)	Y (UTM)	Distance from ML	Without Control Measures		X (UTM)	Y (UTM)	Distance from ML
	Peak	Normative				Peak	Normative			
	PM_{10}									
1	15.9814	15.9814	778882.90	2331207	100	41.83843	41.83843	778882.9	2331207	100
2	13.94622	13.94622	778882.90	2331207	100	36.05166	36.05166	778882.9	2331207	100
3	12.62738	12.62738	779349.30	2331453	200	35.25485	35.25485	779349.3	2331453	200
4	11.28457	11.28457	778889.20	2331407	300	30.83833	30.83833	778889.2	2331407	300
5	10.57599	10.57599	779349.30	2331453	100	30.10474	30.10474	778432.5	2331244	200
6	9.75083	9.75083	778889.20	2331407	300	29.17066	29.17066	779349.3	2331453	100
7	8.02779	8.02779	779398.20	2330374	100	28.16254	28.16254	779398.2	2330374	100
8	7.64081	7.64081	778432.50	2331244	200	26.41291	26.41291	778889.2	2331407	200
9	7.35283	7.35283	779391.40	2331752	500	26.29948	26.29948	778432.5	2331244	200
10	7.22975	7.22975	778882.90	2331207	100	23.77726	23.77726	779398.2	2330374	100
	$PM_{2.5}$									
1	8.49455	8.49455	778882.90	2331207	100	22.29636	22.29636	778882.9	2331207	100
2	6.77126	6.77126	779349.30	2331453	200	18.90892	18.90892	779349.3	2331453	200
3	6.01157	6.01157	778889.20	2331407	300	16.44826	16.44826	778889.2	2331407	300
4	4.61598	4.61598	779398.20	2330374	100	16.19346	16.19346	779398.2	2330374	100
5	4.07674	4.07674	778432.50	2331244	200	16.04333	16.04333	778432.5	2331244	200
6	3.98527	3.98527	779391.40	2331752	500	13.67192	13.67192	779398.2	2330374	100
7	3.85224	3.85224	779398.20	2330374	100	12.65506	12.65506	779398.2	2330374	100
8	3.8141	3.8141	778837.30	2331950	800	12.48629	12.48629	779398.2	2330374	100
9	3.67221	3.67221	779398.20	2330374	100	12.46462	12.46462	779391.4	2331752	500
10	3.63068	3.63068	778882.90	2331207	100	12.11003	12.11003	778587.7	2331493	400
	SO_2									
1	0.05433	0.05433	778882.90	2331207	100	0.05433	0.05433	778882.90	2331207	100
2	0.04831	0.04831	778882.90	2331207	100	0.04831	0.04831	778882.90	2331207	100
3	0.0421	0.0421	779349.30	2331453	200	0.0421	0.0421	779349.30	2331453	200
4	0.03599	0.03599	778889.20	2331407	300	0.03599	0.03599	778889.20	2331407	300
5	0.03591	0.03591	779349.30	2331453	200	0.03591	0.03591	779349.30	2331453	200
6	0.03156	0.03156	778889.20	2331407	300	0.03156	0.03156	778889.20	2331407	300
7	0.02767	0.02767	778882.90	2331207	100	0.02767	0.02767	778882.90	2331207	100
8	0.02674	0.02674	779670.90	2331144	100	0.02674	0.02674	779670.90	2331144	100

Rank	With Control Measures		X (UTM)	Y (UTM)	Distance from ML	Without Control Measures		X (UTM)	Y (UTM)	Distance from ML
	Peak	Normative				Peak	Normative			
9	0.02657	0.02657	778882.90	2331207	100	0.02657	0.02657	778882.90	2331207	100
10	0.02503	0.02503	778882.90	2331207	100	0.02503	0.02503	778882.90	2331207	100
	NO_2									
1	1.75102	1.75102	778882.90	2331207	100	1.75102	1.75102	778882.90	2331207	100
2	1.56266	1.56266	778882.90	2331207	100	1.56266	1.56266	778882.90	2331207	100
3	1.23379	1.23379	779349.30	2331453	200	1.23379	1.23379	779349.30	2331453	200
4	1.13934	1.13934	778889.20	2331407	300	1.13934	1.13934	778889.20	2331407	300
5	1.05997	1.05997	779349.30	2331453	200	1.05997	1.05997	779349.30	2331453	200
6	1.00217	1.00217	778889.20	2331407	300	1.00217	1.00217	778889.20	2331407	300
7	0.93547	0.93547	779670.90	2331144	100	0.93547	0.93547	779670.90	2331144	100
8	0.90923	0.90923	778882.90	2331207	100	0.90923	0.90923	778882.90	2331207	100
9	0.85556	0.85556	778882.90	2331207	100	0.85556	0.85556	778882.90	2331207	100
10	0.80925	0.80925	779670.90	2331144	100	0.80925	0.80925	779670.90	2331144	100

A perusal of above table shows that the maximum incremental values with control measures will be 15.98 µg/m^3 for PM_{10}, 8.49 µg/m^3 $PM_{2.5}$, 0.054 µg/m^3 SO_2 and 1.75 µg/m^3 NO_2, respectively are anticipated at a distance of 100 m from the mining lease boundary. The GLC values for PM_{10} & $PM_{2.5}$ for the peak and normative capacity are same since with increase in 20% production of limestone in the mine; the 20% of working hours of mine has also been increased from 12 hrs to 14.4 hrs. Per hour emissions per unit area remain the same for both peak and normative scenario.

Control measures proposed are as follows :

Sl.	Activity/ control measures	Effectiveness of controlling
1	Water sprinkling & green belt along road	75%
2	Rock breaker/ ripper dozer instead of drilling blasting	50%
3	Sprinkling on top soil dump, mineral stock yard and while loading/ unloading	70%

(ii) CALINE 4 Modelling for impact due to road transportation

Total material to be evacuated by road through 25 T dumpers is estimated to be 1.6 MTPA. Considering 20% extra production (peak) as discussed in assumptions part earlier, There will be daily movement of 512 numbers of dumpers (to & fro) per day from Vangar Mine to cement plant at Padhiarka & Soda Ash Plant at Bhavnagar. Air quality prediction modeling for road has been done using CALINE 4 model. The emission (incremental GLC) from the dumpers has been calculated and detailed in **Annexure XX**. Summary of maximum GLC due to transportation, with and without control measures, are tabulated in **Table No. C4-2** and GLCs at various air quality location are given in **Table No. C4-3**.

TABLE NO. C4-2: CALCULATED MAXIMUM GROUND LEVEL CONCENTRATION (µg/m³) FROM ROAD (MINE EXIT TO CEMENT PLANT)

Parameters	Maximum GLC		Receptor No.	Section	Distance from road
Without control measures					
	Peak	**Normative**			
PM_{10}	3.36	3.36	2	S1	50
$PM_{2.5}$	0.71	0.71	2	S1	50
SO_2	0.01	0.01	2	S1	50
NO_2	0.44	0.44	2	S1	50
With control measures					
	Peak	**Normative**			
PM_{10}	1.02	1.02	2	S1	50
$PM_{2.5}$	0.25	0.25	2	S1	50
SO_2	0.01	0.01	2	S1	50
NO_2	0.44	0.44	2	S1	50

Note: Same GLC shall be applicable for normative production since same hourly truck movement has been considered for normative production but for lesser hours. CALINE4 model gives the same GLC output for same hourly vehicle movement.

The control measures considered are sprinkling, green belt and maintenance of roads, which is likely to reduce the dust generation due to wheels by 30 %.

The existing air quality values along with the anticipated incremental GLC values due to mining operation and transportation,at the air quality monitoring stations is given in **Table No. C4-3**.

(b) Cumulative impact from all the three mines

There are two more mines adjacent to the proposed lease. These will have a cumulative impact. Accordingly, cumulative impact has been predicted through air quality modeling. The assumption and procedures followed are same as discussed earlier for Vangar & Madhiya Limestone mine. The assumptions, input data and other details are given in **Annexure XXI** along with GLC isopleth maps for cumulative impact. The existing air quality values along with the anticipated cumulative incremental GLC values at the air quality monitoring stations is given in **Table No. C4-4**. Likely Transportation route is given in **Fig No. C4-2.**

It can be seen from **Table No. C4-3 & Table No. C4-4** that after addition of the incremental GLC's to the existing air quality, the concentration of pollutants would increase, but still they would remain within the prescribed standards at all the sampling stations as per applicable standards.

FIG NO. C4-2: TRANSPORTATION ROUTE

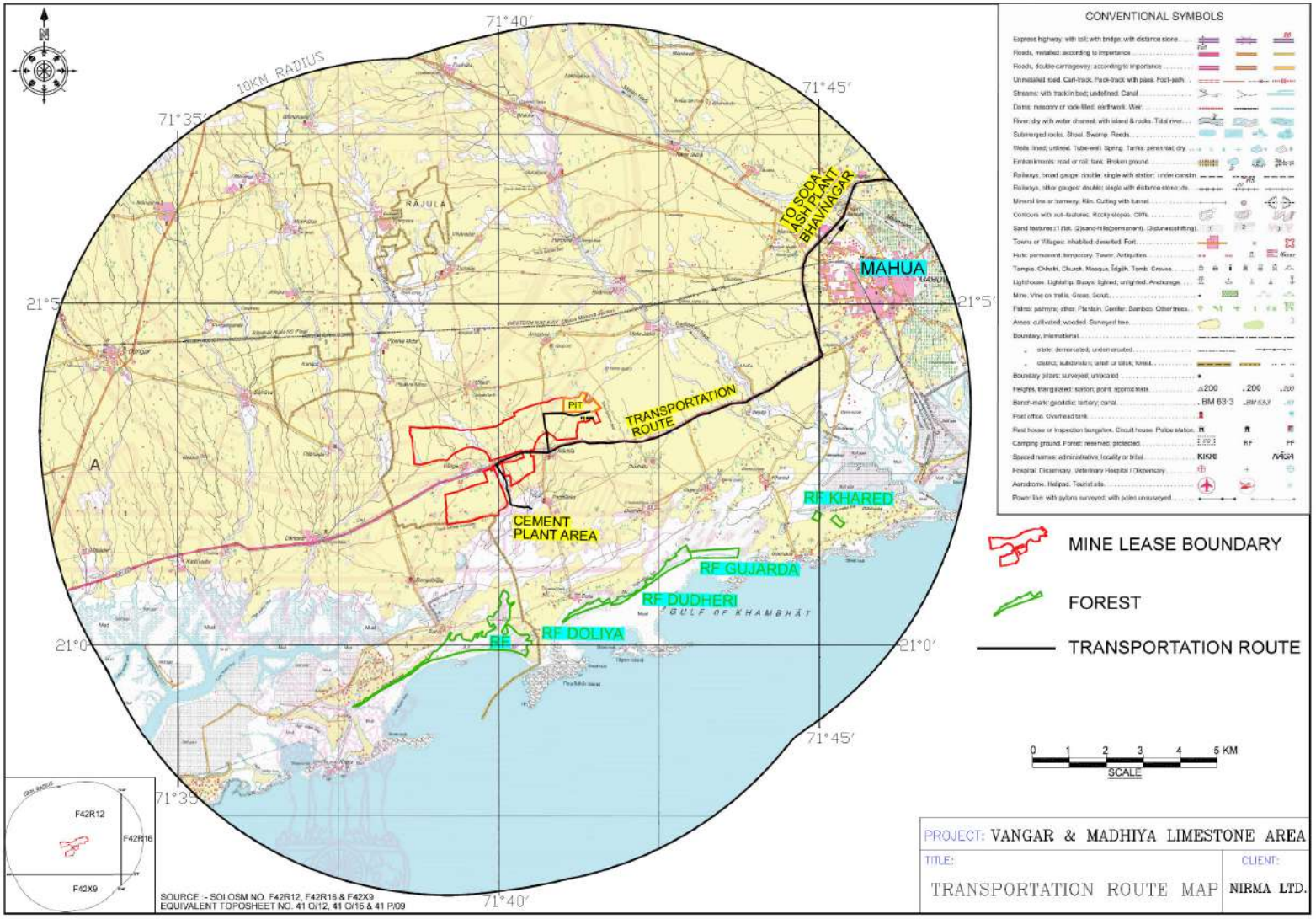


TABLE NO. C4-3: ANTICIPATED PEAK INCREMENTAL GLC VALUES DUE TO VANGAR & MADHIYA LIMESTONE MINE AT THE AIR QUALITY MONITORING STATIONS (µg/m³)

Station code	Sampling Station	PM_{10}				$PM_{2.5}$				SO_2				NO_2			
		Maximum observed value	Incremental		Total	Maximum observed value	Incremental		Total	Maximum observed value	Incremental		Total	Maximum observed value	Incremental		Total
			From mining activity	From Road transportation			From mining activity	From Road transportation			From mining activity	From Road transportation			From mining activity	From Road transportation	
1.	Near Cement Plant, Padhiyarka	64.8	0.008	-	64.808	32.6	0.005	-	32.605	5.7	0.000	-	5.700	7.8	0.000	-	7.800
2.	Padhiarka	61	0.045	-	61.045	34.5	0.026	-	34.526	6.8	0.000	-	6.800	10.9	0.001	-	10.901
3.	Vangar (core zone)	68.8	0.857	-	69.657	37.4	0.493	-	37.893	7.7	0.002	-	7.702	10.5	0.057	-	10.557
4.	Madhiya	71.1	0.401	0.000	71.501	40	0.230	0.000	40.230	10.2	0.001	0.000	10.201	14.5	0.023	0.000	14.523
5.	Dudhala No.1	66.3	1.519	-	67.819	35.5	0.873	-	36.373	6.8	0.004	-	6.804	9.7	0.125	-	9.825
6.	Gujarda	68	0.835	-	68.835	36.6	0.480	-	37.080	6.8	0.002	-	6.802	7.8	0.064	-	7.864
7.	Patva	59.8	0.088	-	59.888	32.1	0.051	-	32.151	6.8	0.000	-	6.800	8.1	0.007	-	8.107
8.	Samadhiyala No. 1	63.4	0.432	-	63.832	36	0.248	-	36.248	6.8	0.001	-	6.801	8.9	0.029	-	8.929
9.	Doliya	59.4	0.000	-	59.400	32.5	0.000	-	32.500	7.7	0.000	-	7.700	10.9	0.000	-	10.900
10.	Rabhda	57.5	0.384	-	57.884	30	0.221	-	30.221	7.2	0.001	-	7.201	8.5	0.026	-	8.526
11.	Nana Pipalva	59.2	1.022	-	60.222	29.1	0.588	-	29.688	7.2	0.002	-	7.202	8.5	0.062	-	8.562
12.	Amrutvel	61.9	2.789	-	64.689	33.7	1.496	-	35.196	8.2	0.004	-	8.204	9.7	0.126	-	9.826
13.	Mota Jadra	59.8	1.187	-	60.987	32.1	0.682	-	32.782	7.5	0.003	-	7.503	9.3	0.087	-	9.387
14.	Devalia	64.7	0.804	-	65.504	34.3	0.463	-	34.763	7.2	0.002	-	7.202	8.1	0.053	-	8.153
15.	Khared	62.5	0.620	-	63.120	31.2	0.356	-	31.556	7.2	0.002	-	7.202	8.1	0.042	-	8.142
16.	Gadhada	48.6	0.616	-	49.216	25.9	0.354	-	26.254	6.8	0.002	-	6.802	7.4	0.045	-	7.445
	Maximum	**71.1**	**2.789**		**71.501**	**40**	**1.496**		**40.23**	**10.2**	**0.004**		**10.201**	**14.5**	**0.126**		**14.523**
	NAAQS 2009				**100**				**60**				**80**				**80**

Note: Same GLC shall be applicable for normative production since 20% less time and 20% less production shall take place compared to peak, but at the same rate

TABLE NO. C4-4: ANTICIPATED CUMULATIVE PEAK INCREMENTAL GLC VALUES DUE TO ALL THE THREE MINE AT THE AIR QUALITY MONITORING STATIONS (µg/m³)

Station code	Sampling Station	PM_{10}				$PM_{2.5}$				SO_2				NO_2			
		Maximum observed value	Incremental		Total	Maximum observed value	Incremental		Total	Maximum observed value	Incremental		Total	Maximum observed value	Incremental		Total
			From mining activity	From Road transportation			From mining activity	From Road transportation			From mining activity	From Road transportation			From mining activity	From Road transportation	
1.	Near Cement Plant, Padhiyarka	64.8	2.748	0.060	67.608	32.6	1.580	0.010	34.190	5.7	0.032	0.000	5.732	7.8	0.218	0.000	8.018
2.	Padhiarka	61	6.435	0.030	67.465	34.5	3.700	0.010	38.210	6.8	0.012	0.000	6.812	10.9	0.146	0.000	11.046
3.	Vangar (core zone)	68.8	1.086	-	69.886	37.4	0.624	-	38.024	7.7	0.004	-	7.704	10.5	0.098	-	10.598
4.	Madhiya	71.1	4.560	0.000	75.660	40	2.622	0.000	42.622	10.2	0.010	0.000	10.210	14.5	0.107	0.000	14.607
5.	Dudhala No.1	66.3	1.774	0.000	68.074	35.5	1.020	0.000	36.520	6.8	0.007	0.000	6.807	9.7	0.189	0.000	9.889
6.	Gujarda	68	1.096	-	69.096	36.6	0.630	-	37.230	6.8	0.007	-	6.807	7.8	0.152	-	7.952
7.	Patva	59.8	0.721	-	60.521	32.1	0.414	-	32.514	6.8	0.003	-	6.803	8.1	0.065	-	8.165
8.	Samadhiyala No. 1	63.4	0.585	-	63.985	36	0.336	-	36.336	6.8	0.003	-	6.803	8.9	0.060	-	8.960
9.	Doliya	59.4	0.199	-	59.599	32.5	0.114	-	32.614	7.7	0.000	-	7.700	10.9	0.002	-	10.902
10.	Rabhda	57.5	0.537	-	58.037	30	0.309	-	30.309	7.2	0.002	-	7.202	8.5	0.053	-	8.553
11.	Nana Pipalva	59.2	1.328	-	60.528	29.1	0.763	-	29.863	7.2	0.005	-	7.205	8.5	0.116	-	8.616
12.	Amrutvel	61.9	4.930	-	66.830	33.7	2.835	-	36.535	8.2	0.007	-	8.207	9.7	0.143	-	9.843
13.	Mota Jadra	59.8	1.731	-	61.531	32.1	0.996	-	33.096	7.5	0.023	-	7.523	9.3	0.239	-	9.539
14.	Devalia	64.7	1.218	-	65.918	34.3	0.700	-	35.000	7.2	0.006	-	7.206	8.1	0.129	-	8.229
15.	Khared	62.5	0.944	-	63.444	31.2	0.543	-	31.743	7.2	0.005	-	7.205	8.1	0.101	-	8.201
16.	Gadhada	48.6	0.892	-	49.492	25.9	0.513	-	26.413	6.8	0.004	-	6.804	7.4	0.097	-	7.497
	Maximum	**71.1**	**6.435**		**75.66**	**40**	**3.7**		**42.622**	**10.2**	**0.032**		**10.21**	**14.5**	**0.239**		**14.607**
	NAAQS 2009				**100**				**60**				**80**				**80**

Note: Same GLC shall be applicable for normative production since 20% less time and 20% less production shall take place compared to peak, but at the same rate

4.4.2 Air pollution control measures

Dust particles which are normally generated due to mining operation and transportation deteriorate the ambient air quality. Control measures are, therefore, proposed to be taken during mining operation, loading and transportation. The processes in the project, the potential sources of emission along with control measures have been given in **Table No. C4-5**.

TABLE NO. C4-5: FLOW-CHART INDICATING THE SPECIFIC AREAS GENERATING FUGITIVE EMISSIONS AND CONTROL MEASURES THROUGHOUT THE MINE

Sl. No.	Activities & flow	Impact	Mitigation & management measures
1	Drilling & Blasting ↓	• Dust generation during drilling • Fly rock and fugitive dust during blasting	• Dust generation mitigated by wet drilling. • Fly rock and dust emission will be reduced by adopting control blasting techniques such as precise and accurate timing delay, optimum oxygen balance in explosives, etc. • Dust generation will be mitigated by water spraying before and after blasting.
2	Excavation of mineral ↓ Internal movement of HEMM and vehicles within project boundary ↓ Temporary stacking of limestone ↓ Transport of limestone	PM_{10}, $PM_{2.5}$, SO_2, NO_2, CO Emission due to • operation of surface Miner, • loading of dumpers (fugitive dust) • movement of dumpers on haul roads (dust & gases) • operation of other fossil fuel based equipment/ machinery	• Maintenance of HEMM, transport vehicles like dumpers/ tippers and all other vehicles • Dust suppression system like water sprinkling to minimize fugitive dust at ○ haul roads, ○ loading and unloading points ○ Transportation roads ○ to minimize fugitive dust. • Automatic water sprinkler system will be installed at road and where SPM are likely to be high constantly to suppress fugitive dust. • Water sprinkling on other portions of the haul road within mine (where automatic spinklers are not installed), two to four times a day according to season. • Overloading of dumpers will not

Sl. No.	Activities & flow	Impact	Mitigation & management measures
			be permitted • Plantation in peripheral greenbelt (7.5m), along the sides of haul roads (outside quarry area) and other vacant areas. • Reclamation of dump & backfill with plantation, agroforestry and agriculture • Dust mask will be provided to the workers, engaged at dust generating sources such as excavation, loading etc.
3	Transportation of limestone	Fugitive dust emission due to movement on roads and PM, So_2 and No_2 from exhaust of dumpers	• Production and delivery planning would be such that the minimum stock will present in the stock yards. • Dust suppression system at truck/tippers loading point. • Overloading not permitted. • Spillage not permitted. • The trucks shall be covered with tarpaulin. • PUC check for all vehicles mandatory. • Use of pucca roads outside mining lease. • Maintenance of road by state government.

The mine management will adopt a number of measures to control dust generation and minimise gaseous emission. These measures are as follows:

1. The emission of dust will be restricted by the use of dust suppressing systems such as fixed or mobile water spraying system at fugitive sources (working faces & loading point), haul roads and wherever required.

2. Mobile sprinkling system will be used on haul roads to achieve 95% dust suppression with a frequency of 1 time/shift in winters and 2 times/ shift in summers.

3. Automatic water sprinkler system i.e. fixed sprinklers (Whirling) will be installed along main haulage road and where SPM are likely to be high constantly to suppress the dust. The efficiency of the static sprinklers

shall be more than 95% in suppressing dust. They shall be operating every 4 hours interval in summers and 8 hour interval in winter. They will be centrally controlled through automatic, pre-set timers.

4. Transport vehicles will be maintained periodically as per the manufacturers' norms and maintained spill proof. They will be covered during transportation of mineral. No overloading shall be permitted. All heavy and light vehicles shall be well maintained and will have their "Pollution Under Control" (PUC) certificates.

5. Tree plantation will be carried out along the mine periphery (7.5 m), quarry area, along the sides of haul roads and other vacant area.

6. Reclamation of dump and later backfill with soil and then plantation, agroforestry and agriculture.

7. Dust masks will be provided as safety measure to the workers, engaged at dust generation points like excavation site, loading/unloading points etc.

8. Water spraying during any construction activities in infrastructure area, on excavated areas or during any dismantling or rehabilitation of structures.

9. The generation of gaseous emissions, such as NO_2, SO_2 & CO is a function of the engines of the equipment and machinery as well as fuel used (which have fixed sulphur content). With periodic maintenance, the emissions remain within norms. No separate measures are being proposed. Regular maintenance schedule will be adopted as per manufacturer's specification.

10. The mine ambient air quality will be regularly monitored and tested to detect the presence of any pollutants above prescribed limits and appropriate measures will be adopted.

11. Control of maximum height of fall off material during loading by shovels into dumpers.

12. Dust extractors shall be used at drill machine.

13. The impact during blasting will also be reduced by following the control measures given below:

    - Pre-wetting of blast site
    - Multi-row drilling and V-pattern drill holes shall be practiced for deep hole drilling and blasting. Deep hole blasting shall be carried out after getting legal permission from competent authority.

- Spacing and burden shall be 4.0 m and 3.0 m respectively in order to avoid fragmentation of over size material.
- Inclination of the drill holes shall be along the slope of the bench. If required, rock breaker shall be engaged to avoid secondary blasting.
- The cord relays of different delays shall be used to restrict the charge per delay.
- Non-electric down-the-hole detonators (NONEL) shall be practiced. This enables holes to blast from bottom to top and with this technique the hole is blasted separately by providing delays in each hole.
- Controlled blasting shall be practised by competent persons. Column shall be stemmed and it would not be less than the burden.

Since the proposed activities are not expected to generate sizeable gaseous emissions such as NO_X, SO_2 & CO, there is no need for any special measures.

4.5 WATER ENVIRONMENT

The generic activities that are usually carried out in a mine along with their impacts are listed in **Table No. C4-6**. The anticipated impacts due to this project are also discussed in the same table.

TABLE NO. C4-6: POTENTIAL IMPACT OF MINING ON WATER ENVIRONMENT

Sl. No.	Impacts of mining activities	Significance	Anticipated in this project	Context of proposed project
1.	Mine in immediate catchment area of Arabian Sea	Impact on water regime due to disturbance of catchment, channels and water bodies	Yes	Arabian Sea Coast is about 3.8 km from High Tide Line from proposed Mine Lease area.
2.	Rainfall & contour of mining area	The contour decides the runoff pattern of catchment area. Also indicates erosion potential. All have significant impact on water resources.	Yes	Garland drains for interception of run off are proposed. Rain water harvesting shall also be carried out.
3.	Overburden quality and characteristics of waste	High risk of water pollution, if it contains toxic metal or is acidic.	No	So far, no waste in the form of OB/ IB/ SB is available in the ML area as per known geology.
4.	Surface water source	Impact on surface water due to water withdrawal	Yes	Water requirement shall be fulfilled from Narmada Water

Sl. No.	Impacts of mining activities	Significance	Anticipated in this project	Context of proposed project
		for mining		Pipeline and mine water etc. Pumped out water will be treated and used.
5.	Ground water sources	(a) Mines have significant impact on ground water resources when intersecting the water table (b) If natural perennial springs are located in the project area, the impact is likely to be high.	(a) No (b) No	(a) Proposed working shall also be well above ground water table for the first five years. However, at conceptual stage, the ultimate working shall be kept above mean sea level i.e. up to +1.0 m AMSL. Only during post-monsoon period, ground water will be encountered in 13th year i.e. end of mine life period in pit no. 4 & 5. However, conceptual pit bottom level will be kept above ground water level i.e. +2.0m AMSL to avoid intersecting ground water level. (b) Natural perennial springs are not there in the mining lease area.
6.	Discharge of mine drainage water	Composition of mine drainage water and volume is considered to estimate the degree of probable contamination in receiving water body.	Yes	Mine seepage is not anticipated as the mine workings will be above the water table for the five years. However, the rain water falling in the mine pits is proposed to be stored in lower parts of pits. The water shall be used for plantation and dust suppression purposes. Excess water mostly during monsoon will be pumped towards Bandhara through natural drains after settlement of solids for recharge of surrounding open wells.

Sl. No.	Impacts of mining activities	Significance	Anticipated in this project	Context of proposed project
7.	Discharge of sewage from offices etc.	The sewage discharge from services has significant impact on water quality.	Yes	Sewage will be generated from mine offices, rest shelters and toilets in. The sewage will treated in septic tank & soak pit and no discharge will take place outside ML.

Note: The above table has been adapted from Annexure 10 of EIA guidance manual for mining of minerals prepared by Administrative Staff College of India, Hyderabad.

4.5.1 Impact on water resources and quality

Impact on surface water

There is no perennial surface water body within the mine lease area and hence there will not be any impact on surface water body within mining lease. The water collected from the mine lease area through garland drains will be diverted towards the salinity ingress control bund i.e. Samdhiyala salinity ingress control bund, ensuring addition of runoff to its water collection area. The water requirement of mines for dust suppression and green belt development can also be met from the rain water accumulated in the mine pits after 5 years. Water required for mine and allied activities will be 42 KLD. 3.0 KLD Water will be used for drinking and domestic purposes from Narmada pipe line. The Reject water of RO/DM plant/ Water tanker (within proposed at Cement plant) will serve the water requirement for dust suppression and plantation of the mines.

At the end of conceptual period, out of 197.0 hectare of excavated area, 36.36 hectares of mined out area will be backfilled and converted into agricultural land and/ or to be utilized for plantation work as the case may be and the balance open area of 160.64 hectares will remain to form a water storage ponds which will serve as recharge pits, water for plantation and as a source of water supply for public use. Water shall be received from rainfall during the year at the conceptual stage when deepest depth is achieved.

Few seasonal streams originate within the ML area and outside the mine lease and passing through the ML Area. The drainage pattern is dendritic in nature. The storm water flows through these streams and finally drains out to sea. Some of streams may get affected due to excavation and the passage of water will be affected when the area is excavated. Therefore, garland drains will be provided as mitigation measures. The garland drains/ diverted water channel will be designed to accommodate the anticipated rain water.

It is therefore apparent that there will be negligible impact of mining on the surface water regime. Whatever water gets collected in the mining pit either as

direct rainfall falling in the pit or mine seepage will be collected in the sump and utilized for spraying on, green belt and for supplying to nearby villages.

There will not be any leaching of the heavy metals from limestone mine lease due to following reasons:

1) Heavy metals are soluble in low pH i.e. acidic water and limestone belts do not have such water.

2) The concentration of aluminium oxide and iron oxide is 2.92% and 2.60%, respectively which are too low to cause impact due to leaching.

3) Any limestone particles which will get carried away by rainwater will settle in the settling tank provided after the garland drains but before the release of rain water into the natural water body.

4) Furthermore, there shall neither be any dumps of waste or mineral, within mine lease. Therefore, when the rain water falls, it shall not have any dumps to leach metals from.

Intersection with mine workings

On account of mining by open cast mining method, a void is created which acts as storage tank. As the water table is cut in the mine, the ground water will seep into pit during post-monsoon at the end of life of mine and water will accumulate in the mine sump. There are two sources of water accumulation in mine sump- one is monsoon rainfall and second one is mine seepage.

With respect to mine seepage, the following may be noted:

- Water level in the core zone ranges between (-) 3.0 to (+) 3.0 m AMSL. The average seasonal fluctuation at average rainfall is about 2 m as reported.

- No ground water will be encountered during planning stage i.e. in 5 years of working plan in neither pre monsoon nor post monsoon in any of the pits as working shall be upto 13 m AMSL.

- Only during post-monsoon period, ground water will be encountered during conceptual stage as ultimate working depth will be upto +1 m AMSL in Pit 4 & 5. However, conceptual pit bottom level will be kept above ground water level i.e. +2.0m AMSL to avoid intersecting ground water level.

- This shallow depth pits shall be backfilled simultaneously after mining for limestone. Water accumulated in pit shall be utilized for plantation as well as irrigation by nearby farmers/ agriculture use.

- Water accumulated in pit due to rainfall shall be utilized for greenbelt, dust suppression etc. If still the surplus water remains, the same will be utilized for irrigation by nearby farmers and recharge to ground water or discharge into salinity ingress bandhara, as feasible.

Site elevation and working Depths of Conceptual Pits have been taken from the approved Review of the Mining Plan. They have been compared with the ground water level given in report titled "Report on hydrogeological & hydrological studies of core and buffer zone of Vangar & Madhiya limestone mine and impact of mining on water regime near village Vangar & Madhiya, taluka Mahuva, district Bhavnagar, Gujarat" by M/s Ground Water & Mineral Investigation Consultancy Centre (P) Ltd., Jaipur, January 2022. The comparison is given in **Table No. C4-7.**

TABLE NO. C4-7: SITE ELEVATION AND WORKING DEPTHS OF CONCEPTUAL PITS AS PER MINING PLAN AND ITS LIKELY INTERSECTION WITH GROUND WATER TABLE

Pit No.	Conceptual pit bottom level (in m AMSL)*	Site Elevation (in m AMSL)		Ground water level**	
		Min.	Max.	Pre monsoon (In m AMSL)	Post monsoon (In m AMSL)
1	10	15	20	3	5
2	7	13	15	0	2.0
3	10	16	18	-2.0	0
4	3 1 in southern part of pit	6	11	-0.5	1.5
5	1	7.5	9.5	-0.5	1.5

Source : Conceptual Plan of Review of MP with PMCP, approved on 05.08.2021

****Source : Table 24 of Hydrogeological & Hydrological studies of core and buffer of Vangar - Madhiya limestone mine and impact of mining on water regime near village Vangar - Madhiya, Taluka-Mahuva, District Bhavnagar, Gujarat.***

It may be noted from the above table that, as per planned mining, the ground water table may get touched in post monsoon in pit no. 4 & 5 when the proposed conceptual pit bottom level of +1.0 m AMSL is achieved. To avoid any accidental intersection of ground water table, the Company has now decided to restrict mining depth to +2.0 m AMSL in pit no. 4 & 5.

Impact on ground water

Ground water pollution can take place only if dumps and stock piles contain harmful chemical substances, which may leach and percolate to the ground water table, thus causing groundwater pollution. No adverse impact on ground water quality is anticipated on this account since no OB external dumps are there and neither will there be any leaching resulting in contamination. Meagre amount of sanitary waste, generated from various facilities will be treated properly through septic tanks and soak pits.

Furthermore, rainwater will accumulate through precipitation as well as mine seepage in the mine sump which can be utilised for mine plantation as well as

irrigation by local farmers. The ground water will benefit due to recharge through the accumulated rain water in the pits.

M/s Ground Water & Mineral Investigation Consultancy Centre (P) Ltd., Jaipur has prepared "Report on hydrogeological & hydrological studies of core and buffer zone of Vangar & Madhiya limestone mine and impact of mining on water regime near village Vangar & Madhiya, taluka Mahuva, district Bhavnagar, Gujarat" in January 2022. It has assessed the hydrogeological conditions with special reference to impact of mining on water regime in and around its proposed Vangar - Madhiya limestone mine, Taluka – Mahuva, District Bhavnagar, Gujarat covering 10 km radius buffer area around proposed mining lease. As the mining (ultimate pit limit) is proposed up to (+) 1/ (+) 2 m amsl, the mining pit will not have mine seepage till 13th year except direct rainfall as water level will not be intersected. To avoid intersecting ground water level in pit no. 4 & 5, conceptual pit bottom level will be kept above ground water level i.e. +2.0m AMSL.Considering the annual rainfall of 718 mm over a pit area of 197.0 ha, the total direct rainfall accumulation can be 1.4 MCM. Assuming, 50% losses to seepage and evaporation 0.7 MCM per annum can be available for plantation and agriculture use.

4.5.2 Salinity ingress

As per the "Report on Hydrogeological Studies of Core and Buffer zone of Vangar & Madhiya Limestone Mine and Impact of Mining on Water Regime near Village Vangar-Madhiya, Taluka-Mahuva, District Bhavnagar, Gujarat" by Ground Water & Mineral Investigation Consultancy Centre (P) Ltd, Jaipur in January 2022. The qualitative aspects of ground water shows that salinity ingression from sea has taken place up to over 3 km from Arabian sea reaching center of buffer zone including mines falling in core zone due to natural and anthropogenic activities.

The mine workings shall always remain minimum 1 m above the ground water table. Since, no interaction with ground water table shall occur, there will not be any seepage into mine pit attributable to the project.

Hence, the project will not contribute to salinity ingress. On the other hand, it will take measures to reduce salinity ingress.

In order to check salinity ingression, large scale rainwater harvesting and artificial recharge measures are to be taken up in and around the core zone. The sea water ingression study has been conducted by the consultant.

It is proposed that a hydrological network system may be established by sinking new piezometers in the area and these may be monitored for measuring the water levels quarterly and water samples may be also be analyzed quarterly. This will help in knowing the hydraulic gradient of ground water flow towards the sea and any movement of interface towards the main

land. Following measures will be observed to guard against seawater ingress if at all:

1 Rainwater harvesting measures will be taken by utilizing the surface runoff of the area by constructing check dams on streams at suitable locations in the upland area to maintain present water levels and present hydraulic gradient towards the sea.

2 Hydrological network system will be established by constructing the piezometers in and around the lease and water quality to know the movement of fresh water / saline water interface.

3 After exhaustion of mineral, voids left will act as natural water harvesting structures.

4 Collected water will stand and gradually percolate into the sub surface water.

5 Positive pressure of fresh water on landward site will be created, this will push back the saline front, which may be at a lower elevation.

4.5.2.1 Mitigation - Storm water management

Measures for management of rainwater run off or storm water are briefly discussed below:

- Peripheral bunds will be erected on the outer edge before reclamation so that the soil is not carried away by storm water.
- A water gradient of about 1 in 100 will be kept at every bench towards inside of the bench to prevent formation of gullies in the bench slopes causing serious erosion.
- Stone pitching will be made at suitable location to regulate water flow and prevent soil erosion.
- Construction of garland drains around freshly excavated and dumped areas so that flow of water with loose material is prevented. The mine water will be passed through settling ponds prior to discharge.
- Any areas with loose debris within the lease hold will be planted.
- Check dams can be constructed on the first order streams, on stretched outside project area. These check dams will minimise solids from mining activities from washing into the larger rivers.
- Geotextiles or plantation will be used to stabilise the backfill to minimise soil erosion.

At the end of life of mine, void area will be converted into rain water recharge pond, its most important purpose will be to serve as a source of water for the plantation on the backfilled area. It would also act as a water reservoir for improving the ground water recharge and be a source of attraction for fauna.

4.6 WATER QUALITY

There is no generation of effluents by mining or allied activities. However, the dewatering process may involve discharging excess water to the natural water courses in rainy season in case of heavy rains. The water will be pumped from the sump.

No chemical pollutants are expected to be generated from this mine, so there will be no discharge of toxic materials on the surface nor to the sub-surface water regime. The dewatering of rain water from the mine may carry higher loads of suspended solids. Some amount of oil/ grease is likely to be released from the vehicle washing.

Impact of rain water storage and of mine seepage on water quality (TDS): As the mining (ultimate pit limit) is proposed up to (+) 1/ (+) 2 m amsl, the mining pit will not have mine seepage till 13th year i.e. end of mine life except direct rainfall as water level will not be intersected. After that, the mine seepage will occur during post-monsoon season only, when the water is expected to be rain fed. Thus, it is not expected to be saline. Furthermore, mine pits will become abandoned as the minerals exhaust in them and they will act as water reservoirs.

They will serve a similar function as a bandhara and aid in recharging rain water to the ground water. Considering the annual rainfall of 718.0 mm over a pit area of 197.0 ha, the total direct rainfall accumulation can be 1.4 MCM. Assuming, 50% losses to seepage and evaporation 0.7 MCM per annum can be available for plantation and agriculture use.

4.6.1 Control & conservation measures for surface and ground water resources and quality

Direct entry of rainwater into pit can be prevented by provision of garland drains around the pit area. Garland drain prevent the inflow of rainwater into pit. The water from the garland drains will be led to a settling tank. The water will be released in to natural streams/ contour leading to the salinity ingress control Bandhara after passing through the settling tank. In order to ensure that water pollution does not occur, control measures to be adopted are.

- To prevent surface and ground water contamination by oil/grease, leak proof containers will be used for storage and transportation of waste oil/grease.

- At present no dewatering is envisaged since the water percolates in to the ground through natural seepage action. In case, dewatering operations have to be carried out in the future, the water pumped out from mine will be first collected in pond, settled and will be used for different activities of mining or released to the nearest nala. There will not be any discharge of turbid water to the natural watercourses.
- The mine pits shall serve as a natural rainwater harvesting structure. During operation, before exhaustion of the reserves, the rainwater flowing into the mine pit shall be allowed to stand till it seeps naturally into the ground. For such duration, the mine pit shall not be worked. After exhaustion of the reserves, the mine pit bottom shall have very low permeability and it shall serve as a shallow water body which will receive water from rain and will be available for use to local people and livestock. In order to ensure that accidents do not occur, the side slopes of the pit will be given a smooth slope and bunds constructed during operation shall remain.
- Mine water while pumping out (if required) during rainy season will carry some silt with it. This will be discharged into near by sump, to assist in settling down of silt, and remaining clean water will be coursed in the near by ground.

Rainwater Harvesting

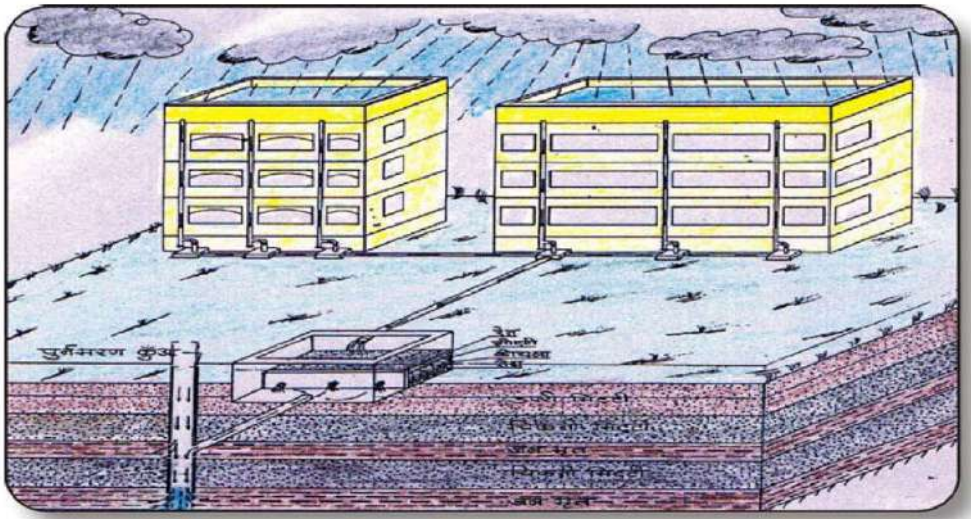
An additional rain water harvesting study has been conducted for mining complex comprising of Padhiarka & Doliya, Vangar & Madhiya and Gujarda, Dudheri & Dudhala Mines by Ground water & Mineral Investigation Consultancy Centre (P) Ltd.

To protect the mine workings from surface water flow during the rains, fresh garland drains shall be made before every monsoon at the periphery of active edges of quarry. Settlement tanks of adequate capacity shall be made on surface. The water accumulated in mine pits will be dewatered and used for greenbelt, dust suppression etc. If still water remains surplus, the same will be utilized for irrigation by nearby farmers and recharge to ground water as feasible.

Considering the annual rainfall of 718 (2010-2021) mm over a pit area of 197.0 ha, the total direct rainfall accumulation can be 1.4 MCM. Assuming, 50% losses to seepage and evaporation 0.7 MCM per annum can be available for plantation and agriculture use.

Rain water harvesting structures shall be provided for the office building and similar structures where from the roof top rain water can be directly recharged to the ground water through borewell. A typical rain water harvesting structure is given in **Fig No. C4-3**.

FIG NO. C4-3: TYPICAL ROOF TOP RAIN WATER HARVESTING STRUCTURE ON MINE OFFICE



Source: Rain Water Harvesting Techniques to Augment Ground Water by CGWB, Faridabad

The mine pit will serve as rainwater harvesting structure. The check dams proposed for arresting silt will also serve as rain water recharge structures. The water to be intercepted in mine pits will be dewatered and used for greenbelt, dust suppression. If still water remains surplus, the same will be utilized for irrigation by nearby farmers and recharge to ground water as feasible. Therefore, the quantity of water encountered during mining will also have positive impact on ground water regime and no external source of ground water will be required for mining activities.

De-silting schedule

1. Silt traps will be provided in garland canal at regular interval of 50 m which will be de-silted at regular interval of 7 days.
2. To reduce the load of silt in storm water at vulnerably location mitigation measures such as sprinkling, wet drilling for blasting and greenbelt development will be undertaken.

4.6.2 Management of generated waste water and runoff water

The following runoff water & wastewater management measures shall be followed:

1. Demarcation around the excavations, garland drain in the event of mine closure.
2. Parapet walls, wherever absolutely necessary will be provided.
3. Waste water generation will be only from the toilets, therefore, septic tank will be provided for treatment of waste water.

4. Leak proof containers will be used for storage and transportation of oil/grease and the area over which oil/grease is handled will be kept effectively impervious.

5. All top soil dumps will be provided with garland drains equipped with baffles to prevent wash offs from reaching the downstream natural channels.

4.7 NOISE LEVEL

4.7.1 Impact due to Noise

The proposed surface miners, HEMM dumpers would be the major noise sources. Operation of machines & vehicles will continuously generate noise, which will have adverse impact on the ambient noise levels. However, the adverse impact is anticipated to be limited to the mining lease area and its immediate surroundings. The adverse impact can be more within the mining lease area, and may cause hearing loss and other related problems to the workmen, if mitigation through protective measures are not taken. Impact due to noise is not anticipated there on the local people of nearest settlements i.e. population of Vangar and Madhiya villages as it is away from mining lease boundary. The mitigation measures are discussed subsequently.

Noise propagation through mathematical model and impacts of noise with distance from source has been studied and brought out below.

As the equipment/ vehicles generate noise generally in the range of 100 dB (A) at source, it can be safely assumed that the ambient noise levels on any point of boundary line of lease are not higher than 100 dB(A). It has, also been assumed that the area within a distance of 3-5 m (say) from noise generating machines/ vehicles will be termed as point noise source to avoid complication in the absence of availability of exact location of various noise generating units, their arrangements and shapes. Taking an extreme case of two machines/ vehicles, each generating 100 dB (A), working at a point will add up to 103 dB(A) overall noise level. Such source noise level has been considered here for anticipating the impacts. Noise attenuation with distance in all directions over flat open bare ground is given by:

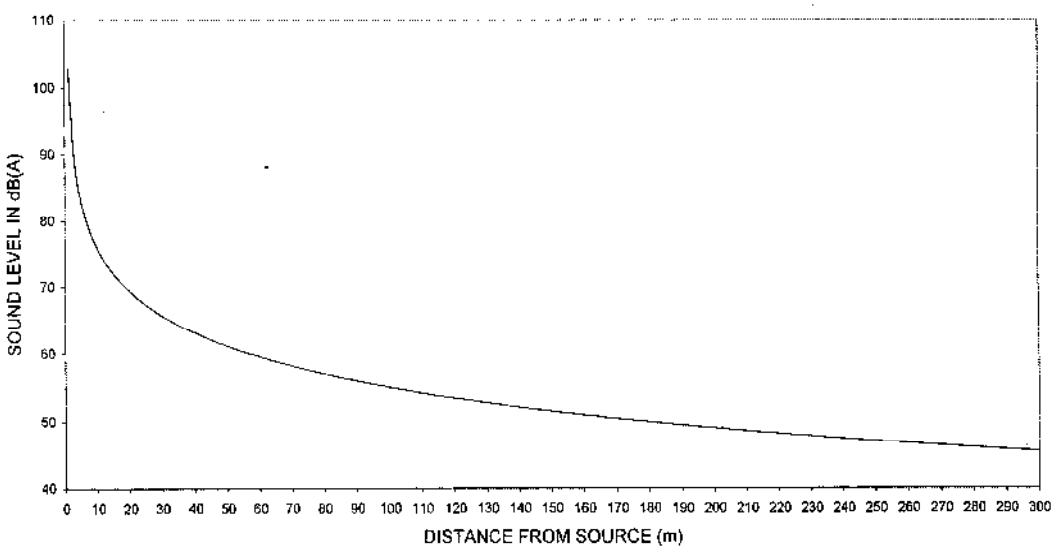
Sound level dB (A) = $Lw - 20 \log_{10} R - 8$

Where:

L_W = Sound level of source, dB (A) assumed 103 dB (A)
R = Source distance, m

The same has been plotted in **Fig No. C4-4** assuming source noise level as 103 dB (A).

FIG NO. C4-4: NOISE ATTENUATION WITH DISTANCE IN ALL DIRECTIONS OVER FLAT OPEN BARE GROUND (SOUND AT SOURCE = 103 DBA)



A perusal of graph shows that the sound levels attenuate to values as shown in **Table No. C4-8**.

TABLE NO. C4-8: NOISE ATTENUATION WITH DISTANCE ON FLAT BARE GROUND WITHOUT AND WITH GREEN BELT COMBINED NOISE OF MORE THAN ONE SOURCE = 103 DB (A)

Distance from source (m)	Noise level reduced from 103 dB(A)	
	Without green belt, dB(A)	With green belt, dB(A)
20	70.0	68.5
60	60.0	55.5
100	56.0	49.0
150	52.0	41.0
180	50.0	33.0
300	45.0	<33.0

It means that after distance of about 300 m, the machine/ vehicle noise will merge into the background noise in the day time, even in the absence of a greenbelt. This noise level is same as the limit [45 dB (A)] prescribed by The Noise Pollution (Regulation and Control) Rules, 2000 at night time for residential areas. Due to plantation along the roads and periphery of lease, it will be possible to further lower the noise levels below the prescribed limits or to reduce the distance at which the noise attenuates to 45 dB(A).

Due to operation of heavy machines and vehicles during mining operation, ambient noise level is likely to increase leading to impact on the workforce. Impact on the workforce can affect the TLV of hearing of those deployed close to the machines and at the secondary stage to neuro problems. The activities, in case of no environmental management measures are taken, can cause

severe impacts on the health of the workforce. Hence, the noise levels will regularly be measured near the operational machines and vehicles and will be kept to a minimum so that the noise level will be within the permissible limits for 8 hour exposure and the ambient air quality standards in respect of noise are given in **Annexure XI.**

The noise from mining and associated activities also disturbs living in the surroundings forcing them to change their habitation. The lease area does not have forest land. Therefore, No direct impact of noise is anticipated animals/ birds.

4.7.2 Noise pollution control measures

The following control measures will be adopted during operation phase to keep the ambient noise levels below permissible limits:

i. Green belt around the ML, Roads, mine infrastructures etc has been proposed.

ii. Regular preventive maintenance of machinery and the transport vehicles

iii. Contractor will be encouraged to deploy specially designed machinery with in-built mechanisms like silencers, mufflers and enclosures for noise generating parts and shock absorbing pads at the foundation of vibrating equipment.

iv. The operator's cabin would be safe guarded with proper enclosures to reduce the noise levels.

v. Noise pollution due to operation of machineries will be kept to the minimum by proper maintenance of the machineries and equipping them with noise abating devices.

vi. Provision of protective devices like ear muffs/ear plugs to those workers who cannot be isolated from the source of noise. There will be rotation of workers to limit exposure time.

4.8 GROUND VIBRATIONS- IMPACT AND MANAGEMENT

Ground vibration, fly rock, air blast, noise, dust and fumes are the deleterious effects of blasting on environment. The explosive energy sets up a seismic wave in the ground, which can cause significant damage to structures and disturbance to human occupants.

When an explosive charge is fired inside the blast hole, it is in converted into hot gases, which exert intense pressure on the blast hole walls. High intensity shock waves propagate radially in all directions and cause the rock particles to oscillate. This oscillation is felt as ground vibration. The proposed mining

operations using deep hole drilling and blasting using delay detonators are bound to produce ground vibrations.

Blasting, in addition to easing the hard strata, generates ground vibrations and instantaneous noise. Ground vibration from mine blasting is expressed by amplitude, frequency and duration of blast. The variables, which influence ground vibrations, are controllable and non-controllable. The non-controllable variables include general surface terrain, type and depth of overburden. Similarly, the controllable variables include type of explosives, charge per delay, delay interval, direction of blast progression, burden, spacing and specific charge and coupling ratio.

Vibration may cause structural damages, which depend on periodical acceleration due to vibration. Air blasts can damage structurally unsound buildings and cause window shattering. Blasting is associated with fly rock hazard.

The vibrations by the mechanical effects act on existing rocks and subject them to tensile, compressive and shearing stresses, which spoil their mechanical characteristics with an immediate consequence. The vibrations are caused due to the permanent installation like crushers, screens, compressors, traffic and blasting. Among all these, blasting is the major source of vibration.

The ground vibrations can cause:

- Land instability: Distorts working faces of benches and downfalls of dumps;
- Cracks in buildings which are present in the mine premises and in the nearby villages; and
- Psychological discomfort-to human beings as well as to nearby fauna.

Blasting operations will generate noise and cause ground vibrations. However, the noise duration will last for few moments, hence, will not pose problem. The ground vibrations are anticipated to cause negative impact if the charge per delay is not rationalised.

In accordance with DGMS regulations, the lease area shall maintain a safety belt as per norms from blasting area. However, keeping in view the presence of villages nearby the mining lease, adequate measures shall be followed during blasting.

The PPV results will have to be compared with the limiting values prescribed by DGMS, Dhanbad (Circular No. 7 dated 29 -08-1997) which are given in **Table No. C4-9**.

TABLE NO. C4-9: PERMISSIBLE PEAK PARTICLE VELOCITY (PPV) AT THE FOUNDATION LEVEL OF STRUCTURES IN MINING AREAS IN MM/SEC.

Type of structure	Dominant excitation frequency Hz		
	<8 Hz	8-25 Hz	>25 Hz
A. Buildings/structures not belonging to owner			
Domestic houses /structures (Kuchha brick and cement)	5	10	15
Industrial buildings (RCC and framed structures)	10	20	25
Objects of historical importance and sensitive structures.	2	5	10
B. Building belonging to owner with limited span of life			
Domestic houses/structures (Kuchha brick and cement)	10	15	25
Industrial buildings (RCC and framed structures)	15	25	50

As the distance increases the PPV value is likely to reduce. The ground vibrations generated by blasting during the mining operations will be well within standards prescribed by DGMS by controlled blasting. Ground vibrations due to mining are not likely to affect the structures in the vicinity of mine lease area. If the ground vibrations remain within the above mentioned limits, there shall not be damage to any structures. However, detailed vibration study shall be carried out after commencement of mining operations.

4.8.1 Vibrations control measures

Mining will be carried out by surface miner as it is eco-friendly. It will be used in area near road, habitation and boundary. In other mining area, mining will be carried out by conventional method i.e, drilling blasting. Mining with surface miner and drilling blasting will not lead to ground vibrations and fly rock. However, ground vibration / air blast due to drilling blasting will be controlled / reduced by following protective measures:

- Multi-row drilling and V-pattern drill holes shall be practiced for deep hole drilling and blasting. Deep hole blasting shall be carried out after getting legal permission competent authority. Utmost efforts shall be taken towards proper fragmentation in order to minimize blasting cost and risk.
- The drilling shall be done with crawler mounted wagon drill fitted with DTH hammer. The diameter of the hole drilled shall not be more than 4". Since the proposed height of the benches is 6m, depth of the drill holes shall be kept 6.6m (about 10% extra taken as sub grade drilling).
- Spacing and burden shall be 4.0 m and 3.0 m respectively in order to avoid fragmentation of over size material.

- Inclination of the drill holes shall be along the slope of the bench. If required, rock breaker shall be engaged to avoid secondary blasting.
- Charging operations shall commence after completion of all drill holes.
- The cord relays of different delays shall be used to restrict the charge per delay. Non-electric down-the-hole detonators (NONEL) shall be practiced. This enables holes to blast from bottom to top and with this technique the hole is blasted separately by providing delays in each hole.

Advantages in this practice are as follows:

a) Ground vibration is reduced by providing separate delay timing to each hole to avoid instantaneous blasting

b) It helps breakage of rock boulders by collisions among themselves

c) It forms the muck pile in one direction only

d) It controls fly rocks as well as help in better fragmentation and also reduces back break

4.8.2 Vibration abatement and fly rocks

Mining will be carried out by surface miner, as it is eco-friendly mining operation in area near road, habitation and boundary area. In other mining area, mining will be carried out by conventional method i.e, drilling blasting. The blasting operations in the mine would be carried out by deep hole drilling and blasting using delay detonators, which reduce the ground vibrations. Further, the ground vibrations will be controlled by using modern shock tubes with delay non-electric detonators. The measures that are generally followed and currently proposed for abatement of ground vibration, air blasting and fly rocks are detailed below:

1. Controlled blasting shall be practised by competent persons
2. Column shall be stemmed and it would not be less than the burden
3. Boundaries of danger zone shall be marked by sign boards
4. Signals by way of whistle, red flag, shall be given at the time of blasting
5. Blasting time shall be fixed and its intimation shall be given to the adjoining villagers.
6. Portable shelter for protecting the shot firer shall be provided
7. NONEL is to be introduced to control the flying rocks, reduce vibration and over pressure within the control/ permissible limit
8. Blasting by NONEL will reduce dust becoming air borne hence will control pollution of ambient air.
9. No blasting shall be carried out within 300m of any surface structure of permanent nature, if any without prior permission of DGMS
10. Blasting timing shall be during shift change.

11. Danger zone shall be marked with red flags and Sentries shall be posted at all access roads and entry points
12. Man and machinery shall be removed to safe distance
13. PPE shall be used during blasting
14. Loose stone shall be removed from bench floor
15. Bottom initiation and delay in each hole shall control the throw of the blast and also reduces the ground vibration and noise due to air blast over pressure.
16. Every blast shall be monitored for vibration/ with DGMS approved norms

Processes or procedures for minimizing vibration from blasting are as follows:

1. Use of delay blasting to separate the explosives used in a blast into a number of individual detonations. If the interval between delay periods is at least eight milliseconds, the individual detonations can be treated as separate blasts and their vibration will not be cumulative.
2. Limit the weight of explosives per day period (more than eight milliseconds)
3. Use of less than the calculated safe weight of explosives for the first one or two periods in tight shots.
4. Use of only the amount of sub-grade drilling that is necessary to pull the bottom of the blast. As with boreholes that do not have adequate relief for the rock, much of the energy released by the explosives in the sub-drilled part of a borehole will go into the production of vibration.
5. When limiting the weight of explosives per delay to a relatively low amount, it may be necessary to modify the blast design.
    A. Use of decked explosives charged with a different delay in each charge.
    B. A millisecond delay blasting switch can be used to increase the number of delay periods.

4.9 TRAFFIC VOLUME

Impact

Air quality prediction modeling for road has been done and given in Section 4.4.1(ii) above. The transportation of mineral shall be done through internal haul road and public road to the cement plant located adjacent to this mining lease area & Soda Ash plant at Bhavnagar through National Highway. Thus, there will be increase in traffic on public roads. Underpass of the highway shall be used during transportation of mineral. The use of internal haul roads shall be maximized in order to eliminates any interaction or interference with public transport and humans on the public roads.

The impact due to movement on roads shall be dust generation and risk of accident, in absence of control measures. The impact if any can be controlled by taking mitigation measures as suggested in subsequent paragraphs.

Estimated manpower is 58 persons and maximum estimated four wheelers and two wheeler movement will be approximately 8 and 50, respectively. There will be daily movement of 512 numbers of dumpers (to & fro) per day or 1536 PCU/ day from Vangar Mine to cement plant at Padhiarka & Soda Ash Plant at Bhavnagar

The proposed increase in traffic density will not cause significant impact on the traffic since the road is capable of handling this increase in traffic density.

4.10 LAND USE

Prediction of environmental impact of the mining activity on land environment are based on the nature of activities, extent of area covered and associated aspects of environmental concern. Land degradation is inevitable during mining particularly in open cast mines, where the original soil ecosystem and structure are drastically destroyed within the core zone. The magnitude of impact on land and its mitigation measures are discussed in subsequent sections.

4.10.1 Land degradation and aesthetic environment

The total ML area is 612.1336 ha. Out of total area, 197.00 ha land i.e. 32.18% will be disturbed by excavation till the end of life of mine. Existing land use pattern of core zone is given in **Table No. C4-10**. Land use at the end of plan period and at the end of life of mine is given in **Table No. C4-11 and Table No. C4-12,** respectively.

TABLE NO. C4-10: EXISTING LANDUSE PATTERN OF CORE ZONE AS ON 01.04.2021 (IN HA.)

Sl. No.	Particulars	Private Land	Govt. Land	Total Area
1.	Pits & Quarries	0.40	-	0.40
2.	Infrastructure, built up area etc.	2.00	-	2.00
3.	Haul road/ cart track	2.60	-	2.60
4.	Undisturbed area	581.4789	25.6547	607.1336
	Total Area	**586.4789**	**25.6547**	**612.1336**

Source: ***Table A8.1 of Review of approved Mining Plan of Vangar & Madhiya Limestone Mine***

TABLE NO. C4-11: LAND USE PATTERN OF THE MINING LEASE AREA AT THE END OF PLAN PERIOD (31.03.2026) (HA)

Sl. No.	Particulars	Private Land	Govt. Land	Total Area
1.	Pits & Quarries	31.71	-	31.71
2.	Dumps of Soil stack	4.63	-	4.63
3.	Infrastructure, built up area etc.	2.50	-	2.50
4.	Haul road/ cart track	4.10	-	4.10
5.	Undisturbed area	543.5389	25.6547	569.1936
	Total Area	**586.4789**	**25.6547**	**612.1336**

Note: Area reclaimed/rehabilitated: Nil
Greenbelt/Plantation: 5.0 ha.
Source: Table A8.8 of Review of approved Mining Plan of Vangar & Madhiya Limestone Mine

TABLE NO. C4-12: LAND USE PATTERN AT THE END OF THE LIFE OF THE MINE (HA.)

Sl. No.	Particulars	Private Land	Govt.Land	Total Area
1.	Pits & Quarries	189.76	7.24	197.00
2.	Soil stack/ Dump	Nil	Nil	Nil
3.	Infrastructure	2.00	-	2.00
4.	Haul road/ cart track	2.60	-	2.60
5.	Undisturbed area	392.1189	18.4147	410.5336
	Total Area	**586.4789**	**25.6547**	**612.1336**

Source: Table A2.20 of Review of approved Mining Plan of Vangar & Madhiya Limestone Mine

Area reclaimed/ rehabilitated by mine owner- 36.36 ha**

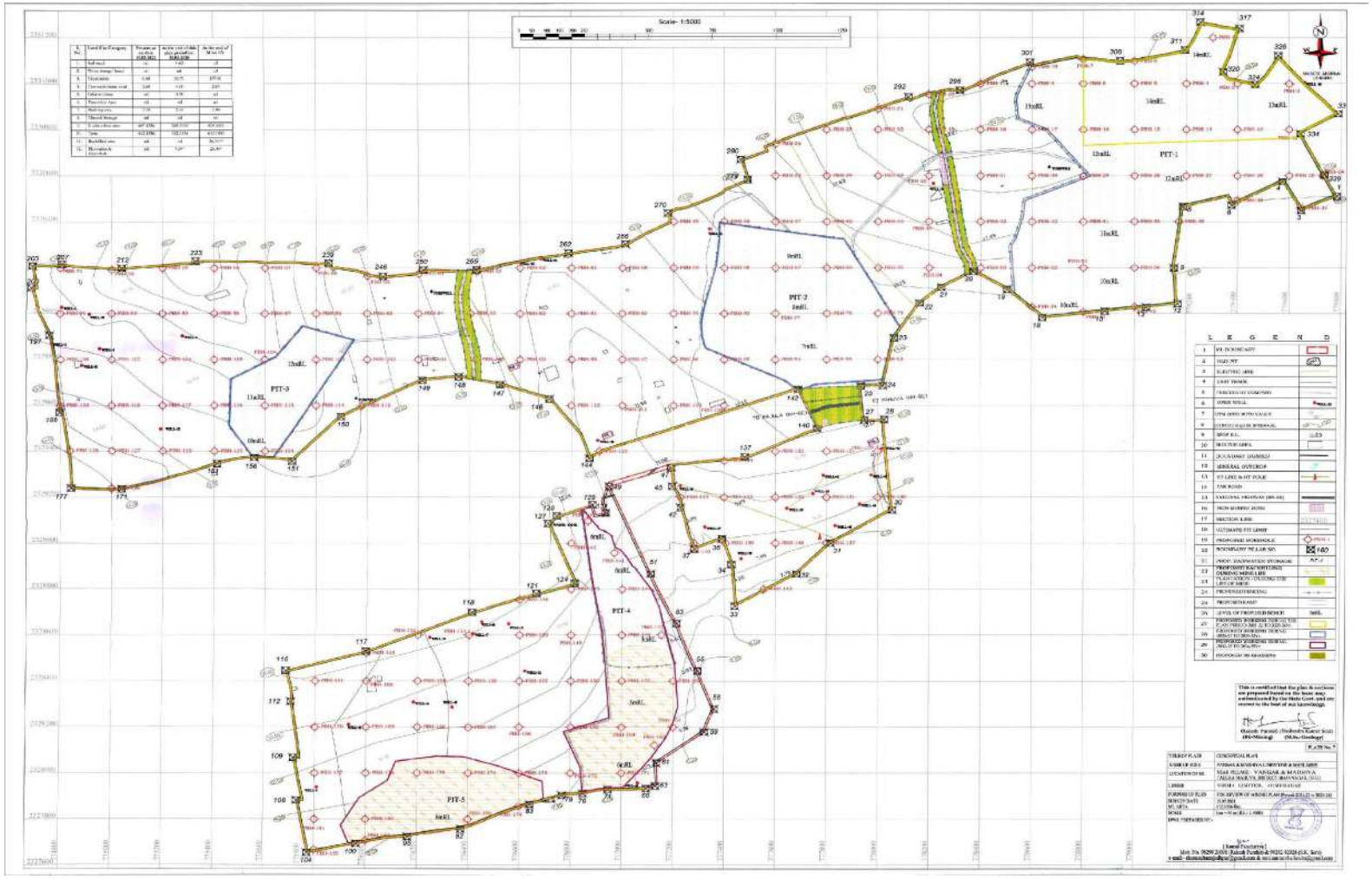
Area afforested by mine owner - 26.50 ha*

* Greenbelt/ plantation proposed within road barrier and boundary barrier/ backfilled area.

** Backfilling area is proposed to be converted into agriculture land/ utilized for plantation work.

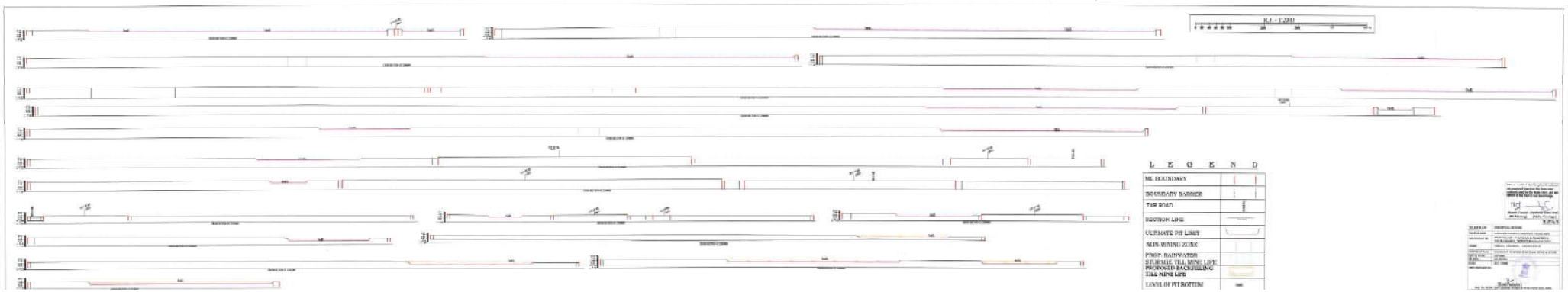
Out of total ML area, Government land is 25.6547 ha (4.19%), while 586.4789 ha is a private land (95.81%). Out of total lease area, 197.00 ha i.e. 32.18 % of the land will be excavated. The disturbed area within ML will comprise excavated land, infrastructure and roads. Presently, the core zone is virgin and topography is flat with few undulations. The degradation of land is not likely to spread to any adjoining area and hence the buffer zone area will not be affected. Conceptual plan and Conceptual section is shown in **Fig No. C4-5** and **Fig No. C4-6**.

FIG NO. C4-5: CONCEPTUAL PLAN BASED ON REVIEW OF MINING PLAN



Note: After exploration as shown in approved review of mining plan, Mineral bearing area of lease (612.1336 ha) will be increased and put into use for mining.

FIG NO. C4-6: CONCEPTUAL SECTION



Land use pattern of the lease area is based on approved Review of mining plan of Vangar & Madhiya Limestone Mine. It can be seen that the maximum land is under agriculture. The agricultural land over the mineral bearing areas will be affected due to the excavation and since the depth of the mine will be go up to (+) 1/ (+) 2m AMSL with no potential backfill material available to restore the levels, two shallow depth mining pit of <4 m & 36.36 ha area shall be backfilled with soil in the south eastern portion of the mine lease area. It shall be utilised for agriculture in case of private land and plantation purpose in case of government land. Due to dearth of backfill material, further backfilling will not be possible.

Loss of agricultural and grazing land: There is no grazing land involved in the mining lease area. The maximum agricultural land likely to be directly affected will be 189.36 ha, which is the private land likely to be excavated. Out of total 197.0 ha excavated area (govt. & private), 36.36 ha will be backfilled and re-utilised for agriculture. In the balance pit area, water storage will occur as described in section 4.5.1 earlier.

4.10.2 Land use management

Land degradation is one of the major adverse outcomes of opencast mining activities and any effort to control adverse impacts is considered incomplete when appropriate land reclamation strategy is not adopted. Since the land degradation in this mine will be partly in the form of excavated void and partly in the form of dump, haul roads etc., the reclamation strategy must include a programme for the reclamation of the disturbed land. Therefore, the stage wise land use and reclamation has been prepared from the land use tables in Review of Mining Plan. The stage wise land use and reclamation can be seen in **Table No. C4-13** and post mine closure land use is given in **Table No. C4-14.**

TABLE NO. C4-13: STAGE WISE LAND USE AND RECLAMATION AREA (HA.)

Sl. No.	Land Use Category	Present	At the end of plan period	At the end of mine life
1.	Soil stack	0	4.63	0
2.	Waste dump/ bund	0	0	0
3.	Excavation	0.40	31.71	197.00
4.	Cart track/mine road	2.60	4.10	2.60
5.	Infrastructure	0	0.50	0
6.	Township Area	0	0	0
7.	Built-up area	2.00	2.00	2.00
8.	Mineral Storage	0	0	0
9.	Undisturbed area	607.1336	569.1936	410.5336
	Total	**612.1336**	**612.1336**	**612.1336**
	Backfilled area	0	0	36.36**
	Plantation & Greenbelt	0	5.0*	26.50*

Note:

** ***Backfilling area is proposed to be converted into agriculture land/ utilized for plantation.***

* ***Greenbelt is proposed within road barrier, boundary barrier.***

Source: Table A2.11 of Review of Mining Plan of Vangar & Madhiya Limestone Mine

TABLE NO. C4-14: POST MINING LAND USE OF CORE ZONE (HA)

Particulars	Private Land	Govt. Land	Total
a) Pits & Quarries	189.76	7.24	197.00
b) Soil stack/ dump	0	0	0
c) Infrastructure including of office/ built-up area	2.00	0	2.00
d) Haul roads/ roads	2.60	0	2.60
e) Undistrubed			
(i) Govt. land		18.4147	18.4147
(ii) Private/Ag. land	392.1189		392.1189
Total occupied Area	**586.4789**	**25.6547**	**612.1336**

f) Area reclaimed/ rehabilitated by mine owner = 36.36 ha**

g) Area afforested by mine owner = 26.50 ha*

** ***Backfilling area is proposed to be converted into agriculture land/ utilized for plantation.***

* ***Greenbelt is proposed within road barrier, boundary barrier.***

The shallow pit of depth of approximately around 4m in the south eastern portion of the mine will be backfilled. The area will be 36.36 Ha as shown in conceptual plan. The backfilling is proposed from 7th year. Backfilled area shall be utilized for agriculture in case of private land and for plantation purpose in case of government land.

4.10.3 Mine closure plan

'Mine Closure Plan' is a whole-of-life exercise that begins at the start of a mine life and continues through to post-closure. A progressive mine closure plan for the proposed mine have been made and approved as part of Mining Plan. Salient points of mine closure plan are briefly discussed in subsequent paragraphs.

4.10.3.1 Management / decommissioning of infrastructure

The project will start soon so the infrastructure will be developed. However in case of any temporary discontinuance or dismantling or disposal of infrastructure will not be required at this stage & the infrastructure will be maintained in good working condition. The mining lease area will be a captive mine of the proposed cement plant in the vicinity. At the time of final closure of the mine the infrastructure can be alternatively utilized for ancillary activities related to cement plant. Such as truck parking yard, training/educational institute, old aged home etc.

4.10.3.2 Disposal of mining machinery

Most of the machinery used for mining activity will be hired on contract basis. Hence the machineries shall be carried by their operating contractors from the mine after completion of contract. Any machinery belonging to the company

will be either shifted to other working mines or disposed off. The mining machinery available in the mine shall be utilized till exhaustion of limestone reserve from the mine. However, during this plan period of the Progressive Mine Closure Plan, no disposal of Mining Machinery is envisaged.

4.10.3.3Safety and security

The life of the mine operations is 13 years. Excavation of limestone in the area is proposed by opencast working, which involves fewer hazards than underground working. Sufficient qualified, experienced & competent staff shall be employed for carrying out mining operation in safe & systematic manner through regular inspection monitoring & controls.

There is no proposal for any abandonment due to unforeseen circumstance following safety measures shall be taken out for safety and security.

- Transportable mining machinery will be shifted to a safe and secure place.
- Top of the pit and all entrance to the working shall be blocked and fenced.
- Security guards shall be posted to prevent any unauthorized entry
- Danger warning boards shall be displayed.
- Regular inspection of the abandoned working shall be carried out to ensure compliance of above measures.

4.10.3.4Temporary discontinuance

In case of any temporary discontinuance due to any enforcing circumstances or court order etc., Necessary notices shall be sent to all such respective departments and concerned authorities of IBM and DGMS Officials. Care and maintenance during temporary discontinuance is covered under Chapter 7 of this EIA report.

4.10.3.5 Economic repercussions of closure of mine and manpower retrenchment

This is a progressive mine closure plan for limestone mine for the period of next five years and during this period, no portion of the mine is proposed to close and therefore, no economic repercussions of closure of mine and Manpower retrenchment is envisaged.

4.10.3.6Time scheduling for abandonment

Mine closure operation is a continuous series of activities starting from day one of the initiation of mining project. Therefore, progressive mine closure plan will be a continuous process throughout the life of mine which will be reviewed periodically. This includes various land reclamation activities to be done continuously and sequentially during the entire life of the mine. The life of mine

will be 13 years (approximately). Life of mine may be increased subject to conversions of resources under 333 categories into category of reserves 111. At this time, it is not possible to furnish time schedule of abandonment, which is likely to be occur after 13 years. Moreover, there is no proposal of temporary abandonment during this progressive mine closure period ending.

4.11 SOLID WASTE - IMPACT AND MANAGEMENT

After the major impacts on land, air and water, mines also have a major impact due to generation of solid wastes. Production of solid waste can cause an impact on topography, land use and quality, air pollution, water contamination and visual aesthetics if proper management is not adopted.

Overburden

No waste in the form of OB/ IB/ SB is available in the ML area as per known geology.

Topsoil

Total quantity of topsoil removal is anticipated as 1.37 Mcum during mine life. The topsoil removed shall be disposed of by means of making a temporary stack at the prescribed sites. The location selected is outside the ultimate pit limit, which seems to be mineralized, shall be on temporary basis.

No mineral reject is proposed to be generated. Soil is non–toxic in nature and there is no harm from the same.

Other than topsoil, solid waste in the form of sludge created by mine water in settling pond, sludge from domestic waste water treatment facilities and municipal solid waste will be there. The generation of solid waste from various sources is given in **Table No. C4-15**.

TABLE NO. C4-15: SOLID WASTE GENERATION

Sl. No.	Description	Quantity
1	Topsoil (life of mine)	1.37 mill. Cum
2	OB	Nil
3	MSW	12.6 kg/day

155670 cum quantity of soil will be generated from the mine in plan period and overburden and mineral rejects will be nil.

Soil conservation

In the ML area, soil cover above limestone varies from 0.5 to 1.0 M. The soil will be carefully scrapped, collected manually and will be used for backfilling.

Since the area is water scarce area, therefore the major part of excavated pits will be used as water reservoir at the end of life, which will in turn be used for pisci- culture, irrigation and recharging the water table.

Management of solid waste

Soil removed during five years of plan period is proposed to be disposed off by means of making a temporary stack at the prescribed site. The location selected shall be outside the ultimate pit limit, which seems to be mineralized, shall be on temporary basis. So there will be no adverse impact on the space chose for the stacking purpose. Total quantity of soil removal is anticipated as about 1.37 million during mine life.

The geometry of proposed top soil stack and easy access: -

Height : 9.0 m (max.) with making terraces at an interval of 5.0 m for safety aspect

Ultimate stack slope : ~ 22^0

It is being anticipated that space for backfilling shall be matured in 2027-28 year. So temporary stacking of topsoil shall be kept for a period of maximum six years, hence stabilization is not proposed. Re-handling of stacked soil is envisaged for the period till mined out area gets matured for backfilling which is anticipated by year 2027-28 of working. The backfilling shall be started only after reaching ultimate level. In compliance of condition imposed in TOR, shallow depth pits are to be backfilled. Hence pits around < 4.0 m deep shall be backfilled. This will lead 36.36 ha area under backfilling which shall be utilized for agriculture/plantation purpose.

Retaining wall is proposed all around the stacking in order to check its spreading. Details of removal of soil and its disposal is given in **Table No. C4-16**. Re-handling of Top Soil is given in **Table No. C4-17**.

TABLE NO. C4-16: REMOVAL OF SOIL AND ITS DISPOSAL

Year	Removal of soil (Mcum)	Means of disposal	Location	Area covered under stacking (ha)
FY 2021-22 to FY 2025-26	0.15	Temporary stacking at one location till 7th year now onwards and after that for simultaneously backfilling	Near boundary pillar no. 6 to 8	4.63
FY 2026-27 to FY 2030-31	0.84		2026-27 and then backfilling	nil
FY 2031-32 to FY 2033-34 (end of mine life)	0.38		No stacking	nil
Total	**1.37**	**-**	**-**	**nil**

Source: Table A2.15 of Review of Mining Plan with progressive mine closure plan approved 05.08.2021

TABLE NO. C4-17: RE-HANDLING OF SOIL TOWARDS RECLAMATION AFTER THE PLAN PERIOD

Year	Re-handling of soil (cum) for backfilling	Means of disposal	Location
2026-27	nil	-	As mentioned in above table
2027-28	55000	Backfilling	
2028-29	50670	Backfilling	
2029-30	50000	Backfilling	

Source: Table A2.16 of Review of Mining Plan with progressive mine closure plan approved 05.08.2021

The void area is proposed to be utilized for accumulation of rainwater, which shall be very useful for the local in replenishment of ground water.

Reclamation

It is estimated that by the end of conceptual period of 13 years, entire estimated mineable limestone reserves is proposed to be exhausted. The mining area shall be gradually developed and exploited for limestone. Looking towards availability of OB soil, backfilling of part area is envisaged. The voids can be used for storage of rainwater. The accumulated water shall be kept suitably fenced off all around, if required.

- Total void area envisaged till conceptual period = 197.00 ha
- Total volume of void envisaged till conceptual period = 13.79 Mcum
- Total soil removal envisaged till conceptual period = 1.37 Mcum
- Total material available for backfilling envisaged till conceptual period after swelling = 1.37*1.3 = 1.781 Mcum
- Total backfilling area envisaged till conceptual period = 36.36 ha

Balance void pit is proposed to be used for rainwater storage at the end of conceptual period. The backfilling program is given in **Table No. C4-18**.

TABLE NO. C4-18: PROGRAMME OF BACKFILLING

Year	Soil to be utilized for tentative backfilling (cum)	Location	Phase wise Area to be backfilled (ha)
FY 2021-22 to FY 2025-26 (Plan period)	No proposal	-	nil
FY 2026-27 to FY 2030-31	0.99 Mcum	Shallow depth pits in the entire ML area	26.17 Ha.
FY 2031-32 to FY 2033-34 (end of mine life)	0.38 Mcum		10.19 Ha.
Total	**1.37 Mcum**		**36.36 Ha.**

Source: Table A2.17 of Review of Mining Plan of Vangar & Madhiya Limestone Mine

Following mitigation measures are proposed for the solid waste:

a. The top soil shall be used simultaneously for the plantation over backfill areas, in green belt and other areas. Some soil would be backfilled into mined out areas. However, the top soil and backfill quantity is too low to bring the level upto the ground level. The sludge shall be removed periodically from the septic tanks in the mining area would be organic in nature. The organic matter will be composted to be used as manure in afforestation/ greenbelt/ agroforestry/ agriculture.

b. The municipal solid waste comprises of (i) organic, (ii) inorganic or recyclable and (iii) non-biodegradable components. The waste shall be segregated at source and the organic component shall be composted at the designated site within the project area. The composted matter will be used as manure in plantation. The inorganic or recyclable wastes shall be sold to recycling vendors. The non biodegradable waste, which can be minimised to less than 10% of the total waste through practice of 3Rs, will be given to the municipal corporation for disposal in their designated land fill site.

4.12 ECOLOGY

No National Park, Wildlife Sanctuary, corridor etc exists within the ML area and also within 15 km radius of ML area. Nearest National Park & Wildlife Sanctuary is the Gir National Park, Gir Wildlife Sanctuary & Mitiyala Wildlife Sanctuary located at a nearest distance of 76.0 km, 44.2km and 43.5km respectively. There is no Forest land in project area. There are 5 Reserved Forest located in the buffer area as given in section 3.10.1. Duly authenticated map showing aforesaid distance alongwith certificate issued by the Chief Wildlife Warden, Gandhinagar vide letter dated: 13.01.2022 & 14.02.2022 are attached herewith as **Annexure XIV.**Authenticated list of flora and fauna in core and buffer zone is given in **Annexure XIII.** The ecological sensitives areas like turtle breeding sites are not within 15 km radius of proposed site. Agricultural crops and fruit trees form a part of the commonly found flora in the study area. Schedule I species i.e. Peafowl, Asiatic Lion and Chinkara are reported in the study area. A wildlife conservation plan has been prepared in consultation with state forest department & got approved from state forest department (PCCF). The copy of same is given in **Annexure XXIII.**

Schedule I species i.e. Peafowl, Asiatic Lion and Chinkara are reported in the study area as per Wildlife Protection Act, 1972 amended uptill 2019. Accordingly, a Wildlife Conservation Plan had been prepared in consultation with state Forest Department & got approved from State Forest Department (PCCF) Government of Gujarat on 20.12.2021. Approval letter & conservation plan are given in **Annexure XXIII.** After the amendments vide Act 18 of 2022, a number of additional species have been added into Schedule-I such as Leopard, Striped hyaena, Jackal, Bengal fox, Indian porcupine, Jungle cat, Grey

wolf, Dog faced water snake, Russell viper, Checkered Keelback, Indian Rat snake, Red sand boa and Naag/cobra. In view of this, the wildlife conservation efforts shall be enhanced in association with Forest and Wildlife Department, Government of Gujarat in due course.

4.12.1 Impact on ecology

Ecological impact from open cast mining result from generation of pollutants both in air and water. Further excavation of soil causes damage to its structure and composition. The adverse impact of proposed mining activity will cause:

During Construction: There is no major construction except mine office. The adverse impact of proposed mining activity will cause:

- Loss of vegetation by excavation and dumping thereby affecting the species for which such vegetation was the host.
- Movement of species away from mining lease area due to noise, vibration and light.
- Generation of dust due to movement of vehicles bringing in construction material

During operation: The impact on the terrestrial ecosystem due to operation of the proposed mining would mainly occur from deposition of air pollutants. Particulates, sulphur dioxide and oxides of nitrogen are major pollutants from traffic. These pollutants affect biotic and abiotic components of the ecosystem individually and synergistically.

Chronic and acute effects on plants and animals may be induced when the concentration of these pollutants exceeds threshold limits.

Impact due to particulates: The dust particles depending upon their size and weight settle down at varying distances on vegetation and soil surfaces in the prevailing and direction. The morning windrose diagram given in Fig C3.5 of Chapter 3, shows that wind flows predominantly from the directions north-west and west in the months of October to March and from north west, west and south-west in the months of April to September. The evening windrose diagram given in Fig C3-6 shows that wind is predominantly flowing from north-east, east and south-east except in October-March and from south west, south-east and south from April to June and south west, south and west from July to October. Therefore, the pollutants will flow in these directions and settle according to the seasonal wind flow pattern.

Foliar deposition of dust may interrupt gaseous exchange through stomatal clogging, thereby affecting plant growth. The effects of air emissions on nearby vegetation and crop lands are not likely to be adverse as the pollutants concentration is expected to be well within the prescribed standards.

Impact due to sulphur dioxide : Chronic exposure to SO_2 causes injury characterized by yellowing of the leaf (Chlorosis). Scientific literatures reveal that low concentration of SO_2 over long period lead to intravenal chlorosis in high humidity. However at higher concentrations, SO_2 combines with moisture in the air to form aerosol which erodes cuticle and cell membrane, thus inviting easy entry of pathogens. It may alter the pH of the soil. Changes in pH of the soil may affect microflora and fauna of the soil. Acute injury is characterized by development of dry dead areas with an ivory to brown colour (necrosis). Taking a seasonal and annual average, the threshold for chronic plant injury has been estimated at approximately 130 $\mu g/m^3$ (A.J Dvorack and B G Lewis, 1978).

USEPA air quality criteria for SO_2 stipulates 0.2 ppm (524 $\mu g/m^3$) level when visible injury to sensitive vegetation in humid regions after 3 hours exposure is observed. In another case, level 0.5 ppm SO_2 level (1310 $\mu g/m^3$) for 1 hour exposure results in visible injury to sensitive vegetation in humid regions. At higher SO_2 concentration of 10 ppm (26214 $\mu g/m^3$), visible injury to vegetation in arid regions is observed. Such high ambient air concentration of sulphur dioxide, is not likely to occur in the area.

Impact due to nitrogen dioxide: USEPA air quality criteria for NO_2 stipulates 2 ppm (3760 $\mu g/m^3$) level when foliar injury to vegetation at 4 hours exposure is observed. At a lower NO_2 concentration of 0.25 ppm (470 $\mu g/m^3$) during the growing period, decrease of growth and yield. Such high ambient air concentration of nitrogen dioxide is unlikely in the study area.

The cumulative 24-hour average incremental GLC from the proposed limestone mine when added to the base line concentration of SO_2 and NO_2 observed in the study area would not be more than 10.21$\mu g/m^3$ and 14.60 $\mu g/m^3$, respectively which is well within the National Ambient Air Quality Standards. Therefore it can be seen that these values are much lower than the threshold limits for damage to terrestrial flora and as such, the impact on the terrestrial ecosystem would be marginal.

Impact due to mining: The general adverse impacts, usually due to operation of opencast mine are:

1. Dust emission from mine due to excavation and transportation, affects the effective photosynthesis by covering the plant/ tree leaves by thin dust layer during dry months which however will be washed away in rainy months.
2. Disturbance to birds and animals due to bright light and unusual noise during operation activity.
3. There may be discharge of excess unutilised pumped out mine water into the nearest natural stream after settlement of suspended solids. As the streams are seasonal and the discharge will also be during monsoons, no

major impact is envisaged on the surface water bodies and on the fresh water eco-system.

4. Loss of vegetation by excavation and dumping thereby affecting the species for which such vegetation was the host.

The effluents generated from the mine will be treated and reused after complying with prescribed standards. Therefore, these too are not anticipated to impact ecology. In fact the waste water, after treatment, will be used for watering the plantation. The impact on flora and fauna of the buffer zone will not be there as no mining activity will take place outside core area.

4.12.1 Management of ecology

Management of ecology comprises of mainly compensatory plantation program as well as plantation for rehabilitation which are detailed below:

4.12.2.1 Flora

(i) Green Belt: Plants act as natural sink for a variety of pollutants as well as replenish air with fresh oxygen. Therefore, establishment of greenbelt and plantation along various facilities and periphery is an important aspect of mitigation plan under ecology. The main consideration during development of green belt and plantation are as follows:

- Effective trapping of dust and emissions
- Noise absorption
- Balancing eco environment
- Waste water reuse
- Aesthetics
- Fast growing, evergreen with large crown

As a single plant does not have all the qualities, a mixture of several varieties of plants has been chosen. The width of the belt will be 7.5 m all along the boundary.

(ii) Plantation program of mine:

Plantation shall also be carried out along roadside and around Administrative buildings, facilities and in vacant undisturbed areas as well. This will result in increasing small sized fauna such as squirrels, hare, reptiles and birds in finding a favorable habitat.

Reclamation plantation: The other measures for management of ecology will comprise of mainly of plantation for rehabilitation. Once the simultaneous backfilling of mine void commences from 2027-28, the reclamation process

over the backfilled area will also commence. Reclamation of top soil dump will also eventually take place.

Afforestation Programme: Company has a plan to plant saplings of trees and shrubs within the boundary barrier and road barrier. Plantation is proposed to be done at the rate of 1000 saplings covering area 1. ha per year. Sandy soil/ topsoil removed during mining is proposed to be used for plantation at pit slope.

Total area covered under plantation/greenbelt proposed is 26.50 ha at end of mine life. The break up is as follows:

1. At boundary barrier greenbelt = 16.50 ha
2. Within road barrier = 10.00 ha

Total = 26.50 ha

Besides this, proposed backfilling area shall be converted into agriculture land/ utilize for plantation work. By the end of this mining plan period, an area of 5.0 ha will be under greenbelt which shall increase aesthetic beauty of the area. Besides this, grass seeds are proposed to be spread on stack for temporary stabilization.

When the mine is exhausted completely, entire area of ML will have five large water storage areas and big garden with trees and shrub, which will be beneficial of human population in the area of Bhavnagar District. The relevant help for successful reclamation/ afforestation will be taken from experienced Forest Officials. The trees recommended for plantation is given in **Table No. C4-19**.

TABLE NO. C4-19: SPECIES OF SAPLINGS PROPOSED

Sl. No.	Botanical Name	Local Name
1.	Acacia auriculiformis	Bangalibaval
2.	*Acacia catechu*	Khair
3.	*Acacia nilotica*	Deshi babul
4.	*Albezia lebbeck*	Siras
5.	*Azadirecta indica*	Neem
6.	*Bamboo spps.*	Vans
7.	*Cassia fistula*	Amaltas
8.	*Cassia seamea*	Kashod
9.	*Casuarina equisetifolia*	Saroo
10.	*Cordia sebestina*	Cordia
11.	*Dalbergia sissoo*	Shisam
12.	*Delonix regia*	Gulmohar
13.	*Erythrina indica*	Pangaro
14.	*Ficus religiosa*	Pipal
15.	*Gmelina arbora*	Shavan
16.	*Jetropha spps.*	RatanJyot

Sl. No.	Botanical Name	Local Name
17.	*Kigelia pinnata*	Kigelia
18.	*Padocarpus chinenses*	Teak
19.	*Parkinsonia spp.*	Rambaval
20.	*Peltoforum ferrungium*	Sonmohar
21.	*Pithecelobium dulse*	Gorasimli
22.	*Phyllanthus embelica*	Amla
23.	*Pongamia pinnata*	Karanj
24.	*Salvadora spps.*	Pillu
25.	*Samania saman*	Raintree
26.	*Sygium cumini*	Jambun
27.	*Tabubia spps.*	Tabubia
28.	*Terminalia cuttappa*	Almond
29.	*Thespecia populanee*	Portia tree
30.	*Cocos nuciphera*	Coconut
31.	*Sapota sps*	Chiku

Source: Table A2.18 of Review of Mining Plan of Vangar & Madhiya Limestone Mine with progressive mine closure plan

Species to be selected will fulfil the following specific requirements of the areas:

- Availability of seeds
- Tolerance to specific conditions or wide adaptability to eco-physiological conditions;
- Rapid growth;
- Capacity to endure water stress and climatic extremes after initial establishment;
- Differences in height, growth habits and bole shapes;
- Pleasing appearance;
- Capacity to selectively concentrate some materials from the surroundings;
- Providing shades;
- Large bio-mass and leaves number to provide fodder and fuel;
- Ability of fixing atmospheric Nitrogen; and
- Improving waste lands;

Environment Management Plan and Reclamation Plan are given in **Fig No. C4-7** and **C4-8** respectively.

FIG NO. C4-7: ENVIRONMENT MANAGEMENT PLAN

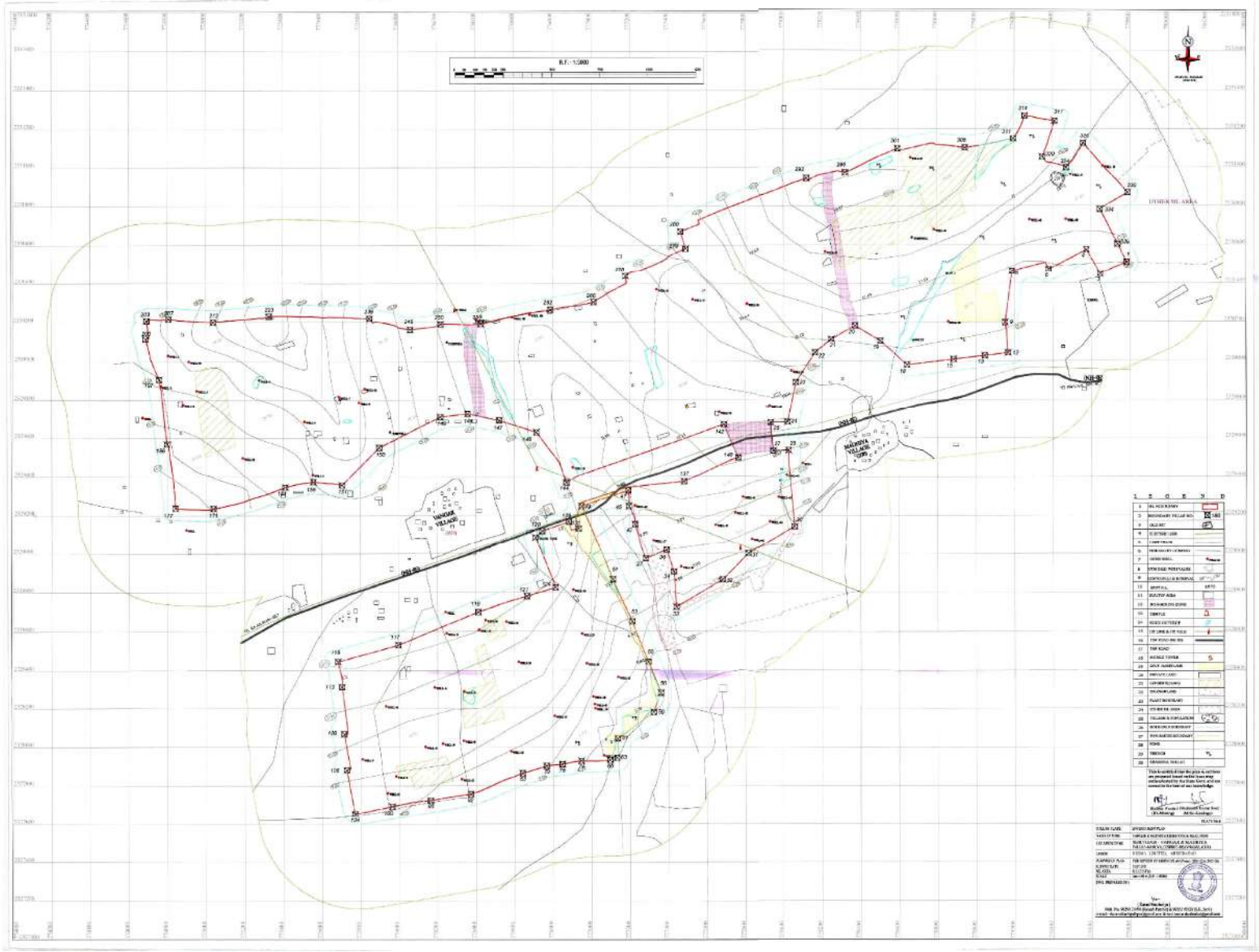
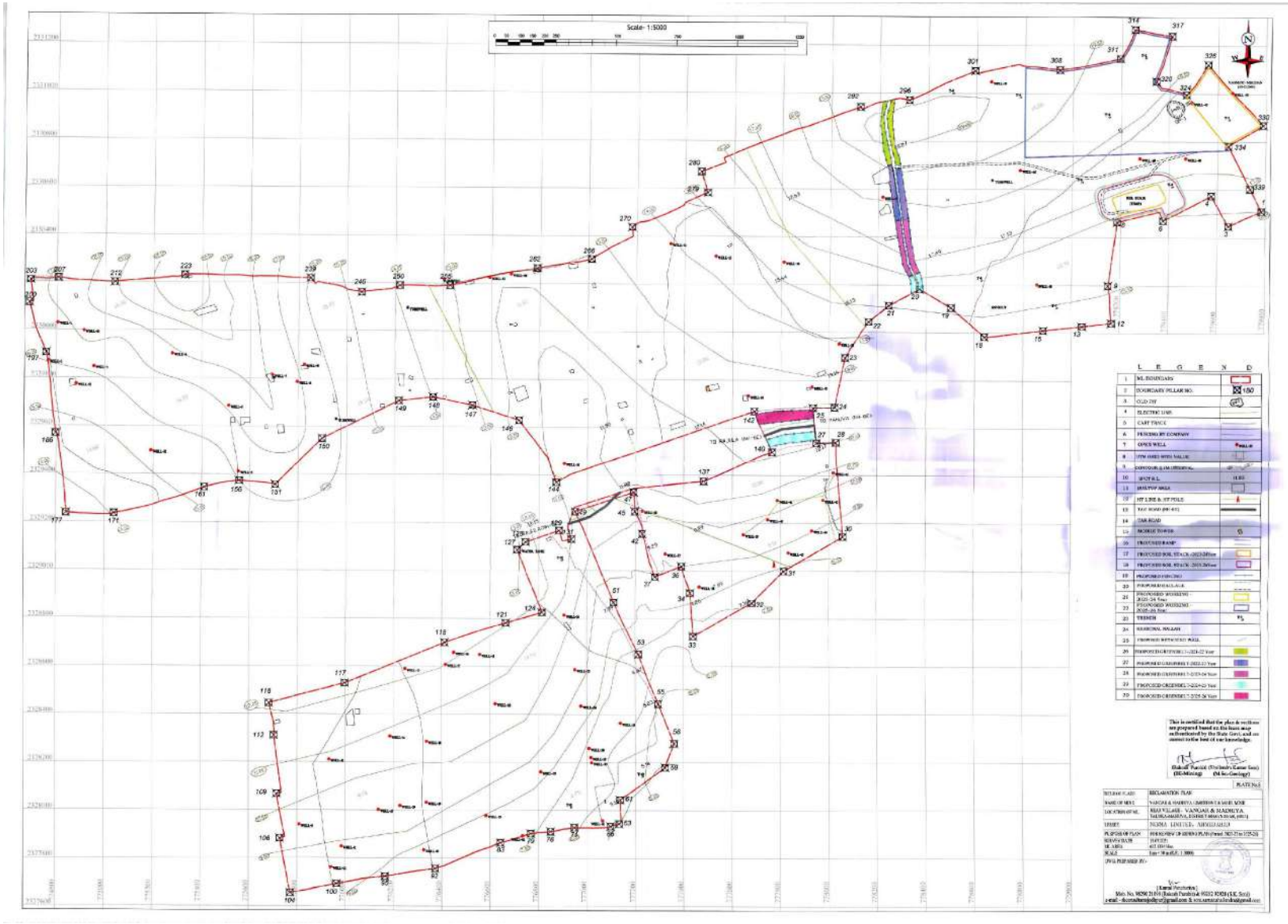


FIG NO. C4-8: RECLAMATION PLAN



The afforested area has to be protected from cattle menace, soil erosion, plant diseases etc. Plants will be protected from diseases by application of proper pesticides. Soil working, manuring etc. will be done whenever necessary. Plants will be protected from cattle menace by proper watch and ward or fencing. Damaged plants will be replaced with new one. Summary of protective measures to be adopted for protection of environment during mine life is given in **Table No. C4-20**.

TABLE NO. C4-20: SUMMARY OF PROTECTIVE MEASURES AND PHASEWISE PLANTATION

Items	Proposed Protective Measures					
	2021-22	**2022-23**	**2023-24**	**2024-25**	**2025-26**	**Total**
Stack management	Temporarily creation of stacking of soil so no proposal of stabilization is required by way of planting saplings. It required spreading of grass seeds.					
Retaining wall	nil	nil	nil	968	nil	968m
Plantation						
Afforestation to be done	1.0 ha	1.0 ha	1.0 ha	1.0 ha	1.0 ha	5.0 ha
No. of saplings planted	1000	1000	1000	1000	1000	5000
Fencing (m) for protection of plantation	1173	980	1034	498	572	4257

Source: Table A2.19 of Review of Mining Plan of Vangar & Madhiya Limestone Mine

4.12.2.2 Fauna

Some of the precautionary and improvement measures will be taken for protection of fauna are as follows:

- The roads leading to and from the mine have and shall have caution boards warning drivers to slow down for animal crossings, if any develop in the future.
- The drivers shall be sensitized not to hit stray animals on the road.
- The emissions from the mines shall always be kept within the norms so that surrounding environment will always be clean and comfortable for humans, wildlife and vegetation.
- Care shall be taken that no food or degradable waste is openly disposed. This could attract wild animals near to human habitation and create man-animal conflict. Hence, disposal of wastes shall always be on the designated and protected place.
- While carrying out social welfare activities, awareness about the variety of faunal species, their status of endangerment and behavior will be spread through posters/ seminars/workshops or discussions to sensitize the

villagers. By gaining correct scientific information, the villagers will be in a better position to protect themselves from animals and in return will not harm them also. Such situation reduces, man-animal conflict, which usually arise due to myths and fear or hatred of animals.

- Water sprinklers and fire hydrants of adequate specification will be provisioned at strategic locations to deal with any emergency.
- Waste water from domestic sources (toilets/ canteens/ baths/ kitchens) will not be released into the environment but treated in septic tank system. Thus, the flora and fauna shall not be exposed to any contaminants.

4.12.3 Wildlife Conservation plan

In the study area, peafowl, Chinkara and Asiatic Lion are reported under Schedule -I of the Wildlife Protection Act, 1972 amended uptill 2019. On the basis of the fauna study findings, Wildlife Conservation Plan was prepared and submitted for approval. The same had been approved by the Forest Department on 20.12.2021. Approval letter is given in Annexure XXIII. After the amendments vide Act 18 of 2022, a number of additional species have been added into Schedule-I such as Leopard, Striped hyaena, Jackal, Bengal fox, Indian porcupine, Jungle cat, Grey wolf, Dog faced water snake, Russell viper, Checkered Keelback, Indian Rat snake, Red sand boa and Naag/cobra. Mitigation measures as suggested in conservation plan shall be followed. These are summarized as follows:

1. **Captive breeding:-** Captive breeding or ex-situ conservation shall be carried to save species from extinction where conservation in the wild is impossible.

2. **Reintroduction and translocations:-** Re-introductions of captive bred populations can occur to replenish wild populations of an endangered species, to create new populations or to restore a species after it has become extinct in the wild.

3. **Habitat protection:-** Minimization of loss and destruction of habitat can be achieved through purchasing land of conservation importance, setting aside land or gazetting it as a national park or other protected area, and passing legislation preventing landowners from undertaking damaging land use practices, or paying them not to undertake those activities.

4. **Avoid plastic products:-** Many fauna mistake plastic waste for food and try to consume it and can cause digestion complications to the birds and even death. By disposing waste properly in covered bins and avoiding plastics, there is less likely a chance that this will lead to death of Faunal species. Thus, all employees and visitors will be made aware through posters at public places within M L area to throw plastic waste in dustbin only.

5. Recycle:- Recycle reduces litter and saves resources. All employees and visitors will be made aware through posters at public places within M L area to recycle, reuse and reduce solid waste generation.

6. Avoid Chemicals:- Many faunal species predate on smaller rodents and animals, grains and cereals to sustain themselves. However, these food sources for birds get tampered by using chemicals for pest control. This can kill a bird or have toxic effects on their health and that of their growing embryos, including deformation or suppressed immune systems. Natural pest control measures ensure that this does not happen. Company will ensure that chemicals based insecticides and weedicides are not used for maintenance of green belt and plantation.

7. Reducing carbon footprint:- There is rise in the number of parasites in the wild. Their increase can be traced to the rising global temperatures that make for shorter winters with higher average temperatures. To combat this, we should reduce greenhouse gas emissions. For this purpose, fossil fuel consumption shall be reduced by providing Solar photovoltaic system to replace coal based electricity and diesel generator sets. Hence, company shall install solar photovoltaic system.

***8. Slow down on the road*:-** A number of faunal deaths occur when they run into vehicles while crossing road. It is possible to avoid hit if more individuals slowed down while driving. Hence speed bumps and speed limit boards shall be installed in and around Mine Lease area.

9. Plant native species:- Native species of plants provide a conducive environment for endangered species to breed and increase in population. The plants also host other types of animals and insects which form important ecosystems and increase the biodiversity of the region. Hence, company shall undertake plantation within the Lease area of native species.

10. Create small habitats:- Individuals can put up structures that act as small habitats within their compounds. These may include bird feeders and baths which act to attract species and serve to provide them with food, water and shelter. This increases the population of the species in the region and provides incentive for more birds to settle in order to breed with the other birds in the region. Company will run an awareness campaign and distribute bird houses, bird feeders, bird baths and informational literature in the surrounding areas.

11. Enjoy nature:- Being active in faunal watching and nature walks ensures that there is constant appreciation for natural beauty. This can be shared among people and continue to help raise awareness of the animal plight, thus, gathering help in any form that would go towards protecting/conserving animals in the region. The company will run outings to help employees, visitors

and local villagers learn to identify the common fauna of neighborhood, and teach local young people the value of wildlife.

12. Keep Your Distance:- Animals need space for feeding, nesting, and other daily activities. Approaching too closely may cause them to become nervous and deplete much-needed energy reserves. During the nesting season, it may even result in loss of eggs or young to predators. This awareness shall be spread through watching outings proposed in above point.

13. Save Bird campaign:- The festival of Utarayan is celebrated with lot of enthusiasm on 14th of January every year where kite flying is one of the most important event. The thread or manja used to fly the kites injures birds, severing their wings and proves fatal. "Save Bird Campaign" is an effort of the State Government to save injured birds while flying kite during the festival of Uttarayan. It is being undertaken in a coordinated manner under the umbrella of Forest Department. Many government departments/organisation like GEC, GEER foundation, GPCB, Fire Department, Police, Traffic wing etc. also provide helping hand in the campaign. Treating an injured bird is a professional job and is undertaken by experienced and competent hands. But even a common citizen can contribute just by spreading certain do's and don'ts. Hence the company will be an active propagator of the campaign to help save birds. (source: https://forests.gujarat.gov.in/save-birds.htm).

Budgetary provision has been made for wildlife management for three years for all the three mine leases. In first year, construction of water ponds and awareness programmes like posters, signboards, notices etc. shall be done. Monitoring of the area shall be done regularly by appointing one person from the project personnel. User agencies will deposit fund after approval of the budget from the office of Forest Conservator, Bhavnagar for various conservation measures. Expenditure deposited shall be Rs. 19.9 lakhsas per the budget approved by Chief Wildlife Warden, Gujarat State, Gandhinagar vide letter dated 20.12.2021 (copy given in **Annexure XXIII**).

Social welfare initiatives

The social welfare initiatives would focus on poverty alleviation, availability of environmental friendly fuels, awareness drives, plantation, protection of fields and similar such measures which will ensure that the people are not exploiting the forests to meet their requirements. When the pressure on forests and natural habitats of the animals reduces, then the animals are not forced to venture out to the villages.

Social Awareness camps

As mentioned above, these will be carried out for mine workers, drivers, labours, etc., proponent officials, technical and non technical staff, school

teachers and children in 10 km radius, local community, villagers and village heads, etc.

Interaction with state forest department

Interaction with state forest department would be carried out in choosing the plant species and sourcing the saplings for the greenbelt. The plantation has to be carried out in a manner that the greenbelt acts as a natural divide and at the same time there are no such trees which have the fruits and fodder for the animals that end up attracting them to the plant area. Even the plantation carried out in the villages under social welfare measures should comprise of trees planted in such a manner that the trees attractive to the fauna are away from habitation and those not attractive to the fauna are in the villages. The company will give logistic support in terms of provision of water during summer season, creation of watering holes, etc. as and when required by the forest department.

With the progressive growth of greenery, biological terrestrial environment will improve in due course of time. The generation of fugitive dust and airborne dust are controlled at source, settling of dust over the crop land or vegetation is also minimised over the surrounding buffer zone. The flora and fauna scenario is, in fact, anticipated to improve due to proposed development of green belts, afforestation and water bodies. Presence of water and food wastes during the day will attract birds and animals more towards the site.

There is no scheme of utilising surface water hence no negative impact on the aquatic environment. It may be noted that the rain water (sweet) usually drains to the sea as runoff, thereby, becomes saline and is thus wasted. Therefore, if the water collected from rains is collected in the pit, it will be recharged into ground, thereby benefiting the surrounding areas. There is no National Park/Sanctuary within core zone or in the study area.

Migratory birds:

As per the National Action Plan for Conservation of Migratory Birds and their habitats along Central Asian Flyway which includes six interrelated components i.e. species conservation, habitat conservation and sustainable management capacity development, communication and outreach, research and knowledge based development and internal cooperation. Company shall support the measures suggested in it in consultation with forest department which includes following: [1]

1. Compile lists of migratory birds being hunted, hunting seasons and trade patterns to ensure prohibition enforcement and project impacts of such hunting on flyway scale populations.

[1] Source: https://moef.gov.in/wp-content/uploads/2019/03/CAF_NAP_Final-with-CL.pdf accessed 28.07.2023

2. Carry out periodic disease surveillance of migratory birds and ensure strategic response to disease outbreaks.
3. Promote migratory bird conservation initiatives through local community participation, including citizen science groups.
4. Capacity development programmes such as trainings, education, awareness material etc. for the personnel from different government departments and other stakeholders site managers, to equip them with necessary skills for integrated wetland management.
5. Building a network of 'Student ambassadors' for enlisting support of communities for conservation of migratory birds and their habitats.

Minimising Man animal conflict

To minimise man animal conflict, the following precautions will be taken in the project:

- Chain link fence will be constructed around the working pit for safety of the project as well for ensuring that the wandering fauna do not enter the project and get themselves harmed in the process.

- To minimize man-animal conflict with foraging animals, the solid waste collection site shall be constructed to restrict its entry.

- To minimize conflict arising due to entry of any mammalian predators (such as leopards) or stray chinkara/ nilgai, warning and information and contact numbers of forest department shall be displayed at prominent locations within and around the project. Employees as well as people in the villages will be made aware to stay calm, inform wildlife department and remain safe.

- Greenbelt along the boundary & roads shall act as buffer for the animals.

4.13 SOCIO-ECONOMIC CONDITIONS

4.13.1 Resettlement & Rehabilitation planning

Impact

As per Approved Review Mining Plan, Mine Lease area is 612.1336 ha. The authenticated list of khasras falling in the mine lease area is given in **Annexure XXVI**. Out of total ML area, Govt. land is 25.6547 ha and private land is 586.4789 ha. Land will be required for quarry area of 197.0 ha. This quarry area has private land, government land including houses/hutments in Vangar village & houses/hutments Madhiya village. The houses/hutment fall in the conceptual pit of mine lease area and the number of plots (khasras) and their land owners were summarised in Table No. C3-21 earlier. Total of 494 land losers will be there.

Mitigation

- The houses/hutments of Vangar & Madhiya villages which are falling under the pit area will be compensated by mutual consensus.
- The land losers who will be giving their land for quarry area shall also be given land value/compensation.
- The compensation/land value shall be as per mutually agreed rates, terms and conditions and commensurate with the latest market conditions for the type of homestead and land.
- The company shall enter into written agreement with the homestead and land owners for the same.
- The present purchase rates shall be based on the circle rates notified by the State Government as follows:

Type of land	Land rate, Rs. Lakh/ ha	Land requirement, ha	Total compensation, Rs. lakhs
Private	13.00	189.76	2466.88
Government	On mining lease	7.24	-
Total		**197.0**	**2466.88**

- Rates for the purchase of homestead as per mutually agreed rates, terms and conditions and commensurate with the latest market conditions for the type of homestead.

Type of homestead	Rate, Rs. / sq.m.	Approx. Homestead area**, sq.m.	Total compensation, Rs. lakhs
Pucca	5000	480	24
Semi pucca	2500	-	-
Kutcha	1000	-	-
Total		**480**	**24**

* part of 197.0 ha quarry area

** Company will consider homestead losers falling in proposed mine area on actual basis at the time of starting of mining activity.

- In addition to above, the registration cost of sale of the land and homesteads shall be borne by the Company. Assuming it to be 6% of the entire costs of sale, the total resettlement budget works out to be Rs. 14.808 lakhs.

- In case a land owner, whose land has limestone resource of depth <4 m is desirous of only leasing the land for the duration of mining instead of perpetual sale, then the company will enter into a lease agreement for the pre-decided duration at a mutually agreed rent. The company will remove the top soil from the progressing face of the open cast pit and store it temporarily till it can be filled back on the exhausted portion of the open cast pit. After laying back the soil on

the exhausted shallow pit (<4 m depth), the land will be returned back to the land owner. The company shall provide technical and monetary aid for 1 year to the farmer, after handing back, to rejuvenate the land for agriculture.

- Mode of payment shall be through cheques/ online transfer to bank account of land losers and homestead loser.
- The company shall be purchasing land directly from land owners at mutually agreed rates. Hence, agreement to lease/ sell shall be signed with land owners with the following timeline:

Sr. No.	Timeline for land requirement	Pvt. Land	Govt. land	Total
		Ina Ha		
1	Present			
1.1	Purchased	0	0	0
1.2	Consented	25.14	0	25.14
1.3	Leased	0	25.65	25.65
2	Future			
2.1	1st to 5th year mining	42.94	0	42.94
2.2	6th year to Conceptual stage - 13th year	194.36	7.24	201.60
2.3	Mine life (up to lease period)	586.48	25.65	612.13

* one sample consent agreement is given in **Annexure XXIX**

4.13.2 Socio-economic impacts and management

The local population gets an opportunity to get employment within unskilled or skilled categories depending upon their eligibility within the company.

Communication facilities created by the project in the form of approach roads, telephones, post offices and amenities such as schools, hospitals, market centres etc. will benefit the local population, since such facilities are not available to them before the project.

The following activities are proposed with a budget as outlined in Chapter 9 for socio-economic benefits.

Education

Educational institutions will be provided financial assistance.

Medical care

1. A dispensary will be constructed and required doctors and other Para medical staff would be organised for better medical care. The dispensary will be equipped with required modern laboratory for conducting all basic

tests. The medical facilities will be open to the nearby villagers of the area, which will enhance company's efforts for extending community health services.

2. Free medical facilities will be provided to local villagers both at mining dispensaries.
3. Contribution of funds for upgrading the existing health centers in the area.
4. Infrastructure Development.
5. Provision of free drinking water facility in the nearby surrounding villages of the lease area will be created.
6. Improvement of irrigation facilities in the surrounding, villages of plant/mining area. Construction of water channels to prevent seepage of water, which will result in enhancement of agricultural production.

Religion, culture & other activities

Nirma Ltd. will encourage brotherhood, fraternity and religious feelings among villagers and will contribute towards celebration of local fairs, organization of religious functions and construction/repair of religious places.

Other social amenities like amusement parks, social activities of Panchayats, Mahila Mandals and Yuva Mandals and other social activities of importance will also be encouraged.

Employment opportunities

1. Provision of direct and in-direct employment to the persons meeting basic requirement from locals.
2. Create opportunities for indirect employment on account of new trucks, company's vehicles and hired vehicles.
3. Create opportunities for indirect employment through stockists and retailers in Gujarat.

4.14 OCCUPATIONAL HEALTH AND SAFETY

Occupational safety and health is very closely related to productivity and good employer-employee relationship. Issues related to occupational health and safety will be regulated in "The Mines Rules, 1955" and will be followed accordingly. Occupational safety and health is another important factor in the mining area and following steps shall be taken.

4.14.1 Safety

During mining operations some of the safety precautions to be implemented are as follows:

- Erecting barbed wire fencing around the areas being excavated.
- Erecting barbed wire fencing around the areas being dumped.
- Fencing the surface reservoir to prevent falling of human or animal into the water.
- Erecting bunds / toe walls around the surface dumps to prevent damage to property or injury to persons by rolling stones.
- Provision of personal protective equipment (PPE) to the workforce.
- Rotation of workers exposed to noisy premises.
- Periodic safety drills and celebrating the National Safety Week, Road Safety Week, World Environment Day, National Fire Service Week etc.
- Maintenance of dust control systems such as mobile and stationary sprinklers.
- Regular maintenance of equipments and machines.
- Regular checking and up keeping of break down or leakage.
- Audio visual dissemination of information on safety, embracing risks associated with their profession, safety regulation will be adopted meticulously.
- Non-destructive testing of all equipment and machinery will be carried out at regular intervals.

After finishing the mining operations, all areas which are inaccessible and are dangerous will be fenced.

4.14.2 Health

The health of the workers may get affected due to following:

- Due to limestone mining, dust generation shall be there. The impact on the health will be on the employees working in the immediate vicinity. The impact of the same shall be irritation in eyes, breathlessness etc.
- The noise will be generated by Continuous Surface Miner, excavator dumpers/tippers etc.
- The person involved in blasting. He shall be working only during the day for the duration of the blasting which is restricted to approximately 2 hours a day. Blasting has the hazard of injuring the personal due to explosive catching fire, fly rocks damaging the vehicles or injuring a person.
- The other potential hazard is of the explosive van driver who also works only during day time and his working hours are input only for the transportation of explosive from the magazine to the blasting site and back. The hazard involved is that the explosive in the van can catch fire or explode leading to injury to vehicle and manpower.

- The third type of hazardous job is of the magazine in-charge who faces risk in case of any fire or explosion of magazine. He will work one shift only.
- Neither of the above workers are exposed to risks throughout their entire shift.

Good medical facilities are available in nearby areas. Medical check up will be conducted for employees every year. The workers shall be monitored for various aspects of health and several tests carried out. Medical examination shall be carried out as per DGMS Circular No. DGMS (Tech.) (S&T) Circular No. 05 of 2011 in continuation with the Form-'O' under rule 29F (2) and 29L for the report of Medical Examination under rule 29B of Mines Rules, 1955.

All the machines, bench offices and yards will be provided with First Aid boxes with essential medicines and replenished whenever required. Company will sponsor First Aid training to the workmen. Periodical medical examination of workers by medical specialist shall be conducted, so that any adverse affect may be detected in its early stage. Besides this, monitoring the values of the different environment health related parameters shall be done, which may lead to occupational health hazards to the workmen and specifying various control measures.

Following measures will be taken to ensure good health of employees:

- ***Prevent heat stress:*** provision of drinking water at close distance, rehydration solution at standby, air conditioned cabins and rooms, wherever possible, ventilated and cool clothes, etc.
- ***Prevent noise exposure:*** provision of ear muffs, enclosed cabins on heavy earth moving machinery.
- ***Prevent injuries:*** Warning announcements/ signal and red flags before blasting, caution boards on roads and road crossings, fencing/ bunding around open pits, etc.
- Ergonomic support in the form of closed air conditioned cabins on the heavy earth moving machinery.
- A separate person will be designated to undertake administration of personal protective equipments.
- Although, a trained doctor will be in charge of the occupational health risk and centre, arrangement for referral facilities will be made available.
- Close surveillance of the factors in working environment and work practices, which may affect environment and workers health. Monitoring of the values of various factors which may lead to occupational health hazards.
- Periodical survey shall be conducted to see the impact on the health status of local people and to take remedial measures, wherever required.

The Company will have qualified mining engineers and mine managers. They will plan, supervise, control, manage and direct mining operations as per mining regulations. All safety norms shall be followed. Personal protective equipments will be issued to workers. A Safety, Health and Environment officer will also be appointed for effective implementation of safety rules and regulations.

Regular Safety Committee meetings will be held at the mines to review the status of implementation of statutes. Regular safety trainings will be conducted such as seminars on safety, training in other mines, etc. Safety posters and pamphlets in English, Hindi and Gujarati shall displayed and distributed to workers. Workers will be made aware about workplace exposure. Company shall put 100% efforts for a zero accident rate.

Fly rock and dust emission will be reduced by adopting control blasting techniques such as precise and accurate timing delay, optimum oxygen balance in explosives, etc.

Since the mine is not yet operation, there are no existing practices adopted for assessment of occupational health including the details of medical examination and facilities.

4.14.3 Public health

49 villages are present in study area i.e. 18 in Rajula Sub district of Amreli and 31 in Mahuva Sub district of Bhavnagar. Their impact on the health of the residents of the study area will be low or negligible since no mining activity will take place outside Lease area. An assessment of the impact on air, water, noise, traffic, blasting and ground vibrations due to mining and related activities has a potential to directly or indirectly impact public health as follows:

(1) **Air quality:** The increase in dust emissions due to mining activities are the primary impact. The impact will be felt acutely by the closest settlements. However, the air quality prediction modelling show that the resultant air quality after commencement of operation of the mine will be well within the national ambient air quality standards, 2009. Furthermore, the use of surface miners and other air pollution control measures proposed will minimize the impact.

(2) **Water:** There is no proposal to withdraw any ground water or surface water from any nearby source. Thus, none of the villages nearby will be competing for the same water. Ground water intersection may occur during post monsoon period at the end of mine life i.e. at 13^{th} year in pit no. 4 & 5. However, conceptual pit bottom level will be kept above ground water level i.e. +2.0m AMSL to avoid intersecting ground water level. It will act as a source of rain water for ground water recharge and use in agriculture and plantation.

(3) **Traffic:** Limestone carrying dumper shall be moved to the company's proposed cement plant adjacent to this mining lease through the internal haul road & Soda ash plant located at Bhavnagar through National Highway. Thus it will not affect public traffic Further it should be ensuring that all dumpers follow the necessary safety procedure for accident free operation.

(4) **Blasting & ground vibrations:** The DGMS norms shall be followed by the company during blasting to minimize the impact due to ground vibration. The advantage in this project is the use of surface miners to almost 50% of the volume, which reduces the consequences of blasting and ground vibration to half.

4.15 CONSERVATION OF NATURAL RESOURCES

4.15.1 Water

For conservation of a natural resource like water, its reuse is a major component of the environmental management plan. The salient points are as follows:

- Mine water will be collected in the pit and shall be utilized for plantation and dust suppression purposes. However, during monsoon mine sump water will be pumped towards surface reservoir through natural drains after settlement of solids for recharge of surrounding open wells.

- Run-off around reclamation area will be controlled by providing catch drains leading to a sedimentation lagoon

- Run-off from dump would be collected through a series of contour drains which would be connected to a water retention pond. The clear water from this pond will be discharged to the natural water course.

4.15.2 Land

Land degradation is one of the major adverse outcomes of opencast mining activities and any effort to control adverse impact is considered incomplete when appropriate lands reclamation strategy is not adopted. Therefore, necessary steps have been taken for the reclamation of the area. Reclamation programme shall be carried out simultaneously with excavation. At the end of mine life, total excavation area will be 197 Ha and out of this, 36.36 ha. will be backfilled and converted for agriculture use / plantation. 26.50 ha. will be green belt proposed within road and boundary barrier. Rest of the excavated area shall remain as void which is proposed to be utilized for accumulation of rainwater, which shall be useful for the local in replenishment of ground water. Thus, conservation of land is achieved till mine closure.

4.15.3 Energy

Adequate steps will be taken for saving energy as follows:

- Systematic and regular maintenance of equipments will be done.
- Energy meter will be provided for main equipment and pollution control equipments to assess the performance of that equipment.
- Light sensing timer will be provided for all haul road & mines lighting for optimum utilization of electric energy.
- Solar lighting will be provided at as many public locations as possible such as road sides, infrastructure area, etc.

4.15.4 Raw material / minerals

There are no raw materials envisaged as this is a mining project. Fuel will be optimally utilised in vehicles and machinery. Mineral will be transported to the cement plant adjacent to mine & soda ash plant located at Bhavnagar through covered dumpers to prevent any loss through spillage.

CHAPTER 5
ANALYSIS OF ALTERNATIVES

5.1 SITE ALTERNATIVES

M/s Nirma Ltd. has been allotted limestone Mine in villages Vangar and Madhiya Taluka Mahuva in District Bhavnagar (Gujarat) by the State Govt. for excavation of mineral limestone and marl over an area of 1225.8553 ha vide letter no. MCR-102004-1827-CHH dated 15.02.2008 for a period of 30 years.

Accordingly, the order for grant of mining lease was issued by Industries and Mines Department, Govt. of Gujarat, Gandhinagar vide letter no. MCR-102004-1827-CHH dated 08.01.2017 in an area of 612.1336 Ha for 50 years. Thereafter the mining lease deed was executed on 11.01.2017 between Dist. Collector, Bhavnagar, State Govt. and the applicant Nirma Ltd. for a period of 50 years under the provision of MMDR Amendment Act, 2015 and also registered the executed mining lease deed with Sub, Registrar, Mahuva on 11.01.2017. Under provision of Minerals (other than Atomic Hydro Carbons Energy Minerals) Concession Rules, 2016, "Mine Development and Production Agreement' has been signed between State Govt. and proponent on 11.01.2017.

Mining is site specific and a mineral has to be mined at the place where it exists in economically feasible quality and quantity. Hence, no alternative site is under consideration.

The selected mine site has location advantage from transportation point of view. The mine is captive for the proposed cement plant of Nirma Ltd. and is having cement grade limestone overlying thin soil cover. In the lease area, high quality of Limestone CaO content >48% is found in upper strata which can be utilized in boiler of Power Plant for de-sulfurization process and can also for manufacturing of Soda Ash for captive purpose. Company is having Soda ash plant located at Kalatalav in Bhavnagar Dist. The selected site has the following advantages:

1. The area has been selected because the lease area has sufficient reserves of cement grade limestone to sustain the life of cement plant.
2. The Mining lease area is near Mahuva town and is easily approachable by road from Mahuva town at about 10 Km. towards NE. Mahuva is Tehsil Head Quarter in Bhavnagar district of Gujarat. Mahuva is about 85 km from District Head Quarter Bhavnagar. National Highway NH-8E (Bhavnagar to Una) passes through the mine lease area.
3. Proximity to plant for limestone transport.
4. There are no industries/mines in the vicinity of the site, thus there is no cumulative pollution load.
5. Availability of labour from nearby villages.

5.2 TECHNOLOGY ALTERNATIVES

A number of mining techniques are in widespread use depending on the site-specific characteristics, and the environmental and other constraints that may be imposed.

Among the techniques that could be considered are:

- The Choice of using open-cast or underground mining will depend largely on economic grounds based on the depth and concentration of minerals, however environmental impact may have an influence;
- Immediate progressive backfilling while mining is till under way is often not favoured for practical reasons, but could be considered in special cases;
- In some cases solution mining may be used instead of excavation. Decisions about which chemical agents to use. e.g. cyanide, will depend partly on environmental risks;
- In-situ heap leaching is often of lower impact than removal of ore for processing elsewhere. Available processes include chemical and biological leaching;
- In-situ heap leaching is often of lower impact than removal of ore for processing elsewhere. Available processes include chemical and biological leaching;

The limestone occurring in the area is almost just below meagre quantity of sand/ soil cover. Clear cut bands of limestone and marly limestone occur in ML area. As deposit occurs nearer to the surface, it is amenable to opencast working. Thus, the mining is proposed to be carried out by fully mechanized opencast method using Continuous Surface Miner (CSM) with combination of excavator/ loader and dumpers. Conventional method i.e. drilling and blasting shall be proposed for handling of limestone. Surface miner is environment friendly machine and is used in order to avoid blasting as far as possible.

The cutting depth of surface miner is 250-300 mm and product size generated after cutting and milling in the required range. The loading is proposed to be carried out by hydraulic excavator and pay loader for lifting sized limestone and transportation shall be done by means of dumper/tippers of 25 tonnes capacity. The destination of mined out limestone is proposed clinkerization unit with crushing unit for crushed material only. Ex-surface miner material needs no further crushing.

The face shall be oriented in east-west direction. The bench height is proposed 6.0 m. Due to absence of waste, no handling of waste is required as pre-production development except topsoil removal and preparation of haul/ mine

road. Soil shall be removed first in order to remove limestone. Benches of 6 m height and working width 12-15 m (as per MMR) maintaining working bench slope of 80-85^0 in limestone shall be there. Soil is loose material so will require pay loader for loading in dumper/ tipper.

Using of surface miner is eco-friendly mining operation specifically in area near road, habitation and boundary areas. The salient features of surface miner are safe and steady operation, minimum dust generation and low noise. It strips the strata in slices of 25-30 cm thick and wide 2.0-2.2 m.

ROM limestone is proposed to be used for the proposed cement plant directly for further process. Initially, limestone may be stacked temporarily depending upon plant demand. The excavation and loading is proposed to be carried out by Surface Miner and by occasionally drilling/ blasting, hydraulic excavator, loader, dumpers. Pay loader of capacity 5.76 cum shall be used for loading of fragmented rock mass of mineral and transported to the proposed cement plant. Crusher is required for material fragmented by drilling and blasting. Crusher is proposed in proposed cement plant in the vicinity of ML area.

High grade limestone available in top layer of the mining lease area which can be used in Soda ash plant, shall be sent directly as ROM to the Soda ash plant located at Kalatalav near Bhavnagar through trucks / dumpers with the permission of the state Govt.

CHAPTER 6
ENVIRONMENTAL MONITORING PROGRAMME

6.1 INTRODUCTION

Success of any environmental management programme depends upon the efficiency of the organizational set up responsible for the implementation of the programme. Regular monitoring of various environmental parameters is also necessary to evaluate effectiveness of management programme so that necessary corrective measures can be taken, in case, there is some deviation in the proposed programme. Environmental quality parameters at work zone are also important for the occupational health and safety of the workers.

Nirma Ltd. shall be responsible for the environmental protection and will take appropriate preventive and curative measures to maintain environment. Nirma Ltd. will follow an effective environment management system at proposed limestone mine with regular water sprinkling for dust suppression, reclamation of mined out area by backfilling and afforestation, plantation around mine site, undisturbed area and roadside.

Required statutory consents/ permissions for the project will be obtained and will be renewed well within time. After grant of the various consents/ permissions, stipulated environmental monitoring will be carried out either by the company itself or through external agencies, monitoring outcomes analysed and corrective measures, if required will be undertaken.

6.2 PROPOSED SETUP

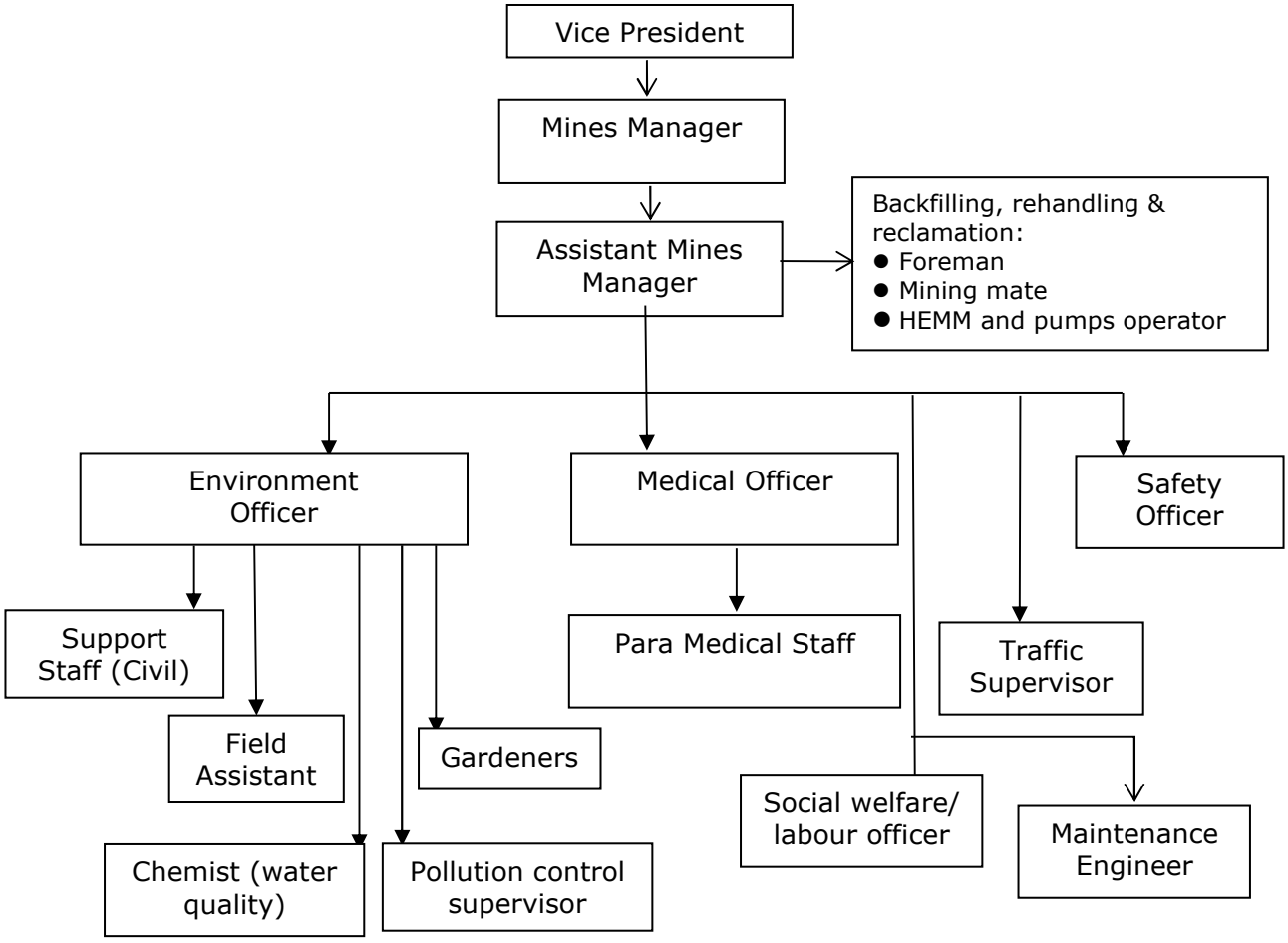
The project is new mine proposed for a targeted production of 1.6 MTPA of limestone. An environmental management and reporting system shall be put in place. Keeping the utility of monitoring results in the implementation of the environmental management programme in view, an organisational chart is proposed, headed by Vice President as shown in **Fig No. C6-1**. Due to the proximity of mine and the plant, and both being under the same management, a team consisting of required qualified personals and trained personnels will be looking after the environmental monitoring and management of mining and cement manufacturing.

1. Collecting water and air samples, work zone monitoring for air pollutants and noise level.
2. Analysis of the water and air samples.
3. Implementing the control and protective measures and monitoring the progress of implementation of environmental management programme.
4. Coordinating the environment related activities within the mine.

5. Green belt development/plantation etc. and maintaining development of greenbelt around the mining site, the plantation of trees will not only help in the suppression of dust and pollutant but it will also enhance the aesthetic values.
6. Good housekeeping will improve the working conditions.
7. Regular cleaning of roads shall avoid accumulation of dust/ water.
8. Regular cleaning/ washing of shop floors.
9. Avoiding un-necessary accumulation and dumping of waste and damaged equipment.
10. Maintaining hygienic condition in the canteen, drinking water sources and toilets.
11. Coordinating with outside agency for collection and analysis of water, soil, noise and air samples,

The monitoring for various parameters of air, water, noise, soil, etc. will be carried out either by the company itself or by recognised/ accredited third parties, as per the monitoring schedule.

FIG No. C6-1: ORGANISATION CHART FOR IMPLEMENTATION OF POLLUTION CONTROL MEASURES



6.3 MONITORING SCHEDULE AND PARAMETERS

To evaluate the effectiveness of environmental management programme, regular monitoring of the important environmental parameters will be done.

Monitoring of various environmental parameters will be carried out on a regular basis to ascertain the following:

a. Pollution status within the plant and mining lease area (core & buffer zone)

b. Generate data for predictive or corrective purpose in respect of pollution

c. Effectiveness of pollution control measures and control facilities

d. To assess environmental impacts

e. To follow the trend of parameters which have been identified as critical.

Monitoring is as important as pollution control since the efficiency of the control measures can only be determined by monitoring. The schedule, duration and parameters to be monitored are shown in **Table No. C6-1**.

TABLE NO. C6-1: MONITORING SCHEDULE AND PARAMETERS

<table>
<tr><th>Sl. No.</th><th>Description of parameters</th><th>Location</th><th>Schedule and duration of monitoring</th></tr>
<tr><td>1.</td><td>Air Quality
Parameters:
$PM_{2.5}$, PM_{10}, SO_2, NO_2, CO, heavy metals</td><td>One sample within mine boundary and three in the vicinity of the project with at least two in the predominant wind direction. At 500m and 1000 m from mine.
Proposed 4 locations:
<table>
<tr><th>Sl</th><th>Name</th><th>Coordinates</th></tr>
<tr><td>1</td><td>Vangar Village</td><td>21° 2'46.96"N
71°39'10.78"E</td></tr>
<tr><td>2</td><td>Madhia village</td><td>21°2'45.72"N
71°40'46.28"E</td></tr>
<tr><td>3</td><td>Mota Jadra</td><td>21° 4'37.37"N
71°42'30.37"E</td></tr>
<tr><td>4</td><td>Nana Pipalva village</td><td>21°3'50.46"N
71°38'19.48"E</td></tr>
</table></td><td>One 24 hourly sample per day, once in a three months</td></tr>
<tr><td>2.</td><td>Micro-meteorology- Wind velocity and direction, Temperature, humidity and rainfall</td><td>Permanent station at adjacent cement plant at 21°1'29.37"N, 71°40'52.70"E</td><td>Continuous automatic monitoring</td></tr>
<tr><td>3.</td><td>Water Quality/effluents
Water quality of surface water and ground water as per IS: 10500, and mine discharge water</td><td>One mine sump water sample from the mine workings, three potable water samples from the</td><td>Water quality of surface water and ground water as per IS: 10500, and mine discharge water samples</td></tr>
</table>

<table>
<tr><th>Sl. No.</th><th>Description of parameters</th><th>Location</th><th>Schedule and duration of monitoring</th></tr>
<tr><td></td><td>samples will be compared with MoEF&CC Schedule-VI standard.</td><td>nearest villages and three pond water samples as follows:
<table>
<tr><th>Sl</th><th>Name</th><th>Coordinates</th></tr>
<tr><td>1</td><td>Mine sump</td><td>21° 3'25.15"N 71°41'9.17"E</td></tr>
<tr><td>2</td><td>Near Cement Plant, Padhiarka</td><td>21°1'30.68"N 71°40'52.38"E</td></tr>
<tr><td>3</td><td>Padhiarka Village(Near Padhiarka Doliya Road)</td><td>21°2'3.14"N 71°40'46.73"E</td></tr>
<tr><td>4</td><td>Vangar Village (Near Primary School)</td><td>21°2'34.81"N 71°39'29.30"E</td></tr>
<tr><td>5</td><td>Malan bandhara near Khared</td><td>21°2'20.87"N 71°44'42.04"E</td></tr>
<tr><td>6</td><td>Arabian Sea Near Doliya</td><td>21°0'24.22"N 71°41'10.75"E</td></tr>
<tr><td>7</td><td>Malan River Near Barpara, Mahuva</td><td>21°4'46.23"N 71°46'36.42"E</td></tr>
</table></td><td>will be compared with MoEF&CC Schedule-VI standard.
Once in three months</td></tr>
<tr><td></td><td>Ground water level</td><td>10 Locations
<table>
<tr><th>Sl.</th><th>Name</th><th>Coordinates</th></tr>
<tr><td>1</td><td>Samadhiyala No-1</td><td>21°1'30.98"N, 71°38'25.11"E</td></tr>
<tr><td>2</td><td>Samdhiyala No.-1</td><td>21°1'11.23"N, 71°38'35.90"E</td></tr>
<tr><td>3</td><td>Mota Pipalva</td><td>21°4'1.26"N, 71°38'10.84"E</td></tr>
<tr><td>4</td><td>Nana Pipalva</td><td>21°3'28.38"N 71°38'40.85"E</td></tr>
<tr><td>5</td><td>Doliya</td><td>21°0'39.95"N 71°41'12.16"E</td></tr>
<tr><td>6</td><td>Doliya</td><td>21°0'44.49"N 71°40'44.37"E</td></tr>
<tr><td>7</td><td>Doliya</td><td>21°0'43.94"N 71°40'42.40"E</td></tr>
<tr><td>8</td><td>Vangar</td><td>21°1'53.25"N 71°39'57.33"E</td></tr>
<tr><td>9</td><td>Vangar</td><td>21°1'51.88"N, 71°39'45.80"E</td></tr>
<tr><td>10</td><td>Vangar</td><td>21°2'24.74"N 71°39'12.27"E</td></tr>
</table></td><td></td></tr>
<tr><td>4.</td><td>Ambient noise level</td><td>Same locations as ambient air quality stations 4 locations
<table>
<tr><th>Sl.</th><th>Name</th><th>Coordinates</th></tr>
<tr><td>1.</td><td>Vangar village</td><td>21°2'46.96"N 71°39'10.78"E</td></tr>
<tr><td>2.</td><td>Padhiarka Near Cement Plant</td><td>21°1'29.37"N 71°40'52.70"E</td></tr>
</table></td><td>Once in three months</td></tr>
</table>

Sl. No.	Description of parameters	Location	Schedule and duration of monitoring
		3. Madhia village — 21°2'45.72"N 71°40'46.28"E 4. Nana Pipalva village — 21°3'50.46"N 71°38'19.48"E	
5.	Inventory of flora (Tree plantation, survival etc.)	Green belt and plantation	Continue till the mine life and mine closure period including post mine closure monitoring period
6.	Soil quality: Parameters: pH, conductivity, $CaCO_3$, specific gravity, moisture, sodium, potassium, textural classification, colour, organic carbon, organic matter, phosphorous, nitrate, calcium, magnesium	Green belt within Lease area and Agricultural land of nearest village Sl. / Name / Coordinates 1. Core Zone — 21° 2'49.63"N 71°40'23.09"E 2. Vangar Village — 21° 2'34.19"N 71°39'29.25"E 3. Near Cement Plant Padhiarka — 21°1'30.36"N 71°40'53.93"E 4. Padhiarka Village(Near Padhiarka Doliya Road) — 21°2'1.66"N 71°40'47.71"E	Once in three months
7.	Land reclamation	Within lease	Throughout life & till fulfillment of action plan of EMP and mine closure plan
8.	DG Stack	Two samples at DG stack exit Sl. / Name / Coordinates 1 / DG1 / 21°03'21.50" 71°40'55.31"	Once in 6 months
9.	DG Noise	Two samples at DG stack exit Sl. / Name / Coordinates 1 / DG1 / 21°03'21.50" 71°40'55.31"	Once in 6 months

Note: The above frequency can be increased as per directions from SPCB/ MOEF&CC

The environmental monitoring activities will be recorded; hence, the following documents will be maintained for record, as applicable:

i) Log sheets of operation and maintenance of pollution control facilities/ equipment (dust suppression, water tanker).

ii) Instruction manual or guidelines for operation and maintenance of pollution control facilities/ equipment.

iii) Statutory records as per the environment related legislations such as Environment Protection Act & Rules, EIA Notification, Air (Prevention and Control of Pollution) Act, Water (Prevention and Control of Pollution) Act and others.

iv) Monthly and annual progress report.

v) Two times a year compliance report for Regional office, MoEF&CC.

vi) Annual Environmental Statement and compliance of Consent conditions for State Pollution Control Board.

6.4 BUDGETARY PROVISION FOR ENVIRONMENTAL MANAGEMENT

Capital cost estimated for EMP

Adequate budgetary provisions have been made by the Company for execution of environmental measurement plan. **Table No. C6-2** and **C6-3** give overall investment on the environmental safeguards and recurring expenditure for successful monitoring and implementation of control measures (including reclamation).

TABLE NO. C6-2: CAPITAL INVESTMENT FOR ENVIRONMENTAL PROTECTION IN LAKHS

Sl. No.	Particulars	No.	Total
I.	**Pollution control**		
1.	Dust suppressor (surface miner)	1	10.00
2.	Water sprayer (Stationary)	5	0.50
3.	Water sprayer (Mobile)	1	8.00
4.	Septic tanks / Soak Pits	6	0.60
5.	Garland drains, retaining wall, check dams	1	5.00
	Sub total		**24.10**
II.	**Pollution monitoring**		
1.	Respirable dust sampler	2	1.60
	Sub total		**1.60**
III.	**Occupational health**		
1.	Fire fighting equipment (Portable)	LS	0.50
2.	Personal protective equipment (goggles, gloves, helmets, safety boots etc)	90	0.60
	Sub total		**1.10**
IV.	**Miscellaneous**		
1.	Environmental Studies, etc	LS	10.00
	Sub total		**10.00**
	Grand total		**36.80**

Annual cost of monitoring and implementation of control measures is given in **Table No. C6-3**.

TABLE NO. C6-3: RECURRING COST FOR ENVIRONMENTAL PROTECTION

Sl. No.	Particulars	Rs. Lakh/annum
1	Pollution control	9.54
2	Pollution monitoring	3.88
3	Occupational health	0.64
4	Green belt	5.10
5	Reclamation	11.39
6	Others (Environmental studies, Rehabilitation, Realignment, Expert advice etc.)	5.28
7	Overheads	0.30
	Total	**36.12**

Assumptions for cost calculation:

1. *300 working days with two shifts operation*
2. *Cost of diesel Rs 97.22/l and petrol Rs. 99.78/l*
3. *Cost of electricity Rs. 5.56/ unit*
4. *Life of mine 13 years*
5. *Manpower considered for cost estimation– 1 nos. Grade-I (salary - Rs 1,50,000/ month)- giving 10% of their time for pollution control (i.e. Assistant Mine manager). Grade-II (salary - Rs 50,000/ month)- 80% of Environment Officer and 60% of Safety Officer time to overall environment issues, 30% and 50 % of the time of 1 nos. Overman and 1 nos. Mining sirdar in Backfilling, rehandling and reclamation, and 100% of the time of 2 nos. i.e 1 Medical officer and 1 Dispensary staff in OHS and medical checkups in dispensary. Grade-III (salary - Rs 20,000/ month)-100% of the time of 1 no. chemist (water quality), 11 nos. various HEMM and pumps operator and 2 nos. Diploma engg from civil in monitoring, inspection etc., Grade- IV (salary - Rs 10,000/ month) 100% of total time of one Gardner for caring and inspection of green belt development and plantation on undisturbed area.*
6. *Debt: Equity ratio as part of total capital - 0*

The total investment on environmental improvement works is envisaged as Rs. 36.80 lakhs and recurring expenditure during the stage of production is Rs. 36.12 lakhs per year. The specific investment cost, therefore, comes to Rs. 2.5 /tonne of limestone. Annual budget has earmarked for social welfare measures as given in **Table No. C8-1**.

Expenditure in Post mine closure & financial assurance

For Financial Assurance M/s Nirma Ltd. Under Rule 27 of MCDR'2017, the area put to use for mining and allied activities will be 42.94 ha at the end of five years period of Progressive Mine Closure Plan. It amounts to a sum of 1,28,82,000/- (Rupees One Crore Twenty Eight Lakh Eighty Two Thousand only). The Mine Development and Production Agreement (MDPA) have been signed between the State Government and lessee. The lessee has deposited requisite an amount of Performance Security Rs. 7,30,94,556/- (Rupees Seven Cr. Thirty Lakh Nighty Four Thousand Five Hundred Fifty-Six Only) on 11.02.2022 in the form of Bank Guarantee vide Bank Guarantee No. 0415222BG0000038 with validity up to 11.02.2027.

CHAPTER 7
ADDITIONAL STUDIES: RISK ASSESSMENT, DISASTER MANAGEMENT PLAN AND PUBLIC CONSULTATION

7.1 RISK ANALYSIS AND DISASTER MANAGEMENT PLAN

All types of industries face certain types of hazards which can disrupt normal activities abruptly and lead to disaster like fires, inundation, failure of machinery, explosion, to name a few. Similarly, limestone mines also have impending dangers or risk which need be addressed for which a disaster management plan has been formulated with an aim of taking precautionary steps to avert disaster and also to take such action after the disaster which limits the damage to the minimum. The entire mining operation will be done under the supervision of the Mines Manager having first class mines managers' certificate of competency and supported by a team of mining engineers, Environment and safety officers.

Nevertheless, the following natural/industrial problems may be encountered during the mining operation:

- Inundation of the mine pit due to excessive rains.
- Slope failures at the mine faces or at stacks.
- Accident due to blasting.
- Accident due to plying of heavy mining equipment.
- Sabotage in magazine area.
- Accident due to fire.

As per proposal made under the Review of Mining Plan, during proposed working, the area will be developed by means of mechanized opencast method using Continuous Surface Miner (CSM) with combination of excavator/ loader and dumpers. Drilling and blasting is proposed for nearly 50% of the material handling. Exploitation and transportation of mineral are to be carried out by Mechanized means. Bench height is maintained up to 6.0 m heights. Maximum depth of working is (+1/+2 m AMSL). No high risk accidents like landslides, subsidence, flood etc. have been apprehended.

But possibility of accidental disaster is not ruled out. Therefore, all the statutory precautions should be taken for quick evacuation as per the Mines Act 1952, the Mines Rules 1955, MMR- 1961 and the MCDR-2017.

The mining operations will be carried under the Management and control of experienced and qualified Mines Manager having Certificate of Competency to manage the mines granted by DGMS. DGMS have been issuing standing orders and circulars to be followed by the mine management in case of disaster if any.

In order to take care of the hazards/disasters, the followings will be strictly followed:

- Working of mines as per approved Review of Mining plan with Progressive Mine Closure Plan.
- All safety precautions and prevention of MMR 1961 will be strictly followed during all mining operations.
- Regular maintenance and testing of all mining equipment as per manufacturer's guidelines.
- Provision of adequate capacity pumps for pumping out water from the mining pit with standby arrangements.
- Checking and regular maintenance of garland drainage and earthen bunds.
- Proper number of notice boards in English / Hindi and Gujarati will be placed warning: No unauthorized persons to trespass the area.
- Periodic checking of worthiness of fire fighting and first aid provision in the mining area.
- Training and refresher courses for all the employees.
- Cleaning of mining faces regularly.
- As a part of disaster management plan, a rescue team will be formed by imparting specialized training to select mining staff.

A check list depicting likely disaster events due to the mining activity is presented in **Table No. C7-1**.

TABLE NO. C7-1: CHECK LIST FOR LIKELY DISASTER IN OPENCAST MINES

Sl. No.	Activities	Human Risk		Ecological Risk		
		Severe	Non – severe	Land	Air	Water
1.	Extraction of mineral		✓	✓	✓	✓
2.	Removal of Soil and Storage		✓	✓	✓	✓
3.	Transportation of mineral on Haul Road	✓		✓	✓	
4.	Use of Machinery		✓	✓	✓	
5.	Drilling and Blasting	✓		✓	✓	

Although, the occurrence of a disaster is rare, still it is necessary to draw an action plan as a contingency measure as explained in subsequent sections.

7.1.1 Inundation

To guard against the danger from inundation in the mine from surface water including in-rush of water in rainy season, adequate number of pumps of required capacity and HP will be installed to pump out the rainwater continuously from mining area. A diesel generator will be provided for un-interrupted supply of power to the pumps in the event of failure of power. At the conceptual stage of mining, excavated mining pits will be left for rain water collection. However, whatever quantity of water gets collected from rains will be pumped out from the mine sump.

As the mining Plan (ultimate pit limit) is proposed up to (+) 1 m/2m AMSL. Water level in the area ranges between (+)3.0m to (-)3.0m AMSL. During next five years, mining shall be carried out up to 13.0m AMSL the level of limestone and marly limestone both encountered. Thus, the mining pit will not have mine seepage atleast next 5 working year except direct rainfall. During conceptual period when ultimate pit bottom limit will be upto +1/2 m AMSL, the mine seepage will occur during post-monsoon season only. Considering the annual rainfall of 718 mm over a pit area of 197.0 ha, the total direct rainfall accumulation can be 1.4 MCM. Assuming, 50% losses to seepage and evaporation 0.7 MCM per annum can be available for plantation and agriculture use.

To protect the mine workings from surface water flow during the rains, fresh garland drains shall be made before every monsoon at the periphery of active edges of quarry. Settling tanks of adequate capacity shall be made on surface. Mine water shall be pumped to it and after settlement and proper treatment, shall be discharged into nearest nala/bandhara. The sump shall be made at one end of strike on the floor of the quarry and will be periodically cleaned. The working benches shall be graded suitably so that the entire water will flow down to the sump.

The water accumulated in mine pits will be dewatered and used for greenbelt, dust suppression etc. If still water remains surplus, the same will be utilized for irrigation by nearby farmers and recharge to ground water as feasible. Therefore, the quantity of water encountered during mining will also have positive impact on ground water regime and no external source of ground water will be required for mining activities and water quality improvement is expected in ground water.

7.1.2 Slope failure

As the rock is hard compact and sides will be properly benched the chances of landslides are not there. There will be no tailing dam.

The rocks are blasted to win the mineral causing cracks and opening in natural binding. Such loose rocks may fall at any time causing damage to human life and machinery. The only remedy to the affect of such situation is to dress the blasted part. All necessary precaution will be taken as per Reg. 115(1) of MMR 1961 to avoid any disaster.

Sliding of waste dump is an equally severe risk like quarry slope failure. But there is no overburden, so question of waste material handling and dumping does not arise.

7.1.3 Risk due to fire

No surface fire is involved in the mining operation. In case of forest, fire may result due to dry leaves and wood in vegetated part and result in a disaster. In the area under reference, there is no such situation and there is no danger of forest fire. No oil, grease, canvas or other inflammable material will be stored in mine except in a fire-proof receptacle.

Sufficient fire extinguishers will be installed in HEMM as well as at selected locations on surface like Electrical Sub-stations, Garage, Diesel Depot, Stores, etc. Besides this, sufficient number of water hydrants with sufficient hose pipes will be made available in the permanent building such as office for fire fighting.

7.1.4 Possible dangers due to storage and handling of explosives

Mainly slurry explosives and ANFO will be used for blasting. Since ANFO is cheaper and economical, it will be used as much as possible except in rainy season. Delay detonators or Nonel detonating fuse will be used since multi row system of firing will be carried out so as to reduce the ground vibration, noise, fly rock etc. due to blasting.

In order to avoid fly rocks and other blasting hazards the secondary blasting is not recommended. However for secondary breakage of oversized boulders hydraulic rock breaker shall be utilized. Blasting parameters for limestone having 6 m average height.

Explosives will be stored in magazine approved by Controller of explosives. Licensed explosive van duly approved in writing by the Controller of explosives will be used for transporting explosives from magazine to the priming station or the site of blasting. The actual quantity of explosives in original cardboard packing will be transported just before the commencement of charging of holes. Fire extinguishers for petroleum fire & the other of CO_2 under pressure type for electric will be kept.

An Explosive Magazine under Explosive Rules 2008 for the storage and use of explosives is provided and maintained in nearby lease hold area in Gujarda mine which shall be common for all mines. Proper watch and guard will be kept, hence no danger from the magazine exists.

Precaution during firing

- The shots shall be fired by the Blaster only
- The shots will be fired during the rest interval (12.00 noon to 1.00 pm)
- Danger zone falling within a radius of 500 m will be marked. Guards shall be posted with red flags to all the directions to prevent approaching of any person & cattle.
- Warning through hooters to all concern within the danger zone will be made.
- Blasting shelters, made of iron sheet of adequate strength will be provided.
- In the event of misfire, the place will be marked with a red flag and dealing with misfire & reliving holes will be carried as per the procedure laid down as per Regulation 167 of MMR- 1961.

7.1.5 Explosion/ Storage of explosives in the magazine

An Explosive Magazine under Explosive Rules 2008 for the storage and use of explosives is provided and maintained in nearby lease hold area which shall be common for all mines. The capacity of the proposed explosive magazine is yet to be decided.

The explosive magazine will be designed in such a manner that normal chances of fire inside the magazine are ruled out. Still following precautions will be taken:

1. Controlled blasting shall be practiced by competent persons
2. Column shall be stemmed and it would not be less than the burden
3. Boundaries of danger zone shall be marked by sign boards
4. Signals by way of whistle, red flag, shall be given at the time of blasting
5. Blasting time shall be fixed and its intimation shall be given to the adjoining villagers.
6. Portable shelter for protecting the shot firer shall be provided
7. NONEL is to be introduced to control the flying rocks, reduce vibration and over pressure within the control/ permissible limit
8. Blasting by NONEL will reduce dust becoming air borne hence will control pollution of ambient air quality
9. No blasting shall be carried out within 300 m of any surface structure of permanent nature, if any without prior permission of DGMS
10. Blasting timing shall be during shift change.

11. Danger zone shall be marked with red flags and santries shall be posted at all access roads and entry points
12. Man and machinery shall be removed to safe distance
13. PPE shall be used during blasting
14. Loose stone shall be removed from bench floor
15. Bottom initiation and delay in each hole shall control the throw of the blast and also reduces the ground vibration and noise due to air blast over pressure.
16. Every blast shall be monitored for vibration/ AOP with DGMS approved norms

7.1.6 Accidents due to machineries / equipments

Most of the accidents occur during transportation by dumpers and trucks. The accidents due to other heavy vehicles are often attributable to mechanical failures, in which the human error factor cannot be ruled out. Mining machineries would be kept well maintained and in good running order. Regular monitoring of condition of equipment and its timely maintenance as per condition will be done. Wrong or careless operation of machines can also cause accidents, thus, only trained personnel shall be allowed to operate the machines. Unauthorized riding on moving vehicles should be prohibited and effectively enforced.

7.1.7 Accident due to cyclone

As the area is close to coast, there are chances of hitting of cyclone which may cause:

- Flash floods
- Damage to life and property
- Disruption of road & telecommunication facilities.
- Lightning

7.2 CARE AND MAINTENANCE DURING TEMPORARY DISCONTINUANCE

Mining lease is fresh grant. At the time of temporary discontinuance of mining operations, notice (as per Rule 28 of MCDR, 2017 & Reg. 6 of MMR, 1961) will be sent to IBM and Mines Safety authorities. Notice will be accompanied as per Rule 28 of MCDR, 2017, vide, Form No. E. All precautionary steps will be taken into account in respect of care and maintenance.

In case of any temporary discontinuance due to court order or due to statutory requirement or any other unforeseen circumstance following measures for care and maintenance and monitoring of status shall be taken.

- Notice of temporary discontinuance of work in mine shall be given in case the discontinuance exceeds six days to the Controller General Controller of Mine and the Regional Controller, IBM and DGMS Officials.
- All the mining machinery shall be shifted to a safe place.
- Entrance to the mines or part of the mines to be discontinued shall be fenced off and security guards shall be posted for the safety and to restrict any unauthorized entry to the area.
- Competent persons shall inspect the area regularly.
- Air, water and other environmental monitoring shall be carried out.
- Care and upkeep of plantation done shall be carried out on regular basis.
- Status of the working and monitoring for re-opening of the mines shall be discussed in weekly meeting on last working day of the week.

In case of discontinuance due to any natural calamities mining operation will be restarted as early as possible after completing rescue work, restoring safety and security and repairs of roads. To meet any emergency a Disaster Management Plan will also be prepared widely circulated and training through rehearsals and mock drills shall be done.

7.3 DISASTER MANAGEMENT PLAN

However to meet any emergency, a Disaster Management Plan shall be prepared widely circulated and training through rehearsals and mock drills shall be conducted. The objective of the Disaster Management Plan is to make use of the combined resources of the mines and outside services to achieve the following:

- Effect the rescue and medical treatment of casualties.
- Safeguard other people.
- Minimize damage to properly and the environment.
- Initially contain and ultimately bring the incidence under control.
- Identify any dead.
- Provide authoritative information to the News media.
- Secure the safe rehabilitation of affected area.

The mine will be a captive limestone mine located close to the cement plant equipped with following facilities:

1. Fire fighting station with fire fighting trucks and staff.
2. Well equipped hospital
3. Ambulance.

4. The lease with its own facilities will be capable of handling any emergency. However in case of need help of Administrative, Govt. Hospital and police from Mahuva town can be taken.

A senior most executive will be heading the emergency organization. He will work as site controller. Agent-Mines nominated by owner shall be overall responsible person. Mine Manager will work as incident controller to organize the team for controlling the incident with the person under his control.

7.3.1 Earthquake

The area falls in the seismic active zone-III which is moderate seismic zone hence following precautions shall be taken for earthquake:-

a. Before an Earthquake

1. All the civil construction is proposed to be carried out with design which will be able to withstand seismic activities.

2. Provision of fire extinguisher, first aid kit, a battery-powered radio, a flashlight and extra batteries at site.

3. Not to leave heavy objects on shelves.

4. Anchoring of heavy furniture, cupboards and appliances to the walls or floor.

b. During an Earthquake

1. Stay calm! If anybody is indoors, stay inside and if outside, stay outside.

2. If anybody indoors, to stand against a wall near the centre of the building, stand in a doorway, or crawl under heavy furniture (a desk or table). Stay away from windows and doors.

3. If anybody outdoors, stay in the open away from power lines or anything that might fall. Stay away from buildings (stuff might fall off the building or the building could fall on you).

4. Not to use matches, candles, or any flame.

5. If anybody is in a vehicle, stop the vehicle and stay inside the vehicle until the earthquake stops.

7.3.2 In Case of Fire at Mine

Sufficient fire extinguishers will be installed at selected locations on site. Besides, numbers of water hydrants with sufficient length of hosepipes will be

made available at the surface for fire protection. Any person when notices any sign of fire shall immediately take steps to give warning by blowing the siren continuously and take steps to extinguish the fire by using appliances available near the site. To avoid any fire hazard all heavy earth moving equipment shall be provided with fire fighting equipment. Personnel shall be given proper training in fire fighting and mock rehearsals shall be conducted.

In the case of a major fire but without explosion risk (e.g. an oil storage tank), only houses close to the fire are likely to need evacuation, although a severe smoke hazard may require this to be reviewed periodically. But if the fire escalates it might be necessary to evacuate people nearby, but only if there is time; if insufficient time exists, people would be advised to stay indoors and shield themselves from the fire while measures are taken by those outside to douse fire.

7.3.3 Explosion & Accidents

To deal with accidents efficiently and quickly, steps shall be taken immediately through warning by suitable means and at the same time take necessary action for withdrawal of men from the site with information to the Mines Owner and other officials without any delay.

To avoid all these disasters at working place and to minimize their effects following precautions shall be taken and arrangement shall be made at the working place.

(i) Periodical maintenance of mine machineries.
(ii) The persons shall be trained properly to handle the situation.
(iii) Detailed warning system, implementation procedure, emergency control centre shall be maintained at the mine with names of trained persons.
(iv) Details and availability of heavy machinery, fire-fighting equipment shall be available at the site.
(v) Proper arrangements shall be made for treatment of injured person, if any.
(vi) All the safety equipment shall be available at the mine.

7.4 OFF-SITE EMERGENCY PLANNING

The complete mining operation will be carried under the Management and control of experienced and qualified Mines Manager having Certificate of Competency to manage the mines, granted by DGMS. Standing orders and circulars issued by DGMS shall be followed by the mine management in case of disaster, if any.

Communications: Identification of personnel involved, communication centre, call signs, network, list of telephone numbers.

Special Emergency Equipment: Details of availability and location of heavy lifting gear, bulldozers, specified fire-fighting equipment, fireboats.

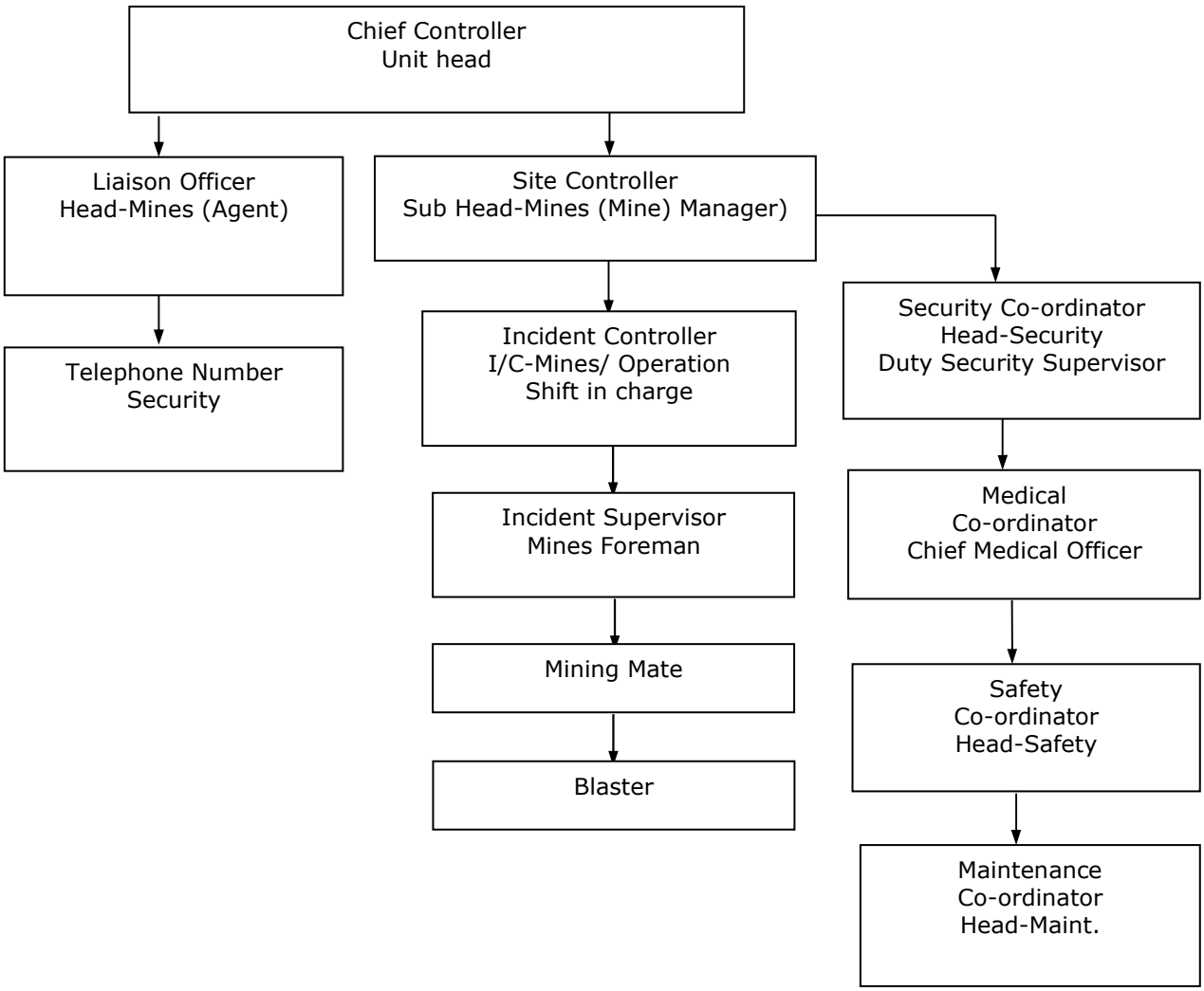
Voluntary Organizations: Details of organizers, telephone numbers, resources, etc.

Meteorological information: Arrangements for obtaining details of weather conditions prevailing at the time and weather forecasts will be made.

Humanitarian Arrangements: Transport, evacuation centres, emergency feeding, treatment of injured, first aid, ambulances, temporary mortuaries.

Details of Emergency Co-ordinating Officer: Name of Person, designation, their contact no. and address, etc.

FIG NO. C7-1: ORGANISATION CHART



Role of the Local Authority

Appointment of an Emergency Planning Officer (EPO) to carry out all this duty as part of the EPO's roles in preparing for a whole range of different emergencies within the local authority area. The EPO will need to obtain the information to provide the basis for the plan.

Role of the Police

Formal duties of the police during an emergency include protecting life and property and controlling traffic movements. The functions include controlling bystanders, evacuating the public, identifying the dead and dealing with casualties and informing relatives of dead or injured.

Role of the Fire Authorities

The control of a fire is normally the responsibility of the senior fire brigade officer who would take over the handling of the fire from the site incident controller on arrival at the site.

Role of the Health Authorities

Health authorities, including doctors, surgeons, hospitals, ambulances and so on, have a vital part to play following a major accident and they should form an integral part of any emergency plan.

Roles of the Government Safety Authority

The Inspectors of Director General of Mines Safety may want to satisfy themselves that the organization responsible for including the off-site plan has made adequate arrangements for handling emergencies of all types including major emergencies.

In the event of an accident, local arrangements regarding the role of the factory inspector will apply. In the aftermath, factory inspectors may wish to ensure that the affected areas are rehabilitated safely.

To deal the above emergency, the following steps will be taken as per emergency plan.

1. Establishment of control rooms

a) Forward (site) control room

The site control room will be Shift Incharge Room, which has got the facilities of telephone wireless communication systems. 1 man will be made the Incharge of the site (forward) control room and who will give the updated information to all the appropriate authority and to the base control room.

b) Base Control Room

The Base Control Room will be in the security officer's room at the main gate (Works) where any information is to be given to the either local authority, local hospital, local police station or to District Magistrate.

2. Provision of infrastructure facilities

The Base Control Room will be informed about the emergency to the Stores Incharge & store Incharge will immediately on receipt of such information will keep open the store. A list of item (normally used for the Rescue Operation) will be made separately and store separately.

The Stores Incharge will ensure that all the items are always readily available. In addition to this the other infrastructure like Crane, Chain Pulley block, Pumps, Ropes etc. will also be arranged as per requirements. In case any of the items which are not available, the Stores Incharge will make necessary arrangement for its local purchase.

3. Duties & responsibilities of emergency personnel

a) Giving of warning

Duty of work person

Any work- person / machine operator who notices any abnormal situation in this mine like outbreak of fire in machinery or elsewhere, sudden inrush of water, slope or bench movement etc., shall take immediate steps to give warning by fastest possible means to the nearest available mine official.

Duty of mine official

The mine official receiving the warning shall send warning by caster possible means to (a) Senior official (b) Manager (c) Mechanical Engineer (d) other part of mine (e) Time keeper & person incharge of sounding siren.

Duty of timekeeper

On receiving Information about the emergency, the Timekeeper and the person incharge of sounding siren shall be sire by a special code. The Timekeeper shall take steps to warn the emergency dealing squad like fire-fighting crew and also rescue team.

Duty of emergency crew & rescue personnel

On hearing the warning signal they should immediately collect at the site control room.

Duty of Manager

On receipt of information about emergency the manager shall send information to (a) Rescue station, if located nearby (b) DGMS (c) Senior officers of Management (d) District Magistrate (e) Police Station and also establish a control rooms with one Asstt. Manager - Incharge of the site control room with proper briefing.

b) Withdrawal of persons & machinery

Duty of mine officials

On receipt of warning of emergency, the mine officials shall forthwith withdraw all persons from their working places and the Mechanical Engineers with his crew/operators shall make arrangement to withdraw all machinery to a safe place. Withdrawal shall be in an orderly manner.

Restriction of employment

No person other than those duly authorised by Manager and Management shall enter in the mine for the purpose of dealing with emergency. Timekeeper shall record in his register the entry to and exit from the mine of any authorised person.

Dealing with emergency

All work of dealing with emergency shall be conducted strictly as per Instruction of the in the control room.

Duty of surveyor

He shall keep ready all plans required at the site control room. He shall prepare a team for undertaking any survey and in case of impending slope failure, monitor the ground movement. He shall keep a list of mines to be approached for voluntary rescue team or other resources.

Duty of welfare officer/ personnel officer

He shall report to the site control room. He shall arrange for accommodation for rescue teams. organize canteen facilities, blood donation, identification of dead bodies etc.

Duty of medical officer

He shall report to the site control room, room, requisition series of doctors from the adjoining mines/ areas, be ready with medical staff to attend to the injured, inform central or district hospitals to receive serious cases, requisition ambulance from adjoining mine/hospitals, arrange for blood collection (list of blood donors shall be mentioned in each.

Duty of security personnel

They shall report to the base control room, cordon off the entrance to the mine, maintain law and order and assist police and arrange for guarding the dead bodies till these are sent for post-mortem examination.

Duty of stores incharge

He shall check the materials on the emergency list, send the list to the control rooms, wait for instruction for procurement of more materials promptly, issue material on receipt of requisition slip by site control room.

Duty of maintenance engineer

They shall report to the site control room, carryout duties assigned to him, arrange mechanical crew for all the two shifts.

Duty of transport officer

He shall report to the both control rooms, keep all light and heavy vehicles ready if necessary requisition more vehicle from adjoining mines, organise transport of men and materials from other mines/places.

Duty of canteen manager

He shall report to both control rooms, arrange supply of tea, snacks, meals etc. for all involved personnel in emergency dealing work.

7.5 SUMMARY OF THE PROCEEDING OF PUBLIC CONSULTATION

Public Consultation is one of the important aspects of environmental impact assessment which is covered under MoEF&CC Notification on environmental clearance issued on 14th September 2006. The aspect of public consultation is followed as per said notification.

The Gujarat Pollution Control Board, Gandhinagar issued an advertisement in Gujarati Daily News Paper "Sandesh" and in English News Paper "The Indian Express" dated 26.03.2023 to conduct the public hearing in respect of M/s Nirma Limited's proposed Limestone Mining project Vangar & Madhiya (Mine Lease area: 612.1336 Ha., 1.6 MTPA ROM) at village Vangar & Madhiya, Taluka: Mahuva, Dist. Bhavnagar on 28.04.2023 at 09:30 hrs. at the premises of Nirma Cement Plant Area, NH 8E/51, Survey No. 80, Village: Padhiyarka, Taluka: Mahuva, Dist. Bhavnagar on the basis of the prepared draft EIA/EMP report, which included the terms of references prescribed by the Ministry of Environment, Forest & Climate Change.

Shri R.K. Mehta (IAS), District Collector and District Magistrate, Bhavnagar presided over and supervised the entire public hearing process, assisted by Shri

A.J. Rathod, Regional Officer, Gujarat Pollution Control Board, Bhavnagar. The copy of information of public hearing published in local newspapers is given in **Annexure XXX.**

Public Hearing was done according to rules and regulations of EIA Notification 2006 and its amendments. During the course of Public Hearing, the guidelines for Covid-19 were duly followed. The summary of the proceedings of the public consultation and the actions taken or to be taken by the company are covered in this section. Various points were raised by the local people during the public hearing. The same have been replied to and the points requiring action from the Company have been clearly addressed and their execution outlined. 887 people attended the public hearing proceedings and about 18 people gave their views/suggestions/comments orally and 71 written queries/suggestions/comments were received before and on the date of public hearing. On behalf of Nirma Ltd. Shri G. J Adroja, Vice President, welcomed all present in public hearing. Thereafter, Ms. Tejalben Patel, Sr. Manager, (Environment) at Nirma Ltd gave brief description of the proposed project through a power point presentation in Gujarati language.

Public Hearing details of the proposed Vangar & Madhiya Limestone Mine, including list of attendees, proceedings/minutes of public hearing in English and Gujarati, points raised by the general public and commitments made by project proponent are given in **Annexure XXX.**

TABLE NO. C 7-2: STATEMENT OF MAIN ISSUES RAISED BY THE PUBLIC AND COMMENTS OF THE PROJECT PROPONENT

PART A : ORAL REPRESENTATIONS SPOKEN DURING PUBLIC HEARING (GIVEN IN ANNEXURE B OF PH MINUTES)

Sl.	Name and Address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
1.	Hamirbhai Rudabhai Shiyal (Mantri-Shri Mahuva Bandhara Khetivadi Paryavaran Bachav Samiti) Vangar village	Following issues were read out by him from his written submission given in Annexure C24 of PH minutes given in Annexure XXX of this EIA: (1) Pursuant to the order dated 18/03/2011 by Hon'ble Supreme Court, the Ministry of Forest and Environment, Government of India, New Delhi constituted expert committee of 9 (nine) members chaired by Prof. C. R. Babu and as per the Ministry of Environment and Forest Order No. L-11011/7/2008-A-II(1) constituted an expert committee of 7 (seven) members under the chairmanship of C. K. Varshney. Both these expert committees have given a report that the land in these mining lease area to be "Wet Land" (fertile). Copies of both the reports are enclosed herewith. (Annexure-1 and 2*) (2) Land of mining lease included Survey numbers of privately agricultural land owned by the farmers without their consent. Leases are executed by the District Collector, Geology & Mining Department, Bhavnagar and M/s. Nirma Limited, Ahmedabad for all the three mine leases in Sub Registrar Office, Mahuva. All the three lease deed has been registered as per document no. 56, 57 and 58	D24	(1) The report of Professor C.R.Babu Committee and Professor C.K.Varshney Committee constituted by the Ministry of Environment and Forest, in which the land in this area was shown as wetland. This report has not been considered by the Hon'ble NGT vide Order dated 14/01/2015 and has dismissed the cancellation order of EC issued by Ministry of Environment and Forest, Government of India, New Delhi. Also, as per the latest Ramsar Convention site released in Nov' 22, the core zone and buffer zone of the proposed mining lease area are not covered as wetlands. A copy along with detail reply is enclosed at page D 24 of Annexure- (C2) of public hearing documents given in **Annexure XXX** of this report. (2) The State Government grants mining leases in limestone bearing areas with the prior approval of the Central Government through the Department of Industries and Mines. Mineral rights in all types of land are held by the Government. According to which the State Government has approved the mining lease. However, company will not acquire agricultural land for mining without consent of farmers. If the farmers want to sell/ give consent for their
2.	Mohanbhai Makwana (President-Mahuva Taluka Rural-Bhartiya Janata Party) Gujarda village		D29	

Sl.	Name and Address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
		on 11.01.2017. Most of these lands are privately owned by farmers, where cultivation takes place. Farmers here do not want mining lease in their fertile land and do not want to give land for mining. The company cannot purchase the above land for mining lease. Not a single farmer wants to give his land without consent. All the farmers included in the lease have signed an affidavit to not sell their land for mining. Copies of affidavits made by farmers are enclosed herewith. (Annexure-3*) (3) Within radius of 5 km of the sanctioned mining lease area, there are three major reservoirs (Samdhiyala Dam, Malan Dam and Nikol Dam). The water of these reservoirs is used in the agriculture fields and ground water level remains good, so that agriculture area is richly irrigated. Farmers get three crops per year, so the farmers here have not agreed to give land for mining. Large number of native birds live in these water bodies, it is totally inappropriate to give environmental clearance to mining in the vicinity of such water bodies. Copies of Irrigation Department report detailing the three reservoirs and details of birds and photographs of reservoirs and agricultural crops are enclosed. (Annexure-4*) (4) The area surrounding the proposed mining lease land is declared as Reserve Forest		land for mining at market rates/commercial negotiation, the project proponent may, accordingly, purchase the land/take consent of the land owner for mining that land. Thus, mining will be done in that land only after getting the consent of the land owner. (3) Malan Bandhara and Samdhiyala Salinity ingress control bund are located within 10 km of the mining lease area and the mining lease is granted as per existing Acts and Rules. The water catchment area of Malan and Nikol Bandhara as well as the benefited areas are not included in the granted mining lease area. The purpose of the Samdhiyala Salinity Ingress Control Bund is to prevent the rising of salty sea water towards the land. It has been planned that where the rain water is collected, to increase the storage capacity of the bund and to facilitate the flow of water in the salinity control bund, three canals will be constructed around the cement plant. As per suggestion/advice of Irrigation Department, company will deepen the proposed land towards the Bandhara to increase water storage. No reservoir is located in any of the three mining lease areas. Apart from this, environment and all related rules and regulations will be followed during mining.

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		(Brihadgir area) as per Government of Gujarat, Forest and Environment Department, Gandhinagar's Resolution no. WLP-117-57R-G.1 dated 18/05/2007. Forest Land is located at a distance of only two-three km from the mining lease land and the area is currently inhabited and roamed by lions as well as Schedule-I animals. As proof of this, the observation information given by the Forest Office, Mahuva is enclosed herewith. (Annexure-5*) (5) Government waste lands of all these seven villages are included in the mining lease. In all these villages there is a reduction in gauchar land in proportion to the number of cattle according to the guidance of the Hon'ble Supreme Court. Therefore, the gram panchayats of the seven affected villages as well as the cattle owners are not agreeing to give government waste land for mining lease and under that it is inappropriate to give environmental clearance to the Company. For this Resolution passed by Gram Panchayat are enclosed herewith. (Annexure-6*) (6) The natural wall of limestone in this area is an advantage to us in the form of a belt during natural calamities, which protects the entire area. Moreover, since the area in question is located on the sea coast, the ingress of salinity is happening very fast. The situation will worsen, if the coastal belt is		(4) No "Bruhadgir Vistar" has been declared as Reserve Forest in resolution of the Department of Environment and Forest, Gandhinagar. Further, the Deputy Conservator of Forests (DCF) has certified by its letter dated 09.11.2020 that "No National Park, Sanctuary, Biosphere Reserve, Wildlife Corridor, Ramsar Site, Tiger/Elephant Reserve is present within 15 km of the mining lease area". A copy of DCF's letter covering the area of all three mines is attached herewith in reply enclosed as Annexure-D24 of public hearing documents given in **Annexure XXX** of this report. (5) Mining leases are granted by the Government after obtaining a land availability and recommendation report from the District Revenue Department for government land falling within the sanctioned mining lease areas. None of the mining lease areas fall within the Coastal Regulatory Zone (natural wall-buffer zone) and no excavation shall be carried out in this natural wall. Mining of limestone in the mining lease areas is planned to be carried out above the ground water level. Mining activities shall not in any way intersect the ground water. So there is no possibility of intrusion of sea water due to mining activities. In fact some of the pits from mining will be used as artificial recharge structures and this will improve the groundwater quality and prevent

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		broken, as this natural barrier controls the salinity of the area. (7) The company has taken permission for its water requirement from Gujarat Water Infrastructure Limited, Gandhinagar since 4th June 2008, which is now 15 years long and since all the conditions of the permission given have been violated, the water permission is considered as canceled. The company has not taken fresh or revised approval and has misled the competent authority by giving wrong details by including old approval letters as available source of water in TOR in EIA/EMP report of the proposed project, which is also ineligible to grant environmental clearance approval to the company. Letter dated 04th June 2008 of GWILL is enclosed herewith. (Annexure-7*) (8) The proposed mining project falls in the same area, in which the Environmental Clearance for M/s Nirma Limited's Cement Plant Environmental Clearance (Approval) is canceled by Ministry of Environment & Forests, Government of India, New Delhi's letter no. J-11011/992/2007-IA||(1) dated 01.12.2011. For the same land and area, the same company now wants to take environmental clearance approval for the mining project In such circumstances, it is not at all appropriate to grant environmental clearance.		the intrusion of more salinity and reduce the increased salinity. The Company itself handed over the approved connection of Narmada Pipeline to GWIL vide letter dated 01.07.2011 for conservation of water source. A copy of the same is annexed herewith in reply enclosed as Annexure-D24 (of public hearing documents given in **Annexure XXX** of this report). GWIL has not canceled the same. Once we receive environmental clearance, we will revive or re-apply the above GWIL permission. The land area of all the three mining leases and the land area of the cement plant are different. Also, the Hon'ble NGT vide its judgment dated 14.01.2015 has canceled the EC cancellation order of MoEF. Cement Plant Project is not included in present EIA Report of Mine, as both the EC applications are different. EIA Report has been preapred based on baseline data generation as per TOR issued by MoEF&CC. The State Government grants mining leases in limestone bearing areas as Mineral rights in all types of land are held by the Government. According to which the State Government has approved the mining lease. However, company will not acquire agricultural

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		In addition, the matter regarding cancellation of Environmental Clearances of said cement project is still pending in the Hon'ble Supreme Court, which is the same area and land for which environmental clearance is sought for the present mining lease. In this matter, the company has not mentioned anywhere in ToR of EIA/EMP for EC. A copy of cancellation of Environmental Clearance's letter is enclosed herewith. (Annexure-8*) M/s. Nirma Limited have not mentioned true and correct information and has given interest-oriented information in the EIA/EMP report based on ToR for environmental clearance of the questioned mining lease project. So this is to inform you that, all of us farmers/labourers/herdsmen have been farming in this area for years, happily supporting our families and we are very happy and are proud of that. The people of this area are determined to do whatever, to ensure that limestone is not mined out on the said fertile land as it is our motherland, the environment of the entire area is maintained well and we all sustain our livelihoods through agriculture and animal husbandry. If mining is done on such a large scale on our fertile land, the fertility of the land as well as agriculture and animal husbandry of the entire area will be destroyed and the crop production capacity of our area will decrease. This will		land for mining without consent of farmers. If the farmers want to sell/ give consent for their land for mining at market rates/commercial negotiation, the project proponent may, accordingly, purchase the land/take consent of the land owner for mining that land. Thus, mining will be done in that land only after getting the consent of the land owner. Additionally, Project proponent also informed that as per representations received from GPCB and Collector Office, following four points are common and are the questions of the people of this area. (1) About Private Land- Privately owned agricultural land can be purchased and mined by the company with farmer's/land owner's consent only. No land is to be acquired by the Government. If the land once sanctioned on lease by the Government, it doesn't mean that the villagers will lose the land and thus there is no question to migrate. (2) Salinity Ingress – Mining will only be done by leaving 500 meters from the High Tide Level (HTL) of the sea i.e. in half a km from the HTL,there will be no excavation in that area. There will be no change in the condition of the stone belt preventing salinity. Ground water will

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		have bad consequences for us in the future such as shortage of food grains, vegetables, agricultural products and such a victual situation will arise that we shall be forced to migrate on a large scale, which will have very bad effects on our family & culture, which we will not accept at all. Nature has blessed us by creating a wall of limestone beneath the land to stop the salinity of the sea. In the coastal areas of Gir-Somnath and Porbandar districts where such natural wall has been excavated, people are suffering with terrible consequences today. The salinity of the sea has penetrated several kilometers in the coastal areas and has destroyed water tables and agricultural lands. Thus, the people of this area are determined not to allow mining here at any cost. In such circumstances, taking into consideration the above facts and issues, the livelihood and health of the farmers and farm laborers, entire people, for the survival of the animals, birds, creatures, it is requested to stop the mining project and not to grant the Environmental Clearance. Our above objections are requested to be taken into consideration as we seven villages strongly oppose the granting of environmental clearance for mining lease to		not be intersected at any place resulting in no change in groundwater salinity due to mining. Mining will be done with eco-friendly surface miner only. Drilling-blasting will be required only in case of hard rock. Mining will be done as per mining plan approved by Indian Bureau of Mines (IBM). (3) Regarding Schedule-1 species & wetland-Government of India notify any places as Wetland/Ramsar Convention Site through study. No such site has been notified in or around the mining lease area as per notification of 2022. A conservation plan for wild life has been prepared in consultation with the Forest Department, Government of Gujarat which has been approved by the Principal Conservator of Forests, Government of Gujarat which will be implemented. According to the last 2016 declaration of Important Bird Area (IBA) for migratory birds, this mining lease area is not included in it. Even as per the judgment of the High Court, there is no wetland in this area and the Honorable NGT has also approved the same. (4) Regarding Environment protection-As you all are concerned about environment, the company is more concerned about the environment and it is our responsibility also. We assure that we are going to fulfil this responsibility sincerely. You

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		M/s Nirma Limited. * references annexed in the written submission		can see that the company has invited experts of different subject matter from all over the country for the EIA study. The company has a separate environment department to follow up all matters related to the environment. We are also responsibly improving the environment with the development of industries. Recently the Honourable NGT and Supreme Court have given important reforms to work in Eco Sensitive Zones (ESZ). From my side as well as from the company, we give an assurance that we will not cause any kind of damage to the environment and mining will be done in accordance with environmental regulations. First of all, mining will be started only in approved government waste land; no private land will be grabbed by the company or acquired by the government. With the above guarantee, we are present here to answer any other questions.
3.	Bharatbhai Naranbhai Shiyal (Member- Dudheri Taluka Panchayat Constituency), Dudheri Village	1. We are submitting a single representation for all 7 villages and 3 mines because we consider them to be a single mining unit since all the 7 villages comprising the 3 mines are contiguous (as is shown below), and therefore they cannot be treated as 3 separate units. 2. Doing so is not only misleading but illegal. The Project Proponent cannot and does not have any discretionary powers to thus splice the mining area and portray an incomplete and misleading picture of environmental loss and degradation and destruction of	D37	1. As all minerals under purview of State Government, the said mining leases has been granted as three individual mining leases by Industries and Mining Department by Government of Gujarat on 08.01.2017. Lease deed has been executed on 11.01.2017 as under. The three-mine lease area of Padhiyarka & Doliya, Vangar & Madhiya and Gujarda, Dudheri & Dudhala for the mining of Limestone in the area 332.24 ha, 616.1336 ha & 681.62 ha has been granted to the M/s Nirma Ltd. through the three different grant orders vide letter No. MCR-102004-1945-

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		livelihoods. 3. Hence at the outset we state that the 3 EPHs being held on 28th April 2023 are illegal and cannot and should not happen at all. Our letter dated 26th April 2023 to Secretary, MoEF&CC has already been sent to concerned authorities. With reference to that letter we had hoped that the EPH would have been canceled. 4. There are 3 mining projects by the same company in the area spread over 7 villages in the Mahuva taluka – one in villages Gujarda, Dudheri and Dudhala, second in Vangar and Madhiya, and the third in Padhiarka and Doliya (EIA p. C1-11 for all 3 reports). 5. The MoEF&CC also recognizes this fact. Which is why condition no. 8 of the ToR for Padhiarka and Doliya mine, condition no. 8 for Vangar and Madhiya mine and condition no. 9 for Gujarda, Dudheri and Dudhala mine has asked for a "**cumulative impact assessment** by considering all the mining activity … of the **mines** …. and should indicate the capacity of **each mine** considered for predication of air quality modeling…" (emphasis added): The Project Proponent needs to carry out the cumulative impact assessment by considering all the mining activity including the transport scenario of the mines in the		CHH, MCR-102004-1827-CHH & MCR-102004-1943-CHH dated 08.01.2017 by the Govt. of Gujarat respectively. 2. The State Government have sanctioned above mentioned three mining leases under the Mineral Act / Rules in mineral bearing area and as per Environment Act, the date of public hearing for environmental clearance of the above mentioned three limestone mining leases is fixed on 28.04.2023 by GPCB for conduct of Public Hearing. Three contiguous mine leases have been granted by the state government to the company and each mine lease is required to obtain a separate environmental clearance as per EIA Notification 2006. Therefore, no discretionary powers have been availed by the project proponent nor any portrayal done which is incomplete or misleading. 3. The State Government have sanctioned above mentioned three mining leases under the Mineral Act / Rules and as per Environment Act, the date of public hearing for environmental clearance of the above mentioned three limestone mining leases is fixed on 28.04.2023 by GPCB for conduct of Public Hearing after submission of Draft EIA report as per granted ToR from MoEF&CC.

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		study area and should indicate the capacity of each mine considered for predication of air quality modelling. The control case and worst-case scenario needs to be demonstrated with controlling factor and GLCs values for all the pollutants needs to be clearly mentioned. The input parameters used for the modelling also needs to be submitted. The PP, in their Compliance report (in the same table), has accepted that they have done a "cumulative impact assessment". If the impact is to be cumulatively assessed, why is it spliced into 3 mines? Alternatively, if the mine is to be reported separately, why does the ToR ask for a "cumulative assessment"? In this connection, the reporting in EIA is malafide. The EIA, on page C1-10 (all 3 reports) states that: "…since there are two other mines also proposed by Nirma Ltd. in the vicinity of … EIA/ EMP is also being prepared for the other two mines together, air quality stations were established giving due consideration to all three mines in core zone and buffer zone." The important fact to highlight here is that the EIA/EMP is not being prepared together only because Ms. Nirma Ltd. has proposed 2 other mines in the area, but is being done in fulfilment of a condition of the ToR. This fact is being suppressed here and hence it is malafide		4. The State Government have sanctioned above mentioned three mining leases under the Mineral Act / Rules and in mineral bearing area with prior approval of Central Government in 2008, subsequently in 2017. 5. The contiguity of the mine lease has been recorded in the documents submitted to the MOEF&CC, New Delhi during the process of obtaining Terms of Reference. As a consequence, the cumulative impact assessment has been prescribed at sl. no. 8 for Vangar & Madhiya and Padhiyarka & Doliya and sr. no. 9 for Gujarda, Dhudheri & Dudhala by MoEF&CC and the same have been complied while making draft EIA report. Therefore, no discretionary powers have been availed by the project proponent nor any portrayal done which is incomplete or misleading. Cumulative impact assessment has been carried out to comply ToR condition no. 8 & 9. Air quality predication modeling for Cumulative impact of 3 mines is given in EIA Report as follows: Doliya and Padhiyaraka mine: Annexure XXI and summarized in Section 4.4.1 (b) page 4-8, Table C 4.4, page 4-10 of EIA report. Gujarada, Dudheri and Dudhala mine: Annexure XXI and summarized in Section 4.4.1 (a) page C 4-8, Table C 4.4, page C4-11 of EIA report.

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		in its misleading presentation. 6. All 7 villages are contiguous villages (as shown in the taluka map above) and the buffer zone of one lease area becomes the core zone of the other lease area, and vice versa. This is made amply clear in Table C3-5 (Location of Air Sampling Stations, page C3-13-14) which provides the list of air sampling stations established to measure the Ambient Air Quality and the accompanying Figure no. C3-8 which establishes the proximity and contiguity of the 7 villages in the 3 mining lease areas. The separate EIAs are a ploy to hide the entirety of the bio-diversity, flora and fauna, endangered and protected wildlife as well as minimize (on paper) the tremendous loss of livelihoods and the irreversible damage to the water bodies, Samadhiyala salinity ingress control bund and the Malan reservoir being the most important, that the project will unleash. It is a ploy to ultimately mislead the Ministry and the public at large. Hence, our submission is that the entire mining operation over these 7 villages be treated as one project. Only then can the magnitude of the adverse impacts on water, water bodies, livelihoods, health, wildlife habitat, salinity ingress, coastal mangroves and marine life be accurately assessed. Treating the 3 mines as		Vangar and Madhiya Mine: Annexure XXI and summarized in Section 4.4.1 (b) page 4-8, Table C4-4, page C4-10 of EIA report Cumulative impact has been carried out because mines are close to each other. Mathematical modelling helps to predict impact on ambient air quality when all three mines will work simultaneously. This helps in taking preventive/ mitigative measures to improve parameters of ambient air quality within norms as per given in NAAQS 2009. This is condition of ToR point (viii) for Vangar and Madhiya, (ix) for Gujarada, Dudheri and Dudhala and (viii) for Doliya and Padhiyaraka mine. There is no malafide reporting in EIA. Three contiguous mine leases have been granted by the state government to the company and each mine lease is required to obtain a separate environmental clearance as per EIA Notification 2006. Company is following guidelines of Ministry of Environment, Forest & Climate Change, Govt. Of India in preparing EIA Reports. No fact has been suppressed nor any malafide nor misleading presentation is there. 6. Three separate EIAs have been prepared as three contiguous mine leases have been granted by the state government to the

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		separate means that the EIAs will be incomplete and hence inaccurate and misleading. Only a single EIA for all the 3 mines spread over these 7 villages would be able to bring out the real picture of the loss and degradation that will be caused to land, air, water and the life of the people of the area. Moreover, the mining operation by M/s Nirma Cement Ltd. in these 7 villages cannot be viewed in isolation and should be seen in conjunction with the mining operation by M/s Ultratech Ltd. in 13 villages of Mahuva and Talaja talukas. Seeing it thus reveals that the entire stretch of nearly 90-100 kms. of the coastline will be denuded of the limestone which acts as a natural barrier against coastal erosion and salinity ingress. Further, both these, i.e. Nirma Cement mines and Ultratech Cement mines, must be seen in conjunction with the following proposed mines running along the coast of Saurashtra: The above list is only a sample of the proposed mines which are to have a public hearing and does not include the already sanctioned and running mines. It is thus essential to see the entire		company and each mine lease is required to obtain a separate environmental clearance as per EIA Notification 2006. Company is following guidelines of Ministry of Environment, Forest & Climate Change, Govt. Of India in preparing EIA Reports. No fact is being hidden in preparation of EIA Reports. List of flora and fauna is given in Annexure XIII, Authenticated location map showing no presence of Wildlife Sanctuary/National Park etc in 15 km radius is given in Annexure XIV of EIA report. There is no perennial surface water body within the 3-mine lease area and hence there will not be any impact on surface water body within mining lease, except seasonal streams. Mining activity shall not take place outside ML area. Mining activities will not have any impact on Malan reservoir since all three mines are outside the drainage system of Malan. For Samdhiyala, the mines are planned to scientifically contribute so as water flow towards Samdhiyala will not disturb & increase its water storage capacity also.

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		peninsular coast as one geographical and geological unit to understand the cumulative impact of all such mining for the present and the future. Such massive mining of materials and destruction of the natural barrier of limestone will spell doom and destruction for the whole of Saurashtra. The impact of this destruction on flora, fauna, lion habitat, lion numbers, human misery and attendant migration will be irreversible and nearly permanent. From the development point of view this is neither sustainable nor responsible. This project cannot and should not be granted the EC. 7. Paltry and costly job creation The employment potential of this mine is mentioned in the EIA on page C2-28 and in tables C2-16 and C2-14. The total employment generation will be 84 (Gujardi, Dudheri and Dudhala), 55 (Padhiarka and Dolia) and 58 (Vangar and Madhiya) jobs only and for 11 years only. A total of 197 jobs!!! **The cost of 1 job is therefore Rs. 40,10,152/-**, calculated on the basis of the total cost of the mining which has been calculated as Rs. 79,00,00,000/- (Rs. 25 crores for Gujardi, Dudheri and Dudhala, Rs. 29 crores for Padhiarka and Dolia and Rs. 25 crores for Vangar and Madhiya in Table C1-1 on page C1-5). Of the 197, 28 jobs will be of a		Wildlife conservation plan has been approved from forest department (PCCF) vide letter no. WLP/32/C/670-672/2021-22 dated 20.12.2021. Measures suggested in the plan shall be followed in consultation with Forest Department. Besides this, any other support required time to time to protect ecology of area by the forest department shall be undertaken by the company if required. Mines/ industries present in 10 km radius of project (impact area) are given in report as per requirement of MoEF&CC guidelines. In order to check salinity ingression, large scale rainwater harvesting and artificial recharge measures shall be taken up in and around the core zone. Hydrological network system will be established by constructing the piezometers in and around the lease and water quality will be checked regularly to know the movement of fresh water / saline water interface. Positive pressure of fresh water on landward site will be created, this will push back the saline front, which may be at a lower elevation. Mines of Ultratech Ltd. are outside 10 km impact area. Excavated area at the end of life of Gujarda, Dudheri and Dudhala Mine shall be 114.24 ha (16.76%) out of total ML area of 681.62 ha, Vangar and Madhiya

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		highly skilled nature and 129 of a skilled nature. 40 will be semi-skilled and unskilled jobs. Creating a mere 28 highly-skilled and 129 skilled jobs at this huge cost is not only questionable but entirely foolish and laughable, if not so tragic. Calling 197 jobs for 11 years as "job creation" is a travesty. Conversely, the destruction of agriculture and people dependent on it for their livelihood will run into thousands of families and tens of thousands of people. The agricultural jobs maintain and sustain nature, flora and fauna and is sustainable and preserves a way of life, which mining will completely destroy and erase. Most importantly though, agriculture keeps people protected from vulnerabilities and vagaries of life and allows them to be in charge of their lives, which will not be the case if there is large scale destruction of livelihoods and attendant migration. Creating 197 jobs while destroying thousands of jobs and upending tens of thousands of lives is not justifiable from any cost-benefit point of view. At least it does not come through in the EIA. The indirect job creation will be in the nature of casual unskilled jobs such as		Mine shall be 197.0 ha (32.18%) out of total ML area of 612.1336 ha and Padhiyarka and Doliya Mine shall be 100.61 ha (30.28%) out of total ML area of 332.24 ha. Thus excavations shall be carried in small area at this stage. Limestone will be mined out in small patches only and that will be restricted upto a depth of +1 m above ground water table. Therefore, no sea water ingress due to mining. Considering that the company is willing to address of all possible concerns, in a reasonable manner for safeguarding the environment. 7. There are several factors that are accounted for in project cost. These include the high cost of land purchase or land lease, high cost of machinery such as surface miners, cost of creating infrastructure, etc. In order to have minimum impact on the surrounding area due to excavation, surface miners have been proposed for operation. Thus, to operate machinery, safety aspects in mining, operation of mine as per approved plan, environment management etc. involves highly skilled and skilled manpower with required qualification and experience. Cost calculation given is not correct and

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		automobile drivers, tea vendors, peons, watchmen, etc. The indirect jobs created by agriculture, on the other hand, are in onion dehydration plants, APMCs, trading, oil mills, ginning presses, and exports. The numbers absorbed in the latter will be far greater than those in the former. 8. Impact On Water Bodies And Water Table The EIA report states that "Ground water is the major source of water for irrigation as well as for drinking purpose in the study area. …" (Exe. Sum. p. 7). The impact of mining related blasting and removal of limestone, as is widely reported and known, leads to the disappearance of the ground water from the area. This has not been reported in the EIA and would be a major omission. The impact of this would be disastrous for the agriculture in the surrounding areas. Hence the impact of the project would not be confined to the 7 villages or the mining pit area only and will be felt much further than that and for far longer than 11 years of the mine life. By granting an EC to a project of this nature, the MoEFCC and GPCB are directly and knowingly inviting irreversible and permanent damage to the quality and quantity of groundwater in the area. Further, it has been stated that "… none of the first order or second order streams will		misleading. Other than direct employment several indirect employments will also be created by way of transportation, maintenance facilities and other auxiliary business. There will be no massive destruction of agriculture nor will people dependent on it for their livelihood will run into thousands of families and tens of thousands of people as indicated by Khedut Ekta Manch. In fact, agriculture is the most affected profession due to vagaries of climate change. In lieu of land purchase for mining, compensation in consensus/ in consultation with the land owner as per market rate shall be paid. Preference in employment depending upon their eligibility/ qualification, indirect employment opportunities, etc. shall be there. After completion of mining activities, shallow depth mining pits of 4 to 6 m shall be backfilled with soil and shall be utilised for agriculture on purpose in case of private land and plantation purpose in case of government land. The land will be returned back to the land owner who has given consent/surface rights for mining only. The project will create direct employment

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		get disturbed by the mining pits except initial stretches of first order stream in … Dudhala area" (pt. 4.2.2, page C4-2). However, Fig. C4-1 (Proposed Diversion Channels) on page C4-3 show that the other 2 mines of which this core zone forms the buffer zone will affect these streams. It is imperative that all 3 mines over these 7 villages be seen as one entity. The EIA Report also accepts that "However, monsoon runoff volume (to Samadhiyala salinity ingress control bund) may marginally reduce due to excavated pit areas" (point 4.2.2, page C4-4). 9. Soil Degradation It is observed that, wherever there is limestone underground the land is fertile and agriculture is prosperous. On the seashore from Ghogha to Porbandar, the coastal area is fertile, and the rich agriculture there is known in local language as "Lili Nagher" – the lush green. Inland area away from seashore is comparatively less fertile. On the seashore, sweet water availability is also due to the limestone. The site where mining is permitted – the Mahuva taluka – is known as Kashmir of Saurashtra. Horticulture is widely practiced here, especially coconut plantations and the world-famous JAMADAR mango, which are		Opportunities will be generated for indirect employment on account of new trucks, company's vehicles, hired vehicles & create opportunities for indirect employment through stockists and retailers in Gujarat and other States in India as well and all other ancillary activities. 8. There will be no intersection of ground water table upto end of mine life any of the three limestone mines i.e., Padhiyarka & Doliya Mine, Vangar & Madhiya Mine and Gujarda, Dudheri & Dudhala mine as limestone mining will be restricted upto a depth +1 m above ground water table. Hence groundwater shall not be affected due to the mining activities. Since limestone is nontoxic in nature and the settlement of any suspended solids will occur by following control measures, thus the runoff will be prevented from contamination. Operational activities of Dudhala area will not affect the streams in its buffer zone. In order to check salinity ingression, large scale rainwater harvesting and artificial recharge measures shall be taken up in and around the core zone. Hydrological network

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		now under danger of extinction. This is corroborated in the EIA in pt. 3.7 on page C3-29 wherein it states that: As per "Ground Water Brochure, Bhavnagar District" by CGWB Ahmedabad (2013), the soils of Bhavnagar district may be broadly classified into following categories: i) Medium black soils ii) Alluvial soils iii) Alkaline soils. Medium black soils are wide spread and are found in all the talukas of the district. They are more productive and are rich in lime, magnesium and alumina and poor in phosphorous, nitrogen and organic matters. They can retain considerable moisture and are much suitable for agriculture. The process of mining will entail excavation, manual shattering of rocks, loading and transportation, etc. The dust disbursed during these processes will settle on the nearby fields, water bodies and standing crops. The soil dug from the mine would be dropped from a height making the dust to disburse in the air and deposit on the land rendering the soil		system will be established by constructing the piezometers in and around the lease and water quality will be checked regularly to know the movement of fresh water / saline water interface. Positive pressure of fresh water on landward site will be created, this will push back the saline front, which may be at a lower elevation. Water from the garland drain/ diverted water channels will flow to the salinity control bund i.e. Samadhiyala bund, to ensure better runoff harvesting and collection. Company will deepen the salinity control bund area to improve the water storage capacity in consultation with Irrigation Department. Three canals will be constructed to enhance smooth flow of incoming water towards Samdhiayala salinity ingress control bund. As per suggestion of/ in consultation with Irrigation Department, the Company will deepen the landside upstream of salinity ingress control bund to improve the water storage. 9. In the ML area, soil cover above limestone varies from 0.5 to 1.0 M. The soil will be carefully scrapped, collected manually and will be utilized for plantation purpose near mine boundary and safety barrier of the road, simultaneously to the extent possible.

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		sterile. The net effects will be: ● erosion of the top soil ● existing land becomes unfit for cultivation because of dumping of solid waste, probably leading to desertification ● standing crops are adversely affected due to dust disbursed in the air, stunting the growth of plants and crops cotton, groundnut, onion, garlic, jowar, millet and other vegetables will be badly affected by the dust and water pollution. ● It should be pertinent to note here that the analysis report on page C3-30 does not mention the fact that the soil is also rich in nitrogen-nitrate which is 12.57 mg/kg. 10. Damage to the built infrastructure The EIA (pt. 2.6.7 on page C2-16) states that "Drilling/ blasting will be carried out for almost half of the proposed production." History of limestone mining suggests that houses and other built infrastructure gets damaged, develops cracks and needs repeated repairs due to the excavation, drilling and blasting processes. This impact is not confined to the core zone only and is felt and documented in the buffer zone of the mining area. It means that the price for the mining will be paid by people who have not even been considered as affected by the mining.		The excess soil has been proposed for back filling for mined out pits having shallow depth. Since the area is water scarce area, therefore the major part of excavated pits will be used as water reservoir at the end of life, which will in turn be used for pisci-culture, irrigation and recharging the water table. The impact on soil quality due to mining shall be minimized through following: ● Establishment of greenbelt and plantation along various facilities and periphery will prevent erosion of top soil. The widths of the belt will be 7.5 m all along the boundary. Interaction with state forest department would be carried out in choosing the plant species and sourcing the saplings for the greenbelt. ● No waste in the form of OB/ IB/ SB is available in the ML area as per known geology. ● The topsoil removed shall be disposed of by means of making a temporary stack at the prescribed sites. The location selected shall be outside the ultimate pit limit, on temporary basis. ● No mineral reject is proposed to be generated. The top soil shall be used simultaneously for the plantation over backfill areas, in green belt and other

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		The EIA says on page C4-5 that "The ground vibrations (due to blasting operation) are anticipated to cause negative impact if the charge per delay is not rationalized." Hence, they have also admitted a potentially debilitating impact of the mining activity. Moreover, this fact is known to MoEFCC as well as the state Pollution Control Board – GPCB. 11. Salinity Ingress It has been reported by various studies, in India and internationally, that mining activity results in making deep pits which in turn causes ground water table to go down. The contamination of surface water due to dumping of solid waste and dust results in contamination of tanks, rivulets, rivers, open wells and ground water as well. Gujarat being a state with the longest coastline in India, is one of the states with a problem of high salinity ingress. Bhavnagar district is a coastal district and is also affected by salinity ingress which threatens agriculture, water quality and overall health of the people. One of the (effective/successful) measures for checking salinity ingress is the embankment (*bandharo*). ***Salinity Control***		areas. ● Mitigation measures as suggested in EIA report shall be followed to prevent dust and water pollution. ● ☐Dust Control: Fixed or mobile water spraying system at fugitive sources (working faces & loading point), haul roads, stock yards and wherever required shall be installed. Dust extractors shall be used at drill machine. Transport vehicles will be be maintained, optimally loaded and shall have PUC certificates. ● Water pollution: There is no generation of effluents /toxic material by mining or allied activities. Leak proof containers will be used for storage and transportation of waste oil/ grease. All top soil dumps will be provided with garland drains equipped with baffles to prevent wash offs from reaching the downstream natural channels. Nitrate nitrogen should be 2-5% for it to be optimum for plant growth. 12.57 mg/kg is 0.001257%, which is deficient. 10. Minimum blasting shall be carried out in hard strata only if require, otherwise continuous surface miner shall be used for mining. During blasting following precautions shall be taken:

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		6.25 The age-old method for controlling the salinity in coastal areas has been the **construction of embankments** as a protective measure to stop ingress of sea, water to these lands. Such bunds existing in Sunderbans (West Bengal), Orissa, Gujarat, Maharashtra, Karnataka etc. are protecting large areas of coastal lands but many of them need improvements and renovation. There is also need to protect rest of the areas by constructing saline embankments along the sea coast in between the area demarcated by creeks and streams. *Source: Report on Development of Coastal Areas Affected by Salinity (NATIONAL COMMITTEE ON THE DEVELOPMENT OF BACKWARD AREAS), November, 1981, Planning Commission, Government of India, New Delhi* While the GoG and the GoI spend many millions of rupees carrying out studies and making recommendations to the effect that embankments should be built, the MoEF&CC and the GoG go and give out mining leases in these same areas which threaten the embankment. The embankment also means that there is a shift from ground water irrigation to surface water irrigation which is a highly recommended measure to check		No blasting shall be carried out within 300m of any surface structure of permanent nature. DGMS norms shall be followed for ensuring ground vibration due to blasting for different types structures. Controlled blasting shall be practised by competent persons. 11. In order to check further salinity ingression, large scale rainwater harvesting and artificial recharge measures shall be taken up in and around the core zone. The voids created due to excavation shall work as ground water recharge structures after the end of mine life. Positive pressure of fresh water on landward site will be created, this will push back the saline front, which may be at a lower elevation. Company will deepen the salinity control bund area to improve the water storage capacity in consultation with Irrigation Department. Three canals will be constructed to enhance smooth flow of incoming water towards Samdhiayala salinity ingress control bund. As per suggestion of/ consultation with Irrigation Department, the Company will deepen the suggested landside upstream of salinity ingress control bund to improve the water storage.

<table>
<tr><th>Sl.</th><th>Name and Address</th><th>Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)</th><th>Response in Annexure no. of PH minutes</th><th>Response of the project proponent during public hearing and updated thereafter</th></tr>
<tr>
<td></td>
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<td>groundwater depletion. The mining will force the farmers to revert back to groundwater irrigation further endangering the already dangerous levels of groundwater.

12. In Core Zone (p. C3-25)
As mentioned in the EIA in Table C3-10 the land use (in ha.) is as follows:

<table>
<tr><th>Village</th><th>Forest land</th><th colspan="2">Government land</th><th colspan="2">Private land</th><th>Total area</th></tr>
<tr><td>Dudhala</td><td>-</td><td>0.3813</td><td>0.23%</td><td>169.6295</td><td>99.77%</td><td>170.0108</td></tr>
<tr><td>Gujarda</td><td>-</td><td>43.5789</td><td>15.75%</td><td>233.1211</td><td>84.25%</td><td>276.70</td></tr>
<tr><td>Dudheri</td><td>-</td><td>71.7144</td><td>30.53%</td><td>163.1948</td><td>69.47%</td><td>234.9092</td></tr>
<tr><td>Total</td><td>-</td><td>115.6746</td><td>16.98%</td><td>565.9454</td><td>83.02%</td><td>681.62</td></tr>
</table>

The EIA does not give percentages. When percentages are calculated, it becomes clear that the proportion of agricultural land is 83%. In village Dudhala, for instance, it is almost entirely private agricultural land that will be lost to mining. It is quite clear that the brunt of the mining will be borne by the land losers and not the mining company or the government.

13. In Buffer Zone (p. C3-25)
A crucial omission in the EIA is that the villages falling In the buffer zone of the mining lease area have not been mentioned in the EIA. The buffer zone comprises the study area of the EIA (p. C1-10). The</td>
<td></td>
<td>12. Though private land is 565.9454 out of the 681.62 ha of area of all three villages, the entire private land will not be required for mining.

At this stage, land required for quarry area of 114.24 ha which comprises of Govt. Land 14.02 ha and Pvt. Land 100.22 ha. Thus, only 14.7% of the private land will be required as per approved mining plan as against the 83% stated by Khedut Ekta Manch. This land will be purchased from the land owners with mutual consensus and commensurate with the local market conditions. Furthermore, 15.66 ha out of the 114.24 ha shall be backfilled and converted to the agricultural land and/ or to be utilized for plantation.

Only that land shall be purchased from farmers that will be required for mining & allied activities (including greenbelt). Based on observations of EAC, MoEF&CC during meetings dated 23-24 May 2016 & 22-23 August 2016, the Company revised the initial mine lease proposal to a reduced area, thus, minimizing the impact on private agricultural land.

13. Complete list of the villages falling under the study area as per Census 2011 has</td>
</tr>
</table>

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		villages falling in the buffer zone of the mining lease area should be mentioned in the EIA and the omission is unacceptable. On page C3-25, C3-24 and C3-26 (of the 3 EIAs) the number of villages falling in the buffer zone are mentioned. The buffer zone covers 48, 40 and 49 villages. However, since the EIAs do not provide the names of the villages it is difficult to figure out which are core of which mine and which are buffer of which mine and which are overlapping. This is a serious and deliberate omission and is unacceptable. Further on page C3-26 (Gujarda EIA), the EIA states that "A perusal of Fig. no. C3-11 shows that the area under non-agricultural use accounts for a major portion (48.75%) followed by net sown area (39.06%)." This is deliberately misleading. It is misleading because fig. no. C3-12 (Map showing satellite imagery interpretation for 10 km. radius) reveals that the area under Sea (Gulf of Cambay), Reservoir/lake (Malan bandharo and Samadhiyala embankment), water logged area is included which takes the "area under non-agriculture use" to 48.75%. If we deduct this area from the calculation, then the area under agricultural use will come to 77.20% of the total land area. This is made amply clear by Figure C3-12 on page C3-28 (Map showing satellite imagery		been incorporated in the EIA at Annexure IX, XVI & XVII of 3 mines. On page C3-25, C3-24 and C3-26 (of the 3 EIAs respectively) only summarized part of Annexure IX is given. There is no omission since information was easily accessible in the referred Annexure on the aforementioned pages. Details of land use is given as per Census 2011 in Table C 3-12 and Fig. C3-11. Land use break up of study area in this table is based on the Census of India 2011. Further, the latest land use of the study area has been interpreted using recent satellite imagery can be seen in Fig No. C3-12. The satellite imagery is of May 2021, summer season, hence, the water-logged areas of Bandharas are low. The land use classification used in the census land use data is different (based on Census classification) from the classification used in satellite imagery interpretation (based on the EIA guidance manuals). Hence, these two data are not directly comparable due to their different land use classification and date of data collection.

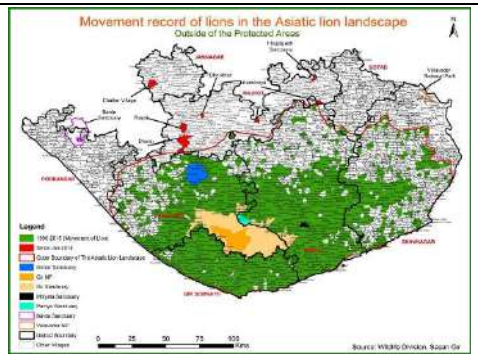
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		interpretation for 10 km. radius). Calculated thus the RF area will also increase from 0.55% to 1.06%. This way of presenting data is misleading and insulting to the intelligence of the people and the MoEFCC. 14. Permanent and irreversible damage to the ecosystem As argued above, the present project, like limestone mining projects elsewhere in the state and country, will entail excavation, blasting, crushing, loading, transportation of the mined limestone. All these activities will unleash permanent and irreversible damage to the fragile coastal ecosystem of the area. Given this knowledge and data, granting an EC to this project is tantamount to granting MoEFCC and GPCB's acquiescence to the destruction of the entire Saurashtra coast, its biodiversity, water, and socio-cultural way of life of the people. Further and more crucially, mining in such a huge area will damage the aquifers. As is well known Gujarat is situated along a Faultline. Mining will result in permanent changes to the geology and hydrology of the area. In such a situation the impact of seismic shocks will be compounded and felt further than normal and most likely may		14. Mining is site specific project and mineral can only be excavated from where it is available. Excavated area at the end of life of Gujarda, Dudheri and Dudhala Mine shall be 114.24 ha (16.76%) out of total ML area of 681.62 ha, Vangar and Madhiya Mine shall be 197.0 ha (32.18%) out of total ML area of 612.1336 ha and Padhiyarka and Doliya Mine shall be 100.61 ha (30.28%) out of total ML area of 332.24 ha. Thus, excavation shall be carried out in small area at this stage. Minimum blasting shall be carried out in hard strata only if require, otherwise continuous surface miner shall be used for mining. Drilling and blasting shall not be carried near the habitation, road and mine boundary. Continuous surface miner shall be used near these areas. The advantage in this project is the use of surface miners to most of the mineral excavation, which reduces the consequences of blasting and ground vibration. Completion of mining activities, shallow depth mining pits of 4 to 6 m shall be backfilled with soil and shall be utilized for agriculture/ plantation purpose in case of private land and plantation purpose in case of government land. This will minimize

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		affect people who may otherwise not have been impacted by the seismic activity. 15. Cumulative impacts of mining, power plant and cement plant M/s Nirma Cement Ltd. has a cement factory in village Padhiarka and they are also going to put up their own power plant for generating electricity. Thus, the EIA must bring out the cumulative impacts of all three of these activities on the people, the land, the water, the flora and the fauna of the region. Only then can the impact be rightly assessed. 16. Skin diseases Limestone mines are known to induce skin and lung diseases. This crucial fact has not even been touched upon in the EIA. 17. History of limestone mining along with its impacts on environment and people Finally, any EIA must be mandatorily made to submit the long history of limestone mining in Gujarat and India along with its impacts on environment and people which has already manifested themselves in the course of the mining and which is extensively reported and documented. 18. Comparison of requirements mentioned in ToR & data provided in the EIA cost-benefit analysis (Table 1.4 Compliance of Generic		impact on land. Mine lease boundary of all three leases is outside the 500 m distance from the high tide line. Therefore, coastal ecosystem is safeguarded. In this regard, the CRZ map has been prepared by Institute of Remote Sensing, Anna University, Chennai and reproduced in Annexure XIX of EIA report. There will be no intersection of ground water table upto end of mine life in any of the three mines i.e., Padhiyarka & Doliya Mines, Vangar & Madhiya Mines and Gujarda, Dudheri & Dudhala Limestone mine. Limestone will be mined out in small patches only and that will be restricted upto a depth of +1 m above ground water table. Hence groundwater shall not be affected due to the mining activities. The mine leases are in seismic zone III and the precautions during construction of any structures within mine lease shall be followed as per BIS codes. 15. This EIA has been prepared for the mining projects only based on TOR point no. 8 which specifies "The Project Proponent needs to carry out the cumulative impact

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		ToR for Opencast Mine Project, p. 1, EIA Report) Chapter 9 on page no. C9-1 is about Environmental Cost Benefit analysis which has been carried out in line with "Guidelines for conducting cost-benefit analysis for projects involving diversion of forest land under the provisions of the Forest (Conservation) Act, 1980" issued by Forest Conservation Division, MoEF&CC, GOI vide letter no. 7-69/2011-FC (Pt.) dt. 01-08-2017. Our submission in this regard is that: i. The Environment Cost Benefit Analysis (ECB) model is incomplete and fails to capture the entire gamut of loss that follows in the wake of such projects. Since the impacts of any project are not confined to the actual operational area of the project but the entire surrounding area, it is imperative that this model be amended to include the entire surrounding area under the ambit of the ECB. ii. It follows that the present ECB is also incomplete, since it has not taken cognizance of the effects of the mining operations on the surrounding area. iii. Moreover, the ECB is only confined to the mining pit area, i.e. 114.24 ha. which is a mere 16.76% of the entire mining lease area of 681.62 ha. The rest of the 567.38 ha. (83.24%) of the		assessment by considering all the mining activity….". It does not include power plant and cement plant. EIA has been prepared in compliance to the ToR issued to Padhiarka & Doliya, Gujarda, Dudheri and Dudhala and Vangar & Madhiya Limestone Mine Vide Letter No. J-11015/154/2016-IA.II (M) dated 28th November 2022, Letter No. J-11015/153/2016-IA.II (M) dated 6th February, 2023 and Letter No. J-11015/152/2016-IA.II (M) dated 23rd December, 2022 respectively by the MoEF&CC. The main impact of mining & transportation activities is on air quality and consequently on people and ecology due to incremental GLC's which have been assessed in 4.4.1 and Annexure XXI of EIA report. 16. Section 4.14.2 addresses various manners in which health of the workers may get affected which includes irritation in eyes, breathlessness etc. among other hazards to health. Precautions have been discussed. With respect to the public, section 4.14.3 discusses that incremental ground level concentrations of particulate matter due to mines show that the resultant levels will be well within the national ambient air quality standards, 2009 in the vicinity of the mines. Thus, there will not be any health impact envisaged on the villagers due to the mining activities. Air pollution control measures given in section 4.4.2 shall be

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		mining lease area has been left out of the purview of the ECB. This, to us, is a clear violation of the condition of the ToR. iv. The ECB has not considered the following points: a. The cropping pattern has not been considered; b. APMC data has not been analysed or calculated; c. The loss of direct and indirect employment has not been calculated; only direct employment generation has been factored in. d. There is a vast difference between the current direct employment generation in agriculture and allied industries and the mere 84 direct jobs which will be created by the mining operation. There can be no comparison between the two situations. The dehydration plants, the cotton ginning mills, agro-business centers, onion and coconut transportation to the Azadpur Mandi - New Delhi and other parts of Northern India are bigger sources of employment and have not been calculated at all. e. No lifespan of direct employment in mining vis-à-vis agriculture and allied industries has been calculated and presented;		strictly followed. 17. The EIAs are project specific documents that have been prepared in compliance to the ToRs issued to (i) Padhiarka & Doliya, (ii) Gujarda, Dudheri and Dudhala and (iiI) Vangar & Madhiya Limestone Mine vide letters no. J-11015/154/2016-IA.II (M) dated 28.11.2022, J-11015/153/2016-IA.II (M) dated 06.02.2023 and J-11015/152/2016-IA.II (M) dated 23.12.2022 respectively by the MoEF&CC. 18. ● Environment Cost Benefit Analysis (ECB) model available from MOEF&CC has been followed and it covers the major contributing components to cost as well as benefit. The same model is followed by all projects seeking forest dereservation permission under Forest Act from MOEF&CC. ● Environment Cost Benefit Analysis has been carried out for the specific project only as per the prescribed ToR. The land which is coming under the pit area and for the required facility shall only be affected at this stage and hence, the same has been considered while estimating the cost to environment and society. ● Although the mine lease is large, the disturbed areas are smaller as observed in the representation. The impact on land shall be restricted to the pit area, dump area & infrastructure area as per the conceptual

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		f. The cost of environmental degradation and pollution has not been calculated. 19. Impact on wildlife (Table 1.4 Compliance of Generic ToR for Opencast Mine Project, p. 11, EIA Report) Our submission in this regard is that: i. The fact is that this area is part of Bruhad Gir (Extended Gir) for Asiatic lions, no plan can mitigate the impact on Asiatic lions inhabiting here in good numbers. The data obtained through RTI by farmers shows that the numbers and its pug marks here are much bigger. ii. These villages have been included in the Bruhad Gir (Extended Gir) by the Dept. of Environment and Forests through GR no. WLP-1107-572-G.1 dated 18-5-2007. This has not been mentioned in the EIA. Iii. The map and data by the Principal Chief Conservator of Forest and Head of the Forest Force (PCCF & HoFF) (gujarat.gov.in) "The March of the Asiatic Lion" clearly shows that the area falls within the lion movement area as well.		plan of approved mine plan and shall not cover the undisturbed area. Hence, there is no violation of the condition of the ToR. ● (a) The land which is being disturbed due to mining is being utilized for agricultural purposes and the benefit from the agricultural income has been considered while calculating the cost benefit analysis as given in Table C9-1. ● 4 (b) The cost of doing agriculture, if no project comes up has been considered as per the market rate of the crops. ● 4 (c) Indirect employment has been accounted for in Table C9-1, part B, points 3 & 4. ● 4 (d) The project will create opportunities for indirect employment on account of new trucks, company's vehicles, hired vehicles & create opportunities for indirect employment through stockists and retailers in Gujarat and other States in India as well and ancillary activities. With respect the mentioned "dehydration plants, the cotton ginning mills, agro-business centers, onion and coconut transportation to the Azadpur Mandi - New Delhi and other parts of Northern India", these will not get affected by the project and continue their business as usual ● 4 (e) The lifespan of the employment for mining has been considered as life of mine. ● 4 (f) Only the tangible costs of

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		 "…lion has over the time carved out space for him and has successfully re-colonised some of its lost territory. As compared to the previous 1883.04 sq.km network of Gir Protected Area, the present Asiatic Lion Landscape (ALL) admeasures around 20,000sq km in Saurashtra (as per the 2015 census). The concept of ALL has been adapted through which additional suitable habitats for lion have been developed. Lions now have a larger home range than before. The man power and infrastructure have been strengthened for intensive protection and conservation of lion in ALL." Also see Singh, H. (2017) Dispersion of the Asiatic Lion Panthera leo persica and its Survival in Human-Dominated Landscape Outside the Gir Forest, Gujarat, India. https://www.semanticscholar.org/paper/Dispersion-of-the-Asiatic-Lion-Panthera-leo-		environmental degradation based on the MOEF&CC guidelines have been considered such as Ecosystem services losses, loss of animal husbandry productivity/ fodder/ public facilities, soil & moisture conservation cost, value of tree and Cost of the land. 19. Reply is as follows: ● The presence of Asiatic lions in the study area has been fully acknowledged and recorded in the EIA however there is no habitation observed in the mining lease area. Wildlife conservation plan prepared and approved by Forest Department. The company will take the necessary steps to ensure that its activity do not result in any conflict with the lions. ● Same as above, Bruhad Gir concept specifically has not been mentioned in the EIA but the Asiatic Lion, has been clearly mentioned and conservation plan prepared for it. As per authenticated map and letter No. WLP/32/C/426-427 dated 14.02.2022 received from Chief Wildlife Warden there is no any notified protected area (National Park, Sanctuaries, etc.) in 10 km area of the mines. (Letter given in Annexure XXV of EIA reports). ● Same as point 1 & 2. Hence, based on the letter received from Honourable Chief Wildlife Warden, who has jurisdiction over all the wildlife of the state, the following

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		persica-Singh/311565d651df1fc52cf874dd5583bb01159a5893 Hence, stating that "There are no National park, Wildlife Sanctuary, Biospheres reserve or migratory Corridor within 15 km radius of ML area." (Executive Summary, p. 8) and "Lease area does not form a part of any Reserve Forest, National park, Wild life Sanctuary or National biosphere reserve" (EIA, p. C1-4) is untrue. 20. Water requirement (Table 1.4 Compliance of Generic ToR for Opencast Mine Project, p. 13-14, EIA Report) Our submission in this regard is that: 1.Narmada water has been cited as the source of water (EIA Report pt. 2.12, p. C2-28). The fact of the matter is that Narmada water is not sufficient even to provide irrigation to the command area. How will it provide water to industries which are ALL claiming to have Narmada as their source of water? 2.They have not provided any letter from SSNNL which has sanctioned this water to them. The EIA report states that "Ground water is the major source of water for irrigation as well as for drinking purpose in the study area. …" (Exe. Sum. p. 7). The impact of mining related blasting and removal of limestone, as is widely		statements are true: * "There is no National park, Wildlife Sanctuary, Biospheres reserve or migratory Corridor within 15 km radius of ML area." (Executive Summary, p. 8) and * "Lease area does not form a part of any Reserve Forest, National park, Wild life Sanctuary or National biosphere reserve" (EIA, p. C1-4). ● Gir National Park, Gir Wildlife Sanctuary & Mitiyala Wildlife Sanctuary are located at a distance more than 43 km from mining lease areas. ● Even in draft ESZ notification of Gir National Park, Gir Wildlife Sanctuary & Mitiyala Wildlife Sanctuary, no any village of mining lease areas included in Draft ESZ. 20. ● The permission for water shall be taken from the GWIL after obtaining the EC. It is completely under the purview of GWIL to decide the adequacy of water from the Narmada river and grant permission to industries for fulfilling their requirements. ● The letter has been given by GWIL and enclosed in Annexure XXIV of EIA report ● The EIA clearly mentions that there will be no intersection of ground water table up to end of mine life any of the three mines i.e., Padhiyarka & Doliya Mines, Vangar &

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		reported and known, leads to the disappearance of the ground water from the area. This has not been reported in the EIA and would be a major omission. The impact of this would be disastrous for the agriculture in the surrounding areas. Hence the impact of the project would not be confined to the 7 villages or the mining pit area only and will be felt much further than that and for far longer than 11 years of the mine life 21. R&R plan and compensation (Table 1.4 Compliance of Generic ToR for Opencast Mine Project, p. 3-4 and 15-16, EIA Report) Our submission in this regard is that: The land owners are NOT willing to sell or lease out their land; THE ISSUE OF COMPENSATION THEREFORE DOES NOT ARISE. Earlier, in 2008, when EC was granted, they had agitated strongly, including taking out a 350 km. long foot march from Mahuva to Gandhinagar, meeting the then CM (now PM) to register their strong opposition to the proposed cement plant and mining project. Their opposition to this project stands and they will continue their peaceful and non-violent protest. They are also submitting their letters spelling out their opposition and refusal to sell or lease out their land to the mining project. But the EIA is being dishonest when it		Madhiya Mines and Gujarda, Dudheri & Dudhala Limestone mine. As limestone mining will be restricted upto a depth +1 m above ground water table. Also, regular monitoring of ground water level in the area shall be done. Hence groundwater shall not be affected due to the mining activities. 21. Main village habitation/residence area outside the mining lease area and scattered huts/house are seen in the ML area. The EIA has clearly explained that there is an ML area, which has presence of habitation, which has been acknowledged by the Khedut Ekta Manch. The entire habitation in the ML will not be displaced since entire area within the ML will not be used for mining. Only the habitation within the quarry will have to be removed. There is R&R related to quarry mining which is clearly mentioned against TOR 12. However, TOR 42 pertains to any R&R required for overburden dumps, which is not required as no displacement will be there due to overburden dumps. Therefore, there is no contradiction nor willful misleading nor lying. The company intends to purchase any private land from the land owners with mutual consent and commensurate with the local market conditions. The land which is coming under the pit area

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		argues that "…the main habitation of villages are outside the ML area, few scattered house/ hutments can be seen in the core zone" (pt. 3.11.1, p. C3-40) but only gives a break-up of the houses falling in the mining pit area (Table C3-21) and remains silent on the households residing in the core area. The immediate next line states that "These house/hutments will get disturbed during mining". However, it has claimed that no R&R may be required since they will not be disturbed. This is contradictory, and willful misleading and lying. There are 133 villages in Mahuva taluka, of which 35 fall in the buffer zone of this mine which is 26% of total villages of the taluka (per Gujarda EIA). To imply that the intrusion in their lives through the mine will be minimal is entirely and deliberately false. Since the village names have not been provided it is difficult to arrive at the exact numbers of people who may be affected and this, to us, appears to be the real reason for not listing the villages by name. This is malafide. 22. Apparent anomaly in the ToR numbers and the dates The ToRs for the three mines vide letters number are as below: J-11015/152/2016 – IA.II(M) Dated 23rd		and for the required facility shall only be affected. No, surrounding land shall be disturbed due to mining. Proper safety rules will be flowed as per DGMS during mining. Void area of shallow depths shall be back filled and later on utilized for agricultural and plantation purposes. So, the contention of malafied is not acceptable. 22. The files for the ToR application were first created in the MOEF&CC database in 2016, as evidenced by the number 2016 mentioned in the letter number. The same file number has been continued by MOEF&CC when the fresh application for ToR was applied in 2022. The ToR J-11015/154/2016 – IA.II(M) dated 28th November, 2022 for Padhiarka and Doliya has been issued before other two because this project was applied for ToR on 23.09.2022. Vangar & Madhiya (Letter No. J-11015/152/2016-IA.II (M) dated 23.12.2022) and Gujarda, Dudheri & Dudhala (Letter No. J-11015/153/2016-IA.II (M) dated 06.02.2023) were applied on 18.11.2022, therefore, their TOR letters were issued after Padhiarka and Doliya It is denied that information has been omitted

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		December, 2022 for Vangar and Madhiya J-11015/153/2016 – IA.II(M) Dated 6th February, 2023 for Dudhala, Dudheri and Gujarda J-11015/154/2016 – IA.II(M) Dated 28th November, 2022 for Padhiarka and Doliya The numbering of 152, 153 and 154 and the dates are anomalous since the earlier number i.e. 152 was granted (i.e. in December '22) after the later number i.e. 154 which was granted earlier, i.e. in November '22. How did this happen? **Additional facts that the EIA has not mentioned or omitted or suppressed are:** The EIA does not mention the fact that the earlier EC was canceled owing to the tremendous opposition and resistance from the farmers and the local people. What makes them think that the resistance will be any less this time around? Apart from this, the following facts are completely suppressed in the EIA: i. Total capacity of the cement plant, daily requirement of mining and total land loss; ii. Life of the cement plant and future limestone requirement; iii. How many mines have been approved on the coastal belt of Gujarat; iv. Impact of the mining on salinity ingress;		or suppressed. The EIAs have been prepared as per the Terms of Reference issued by MOEF&CC. Our three mining projects have never been granted environmental clearance in the past, hence, question of cancellation of their EC does not arise. This mining projects are still under process to receive the environmental clearance. The public hearing has been conducted in which the local people and farmers have recorded their objections and the company will take into consideration their concerns during finalizing the EIA. The company requests for support from local people. It is denied that information has been suppressed. 1. 1.9 MTPA cement plant capacity is mentioned in section 1.2, Chapter 1 of all three EIA reports • The daily mining capacity of each mine is also mentioned in section 1.2, Chapter 1 of all three EIA reports • Land loss for cement plant is not pertinent since the EIAs have been prepared to obtain EC for the mining projects and not for the cement plant. 2. Not pertinent since the EIAs have been prepared to obtain EC for the mining projects and not for the Cement Plant. Furthermore, the limestone use is not restricted to cement plant.

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		v. Total employment loss, present agricultural production and yield, and agro and allied industries in the area; (in the case of record unemployment in the country, destroying existing employments must have a strong and irrefutable justification); vi. India is a 'High Climate Risk Zone' country, and within India, Gujarat is a high climate risk zone. Why such a project should be sanctioned in such a fragile climatic zone needed an explanation which is missing; Nine Indian states at high risk of damage due to climate change hazards: Report (scroll.in); XDI gross domestic weather risk report: 9 Indian states in the list (groundreport.in) vii. The fact that migratory birds have been regularly spotted at the Malan reservoir and the Samadhiyala salinity control bund has not been mentioned in the EIA; viii. The silting speed at Malan reservoir and the Samadhiyala salinity control bund had to be calculated and put in the EIA; ix. A comparative study of contribution of mining to state revenue vis-à-vis loss to the people – land, water, livelihood, opportunity, health –had to be done; x. A comparative study of the time span of incomes and livelihoods from mining and agriculture had to be done; xi. Impacts of blasting activity in other		3. The EIA study has been conducted based on study area, i.e. up to 10 km radius from the project area/ core zone and not throughout the coastal belt of Gujrat. This representation received from Khedut Ekta Manch itself contains such a list of mines, public hearing of which have been or will be conducted as part of EC process. 4. With respect to the intersection with ground water conceptual pit bottom level will be restricted upto a depth +1 m above ground water table in all three mines and no ground water will be intersect is envisaged. Also, all three mining lease areas are out of CRZ. Which will act as buffer area. So, there will be no possibility of sea water ingress. During operation and also after exhaustion of mineral, voids left will act as natural water harvesting structures and store fresh water. Collected water will stand and gradually percolate into the sub surface water. Positive pressure of fresh water on landward site will be created, this will push back the saline front, which may be at a lower elevation. The remedial suggestion has been incorporated in section 4.5.2 in the Draft EIA Report. In this way, this project will put good impact and check salinity ingress. 5. The land required for mining is both

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		limestone mines in other states had to be studied and provided here which has not been done; xii. The net impact of mining on migration (in the absence of viable livelihoods) and stress on urban infrastructure had to be studied and reported, which has not been done.		government land as well as agricultural land. The agricultural land will be taken from willing farmers only through purchase or lease basis. In case a land owner, whose land has limestone resource of depth <4 m is desirous of only leasing the land for the duration of mining instead of perpetual sale, then the company will enter into a lease agreement for the pre-decided duration at a mutually agreed rent. The company will remove the top soil from the progressing face of the open cast pit and store it temporarily till it can be filled back on the exhausted portion of the open cast pit. After laying back the soil on the exhausted shallow pit (<4 m depth), the land will be returned back to the land owner. Thus, there will not be loss of income to the farmer who agrees to give land on lease since he will receive income through lease rent and go back to farming after completion of mining. It is expected that the farmers who sell land shall also be utilizing the money in a fruitful manner. Thus, no destruction of employment is intended by the project. 6 It is prudent to note that the referred news

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				article explains that 'This increase and overall risk to the built environment in 2050 is driven predominately by sea level rise and secondarily by flooding and coastal inundation". The referred news article puts 9 states of India at high risk of extreme weather change hazards and cities like Mumbai are mentioned. This does not imply that development should cease in Mumbai or the rest of the country. Taking the spirit of the article into consideration, projects should come up incorporating climate resilience measures and preparation measures to protect from hazards such as flooding and inundation, which are already covered in chapter 7 of the EIA. 7. A perusal of the list of birds given in Annexure XIII in EIA shows that various migratory birds such as flamingo, ibis, spoonbills, etc are observed in study area. A wildlife conservation plan has been prepared in which preservation of fauna of the study area has planned and the same has been approved by Forest Department. Approval letter & conservation plan are given in Annexure XXIII of EIA report. 8. Siltation at Malan reservoir and the Samadhiyala salinity control bund are impacted by a multitude of activities in their respective catchments. Mining activities will not have any impact on Malan reservoir since the mines are outside the drainage

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				system of Malan. For Samdhiyala, the mines are planned to contribute to its water storage and mitigation measures for erosion control have been given for mining activities in Chapter 4 of EIA. EIA has been prepared in compliance to the ToR issued by MOEF&CC. 9. In this regard detailed Cost to Benefit analysis has been carried out in Chapter 9. 10 In this regard detailed Cost to Benefit analysis has been carried out in Chapter 9. 11.EIA has been prepared in compliance to the ToRs issued by MOEF&CC. And the precautions for blasting along with the measures to ensure compliance to the DGMS norms for ground vibration has been given in Section 4.8 of the EIA report. 12.EIA has been prepared in compliance to the ToRs issued by MOEF&CC.
4.	Manishbhai Jitubhai, Dudheri Village	He opposed the proposed mining project and told not to destroy Saurashtra's Kashmir.		The benefits of the project were explained by the representative of the project proponent and the guarantee was given to contribute in the development of Mahuva with coordination with villagers.
5.	Chhaganbhai Nanbhai Bhaliya (Member- Doliya Taluka Panchayat), Doliya Village	The mining lease area granted to the company consists of privately owned agricultural land. Millets, sorghum, vegetables are cultivated in this agricultural land, so such land should not be given.		Representative of the project proponent informed that the land owner who wants to give the land by sale/consent will only be taken by the company for mining.
6.	Babhmniya	Information sought for species included in		Representative of the project proponent has

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	Khimjibhai Bhanabhai, Dudheri Village	Schedule-1. The main occupation of the people here is agriculture and animal husbandry. With the coming of the mining project, both these businesses will be destroyed.		informed that mining will be done according to the rules of Environment and Mining, hence will cause negligible loss to the both businesses.
7.	Rameshbhai Bhagabhai Gohil Up-Pramukh, Kisan Morcho, Vaghnagar Village	As a representative of Mahuva Municipality, he asked that is it legal to conduct the environmental public hearing of three different mining leases of these seven villages on the same date and at the same place at different times? This point needs to be included in the minutes.		In response, the representative of the project proponent informed that three mining leases have been approved by the Government through separate lease deeds. According to the rules under the Environment Protection Act and its amendments the three environmental hearings of the three mining leases are to be held on the same day and at the same place. The villages included in 10 km of all three mining leases are almost the same. According to the Terms of Reference of three mining leases, cumulative impact to be presented when they operate together. So the environmental public hearing of these three has been held on the same date and place.
8.	Mavjibhai Chauhan on behalf of Shantuben Narsinh Chauhan, Member of Jilla Panchayat Matdar Mandal (Katpar Jilla Panchayat), Gujarda Village	Following issues were read out by him from his written submission given in Annexure C24 of PH minutes given in Annexure XXX of this EIA: (1) Pursuant to the order dated 18/03/2011 by Hon'ble Supreme Court, the Ministry of Forest and Environment, Government of India, New Delhi constituted expert committee of 9 (nine) members chaired by Prof. C. R. Babu and as per the Ministry of Environment and Forest Order No. L-11011/7/2008-A-II(1) constituted an expert committee of 7 (seven) members under the chairmanship of C. K. Varshney. Both these expert committees have given a report that	D32	(1) The report of Professor C.R.Babu Committee and Professor C.K.Varshney Committee constituted by the Ministry of Environment and Forest, in which the land in this area was shown as wetland. This report has not been considered by the Hon'ble NGT vide Order dated 14/01/2015 and has dismissed the cancellation order of EC issued by Ministry of Environment and Forest, Government of India, New Delhi.Also, as per the latest Ramsar Convention site released in Nov' 22, the core zone and buffer zone of the proposed mining lease area are not covered as wetlands. A copy along with detail reply is enclosed at

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		the land in these mining lease area to be "Wet Land" (fertile). Copies of both the reports are enclosed herewith. (Annexure-1 and 2*) (2) Land of mining lease included Survey numbers of privately agricultural land owned by the farmers without their consent. Leases are executed by the District Collector, Geology & Mining Department, Bhavnagar and M/s. Nirma Limited, Ahmedabad for all the three mine leases in Sub Registrar Office, Mahuva. All the three lease deed has been registered as per document no. 56, 57 and 58 on 11.01.2017. Most of these lands are privately owned by farmers, where cultivation takes place. Farmers here do not want mining lease in their fertile land and do not want to give land for mining. The company cannot purchase the above land for mining lease. Not a single farmer wants to give his land without consent. All the farmers included in the lease have signed an affidavit to not sell their land for mining. Copies of affidavits made by farmers are enclosed herewith. (Annexure-3*) (3) Within radius of 5 km of the sanctioned mining lease area, there are three major reservoirs (Samdhiyala Dam, Malan Dam and Nikol Dam). The water of these reservoirs is used in the agriculture fields and ground water level remains good, so that agriculture		page D 24 of Annexure- (C2) of public hearing documents given in **Annexure XXX** of this report. (2) The State Government grants mining leases in limestone bearing areas with the prior approval of the Central Government through the Department of Industries and Mines. Mineral rights in all types of land are held by the Government. According to which the State Government has approved the mining lease. However, company will not acquire agricultural land for mining without consent of farmers. If the farmers want to sell/ give consent for their land for mining at market rates/commercial negotiation, the project proponent may, accordingly, purchase the land/take consent of the land owner for mining that land. Thus, mining will be done in that land only after getting the consent of the land owner. (3) Malan Bandhara and Samdhiyala Salinity ingress control bund are located within 10 km of the mining lease area and the mining lease is granted as per existing Acts and Rules. The water catchment area of Malan and Nikol Bandhara as well as the benefited areas are not included in the granted mining lease area. The purpose of the Samdhiyala Salinity Ingress Control Bund is to prevent the rising of

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		area is richly irrigated. Farmers get three crops per year, so the farmers here have not agreed to give land for mining. Large number of native birds live in these water bodies, it is totally inappropriate to give environmental clearance to mining in the vicinity of such water bodies. Copies of Irrigation Department report detailing the three reservoirs and details of birds and photographs of reservoirs and agricultural crops are enclosed. (Annexure-4*) (4) The area surrounding the proposed mining lease land is declared as Reserve Forest (Brihadgir area) as per Government of Gujarat, Forest and Environment Department, Gandhinagar's Resolution no. WLP-117-57R-G.1 dated 18/05/2007. Forest Land is located at a distance of only two-three km from the mining lease land and the area is currently inhabited and roamed by lions as well as Schedule-I animals. As proof of this, the observation information given by the Forest Office, Mahuva is enclosed herewith. (Annexure-5*) (5) Government waste lands of all these seven villages are included in the mining lease. In all these villages there is a reduction in gauchar land in proportion to the number of cattle according to the guidance of the Hon'ble Supreme Court. Therefore, the gram		salty sea water towards the land. It has been planned that where the rain water is collected, to increase the storage capacity of the bund and to facilitate the flow of water in the salinity control bund, three canals will be constructed around the cement plant. As per suggestion/advice of Irrigation Department, company will deepen the proposed land towards the Bandhara to increase water storage. No reservoir is located in any of the three mining lease areas. Apart from this, environment and all related rules and regulations will be followed during mining. (4) No "Bruhadgir Vistar" has been declared as Reserve Forest in resolution of the Department of Environment and Forest, Gandhinagar. Further, the Deputy Conservator of Forests (DCF) has certified by its letter dated 09.11.2020 that "No National Park, Sanctuary, Biosphere Reserve, Wildlife Corridor, Ramsar Site, Tiger/Elephant Reserve is present within 15 km of the mining lease area". A copy of DCF's letter covering the area of all three mines is attached herewith in reply enclosed as Annexure-D24 of public hearing documents given in **Annexure XXX** of this report. (5) Mining leases are granted by the Government after obtaining a land availability and recommendation report from the District Revenue Department for government land

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		panchayats of the seven affected villages as well as the cattle owners are not agreeing to give government waste land for mining lease and under that it is inappropriate to give environmental clearance to the Company. For this Resolution passed by Gram Panchayat are enclosed herewith. (Annexure-6*) (6) The natural wall of limestone in this area is an advantage to us in the form of a belt during natural calamities, which protects the entire area. Moreover, since the area in question is located on the sea coast, the ingress of salinity is happening very fast. The situation will worsen, if the coastal belt is broken, as this natural barrier controls the salinity of the area. (7) The company has taken permission for its water requirement from Gujarat Water Infrastructure Limited, Gandhinagar since 4th June 2008, which is now 15 years long and since all the conditions of the permission given have been violated, the water permission is considered as canceled. The company has not taken fresh or revised approval and has misled the competent authority by giving wrong details by including old approval letters as available source of water in TOR in EIA/EMP report of the proposed project, which is also ineligible to grant environmental clearance approval to the company. Letter dated 04th June 2008 of		falling within the sanctioned mining lease areas. None of the mining lease areas fall within the Coastal Regulatory Zone (natural wall-buffer zone) and no excavation shall be carried out in this natural wall. Mining of limestone in the mining lease areas is planned to be carried out above the ground water level. Mining activities shall not in any way intersect the ground water. So there is no possibility of intrusion of sea water due to mining activities. In fact some of the pits from mining will be used as artificial recharge structures and this will improve the groundwater quality and prevent the intrusion of more salinity and reduce the increased salinity. The Company itself handed over the approved connection of Narmada Pipeline to GWIL vide letter dated 01.07.2011 for conservation of water source. A copy of the same is annexed herewith in reply enclosed as Annexure-D24 (of public hearing documents given in **Annexure XXX** of this report). GWIL has not canceled the same. Once we receive environmental clearance, we will revive or re-apply the above GWIL permission. The land area of all the three mining leases and the land area of the cement plant are different. Also, the Hon'ble NGT vide its

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		GWILL is enclosed herewith. (Annexure-7*) (8) The proposed mining project falls in the same area, in which the Environmental Clearance for M/s Nirma Limited's Cement Plant Environmental Clearance (Approval) is canceled by Ministry of Environment & Forests, Government of India, New Delhi's letter no. J-11011/992/2007-IA||(1) dated 01.12.2011. For the same land and area, the same company now wants to take environmental clearance approval for the mining project In such circumstances, it is not at all appropriate to grant environmental clearance. In addition, the matter regarding cancellation of Environmental Clearances of said cement project is still pending in the Hon'ble Supreme Court, which is the same area and land for which environmental clearance is sought for the present mining lease. In this matter, the company has not mentioned anywhere in ToR of EIA/EMP for EC. A copy of cancellation of Environmental Clearance's letter is enclosed herewith. (Annexure-8*) M/s. Nirma Limited have not mentioned true and correct information and has given interest-oriented information in the EIA/EMP report based on ToR for environmental clearance of the questioned mining lease project. So this is to inform you that, all of us farmers/labourers/herdsmen have been		judgment dated 14.01.2015 has canceled the EC cancellation order of MoEF. Cement Plant Project is not included in present EIA Report of Mine, as both the EC applications are different. EIA Report has been preapred based on baseline data generation as per TOR issued by MoEF&CC. The State Government grants mining leases in limestone bearing areas as Mineral rights in all types of land are held by the Government. According to which the State Government has approved the mining lease. However, company will not acquire agricultural land for mining without consent of farmers. If the farmers want to sell/ give consent for their land for mining at market rates/commercial negotiation, the project proponent may, accordingly, purchase the land/take consent of the land owner for mining that land. Thus, mining will be done in that land only after getting the consent of the land owner. Additionally, Project proponent also informed that as per representations received from GPCB and Collector Office, following four points are common and are the questions of the people of this area.

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		farming in this area for years, happily supporting our families and we are very happy and are proud of that. The people of this area are determined to do whatever, to ensure that limestone is not mined out on the said fertile land as it is our motherland, the environment of the entire area is maintained well and we all sustain our livelihoods through agriculture and animal husbandry. If mining is done on such a large scale on our fertile land, the fertility of the land as well as agriculture and animal husbandry of the entire area will be destroyed and the crop production capacity of our area will decrease. This will have bad consequences for us in the future such as shortage of food grains, vegetables, agricultural products and such a victual situation will arise that we shall be forced to migrate on a large scale, which will have very bad effects on our family & culture, which we will not accept at all. Nature has blessed us by creating a wall of limestone beneath the land to stop the salinity of the sea. In the coastal areas of Gir-Somnath and Porbandar districts where such natural wall has been excavated, people are suffering with terrible consequences today. The salinity of the sea has penetrated several kilometers in the coastal areas and has destroyed water tables and agricultural lands. Thus, the people of this area are determined		(1) About Private Land- Privately owned agricultural land can be purchased and mined by the company with farmer's/land owner's consent only. No land is to be acquired by the Government. If the land once sanctioned on lease by the Government, it doesn't mean that the villagers will lose the land and thus there is no question to migrate. (2) Salinity Ingress – Mining will only be done by leaving 500 meters from the High Tide Level (HTL) of the sea i.e. in half a km from the HTL,there will be no excavation in that area. There will be no change in the condition of the stone belt preventing salinity. Ground water will not be intersected at any place resulting in no change in groundwater salinity due to mining. Mining will be done with eco-friendly surface miner only. Drilling-blasting will be required only in case of hard rock. Mining will be done as per mining plan approved by Indian Bureau of Mines (IBM). (3) Regarding Schedule-1 species & wetland-Government of India notify any places as Wetland/Ramsar Convention Site through study. No such site has been notified in or around the mining lease area as per notification of 2022. A conservation plan for wild life has been prepared in consultation with the Forest Department, Government of Gujarat which has been approved by the Principal Conservator of Forests, Government of Gujarat which will be implemented.

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		not to allow mining here at any cost. In such circumstances, taking into consideration the above facts and issues, the livelihood and health of the farmers and farm laborers, entire people, for the survival of the animals, birds, creatures, it is requested to stop the mining project and not to grant the Environmental Clearance. Our above objections are requested to be taken into consideration as we seven villages strongly oppose the granting of environmental clearance for mining lease to M/s Nirma Limited. * references annexed in the written submission		According to the last 2016 declaration of Important Bird Area (IBA) for migratory birds, this mining lease area is not included in it. Even as per the judgment of the High Court, there is no wetland in this area and the Honorable NGT has also approved the same. (4) Regarding Environment protection-As you all are concerned about environment, the company is more concerned about the environment and it is our responsibility also. We assure that we are going to fulfil this responsibility sincerely. You can see that the company has invited experts of different subject matter from all over the country for the EIA study. The company has a separate environment department to follow up all matters related to the environment. We are also responsibly improving the environment with the development of industries. Recently the Honourable NGT and Supreme Court have given important reforms to work in Eco Sensitive Zones (ESZ). From my side as well as from the company, we give an assurance that we will not cause any kind of damage to the environment and mining will be done in accordance with environmental regulations. First of all, mining will be started only in approved government waste land; no private land will be grabbed by the company or acquired by the government. With the above guarantee, we are present here to answer any other questions.
9.	**Name:** Bhaliya Rameshbhai	Earlier the leaders here discussed all kinds of issues but why the canal work has not been started in our area which was approved for the		Regional Officer informed that this matter is not related to this project so represent only for environmental impact due to this project.

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	Bhimabhai **Village:** Dudheri	cost of 40 crores.		
10.	**Name:** Bhikhabhai Valabhai Bhil **Village:** Padhiyarka	Collector Bhavnagar and GPCB officers have come to hear us today. Collector is the King here and we all are here so please take a proper decision in this matter.		Regional Officer informed that represent only for environmental impact due to proposed project.
11.	**Name:** Kishangiri Hiragiri Goswami **Village**:Dudheri	There are 7 villages in core zone in which population is around 50 thousand. Only 84 people will get employment opportunity due to this project. Excavation only increases the pollution of the environment, it cannot decrease, the Gujarat Pollution Control Board should take a decision keeping in mind our 50 thousand people.		The project proponent stated that the mining will be done after receiving EC in accordance with environmental laws and regulations. This project will create thousands of indirect employment opportunities.
12.	**Name:**Rajubhai Chhelana **Village:**Vanga r	He presented verbatim that there is movement of wild life in the proposed mining area. There are wild animals' corridors which fall under Schedule-1. Lion in this area is taking care of his cubs. This location has 17 km long sweet water bund which is important area for birds as notified by IBA. Large no. Of migratory birds spends their time during winter. And efforts are being put to declare this location as Ramsar Site.		A detailed response is already given earlier by the representative of Project Proponent. Even though, it is ensured that the mining work will be done as per Environmental Laws & Regulations.
13.	**Name:** Baraiya Bhupatbhai Sukhabhai, on behalf of	I am submitting on behalfof Padhiarka Gram Panchayat. It does not make any sense of the Panchayat if all permit of the revenue kasbas are given for mining except of village area.		The project proponent stated that the Department of Industries and Mines of the State Government takes prior approval of the Central Government before granting mining leases in Lime Stone Bearing Areas. Mineral rights in all

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	Rekhaben Baraiya. Sarpanch-Padhiyarka **Village:** Padhiyarka	Panchayat is the foundation of the constitution. If the Collector/Government approves all waste land, then what should the Panchayat do? In this area, there was gauchar of Vangar and Padhiarka, which was also converted into waste land by the Government & was given to Nirma. With this project, major farmers of our village will become homeless. Due to this project, the Samdhiyala Bund will get depleted, natural water flow will be diverted, employment will be lost and migratory birds will also not come to the nearby Samdhiyala and Malan Bunds Constitutional institutions like Gram Panchayat will also get destroyed due to this project.		types of land are held by the Government. This mining lease area has been approved by Govt. Samdhiyala Salinity Ingress Control Bund is not a part of the mining area and will not be affected by the proposed scheme. Project will generate direct and indirect employment opportunities. This mining lease area is not included as per last 2016 notification of Important Bird Area (IBA) for birds. A conservation plan for wild life has been prepared in consultation with the Forest Department, Government of Gujarat, which has been approved by the Principal Conservator of Forests, Government of Gujarat & the same will be followed.
14	**Name:** Shiyal Trikambhai Rasikbhai, on behalf of Manjulaben Ranchhodbhai Dhundhalva, Sarpanch Vangar **Village**:Vangar	1. Grant of environmental clearance for mining in all revenue survey no. other than village habitat, hence, no meaning of Panchayat 2. 196 farmers of our village will loose their land rights. 3. 674 livestock of our village will be lost due to mining in waste land areas, the herdsmen will have to migrate. 4. The Samdhiala Bund adjacent to our village will be finished. 5. Our water flow direction will be changed 6. The salinity will be increase and destroy the surrounding talukas as well. 7. If the agriculture and animal husbandry of the villages will be destroyed, then this area will become desolate, when the	D54	1. Mineral rights in all types of land are held by the government. According to which the State Government, Industry and Mines Dep't, has granted Mining Lease in Limestone mineral bearing area after obtaining prior approval of Central Government. 2. No agricultural land shall be acquired by the Government for mining in the granted mining lease area. If the farmers want to sell or give consent for mining in their land at market rates, mine owner can mine the land only by taking land on sale or by consent for mining from the land owner. Thus, mining will be done in that land only after getting the consent of the land owner. 3. Mineral rights in all types of land are held by the government. According to which the State Government, Industry and Mines Dep't, has

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		villagers migrate. 8. Lions, Leopards, Chinkaras live in the revenue area of our village. 9. Both, Samdhiyala and Malan bandhara attract a large number of migratory birds in winter season. These birds will stop coming because of mining dust pollution and blasting.		granted Mining Lease in Limestone mineral bearing area after obtaining prior approval of Central Government. 4. The mining lease granted to Nirma Limited is located away from Samdhiyala Bandhara (Salinity ingress prevention bund). Hence there is no question of going to be impacted. 5. In is proposed to be construct garland drain in the sanctioned mining lease area to maintain the flow of water towards Samdhiyala Bandhara (salinity ingress prevention bund). Hence there is no question of changing water flow. 6. Mining lease areas are far away from the coastal regulatory zone (CRZ) area of the sea. Further, As per mine plan, the mining work shall not intersect the ground water table and shall be carried out well above it and shall not use underground water. However, rainwater harvesting in mined out pits, will raise the ground water table and prevent salinity ingress further. 7. Mineral rights in all types of land are held by the government. According to which mining lease has been granted in Limestone mineral bearing area after obtaining prior approval of the Central Government by the Industries and Mines Department of the State Government. No agricultural land will be acquired by the Government for mining in the sanctioned mining lease area. If the farmers want to give consent to sell their land for mining at the market rates, the mine owner can carry out

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				mining work in the land only after taking the land owner's land on sale or by consent, so mining will be done in that land only after obtaining the consent of the land owner. So the question of destruction of agriculture or animal husbandry does not arise. 8. Wildlife conservation plan has been approved by the wildlife department for conservation of Schedule 1 wildlife in this area for this mining and this sanctioned wildlife conservation plan will be implemented along with the commencement of mining activities in the area. 9. The Wildlife Conservation Plan is approved by the Wildlife Department for the conservation of Schedule 1 wildlife and this approved wildlife conservation plan will be implemented as soon as commencement of mining activities in the area and the noise pollution will remain below the prescribed limit. There will be no harm to wildlife.
15	**Name:** Narsinhbhai Mohanbhai Joliya, on behalf of Sonaben Mohanbhai Joliya, Doliya Gram Panchayat **Village:** Doliya	1. Grant of environmental clearance for mining in all revenue survey no. other than village habitat, hence, no meaning of Panchayat 2. 188 farmers of our village will loose their land rights. 3. 555 livestock of our village will be lost due to mining in waste land areas, the herdsmen will have to migrate. 4. The Samdhiala Bund adjacent to our village will be finished.	D61	1. Mineral rights in all types of land are held by the government. According to which the State Government, Industry and Mines Dep't, has granted Mining Lease in Limestone mineral bearing area after obtaining prior approval of Central Government. 2. No agricultural land shall be acquired by the Government for mining in the granted mining lease area. If the farmers want to sell or give consent for mining in their land at market rates, mine owner can mine the land only by taking

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		5. Our water flow direction will be changed 6. The salinity will be increase and destroy the surrounding talukas as well. 7. If the agriculture and animal husbandry of the villages will be destroyed, then this area will become desolate, when the villagers migrate. 8. Lions, Leopards, Chinkaras live in the revenue area of our village. 9. Both, Samdhiyala and Malan bandhara attract a large number of migratory birds in winter season. These birds will stop coming because of mining dust pollution and blasting.		land on sale or by consent for mining from the land owner. Thus, mining will be done in that land only after getting the consent of the land owner. 3. Mineral rights in all types of land are held by the government. According to which the State Government, Industry and Mines Dep't, has granted Mining Lease in Limestone mineral bearing area after obtaining prior approval of Central Government. 4. The mining lease granted to Nirma Limited is located away from Samdhiyala Bandhara (Salinity ingress prevention bund). Hence there is no question of going to be impacted. 5. In is proposed to be construct garland drain in the sanctioned mining lease area to maintain the flow of water towards Samdhiyala Bandhara (salinity ingress prevention bund). Hence there is no question of changing water flow. 6. Mining lease areas are far away from the coastal regulatory zone (CRZ) area of the sea. Further, As per mine plan, the mining work shall not intersect the ground water table and shall be carried out well above it and shall not use underground water. However, rainwater harvesting in mined out pits, will raise the ground water table and prevent salinity ingress further. 7. Mineral rights in all types of land are held by the

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				government. According to which mining lease has been granted in Limestone mineral bearing area after obtaining prior approval of the Central Government by the Industries and Mines Department of the State Government. No agricultural land will be acquired by the Government for mining in the sanctioned mining lease area. If the farmers want to give consent to sell their land for mining at the market rates, the mine owner can carry out mining work in the land only after taking the land owner's land on sale or by consent, so mining will be done in that land only after obtaining the consent of the land owner. So the question of destruction of agriculture or animal husbandry does not arise. 8. Wildlife conservation plan has been approved by the wildlife department for conservation of Schedule 1 wildlife in this area for this mining and this sanctioned wildlife conservation plan will be implemented along with the commencement of mining activities in the area. 9. The Wildlife Conservation Plan is approved by the Wildlife Department for the conservation of Schedule 1 wildlife and this approved wildlife conservation plan will be implemented as soon as commencement of mining activities in the area and the noise pollution will remain below the prescribed limit. There will be no harm to wildlife. In view of all the above, the points raised are either not correct or not properly addressed.

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16	**Name:** Himmatbhai Danabhai Makwana **Village:**Vangar	• The area to be used for mining has a permanent habitat for wildlife and its corridor The area is a corridor area for Asiatic lions in Gujarat, which is listed in schedule 1. • Lion is observed by Forest Department and recorded regularly. 275 species of birds have been recorded in the area sought for mining as well as within a radius of 10 km from mining, out of which 41 birds are in schedule 1 and 234 birds are in schedule 2. The 17 km long embankment was declared bird area IBA in 2005. If mining happens, what about the habitat of these birds ? • Noise pollution from mining (explosives) is harmful to wildlife and humans. • The proposed route of transportation and area proposed for mining will lead to deforestation. • Wildlife habitat will be destroyed. Corridor area of wildlife will be destroyed. • The mining site should be close to the residential area so that wildlife will leave the existing site and move towards the human settlement area. • Possibility of accidents with wild animals like lions, leopards, etc. • The area is also home to reptiles and mainly such creatures live underground and spend their livelihood only in a short space.	D42	• The The Principal Chief conservator of Forest, Gujarat State, Gandhi Nagar has certified by its letter dated 13.01.2022s certified the map of our mining area and its surrounding buffer area and certified that "There are no National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar Sites, Tiger Elephant Reserves within the 10 km study area of the three mines. Copy of letter dated: 13.01.20220 from Deputy Conservator of Forests is enclosed herewith and according to the conservation plan approved by the forest department, conservation of schedule-1 and other wildlife will be implemented. • Authenticated list of flora and fauna of the mining lease area and its surrounding Buffer area has been given by the Forest Department, Gujarat State Department vide letter dated 05.02.2018 and the same is mentioned in the EIA, Wildlife Conservation Plan for schedule 1 mentioned therein, is approved by the Wildlife Department and approved wildlife conservation plan will be implemented as soon as the initiation of mining activities in the area. According to the I.B.A. report-2016, the proposed mining lease area does not fall under the Important Bird Area (IBA) and not a Ramsar Site or any Important Area declared by the Forest Department. • The management proposed in the EIA report to abate Noise pollution, will be implemented

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		• There is also threat to marine life. • Due to mining, the environment and human life will also be affected. • The mining area has grey stones which prevents sea from advancing, if mining takes place there will be a possibility of sea water flowing into the countryside. • Loud noise from explosives used for mining will add to the noise pollution. • It also includes land, water and vegetation which is the natural home of a wild animal, according to the Wildlife Protection Act, 1972. • EIA for Nirma Mining it is clearly mentioned in the report that the wild life and birds are permanently removed from the site due to the explosion.		during mining. • The mining lease area of limestone is not part of any bandhara land and is sanctioned away from the coastal regulatory zone of the sea. Further, as per the mining plan, the mining will not intersect the ground water table and will be carried out above it and the underground water will not be used for mining. However, rainwater percolating into the pits caused by mining will raise the water table and prevent further salinity Ingress. • Deputy Conservator of Forests, Bhavnagar has provided details vide his letter dated 27.01.2023 that turtle rearing/breeding center is located at Hathab, Taluka: Bhavnagar is located at about 70 km away from our mining lease and there is no turtle area in 10 km area from our lease area. • There is no any forest, reserve forest or any CRZ area falls in the proposed mining lease area. Hence, wildlife and aquatic life will not be affected due to mining activity. • According to the I.B.A. report-2016, the proposed mining lease area does not fall under the Important Bird Area (IBA) and not a Ramsar Site or any Important Area declared by the Forest Department. • The Deputy Conservator of Forests has authenticated the map of our mining lease area and surrounding Buffer area and certified that "There is no National Park, Sanctuaries Biosphere Reserves, Wildlife

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				Corridor, Ramsar Site, Tiger / Elephant Reserve in the 10 km study area. Conservation plan for schedule-1 and other wildlife will be implemented as per conservation plan approved by the wildlife department. ● The mining lease area of limestone is not part of any bandhara land and is sanctioned away from the coastal regulatory zone of the sea. Further, as per the mining plan, the mining will not intersect the ground water table and will be carried out above it and the underground water will not be used for mining. However, rainwater percolating into the pits caused by mining will raise the water table and prevent further salinity Ingress. Measures to control the noise pollution are given in EIA report, will be implemented during mining. ● The Deputy Conservator of Forests has authenticated the map of our mining lease area and surrounding Buffer area and certified that "There is no National Park, Sanctuaries Biosphere Reserves, Wildlife Corridor, Ramsar Site, Tiger / Elephant Reserve in the 15 km study area. Conservation plan for schedule-1 and other wildlife will be implemented as per conservation plan approved by the wildlife department. ● Impacts from mining given as wildlife and birds may migrate from the area due to explosives. But In the EIA report, the

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				measures have been suggested to prevent its impact and its implementation will minimize this impact.
17.	**Name:** Devbhati, Gir Nature Club, Mahuva	The area is a corridor area for Asiatic lions in Gujarat's Shan Sama, which falls in schedule 1, and is also a habitat, the area is mainly used by lions to raise their cubs, where they have access to sufficient water and food. Apart from this, wild animals like leopard, wolf (Schedule-1), deer, lynx, jackal, harrier, jungle cat, porcupine also live in this area and raise their cubs. Lions are observed permanently by the forest department and observations are also recorded with GPS regularly. There is a 17 km long sweet water dam in this area and it has been declared as IBA (Important Bird Area) in 2005. 280 species of birds have been recorded here, including 44 birds in schedule 1 and 236 birds in schedule 2 in the area sought for mining as well as within a radius of 10 km from mining. The figures shown in the EIA report show only 70 birds which seems to be misrepresented just to get permission. Apart from this, rare and endangered birds have also been seen in this area. Endangered vultures also find their food in this area and also live in the nearby area, mainly through predation by vultures and lions.	D25	Land area other than village habitation is either government waste land or agriculture land. Movement of Lion and other wild animals are present in core and buffer zone. However, there is no lion or any wild animal habitation observed in core or buffer zone of limestone mining lease area. Also in draft Eco Sensitive Zone (ESZ) notification of Gir National Park, the Gir Wildlife Sanctuary, the Paniya Wildlife Sanctuary and the Mitiyala Wildlife Sanctuary, riverine corridor mentioning movement of lion & other wildlife movement which does not reflect said seven villages of proposed mining lease area. Moreover, Wildlife Conservation Plan has been prepared in consultation of Forest Department and conservation activity of plan has been approved by the Wildlife Department and will be implemented on starting the mining activity in the area. No Part of Samdhiyala or Malan Bandhara land falls in Mining lease area of Nirma. Low-lying areas are part of ML applied area in 2004 and LOI granted area in year 2008 and also ML grant in 2017 for lease deed by the Govt. looking to mineral bearing area. However, company will surrender the area from mining lease after deepening, in consultation with irrigation dep't for enhancement of water

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		In the area sought for mine lease, an estimated 190 hectares of inundated area of the freshwater dam is included in the mining. Besides, due to the proximity of the sea, dams have been built by the government at a cost of crores of rupees to prevent salt control. The limestone that is mined there Being a stony area, there is a possibility of salt migration, thus the purpose of salt prevention is not maintained. Indian Ocean humpback dolphins, bottlenose dolphins, finless porpoises, pygmy sperm whales, sting-rays and endangered sea turtles, green sea turtles and olives, protected in Schedule-I of the Wildlife Protection Act-1972 within 10 km from mining. Ridley turtles are also found here and their nests have been recorded in the past. The main reason for this 17 km long dam which was declared IBA in 2005 is because of the birds living here. What will happen to the habitat of these birds if mining takes place? Besides above following issues were also raised: 1. Noise pollution from mining (explosives) is harmful to wildlife, birds, marine life, and humans. 2. Permitted mining area is a gateway for		storage capacity of Bandhara. Proposed mining lease area does not fall under any of the following notified area: • Important Bird Area(IBA) as per 2016 IBA report • Latest Ramsar Wetland Sites,2022. • CRZ Notification,2011 Proposed mining lease area does not fall under Important Bird Area(IBA) as per 2016 IBA report. Point wise reply of your query is as under 1. Effective mitigation measures have been considered to control noise level due to blasting and transportation. • Fitting of special silencer, proper lubrication and periodic maintenance of noise generating machinery and transportation vehicles will be ensured. • Dense green belt around the opencast working has been proposed. • Further, provision of greenbelt around mine infrastructures and both sides of haul road on the surface has been made. • Blasting will be carried out as per DGMS

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		migratory birds coming to Gujarat. In which Malan Bandhara is his first vacation. In future, if they feel threatened here, they will stop coming to this area. Due to which there can be a big change in the food chain and food web of the residential area here. Which can cause great loss to humans in the coming years. 3. The proposed route for the movement of mining vehicles and the area proposed for excavation will deforest. Due to which the habitat of wildlife and birds will be affected. Apart from this, there will be a greater impact on small scale fishing than coastal fishing. 4. What will happen if mining takes place where mining takes place where there is a permanent habitat and corridor for wildlife and reptiles? 5. Wildlife habitat will be destroyed. 6. Corridor area of wildlife will be destroyed. 7. Wildlife currently living in mined areas to raise their young will be destroyed. 8. Loud noise and movement of vehicles will disturb the daily activities of animals. 9. The mining site is close to the residential area so that the wild life will leave the existing area and there will be possibility to reach near the human settlement. 10. Possibility of accidents with wild animals		regulations, Environment Management Plan has been given in Section 10.1 of EIA report. 2. No part of Malan Bandhara land falls in Mining lease area of Nirma. Therefore, there will be no impact on migratory birds due to mining activity. 3. No Forest or Reserved Forest or CRZ area falls in proposed mining lease area. Hence, there will be no impact on wildlife & aquatic life due to mining activity. 4. Land area other than village habitation is either government waste land or agriculture land. Movement of Lion and other wild animals are present in core and buffer zone. However, there is no lion or any wild animal habitation observed in core or buffer zone of limestone mining lease area. Also in draft Eco Sensitive Zone(ESZ) notification of Gir National Park, the Gir Wildlife Sanctuary, the Paniya Wildlife Sanctuary and the Mitiyala Wildlife Sanctuary, riverine corridor mentioning movement of lion & other wildlife movement which does not reflect said seven villages of proposed mining lease area. 5. Wildlife Conservation Plan has been prepared in consultation of Forest Department and has

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		like lions, leopards, etc. during mining by heavy vehicles, currently the death of lions, leopards, and other wild animals due to vehicle accidents is increasing while mining in such corridor area will be like giving death to wild animals. 11. The area is also home to reptiles and mainly such creatures live underground and make their living in a short space, so it would not be appropriate to allow mining in the area. 12. Apart from this the marine life will also be affected. 13. Due to mining, the environment and human life will also be adversely affected and will cause heavy losses in the long run. 14. The mining area is an area with gray stones and the area is located near the sea which prevents the sea from advancing, if mining takes place there will be a possibility of sea water flowing into the countryside. These gray stones make the water clean, if mining takes place, the purity of the water will decrease due to which the people around will have to fight for clean water for a long time. 15. Loud noise from explosives used for mining will increase noise pollution and such loud noise will also be a concern for nearby human settlements.		been approved by the Wildlife Department and will be implemented on starting the mining activity in the area. 6. No CRZ area falls in proposed mining lease area. During mining, there will not be any intersection with ground water. Therefore, no adverse impacts have been envisaged as proper mitigation measures have been considered. 7. Mining will be done through continuous surface miner only. However, as and when required, drilling and blasting will be carried out with required mitigation measures. 8. No Forest land, reserved Forest area falls in proposed mining lease area. Wildlife Conservation Plan has been prepared in consultation of Forest Department and conservation activity of plan has been approved by the Wildlife Department and will be implemented on starting the mining activity in the area.

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		According to the Wildlife Protection Act, 1972 to move the wildlife from their permanent residence, or to change their residence, disturbing their daily routine etc. is counted to be a punishable activity. In EIA report for Nirma mining it is clearly mentioned that due to explosives wild animals & birds will be removed permanently from this area. Places asked by Nirma Limited for mining may lead to huge loss to wild animals, environment & human life. Due to which this area doesn't seem appropriate for mining if still proceedings doesn't happen then will again knock the doors of NGT.		
18.	Purshottam Maganbhai Baraiya (On behalf of Anjuben Ghelabhai Makwana, President Mahuva Taluka Panchayat) Dudheri village	Following issues were read out by him from his written submission given in Annexure C24 of PH minutes given in Annexure XXX of this EIA: (1) Pursuant to the order dated 18/03/2011 by Hon'ble Supreme Court, the Ministry of Forest and Environment, Government of India, New Delhi constituted expert committee of 9 (nine) members chaired by Prof. C. R. Babu and as per the Ministry of Environment and Forest Order No. L-11011/7/2008-A-II(1) constituted an expert committee of 7 (seven) members under the chairmanship of C. K. Varshney. Both these expert committees have given a report that the land in these mining lease area to be "Wet Land" (fertile). Copies of both the reports are enclosed herewith. (Annexure-1 and 2*)	D41	The report of Professor C.R.Babu Committee and Professor C.K.Varshney Committee constituted by the Ministry of Environment and Forest, in which the land in this area was shown as wetland. This report has not been considered by the Hon'ble NGT vide Order dated 14/01/2015 and has dismissed the cancellation order of EC issued by Ministry of Environment and Forest, Government of India, New Delhi. Also, as per the latest Ramsar Convention site released in Nov' 22, the core zone and buffer zone of the proposed mining lease area are not covered as wetlands. A copy along with detail reply is enclosed at page D 24 of Annexure- (C2) of public hearing documents given in **Annexure XXX** of this report. (2) The State Government grants mining leases in limestone bearing areas with the prior

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		(2) Land of mining lease included Survey numbers of privately agricultural land owned by the farmers without their consent. Leases are executed by the District Collector, Geology & Mining Department, Bhavnagar and M/s. Nirma Limited, Ahmedabad for all the three mine leases in Sub Registrar Office, Mahuva. All the three lease deed has been registered as per document no. 56, 57 and 58 on 11.01.2017. Most of these lands are privately owned by farmers, where cultivation takes place. Farmers here do not want mining lease in their fertile land and do not want to give land for mining. The company cannot purchase the above land for mining lease. Not a single farmer wants to give his land without consent. All the farmers included in the lease have signed an affidavit to not sell their land for mining. Copies of affidavits made by farmers are enclosed herewith. (Annexure-3*) (3) Within radius of 5 km of the sanctioned mining lease area, there are three major reservoirs (Samdhiyala Dam, Malan Dam and Nikol Dam). The water of these reservoirs is used in the agriculture fields and ground water level remains good, so that agriculture area is richly irrigated. Farmers get three crops per year, so the farmers here have not agreed to give land for mining. Large number of native birds live in these water bodies, it is		approval of the Central Government through the Department of Industries and Mines. Mineral rights in all types of land are held by the Government. According to which the State Government has approved the mining lease. However, company will not acquire agricultural land for mining without consent of farmers. If the farmers want to sell/ give consent for their land for mining at market rates/commercial negotiation, the project proponent may, accordingly, purchase the land/take consent of the land owner for mining that land. Thus, mining will be done in that land only after getting the consent of the land owner. (3) Malan Bandhara and Samdhiyala Salinity ingress control bund are located within 10 km of the mining lease area and the mining lease is granted as per existing Acts and Rules. The water catchment area of Malan and Nikol Bandhara as well as the benefited areas are not included in the granted mining lease area. The purpose of the Samdhiyala Salinity Ingress Control Bund is to prevent the rising of salty sea water towards the land. It has been planned that where the rain water is collected, to increase the storage capacity of the bund and to facilitate the flow of water in the salinity control bund, three canals will be constructed around the cement plant. As per suggestion/advice of Irrigation Department, company will deepen the proposed land towards

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		totally inappropriate to give environmental clearance to mining in the vicinity of such water bodies. Copies of Irrigation Department report detailing the three reservoirs and details of birds and photographs of reservoirs and agricultural crops are enclosed. (Annexure-4*) (4) The area surrounding the proposed mining lease land is declared as Reserve Forest (Brihadgir area) as per Government of Gujarat, Forest and Environment Department, Gandhinagar's Resolution no. WLP-117-57R-G.1 dated 18/05/2007. Forest Land is located at a distance of only two-three km from the mining lease land and the area is currently inhabited and roamed by lions as well as Schedule-I animals. As proof of this, the observation information given by the Forest Office, Mahuva is enclosed herewith. (Annexure-5*) (5) Government waste lands of all these seven villages are included in the mining lease. In all these villages there is a reduction in gauchar land in proportion to the number of cattle according to the guidance of the Hon'ble Supreme Court. Therefore, the gram panchayats of the seven affected villages as well as the cattle owners are not agreeing to give government waste land for mining lease and under that it is inappropriate to give environmental clearance to the Company. For		the Bandhara to increase water storage. No reservoir is located in any of the three mining lease areas. Apart from this, environment and all related rules and regulations will be followed during mining. (4) No "Bruhadgir Vistar" has been declared as Reserve Forest in resolution of the Department of Environment and Forest, Gandhinagar. Further, the Deputy Conservator of Forests (DCF) has certified by its letter dated 09.11.2020 that "No National Park, Sanctuary, Biosphere Reserve, Wildlife Corridor, Ramsar Site, Tiger/Elephant Reserve is present within 15 km of the mining lease area". A copy of DCF's letter covering the area of all three mines is attached herewith in reply enclosed as Annexure-D24 of public hearing documents given in **Annexure XXX** of this report. (5) Mining leases are granted by the Government after obtaining a land availability and recommendation report from the District Revenue Department for government land falling within the sanctioned mining lease areas. None of the mining lease areas fall within the Coastal Regulatory Zone (natural wall-buffer zone) and no excavation shall be carried out in this natural wall. Mining of limestone in the mining lease areas is planned to be carried

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		this Resolution passed by Gram Panchayat are enclosed herewith. (Annexure-6*) (6) The natural wall of limestone in this area is an advantage to us in the form of a belt during natural calamities, which protects the entire area. Moreover, since the area in question is located on the sea coast, the ingress of salinity is happening very fast. The situation will worsen, if the coastal belt is broken, as this natural barrier controls the salinity of the area. (7) The company has taken permission for its water requirement from Gujarat Water Infrastructure Limited, Gandhinagar since 4th June 2008, which is now 15 years long and since all the conditions of the permission given have been violated, the water permission is considered as canceled. The company has not taken fresh or revised approval and has misled the competent authority by giving wrong details by including old approval letters as available source of water in TOR in EIA/EMP report of the proposed project, which is also ineligible to grant environmental clearance approval to the company. Letter dated 04th June 2008 of GWILL is enclosed herewith. (Annexure-7*) (8) The proposed mining project falls in the same area, in which the Environmental		out above the ground water level. Mining activities shall not in any way intersect the ground water. So there is no possibility of intrusion of sea water due to mining activities. In fact some of the pits from mining will be used as artificial recharge structures and this will improve the groundwater quality and prevent the intrusion of more salinity and reduce the increased salinity. The Company itself handed over the approved connection of Narmada Pipeline to GWIL vide letter dated 01.07.2011 for conservation of water source. A copy of the same is annexed herewith in reply enclosed as Annexure-D24 (of public hearing documents given in **Annexure XXX** of this report). GWIL has not canceled the same. Once we receive environmental clearance, we will revive or re-apply the above GWIL permission. The land area of all the three mining leases and the land area of the cement plant are different. Also, the Hon'ble NGT vide its judgment dated 14.01.2015 has canceled the EC cancellation order of MoEF. Cement Plant Project is not included in present EIA Report of Mine, as both the EC applications are different. EIA Report has been prepared based on baseline data generation as per TOR issued by

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		Clearance for M/s Nirma Limited's Cement Plant Environmental Clearance (Approval) is canceled by Ministry of Environment & Forests, Government of India, New Delhi's letter no. J-11011/992/2007-IA||(1) dated 01.12.2011. For the same land and area, the same company now wants to take environmental clearance approval for the mining project In such circumstances, it is not at all appropriate to grant environmental clearance. In addition, the matter regarding cancellation of Environmental Clearances of said cement project is still pending in the Hon'ble Supreme Court, which is the same area and land for which environmental clearance is sought for the present mining lease. In this matter, the company has not mentioned anywhere in ToR of EIA/EMP for EC. A copy of cancellation of Environmental Clearance's letter is enclosed herewith. (Annexure-8*) M/s. Nirma Limited have not mentioned true and correct information and has given interest-oriented information in the EIA/EMP report based on ToR for environmental clearance of the questioned mining lease project. So this is to inform you that, all of us farmers/labourers/herdsmen have been farming in this area for years, happily supporting our families and we are very happy and are proud of that. The people of this area are determined to do whatever, to		MoEF&CC. The State Government grants mining leases in limestone bearing areas as Mineral rights in all types of land are held by the Government. According to which the State Government has approved the mining lease. However, company will not acquire agricultural land for mining without consent of farmers. If the farmers want to sell/ give consent for their land for mining at market rates/commercial negotiation, the project proponent may, accordingly, purchase the land/take consent of the land owner for mining that land. Thus, mining will be done in that land only after getting the consent of the land owner. Additionally, Project proponent also informed that as per representations received from GPCB and Collector Office, following four points are common and are the questions of the people of this area. (1) About Private Land- Privately owned agricultural land can be purchased and mined by the company with farmer's/land owner's consent only. No land is to be acquired by the Government. If the land once sanctioned on lease by the Government, it doesn't mean that the villagers will lose the land and thus there is no question to migrate.

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		ensure that limestone is not mined out on the said fertile land as it is our motherland, the environment of the entire area is maintained well and we all sustain our livelihoods through agriculture and animal husbandry. If mining is done on such a large scale on our fertile land, the fertility of the land as well as agriculture and animal husbandry of the entire area will be destroyed and the crop production capacity of our area will decrease. This will have bad consequences for us in the future such as shortage of food grains, vegetables, agricultural products and such a victual situation will arise that we shall be forced to migrate on a large scale, which will have very bad effects on our family & culture, which we will not accept at all. Nature has blessed us by creating a wall of limestone beneath the land to stop the salinity of the sea. In the coastal areas of Gir-Somnath and Porbandar districts where such natural wall has been excavated, people are suffering with terrible consequences today. The salinity of the sea has penetrated several kilometers in the coastal areas and has destroyed water tables and agricultural lands. Thus, the people of this area are determined not to allow mining here at any cost. In such circumstances, taking into consideration the above facts and issues, the livelihood and health of the farmers and farm laborers,		(2) Salinity Ingress – Mining will only be done by leaving 500 meters from the High Tide Level (HTL) of the sea i.e. in half a km from the HTL,there will be no excavation in that area. There will be no change in the condition of the stone belt preventing salinity. Ground water will not be intersected at any place resulting in no change in groundwater salinity due to mining. Mining will be done with eco-friendly surface miner only. Drilling-blasting will be required only in case of hard rock. Mining will be done as per mining plan approved by Indian Bureau of Mines (IBM). (3) Regarding Schedule-1 species & wetland-Government of India notify any places as Wetland/Ramsar Convention Site through study. No such site has been notified in or around the mining lease area as per notification of 2022. A conservation plan for wild life has been prepared in consultation with the Forest Department, Government of Gujarat which has been approved by the Principal Conservator of Forests, Government of Gujarat which will be implemented. According to the last 2016 declaration of Important Bird Area (IBA) for migratory birds, this mining lease area is not included in it. Even as per the judgment of the High Court, there is no wetland in this area and the Honorable NGT has also approved the same.

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		entire people, for the survival of the animals, birds, creatures, it is requested to stop the mining project and not to grant the Environmental Clearance. Our above objections are requested to be taken into consideration as we seven villages strongly oppose the granting of environmental clearance for mining lease to M/s Nirma Limited. * references annexed in the written submission		(4) Regarding Environment protection-As you all are concerned about environment, the company is more concerned about the environment and it is our responsibility also. We assure that we are going to fulfil this responsibility sincerely. You can see that the company has invited experts of different subject matter from all over the country for the EIA study. The company has a separate environment department to follow up all matters related to the environment. We are also responsibly improving the environment with the development of industries. Recently the Honourable NGT and Supreme Court have given important reforms to work in Eco Sensitive Zones (ESZ). From my side as well as from the company, we give an assurance that we will not cause any kind of damage to the environment and mining will be done in accordance with environmental regulations. First of all, mining will be started only in approved government waste land; no private land will be grabbed by the company or acquired by the government. With the above guarantee, we are present here to answer any other questions.

PART B : WRITTEN REPRESENTATION RECEIVED DURING PUBLIC HEARING

Sl.	Query in Annexure no. of PH minutes	Name and address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
1.	C1	President Shri, Kisan Ekta Samiti, Mahuva dated 28.03.2023	1. The land of these 7 villages is very fertile so it cannot be given for mining. 2. The Mining will take away the main livelihood of the area which is agriculture. 3. The stones lying in soil of these villages act as a protective wall. The sea salinity will have a terrible effect on the fertile land if these stones are removed. 4. As soon as mining is allowed, the youth will become unemployed and serious issue of displacement will arise. 5. Lions & other wild animals are living in the land of these seven villages. 6. National bird Peacock and other similar types of birds are living in the land of these seven villages. 7. Since the land of these seven villages are fertile, crops like vegetables, grains, pulses, cotton, groundnuts are produced in abundance in these lands, so it should not be allowed to go for mining. 8. In 2018, the farmers of these villages have jointly given undertaking that Nirma mining activity is not suitable for this area. So the hearing should be stopped.	D1	1. The Industries and Mines Department of the State Government has obtained the prior approval of the Central Government before granting mining leases in the Limestone bearing area. Mineral rights in all types of lands are held by the Government. However, the project will not acquire agricultural land for mining, if the farmers want to sell/consent their land for mining at market rates, the mine owner may, accordingly, sell the land/take consent of the land owner to mine that land. Thus, mining will be done in that land only after getting the consent of the land owner. 2. Agriculture along with mining will work simultaneously. The establishment of mining and related industries in the area will create direct and indirect employment and create more employment opportunities for the local people. 3. Mining leases of limestone are granted away from the Coastal Regulatory Zone of the sea. The ground water quality of seven villages is saline and the salinity is already increasing due to excessive extraction of ground water aquifers for agriculture. However, the retention of rainwater due to mining in the mined out pits will percolate into the soil, raising the groundwater table and prevent further salinity ingression. Accordingly, the rain water stored in the pits will act as a salinity barrier.

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					Moreover, as per the approved mining plan, the mining will not intersect the ground water table & will be done above it and the ground water will not be used for mining so that there will be no harm to the existing ground water condition. 4. The habitation, village and its surrounding area is not part of the mining lease area and it is outside the lease area. Hence there will be no disturbance to the village habitation. Youth have to go out for employment due to lack of industries. The establishment of mining and related industries in the area will create direct and indirect employment and create more employment opportunities for the local people. Local and land loosers will be given priority in employment as per their capability and educational qualification. 5. A Wildlife Conservation Plan has been approved by the Wildlife Department for the protection of Schedule I species and accordingly it will be implemented along with commencement of mining activities in the area. 6. Same as point 5 above 7. The soil in seven villages is not fertile as the ground water quality is saline. So crops are always dependent on monsoon water. 8. The Industries and Mines Department of the State Government has obtained the prior approval of the Central Government for granting mining leases in the Limestone bearing area. Mineral rights for all types of

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					land are held by the Government. Although the Government will not acquire agricultural land for Mining purpose. If the farmers want to sell/ give consent their land for mining at market rates, accordingly mine owner shall do the mining. Thus, mining will be done in that land only. In the year 2017, Mining Lease in Limestone bearing area was approved by Government and accordingly Lease Deed Agreement was executed by District Collector, Bhavnagar
2.	C2	Shri Mahuva-Bandhara-Kheti Paryavaran Bachav Samiti dated 8.04.2023	1. For the land owned by the farmers of the survey numbers of the privately owned agricultural land included in the mining lease, without the consent of the farmers, the District Collector's office, Bhavnagar, Mines and Minerals (Government) and M/s Nirma Limited, Ahmedabad has executed the lease deed and registered the same at Mahuva sub register office on 11-1-2017. Cultivation is being done on the land is privately owned by the farmers. The farmers here do not want mining in their fertile land, the company cannot buy the above lands for mining purpose and due to such reasons the company cannot do mining in the land here. Not a single farmer wants to give away his land. 2. Within the radius of 5 km of the granted mining lease area, there are three major	D2	1. Mining leases consists of limestone minerals bearing Government and Privately owned land. Govt of Gujarat Industries and Mines Department with the prior approval of the Central Government, granted Mining Lease in Limestone bearing areas and District Collector has executed the Mining Lease Deed and registered. The rights of Mining Lease grant are with the State Govt in mineral bearing areas of privately owned land. After lease deed execution / registration, there is a provision to carry out mining operation in privately owned land after obtaining the consent of the owner of the private land, which will be observed. 2. Granted mining lease areas do not consist the water catchment areas as well as in the benefited areas of Malan and Nikol Bandhara. The purpose of the Samdhiyala Salinity Control Bund is to prevent the ingress of salty sea water towards the land.
3.	C3	Madhiya Gram Panchayat dated 8.4.2023		D3	
4.	C4	Vangar Gram Panchayat dated 8.4.2023		D4	

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			reservoirs (Malan Bandhara, Nikol Bandhara and Samdhiyala Bandhara). The water of these reservoirs meets the agriculture here, so that the prosperity in agriculture is irrigated, the farmers take three crops in a year. So the farmers here are not agree to give land for mining. It is absolutely inappropriate to allow mining in the vicinity of such water bodies. 3. The area surrounding of the proposed mining lease land has been declared as Reserve Forest (Brihadgir Area) by the Forest Department of Govt. And the Lions are currently living and roaming in this area. 4. The above mining lease area and the land thereon have been given a report by the Expert Committee constituted by the Hon'ble Supreme Court and by the Department of MOEF&CC, Government of India declaring the land to be 'Wetland', 5. Mining leases have been granted in seven villages. The Government Waste Land of all these seven villages are included in leases. In all these villages there is a shortage of Guacher land in proportion to the number of cattle. Therefore, Gram Panchayats and Cattle breeder of these seven villages are not agree to give the Government Waste land for mining lease. 6. The nature has blessed us by creating a		In which rainwater is collected. It is planned for catchment area of water and to increase the storage capacity of this Bandhara. The lands of Madhiya, Dudheri, Dudhala and Gujarda villages do not fall within the earmarked benefit area of any of the above Bandhara. Malan Bandhara and Samdhiyala Salinity Control Bund are located within 10 km of the mining lease areas mining leases are granted as per prevailing Act and Rules. All Mining, Environment and related regulations will be observed. 3. The granted mining lease areas do not include reserve forest or other forest area of any kind. The information about the wildlife living and roaming in the mining lease areas and its surrounding 10 km area obtained from the Wildlife Forest Department and included in the draft EIA report. For the conservation of schedule-1 species and other wildlife, actions will be carried out as per the Wildlife Conservation Plan and all relevant rules will be observed. Will participate in wildlife conservation through forest department schemes. 4. The granted mining lease areas do not include any declared wetlands and there is no notification declaring the land as 'wetland' either by the Supreme Court-constituted expert committee or the Ministry of Environment, Forest and Climate Change, Government of India.

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			wall of limestone in area; this is an advantage for us in the form of a belt during natural calamities. which protects the entire area. Moreover, as the area in question is located on the sea coast, the salinity intrusion is very intense. If this coastal belt is broken, the situation will be worsening. Due to this belt, the salinity of this area is controlled.		5. A resolution of the Gram Panchayat is necessary to grant a mining lease in Gauchar land. In Government land, Mining Leases are granted by the Government on getting Land availability recommendation report of the District Revenue Department. 6. The Mining leases of limestone are granted away from the Natural Coastal Belt (Coastal Regulatory Zone) of the sea. The mining of limestone in the mining lease areas are planned to be carried out above the ground water table. The mining activities will not intersect the ground water in any way. So that there will not be ingression of sea water due to the mining activities. In fact some of the mining pits will be used as an artificial recharge structures and this will improve the quality of the ground water and prevent further salinity ingression and reduce the increased salinity. In case of C3 we want to bring to attention of the government that as per our knowledge the term of this Gram Panchayat has been completed and the administrator has been appointed. The signatories are not Sarpanch at present, but, he has used letterhead of the village for signature & representation to mislead the Ministry – Govt. In view of this, we request you to not to consider this representation and consider as cancel.
5.	C5	Padhiyarka Gram Panchayat dated 8.4.2023		D5	

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6.	C6	Doliya Gram Panchayat dated 8.4.2023		D6	
7.	C7	Dudhala no.1 Gram Panchayat dated 8.4.2023		D7	
8.	C8	Dudheri Gram Panchayat dated 8.4.2023		D8	
9.	C9	Gujarda Gram Panchayat dated 8.4.2023		D9	
10.	C10	Devaliya Gram Panchayat dated 8.4.2023		D10	
11.	C11	Khared Gram Panchayat dated 8.4.202		D10	
12.	C12	Katpar Gram Panchayat dated 8.4.2023		D12	
13.	C13	Samdhiyala- 1 Gram Panchayat dated 8.4.2023		D13	
14.	C14	Patwa Gram Panchayat dated 8.4.2023		D14	
15.	C15	Gadhda Gram Panchayat Samiti dated 8.4.2023		D15	
16	C16	President		C16	

Sl.	Query in Annexure no. of PH minutes	Name and address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
		Mohanbhai Hamirbhai Makwana, BJP (Mahuva) dated 8.4.2023			
17.	C17	Shantuben Narsinh bhai Chauhan dated 8.4.2023		D17	
18.	C18	Shrimati Anjuben Ghelabhai Makwana dated 8.4.2023		D18	
19.	C19	Shri Vitthalbhai Madhubhai Vaghela dated 8.4.2023		D19	
20.	C20	Shri Bharatbhai Naranbhai Shiyal dated 8.4.2023		D20	
21.	C21	Shri Chhaganbhai Nanbhai Bhaliya dated 8.4.2023		D21	
22.	C22	Shri Ramjibhai Chittharbhai Dolshiyadated 8.4.2023		D22	
23.	C23	Mahesh Pandya Paryavaran Mitra 502, Raj Avenue, Bhaikaka nagar	1. Justify the delay in organizing EPH and the delay in taking Environmental Clearance for the project. 2. How many local people are getting	D23	1. First, EPH of the said mining lease has been scheduled on 14.10.2020 which was postponed due to COVID-19 pandemic. Again in year 2021, EPH was scheduled on

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		Road Thaltej, Ahmedabad - 380059 dated 20.4.2023	employment in this project? Direct and Indirect way? 3.What's your plan for social improvement and for community welfare? 4. How do you reduce noise pollution that arises from transportation of vehicles? 5.What kind of steps are you taking to mitigate air pollution? 6. What will be the main components of the mining closure plan? Which materials will be used for that purpose? Provide details. 7.What fuel are you using for the DG set? Kindly justify. 8. How do you fulfil the water requirement? Give details.		16.12.2021, however due to unavoidable circumstances GPCB has canceled the EPH. Meantime, ToR has been expired and we have again taken fresh ToR and on submission of EIA report this EPH has been scheduled on 28.04.2023. 2. Direct employment due to said mining project is around 55 nos and many more thousands of persons will be indirectly engaged. Details on employment potential has been given in section 2.14 and 8.1 in DEIA report. 3. Project would initially target the villages within 2 km of limestone Mine. Additionally, the amenities as reported for the villages in Census 2011 were studied. As per Census 2011 data, almost all the facilities are available in the villages. The field observations and data analysis indicate that the villages have concerns related to safe drinking water & proper water supply system, connecting roads in the villages and sanitation. Details regarding the same has been given in Section 8.4 & 8.3 of EIA report. 4. Effective mitigation measures have been considered to control noise level due to transportation. • Fitting of special silencer, proper lubrication and periodic maintenance of noise generating machinery and transportation vehicles will be ensured. • Dense green belt around the opencast

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					working. • Further, provision of greenbelt around mine infrastructures and both sides of haul road on the surface. Environment Management Plan has been given in Section 10.1 of EIA report. 5. Major points of Air Environment Management have been given as below. • The emission of dust will be restricted by the use of dust suppressing systems such as fixed or mobile water spraying system at fugitive sources (working faces & loading point), haul roads, stock yards, dumps, stock yard and wherever required. • Transport vehicles will be maintained periodically as per the manufacturers' norms and maintained spill proof. They will be covered during transportation of mineral. No overloading shall be permitted. All heavy and light vehicles shall be well maintained and will have their "Pollution Under Control" (PUC) certificates. • Tree plantation will be carried out along the mine periphery (7.5 m), along the sides of haul roads (outside quarry area or working dumps) and other vacant area • Dust masks will be provided as safety measure to the workers, engaged at

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					dust generation points like excavation site, loading/unloading points, etc. • All equipment's will be maintained periodically to minimize source emissions. Regular maintenance schedule will be adopted as per manufacturer's specification. • Good housekeeping will be enforced. Environment Management Plan has been given in Section 10.1 of EIA report. 6. There are major six components of mine closure plan. i. Management / decommissioning of infrastructure ii. Disposal of mining machinery iii. Safety and security iv. Temporary discontinuance v. Economic repercussions of closure of mine and manpower retrenchment vi. Time scheduling for abandonment Details about each component have been given in Section 4.10.3 of EIA report. 7. Diesel is proposed as a fuel in the DG Set. 8. Water requirement will be fulfilling from the following three sources.

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					• Water harvested within mine lease during rainy season. • Narmada water pipeline. • Reject water RO/DM Plant of proposed cement plant
24.	C24	Shri Mahuva Bandhara Khetivadi Paryavaran Bhachav Samiti dated 28.04.2023	1. Pursuant to the order dated 18/03/2011 by Hon'ble Supreme Court, the Ministry of Forest and Environment, Government of India, New Delhi constituted expert committee of 9 (nine) members chaired by Prof. C. R. Babu and as per the Ministry of Forest and Environment, Order No. L-11011/7/2008-A-II(1) constituted an expert committee of 7 (seven) members under the chairmanship of C. K. Varshney. Both these expert committees have given a report that the land in these mining lease area to be "Wet Land" (fertile). 2. Land of mining lease included Survey numbers of privately owned agricultural land owned by the farmers without the consent of the farmers are executed by the District Collector, Geology & Mining Department, Bhavnagar and M/s. Nirma Limited, Ahmedabad for all the three leases in Mahuva Sub Registrar Office. The all three lease deed has been registered as per document no. 56, 57 and 58 on 11.01.2017". Most of these lands are privately owned by farmers, where cultivation takes place. Farmers here do not	D24	1. The report of Professor C.R.Babu Committee and Professor C.K.Vashney Committee constituted by the Ministry of Forest and Environment, in which the land in this area was shown as wetland. This report has not been approved by the Hon'ble NGT and the NGT vide Order dated 14/01/2015 has dismissed the MoEF&CC's EC cancellation order dated 01/12/2011. Further, The Principal Chief conservator of Forest, Gujarat State, Gandhi Nagar has certified by its letter dated 13.01.2022 that "No National Park, Sanctuary, Biosphere Reserve, Wildlife Corridor, Ramsar Site, Tiger/Elephant within 10 km of the Reserve". A copy of DCF's letter covering the area of all three mines is submitted in Public Hearing Documents. Also, as per the latest Ramsar Convention site released in Nov'22, the core zone and buffer zone of the proposed mining lease area are not covered as wetlands in the latest report. 2. The state government grants mining leases

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			want mining lease in their fertile land, do not want to give land for mining. The company cannot purchase the above land for mining lease. Not a single farmer wants to give his land without consent. All the farmers included in the lease have signed an affidavit to not to sell their land for mining. 3. Within radius of 5 km of the sanctioned mining lease area, there are three major reservoirs (Samdhiyala Dam, Malan Dam and Nikol Dam). The water of these reservoirs is used in the agriculture farm, Ground water level remains good, so that agriculture is richly irrigated. Farmers have three crops per year, so the farmers here are not agreed to give land in mining. Large number of native birds live in these water bodies, it is totally inappropriate to give environmental clearance to mining in the vicinity of such water bodies. 4. The area surrounding the proposed mining lease land is declared as Reserve Forest (Brihadgir area) as per Government of Gujarat, Forest and Environment Department, Gandhinagar's Resolution no. WLP-117-57R-G.1 dated 18/05/2007. Forest Land is located at a distance of only two-three km from the mining lease land and the area is currently inhabited and roamed by lions as well as Schedule-I animals.		in limestone bearing areas with the prior approval of the central government through the Department of Industries and Mines. Mineral rights in all types of land are held by the government. According to which the state government has approved the mining lease. However, the company will not acquire agricultural land for mining without consent of farmers. If the farmers want to sell/consent their land for mining at market rates/commercial negotiation, the project proponent may, accordingly, purchase the land/take consent of the land owner to mine that land. Thus, mining will be done in that land only after getting the consent of the land owner. 3. Within 10 km of the mining lease area, Malan Bandhara and Samdhiyala Salinity Control Bund are to prevent salt spread and the mining lease is granted as per existing Acts and Rules. The water catchment area of Malan and Nikol Bandhara as well as the benefited areas do not include the mining lease areas granted. The purpose of the Samdhiyala Salinity Ingress Control Bund is to prevent the rising of salty sea water towards the land. In which the rain water is collected, it has been planned to increase the storage capacity of the bund and to facilitate the

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			5. Government waste lands of all these seven villages are included in the mining lease. In all these villages there is a reduction in gauchar land in proportion to the number of cattle according to the guidance of the Hon'ble Supreme Court. Therefore, the gram panchayats of the seven affected villages as well as the cattle owners are not agreeing to give government waste land for mining lease and under that it is inappropriate to give environmental clearance to the Company. For this Resolution has been passed by Gram Panchayat 6. The natural wall of limestone in this area is an advantage to us in the form of a belt during natural calamities, which protects the entire area. Moreover, since the area in question is located on the sea coast, the ingress of salinity is happening very fast. The situation will worsen, if the coastal belt is broken, as this natural barrier controls the salinity of the area. 7. The company has taken permission for its water requirement from Gujarat Water Infrastructure Limited, Gandhinagar since 4th June-2008, which is now 15 years long and since all the conditions of the permission given have been violated, the water permission is considered as canceled. The company has not taken fresh or revised approval and has misled the competent		flow of water in the salt control bund, three canals will be constructed around the cement plant. As per suggestion/advice of Irrigation Department the company will deepen the proposed land towards the bandhara to increase water storage. No reservoir is located in any mining lease area. Apart from this, environment and all related rules will be followed during mining. 4. No 'Bruhadgir Vistar' has been declared as Reserve Forest in resolution No. WLP-1107-572-J of the Department of Forest and Environment, Gandhinagar dated 18/05/2009. Further, the The Principal Chief conservator of Forest, Gujarat State, Gandhi Nagar has certified by its letter dated 13.01.2022 that "No National Park, Sanctuary, Biosphere Reserve, Wildlife Corridor, Ramsar Site, Tiger/Elephant within 10 km of the Reserve". 5. Mining leases are granted by the Government after obtaining a land availability recommendation report from the District Revenue Department on government land falling within the sanctioned mining lease areas. 6. None of the mining lease areas fall within the Coastal Regulatory Zone (natural wall-buffer zone) and no excavation is to be

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			authority by giving wrong details by including old approval letters as available source of water in TOR in EIA/EMP report of the proposed project, which is also ineligible to grant environmental clearance approval to the company. 8. The proposed mining project falls in the same area, in which the Environmental Clearance for M/s Nirma Limited's Cement Plant Environmental Clearance (Approval) is canceled by Ministry of Environment & Forests, Government of India, New Delhi's letter no. J-11011/992/2007-IA||(1) dated 01.12.2011. For the same land, the same company now wants to take environmental clearance approval for the mining project for the same area. In such circumstances, it is not at all appropriate to grant environmental clearance.		carried out in this natural wall. Mining of limestone in the mining lease areas is planned to be carried out above the ground water level. Mining activities shall not in any way intersect the ground water. So there is no possibility of intrusion of sea water due to mining activities. In fact some of the pits from mining will be used as artificial recharge structures and this will improve the groundwater quality and prevent the intrusion of more salinity and reduce the increased salinity. 7. The Company itself handed over the approved connection of Narmada Pipeline to GWIL vide letter dated 01.07.2011 for conservation of water source. GWIL has not canceled the same. Once we receive environmental clearance, we will revive or re-contract the above GWIL permit. 8. The land area of all the three mining leases and the land area of the cement plant are different. Also, the NGT vide its judgment dated 14.01.2015 has set aside the MoEF, New Delhi order no. J 11011/992/2007-IA II(I) dated 1.12.2011 vide which EC of the plant was canceled. As both mining & cement plant projects are different as well as EC application are different, therefore not mentioned about this in EIA. 9.

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25.	C25	Dev Bhati, President, Gir Foundation Nature Club,	The area is a corridor area for Asiatic lions in Gujarat's Shan Sama, which falls in schedule 1, and is also a habitat, the area is mainly used by lions to raise their cubs, where they have access to sufficient water and food. Apart from this, wild animals like leopard, wolf (Schedule-1), deer, lynx, jackal, harrier, jungle cat, porcupine also live in this area and raise their cubs. Lions are observed permanently by the forest department and observations are also recorded with GPS regularly. There is a 17 km long sweet water dam in this area and it has been declared as IBA (Important Bird Area) in 2005. 280 species of birds have been recorded here, including 44 birds in schedule 1 and 236 birds in schedule 2 in the area sought for mining as well as within a radius of 10 km from mining. The figures shown in the EIA report show only 70 birds which seems to be misrepresented just to get permission. Apart from this, rare and endangered birds have also been seen in this area. Endangered vultures also find their food in this area and also live in the nearby area, mainly through predation by vultures and lions. In the area sought for mine lease, an estimated 190 hectares of inundated area of the freshwater dam is included in the mining. Besides, due to the proximity of the sea, dams have been built by the government at a cost of crores of rupees to prevent salt control. The limestone that is mined there Being a stony	D25	Land area other than village habitation is either government waste land or agriculture land. Movement of Lion and other wild animals are present in core and buffer zone. However, there is no lion or any wild animal habitation observed in core or buffer zone of limestone mining lease area. Also in draft Eco Sensitive Zone (ESZ) notification of Gir National Park, the Gir Wildlife Sanctuary, the Paniya Wildlife Sanctuary and the Mitiyala Wildlife Sanctuary, riverine corridor mentioning movement of lion & other wildlife movement which does not reflect said seven villages of proposed mining lease area. Moreover, Wildlife Conservation Plan has been prepared in consultation of Forest Department and conservation activity of plan has been approved by the Wildlife Department and will be implemented on starting the mining activity in the area. No Part of Samdhiyala or Malan Bandhara land falls in Mining lease area of Nirma. Low-lying areas are part of ML applied area in 2004 and LOI granted area in year 2008 and also ML grant in 2017 for lease deed by the Govt. looking to mineral bearing area. However, company will surrender the area from mining lease after deepening, in consultation with irrigation dep't for enhancement of water storage capacity of Bandhara.

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			area, there is a possibility of salt migration, thus the purpose of salt prevention is not maintained. Indian Ocean humpback dolphins, bottlenose dolphins, finless porpoises, pygmy sperm whales, sting-rays and endangered sea turtles, green sea turtles and olives, protected in Schedule-I of the Wildlife Protection Act-1972 within 10 km from mining. Ridley turtles are also found here and their nests have been recorded in the past.The main reason for this 17 km long dam which was declared IBA in 2005 is because of the birds living here. What will happen to the habitat of these birds if mining takes place? Besides above following issues were also raised: 1. Noise pollution from mining (explosives) is harmful to wildlife, birds, marine life, and humans. 2. Permitted mining area is a gateway for migratory birds coming to Gujarat. In which Malan Bandhara is his first vacation. In future, if they feel threatened here, they will stop coming to this area. Due to which there can be a big change in the food chain and food web of the residential area here. Which can cause great loss to humans in the coming years. 3. The proposed route for the movement of		Proposed mining lease area does not fall under any of the following notified area: • Important Bird Area(IBA) as per 2016 IBA report • Latest Ramsar Wetland Sites,2022. • CRZ Notification,2011 Proposed mining lease area does not fall under Important Bird Area(IBA) as per 2016 IBA report. Point wise reply of your query is as under 9. Effective mitigation measures have been considered to control noise level due to blasting and transportation. • Fitting of special silencer, proper lubrication and periodic maintenance of noise generating machinery and transportation vehicles will be ensured. • Dense green belt around the opencast working has been proposed. • Further, provision of greenbelt around mine infrastructures and both sides of haul road on the surface has been made. • Blasting will be carried out as per DGMS regulations, Environment Management Plan has been given in Section 10.1 of EIA report. 10. No part of Malan Bandhara land falls in

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			mining vehicles and the area proposed for excavation will deforest. Due to which the habitat of wildlife and birds will be affected. Apart from this, there will be a greater impact on small scale fishing than coastal fishing. 4. What will happen if mining takes place where mining takes place where there is a permanent habitat and corridor for wildlife and reptiles? 5. Wildlife habitat will be destroyed. 6. Corridor area of wildlife will be destroyed. 7. Wildlife currently living in mined areas to raise their young will be destroyed. 8. Loud noise and movement of vehicles will disturb the daily activities of animals. 9. The mining site is close to the residential area so that the wild life will leave the existing area and there will be possibility to reach near the human settlement. 10. Possibility of accidents with wild animals like lions, leopards, etc. during mining by heavy vehicles, currently the death of lions, leopards, and other wild animals due to vehicle accidents is increasing while mining in such corridor area will be like giving death to wild animals. 11. The area is also home to reptiles and mainly such creatures live underground and make their living in a short space, so it would not be appropriate to allow mining in the area. 12. Apart from this the marine life will also be		Mining lease area of Nirma. Therefore, there will be no impact on migratory birds due to mining activity. 11. No Forest or Reserved Forest or CRZ area falls in proposed mining lease area. Hence, there will be no impact on wildlife & aquatic life due to mining activity. 12. Land area other than village habitation is either government waste land or agriculture land. Movement of Lion and other wild animals are present in core and buffer zone. However, there is no lion or any wild animal habitation observed in core or buffer zone of limestone mining lease area. Also in draft Eco Sensitive Zone(ESZ) notification of Gir National Park, the Gir Wildlife Sanctuary, the Paniya Wildlife Sanctuary and the Mitiyala Wildlife Sanctuary, riverine corridor mentioning movement of lion & other wildlife movement which does not reflect said seven villages of proposed mining lease area. 13. Wildlife Conservation Plan has been prepared in consultation of Forest Department and has been approved by the Wildlife Department and will be implemented on starting the mining activity in the area.

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			affected. 13. Due to mining, the environment and human life will also be adversely affected and will cause heavy losses in the long run. 14. The mining area is an area with gray stones and the area is located near the sea which prevents the sea from advancing, if mining takes place there will be a possibility of sea water flowing into the countryside. These gray stones make the water clean, if mining takes place, the purity of the water will decrease due to which the people around will have to fight for clean water for a long time. 15. Loud noise from explosives used for mining will increase noise pollution and such loud noise will also be a concern for nearby human settlements. 16. According to the Wildlife Protection Act, 1972 to move the wildlife from their permanent residence, or to change their residence, disturbing their daily routine etc. is counted to be a punishable activity. In EIA report for Nirma mining it is clearly mentioned that due to explosives wild animals & birds will be removed permanently from this area. Places asked by Nirma Limited for mining may lead to huge loss to wild animals, environment & human life. Due to which this area doesn't seem appropriate for mining if still proceedings doesn't happen then will again		14. No CRZ area falls in proposed mining lease area. During mining, there will not be any intersection with ground water. Therefore, no adverse impacts have been envisaged as proper mitigation measures have been considered. 15. Mining will be done through continuous surface miner only. However, as and when required, drilling and blasting will be carried out with required mitigation measures. 16. No Forest land, reserved Forest area falls in proposed mining lease area. Wildlife Conservation Plan has been prepared in consultation of Forest Department and conservation activity of plan has been approved by the Wildlife Department and will be implemented on starting the mining activity in the area.

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			knock the doors of NGT.		
26	C26	Rajabhai Kanabhai Vala, Vangar village	He supported and welcomed the project.	D26	Company welcomed his suggestion.
27	C27	Gordhanbhai N Padshala, Madhiya village	He supported and welcomed the project.	D27	Company welcomed his suggestion.
28	C28	Maheshbhai Bhagwandas Patel, Padhiyarka	He supported and welcomed the project.	D28	Company welcomed his suggestion.
29.	C29	Mohanbhai Hamirbhai Makwana, Gujarda village	He submittedhis representation dated 28/04/2023 which is enclosed as **Annexure – C29** in the minutes of PH given in Annexure XXX of EIA**.** Contents are same as given in serial no. 24 of this table.	D29	Points / questions raised by Mohanbhai Hamirbhai Makwanaa are same as raised by Shri Mahuva Bandhara Khetivadi Paryavaran Bhachav Samiti (Sl. No. 24) Answers are given in reply of Serial No. 24. Moreover it was also informed that the MoEF&CC had canceled Cement Plant EC on the report given by Prof. Babu Committee and Prof. Vashaney Committee which was not accepted by Hon'ble NGT & Hon'ble NGT has set-aside/revived cement plant EC vide its judgement dated 14.01.2015. Hon'ble Supreme court has not given any stay on Hon'ble NGT order. So the environment clearance of the company is in the same condition as it was. As per The High Court order, Company has already returned 100 Ha. for Samdhiyala Bund and we have to undertake deepening when the plant come so that we can increase the

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					storage capacity of rain water. Due to this the capacity of the bund will increase by 200%. Company is willing to give land for school at Dudheri village and contribution for the same. Letter regarding our commitment is already inwarded to Collector Sir on 24/02/2023.
30	C30	Sagar Rabri,Trustee Khedut Ekta Manch	1. We are submitting a single representation for all 7 villages and 3 mines because we consider them to be a single mining unit since all the 7 villages comprising the 3 mines are contiguous (as is shown below), and therefore they cannot be treated as 3 separate units. 2. Doing so is not only misleading but illegal. The Project Proponent cannot and does not have any discretionary powers to thus splice the mining area and portray an incomplete and misleading picture of environmental loss and degradation and destruction of livelihoods. 3. Hence at the outset we state that the 3 EPHs being held on 28th April 2023 are illegal and cannot and should not happen at all. Our letter dated 26th April 2023 to Secretary, MoEF&CC has already been sent to concerned authorities. With reference to that letter we had hoped that the EPH would have been canceled. 4. There are 3 mining projects by the same company in the area spread over 7 villages in the Mahuva taluka – one in villages Gujarda, Dudheri and Dudhala, second in	D55	23. As all minerals under purview of State Government, the said mining leases has been granted as three individual mining leases by Industries and Mining Department by Government of Gujarat on 08.01.2017. Lease deed has been executed on 11.01.2017 as under. The three-mine lease area of Padhiyarka & Doliya, Vangar & Madhiya and Gujarda, Dudheri & Dudhala for the mining of Limestone in the area 332.24 ha, 616.1336 ha & 681.62 ha has been granted to the M/s Nirma Ltd. through the three different grant orders vide letter No. MCR-102004-1945-CHH, MCR-102004-1827-CHH & MCR-102004-1943-CHH dated 08.01.2017 by the Govt. of Gujarat respectively. 24. The State Government have sanctioned above mentioned three mining leases under the Mineral Act / Rules in mineral bearing area and as per Environment Act, the date of public hearing for environmental clearance of the above mentioned three limestone mining leases

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			Vangar and Madhiya, and the third in Padhiarka and Doliya (EIA p. C1-11 for all 3 reports). 5. The MoEF&CC also recognizes this fact. Which is why condition no. 8 of the ToR for Padhiarka and Doliya mine, condition no. 8 for Vangar and Madhiya mine and condition no. 9 for Gujarda, Dudheri and Dudhala mine has asked for a "**cumulative impact assessment** by considering all the mining activity … of the **mines** …. and should indicate the capacity of **each mine** considered for predication of air quality modeling…" (emphasis added): 6. The Project Proponent needs to carry out the cumulative impact assessment by considering all the mining activity including the transport scenario of the mines in the study area and should indicate the capacity of each mine considered for predication of air quality modelling. The control case and worst-case scenario needs to be demonstrated with controlling factor and GLCs values for all the pollutants needs to be clearly mentioned. The input parameters used for the modelling also needs to be submitted. 7. The PP, in their Compliance report (in the same table), has accepted that they have done a "cumulative impact assessment". If the impact is to be cumulatively assessed,		is fixed on 28.04.2023 by GPCB for conduct of Public Hearing. Three contiguous mine leases have been granted by the state government to the company and each mine lease is required to obtain a separate environmental clearance as per EIA Notification 2006. Therefore, no discretionary powers have been availed by the project proponent nor any portrayal done which is incomplete or misleading. 25. The State Government have sanctioned above mentioned three mining leases under the Mineral Act / Rules and as per Environment Act, the date of public hearing for environmental clearance of the above mentioned three limestone mining leases is fixed on 28.04.2023 by GPCB for conduct of Public Hearing after submission of Draft EIA report as per granted ToR from MoEF&CC. 26. The State Government have sanctioned above mentioned three mining leases under the Mineral Act / Rules and in mineral bearing area with prior approval of Central Government in 2008, subsequently in 2017. 27. The contiguity of the mine lease has been recorded in the documents submitted to the MOEF&CC, New Delhi during the

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			why is it spliced into 3 mines? Alternatively, if the mine is to be reported separately, why does the ToR ask for a "cumulative assessment"? 8. In this connection, the reporting in EIA is malafide. The EIA, on page C1-10 (all 3 reports) states that: 9. "…since there are two other mines also proposed by Nirma Ltd. in the vicinity of … EIA/ EMP is also being prepared for the other two mines together, air quality stations were established giving due consideration to all three mines in core zone and buffer zone." The important fact to highlight here is that the EIA/EMP is not being prepared **together** only because Ms. Nirma Ltd. has proposed 2 other mines in the area, but is being done in **fulfilment of a condition of the ToR**. This fact is being suppressed here and hence it is malafide in its misleading presentation. 10. All 7 villages are contiguous villages (as shown in the taluka map above) and the buffer zone of one lease area becomes the core zone of the other lease area, and vice versa. This is made amply clear in Table C3-5 (Location of Air Sampling Stations, page C3-13-14) which provides the list of air sampling stations established to measure the Ambient Air Quality and the accompanying Figure no. C3-8 which establishes the proximity and contiguity of the 7 villages in the 3 mining lease areas.		process of obtaining Terms of Reference. As a consequence, the cumulative impact assessment has been prescribed at sl. no. 8 for Vangar & Madhiya and Padhiyarka & Doliya and sr. no. 9 for Gujarda, Dhudheri & Dudhala by MoEF&CC and the same have been complied while making draft EIA report. Therefore, no discretionary powers have been availed by the project proponent nor any portrayal done which is incomplete or misleading. Cumulative impact assessment has been carried out to comply ToR condition no. 8 & 9. Air quality predication modeling for Cumulative impact of 3 mines is given in EIA Report as follows: Doliya and Padhiyaraka mine: Annexure XXI and summarized in Section 4.4.1 (b) page 4-8, Table C 4.4, page 4-10 of EIA report. Gujarada, Dudheri and Dudhala mine: Annexure XXI and summarized in Section 4.4.1 (a) page C 4-8, Table C 4.4, page C4-11 of EIA report. Vangar and Madhiya Mine: Annexure XXI and summarized in Section 4.4.1 (b) page 4-8, Table C4-4, page C4-10 of EIA report Cumulative impact has been carried out because mines are close to each other. Mathematical modelling helps to predict impact on ambient air quality when all three mines will work simultaneously. This

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			11. The separate EIAs are a ploy to hide the entirety of the bio-diversity, flora and fauna, endangered and protected wildlife as well as minimize (on paper) the tremendous loss of livelihoods and the irreversible damage to the water bodies, Samadhiyala salinity ingress control bund and the Malan reservoir being the most important, that the project will unleash. It is a ploy to ultimately mislead the Ministry and the public at large. Hence, our submission is that the entire mining operation over these 7 villages be treated as one project. Only then can the magnitude of the adverse impacts on water, water bodies, livelihoods, health, wildlife habitat, salinity ingress, coastal mangroves and marine life be accurately assessed. Treating the 3 mines as separate means that the EIAs will be incomplete and hence inaccurate and misleading. 12. Only a single EIA for all the 3 mines spread over these 7 villages would be able to bring out the real picture of the loss and degradation that will be caused to land, air, water and the life of the people of the area. 13. Moreover, the mining operation by M/s Nirma Cement Ltd. in these 7 villages cannot be viewed in isolation and should be seen in conjunction with the mining operation by M/s Ultratech Ltd. in 13		helps in taking preventive/ mitigative measures to improve parameters of ambient air quality within norms as per given in NAAQS 2009. This is condition of ToR point (viii) for Vangar and Madhiya, (ix) for Gujarada, Dudheri and Dudhala and (viii) for Doliya and Padhiyaraka mine. There is no malafide reporting in EIA. Three contiguous mine leases have been granted by the state government to the company and each mine lease is required to obtain a separate environmental clearance as per EIA Notification 2006. Company is following guidelines of Ministry of Environment, Forest & Climate Change, Govt. Of India in preparing EIA Reports. No fact has been suppressed nor any malafide nor misleading presentation is there. 28. Three separate EIAs have been prepared as three contiguous mine leases have been granted by the state government to the company and each mine lease is required to obtain a separate environmental clearance as per EIA Notification 2006. Company is following guidelines of Ministry of Environment, Forest & Climate Change, Govt. of India in preparing EIA Reports.

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			villages of Mahuva and Talaja talukas. Seeing it thus reveals that the entire stretch of nearly 90-100 kms. of the coastline will be denuded of the limestone which acts as a natural barrier against coastal erosion and salinity ingress. 14. Further, both these, i.e. Nirma Cement mines and Ultratech Cement mines, must be seen in conjunction with the following proposed mines running along the coast of Saurashtra: 15. The above list is only a sample of the proposed mines which are to have a public hearing and does not include the already sanctioned and running mines. 16. It is thus **essential to see the entire peninsular coast as one geographical and geological unit to understand the cumulative impact of all such mining for the present and the future**. 17. Such massive mining of materials and destruction of the natural barrier of limestone will spell doom and destruction for the whole of Saurashtra. The impact of this destruction on flora, fauna, lion habitat, lion numbers, human misery and attendant migration will be irreversible and nearly permanent. From the development point of view this is neither sustainable nor responsible. This project cannot and should not be granted the EC. 18. Paltry and costly job creation		No fact is being hidden in preparation of EIA Reports. List of flora and fauna is given in Annexure XIII, Authenticated location map showing no presence of Wildlife Sanctuary/National Park etc in 15 km radius is given in Annexure XIV of EIA report. There is no perennial surface water body within the 3-mine lease area and hence there will not be any impact on surface water body within mining lease, except seasonal streams. Mining activity shall not take place outside ML area. Mining activities will not have any impact on Malan reservoir since all three mines are outside the drainage system of Malan. For Samdhiyala, the mines are planned to scientifically contribute so as water flow towards Samdhiyala will not disturb & increase its water storage capacity also. Wildlife conservation plan has been approved from forest department (PCCF) vide letter no. WLP/32/C/670-672/2021-22 dated 20.12.2021. Measures suggested in the plan shall be followed in consultation with Forest Department. Besides this, any other support required time to time to protect ecology of area by

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			19. The employment potential of this mine is mentioned in the EIA on page C2-28 and in tables C2-16 and C2-14. The total employment generation will be 84 (Gujardi, Dudheri and Dudhala), 55 (Padhiarka and Dolia) and 58 (Vangar and Madhiya) jobs only and for 11 years only. A total of 197 jobs!!! **The cost of 1 job is therefore Rs. 40,10,152/-**, calculated on the basis of the total cost of the mining which has been calculated as Rs. 79,00,00,000/- (Rs. 25 crores for Gujardi, Dudheri and Dudhala, Rs. 29 crores for Padhiarka and Dolia and Rs. 25 crores for Vangar and Madhiya in Table C1-1 on page C1-5). Of the 197, 28 jobs will be of a highly skilled nature and 129 of a skilled nature. 40 will be semi-skilled and unskilled jobs. Creating a mere 28 highly-skilled and 129 skilled jobs at this huge cost is not only questionable but entirely foolish and laughable, if not so tragic. Calling 197 jobs for 11 years as "job creation" is a travesty. 20. Conversely, the destruction of agriculture and people dependent on it for their livelihood will run into thousands of families and tens of thousands of people. The agricultural jobs maintain and sustain nature, flora and fauna and is sustainable and preserves a way of life, which mining will completely destroy and erase. Most importantly though, agriculture keeps		the forest department shall be undertaken by the company if required. Mines/ industries present in 10 km radius of project (impact area) are given in report as per requirement of MoEF&CC guidelines. In order to check salinity ingression, large scale rainwater harvesting and artificial recharge measures shall be taken up in and around the core zone. Hydrological network system will be established by constructing the piezometers in and around the lease and water quality will be checked regularly to know the movement of fresh water / saline water interface. Positive pressure of fresh water on landward site will be created, this will push back the saline front, which may be at a lower elevation. Mines of Ultratech Ltd. are outside 10 km impact area. Excavated area at the end of life of Gujarda, Dudheri and Dudhala Mine shall be 114.24 ha (16.76%) out of total ML area of 681.62 ha, Vangar and Madhiya Mine shall be 197.0 ha (32.18%) out of total ML area of 612.1336 ha and Padhiyarka and Doliya Mine shall be 100.61 ha (30.28%) out of total ML area of 332.24 ha. Thus excavations shall be carried in small area at this stage. Limestone will be mined out in small

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			people protected from vulnerabilities and vagaries of life and allows them to be in charge of their lives, which will not be the case if there is large scale destruction of livelihoods and attendant migration. 21. Creating 197 jobs while destroying thousands of jobs and upending tens of thousands of lives is not justifiable from any cost-benefit point of view. At least it does not come through in the EIA. 22. The indirect job creation will be in the nature of casual unskilled jobs such as automobile drivers, tea vendors, peons, watchmen, etc. The indirect jobs created by agriculture, on the other hand, are in onion dehydration plants, APMCs, trading, oil mills, ginning presses, and exports. The numbers absorbed in the latter will be far greater than those in the former. 23. Impact On Water Bodies And Water Table 24. The EIA report states that "Ground water is the major source of water for irrigation as well as for drinking purpose in the study area. …" (Exe. Sum. p. 7). The impact of mining related blasting and removal of limestone, as is widely reported and known, leads to the disappearance of the ground water from the area. This has not been reported in the EIA and would be a major omission. The impact of this would be		patches only and that will be restricted upto a depth of +1 m above ground water table. Therefore, no sea water ingress due to mining. Considering that the company is willing to address of all possible concerns, in a reasonable manner for safeguarding the environment. 29. There are several factors that are accounted for in project cost. These include the high cost of land purchase or land lease, high cost of machinery such as surface miners, cost of creating infrastructure, etc. In order to have minimum impact on the surrounding area due to excavation, surface miners have been proposed for operation. Thus, to operate machinery, safety aspects in mining, operation of mine as per approved plan, environment management etc. involves highly skilled and skilled manpower with required qualification and experience. Cost calculation given is not correct and misleading. Other than direct employment several indirect employments will also be created by way of transportation, maintenance facilities and other auxiliary business. There will be no massive destruction of

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			disastrous for the agriculture in the surrounding areas. Hence the impact of the project would not be confined to the 7 villages or the mining pit area only and will be felt much further than that and for far longer than 11 years of the mine life. 25. By granting an EC to a project of this nature, the MoEFCC and GPCB are directly and knowingly inviting irreversible and permanent damage to the quality and quantity of groundwater in the area. 26. Further, it has been stated that "… none of the first order or second order streams will get disturbed by the mining pits except initial stretches of first order stream in … Dudhala area" (pt. 4.2.2, page C4-2). However, Fig. C4-1 (Proposed Diversion Channels) on page C4-3 show that the other 2 mines of which this core zone forms the buffer zone will affect these streams. It is imperative that all 3 mines over these 7 villages be seen as one entity. 27. The EIA Report also accepts that "However, monsoon runoff volume (to Samadhiyala salinity ingress control bund) may marginally reduce due to excavated pit areas" (point 4.2.2, page C4-4). 28. Soil Degradation It is observed that, wherever there is limestone underground the land is fertile and agriculture is prosperous. On the seashore from Ghogha to Porbandar, the		agriculture nor will people dependent on it for their livelihood will run into thousands of families and tens of thousands of people as indicated by Khedut Ekta Manch. In fact, agriculture is the most affected profession due to vagaries of climate change. In lieu of land purchase for mining, compensation in consensus/ in consultation with the land owner as per market rate shall be paid. Preference in employment depending upon their eligibility/qualification, indirect employment opportunities, etc. shall be there. After completion of mining activities, shallow depth mining pits of 4 to 6 m shall be backfilled with soil and shall be utilised for agriculture on purpose in case of private land and plantation purpose in case of government land. The land will be returned back to the land owner who has given consent/surface rights for mining only. The project will create direct employment Opportunities will be generated for indirect employment on account of new trucks, company's vehicles, hired vehicles & create opportunities for indirect employment through stockists and retailers in Gujarat and other States in India as well and all other ancillary

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			coastal area is fertile, and the rich agriculture there is known in local language as "Lili Nagher" – the lush green. Inland area away from seashore is comparatively less fertile. On the seashore, sweet water availability is also due to the limestone. The site where mining is permitted – the Mahuva taluka – is known as Kashmir of Saurashtra. Horticulture is widely practiced here, especially coconut plantations and the world-famous JAMADAR mango, which are now under danger of extinction. 29. This is corroborated in the EIA in pt. 3.7 on page C3-29 wherein it states that: 30. As per "Ground Water Brochure, Bhavnagar District" by CGWB Ahmedabad (2013), the soils of Bhavnagar district may be broadly classified into following categories: i) Medium black soils ii) Alluvial soils iii) Alkaline soils. Medium black soils are wide spread and are found in all the talukas of the district. They are more productive and are rich in lime, magnesium and alumina and poor in phosphorous, nitrogen and organic matters. They can retain considerable moisture and are much suitable for agriculture. The process of mining will entail excavation, manual shattering of rocks, loading and transportation, etc. The dust disbursed during these processes will settle on the nearby fields,		activities. 30. There will be no intersection of ground water table upto end of mine life any of the three limestone mines i.e., Padhiyarka & Doliya Mine, Vangar & Madhiya Mine and Gujarda, Dudheri & Dudhala mine as limestone mining will be restricted upto a depth +1 m above ground water table. Hence groundwater shall not be affected due to the mining activities. Since limestone is nontoxic in nature and the settlement of any suspended solids will occur by following control measures, thus the runoff will be prevented from contamination. Operational activities of Dudhala area will not affect the streams in its buffer zone. In order to check salinity ingression, large scale rainwater harvesting and artificial recharge measures shall be taken up in and around the core zone. Hydrological network system will be established by constructing the piezometers in and around the lease and water quality will be checked regularly to know the movement of fresh water / saline water interface. Positive pressure of fresh water on landward site will be created, this will push back the saline front, which may be at a

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			water bodies and standing crops. The soil dug from the mine would be dropped from a height making the dust to disburse in the air and deposit on the land rendering the soil sterile. The net effects will be erosion of the top soil existing land becomes unfit for cultivation because of dumping of solid waste, probably leading to desertification standing crops are adversely affected due to dust disbursed in the air, stunting the growth of plants and crops cotton, groundnut, onion, garlic, jowar, millet and other vegetables will be badly affected by the dust and water pollution. It should be pertinent to note here that the analysis report on page C3-30 does not mention the fact that the soil is also rich in nitrogen-nitrate which is 12.57 mg/kg. Damage to the built infrastructure The EIA (pt. 2.6.7 on page C2-16) states that "Drilling/ blasting will be carried out for almost half of the proposed production." History of limestone mining suggests that houses and other built infrastructure gets damaged, develops cracks and needs repeated repairs due to the excavation, drilling and blasting processes. This impact is not confined to the core zone only and is felt and documented in the buffer zone of the mining area. It means that the price for the mining will be paid by people who have not even been considered as affected by the mining.		lower elevation. Water from the garland drain/ diverted water channels will flow to the salinity control bund i.e. Samadhiyala bund, to ensure better runoff harvesting and collection. Company will deepen the salinity control bund area to improve the water storage capacity in consultation with Irrigation Department. Three canals will be constructed to enhance smooth flow of incoming water towards Samdhiayala salinity ingress control bund. As per suggestion of/ in consultation with Irrigation Department, the Company will deepen the landside upstream of salinity ingress control bund to improve the water storage. 31. In the ML area, soil cover above limestone varies from 0.5 to 1.0 M. The soil will be carefully scrapped, collected manually and will be utilized for plantation purpose near mine boundary and safety barrier of the road, simultaneously to the extent possible. The excess soil has been proposed for back filling for mined out pits having shallow depth. Since the area is water scarce area, therefore the major part of excavated pits will be used as water reservoir at the end of life, which will in turn be used for pisci-culture, irrigation

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			The EIA says on page C4-5 that "The ground vibrations (due to blasting operation) are anticipated to cause negative impact if the charge per delay is not rationalized." Hence, they have also admitted a potentially debilitating impact of the mining activity. Moreover, this fact is known to MoEFCC as well as the state Pollution Control Board – GPCB. 11. Salinity Ingress It has been reported by various studies, in India and internationally, that mining activity results in making deep pits which in turn causes ground water table to go down. The contamination of surface water due to dumping of solid waste and dust results in contamination of tanks, rivulets, rivers, open wells and ground water as well. Gujarat being a state with the longest coastline in India, is one of the states with a problem of high salinity ingress. Bhavnagar district is a coastal district and is also affected by salinity ingress which threatens agriculture, water quality and overall health of the people. One of the (effective/successful) measures for checking salinity ingress is the embankment (*bandharo*). ***Salinity Control*** 6.25 The age-old method for controlling the		and recharging the water table. The impact on soil quality due to mining shall be minimized through following: ● Establishment of greenbelt and plantation along various facilities and periphery will prevent erosion of top soil. The widths of the belt will be 7.5 m all along the boundary. Interaction with state forest department would be carried out in choosing the plant species and sourcing the saplings for the greenbelt. ● No waste in the form of OB/ IB/ SB is available in the ML area as per known geology. ● The topsoil removed shall be disposed of by means of making a temporary stack at the prescribed sites. The location selected shall be outside the ultimate pit limit, on temporary basis. ● No mineral reject is proposed to be generated. The top soil shall be used simultaneously for the plantation over backfill areas, in green belt and other areas. ● Mitigation measures as suggested in EIA report shall be followed to prevent dust and water pollution. ● ☐Dust Control: Fixed or mobile water spraying system at fugitive sources (working faces & loading point), haul roads, stock yards and wherever required shall be installed. Dust extractors shall be

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			salinity in coastal areas has been the **construction of embankments** as a protective measure to stop ingress of sea, water to these lands. Such bunds existing in Sunderbans (West Bengal), Orissa, Gujarat, Maharashtra, Karnataka etc. are protecting large areas of coastal lands but many of them need improvements and renovation. There is also need to protect rest of the areas by constructing saline embankments along the sea coast in between the area demarcated by creeks and streams. *Source: Report on Development of Coastal Areas Affected by Salinity (NATIONAL COMMITTEE ON THE DEVELOPMENT OF BACKWARD AREAS), November, 1981, Planning Commission, Government of India, New Delhi* While the GoG and the GoI spend many millions of rupees carrying out studies and making recommendations to the effect that embankments should be built, the MoEF&CC and the GoG go and give out mining leases in these same areas which threaten the embankment. The embankment also means that there is a shift from ground water irrigation to surface water irrigation which is a highly recommended measure to check groundwater depletion. The mining will force the farmers to		used at drill machine. Transport vehicles will be be maintained, optimally loaded and shall have PUC certificates. ● Water pollution: There is no generation of effluents /toxic material by mining or allied activities. Leak proof containers will be used for storage and transportation of waste oil/ grease. All top soil dumps will be provided with garland drains equipped with baffles to prevent wash offs from reaching the downstream natural channels. Nitrate nitrogen should be 2-5% for it to be optimum for plant growth. 12.57 mg/kg is 0.001257%, which is deficient. 32. Minimum blasting shall be carried out in hard strata only if require, otherwise continuous surface miner shall be used for mining. During blasting following precautions shall be taken: No blasting shall be carried out within 300m of any surface structure of permanent nature. DGMS norms shall be followed for ensuring ground vibration due to blasting for different types structures. Controlled blasting shall be practised by competent persons.

<table>
<tr><th>Sl.</th><th>Query in Annexure no. of PH minutes</th><th>Name and address</th><th>Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)</th><th>Response in Annexure no. of PH minutes</th><th>Response of the project proponent during public hearing and updated thereafter</th></tr>
<tr>
<td></td><td></td><td></td>
<td>revert back to groundwater irrigation further endangering the already dangerous levels of groundwater.

12. In Core Zone (p. C3-25)
As mentioned in the EIA in Table C3-10 the land use (in ha.) is as follows:

<table>
<tr><th>Village</th><th>Forest land</th><th colspan="2">Government land</th><th colspan="2">Private land</th><th>Total area</th></tr>
<tr><td>Dudhala</td><td>-</td><td>0.3813</td><td>0.23%</td><td>169.6295</td><td>99.77%</td><td>170.0108</td></tr>
<tr><td>Gujarda</td><td>-</td><td>43.5789</td><td>15.75%</td><td>233.1211</td><td>84.25%</td><td>276.70</td></tr>
<tr><td>Dudheri</td><td>-</td><td>71.7144</td><td>30.53%</td><td>163.1948</td><td>69.47%</td><td>234.9092</td></tr>
<tr><td>Total</td><td>-</td><td>115.6746</td><td>16.98%</td><td>565.9454</td><td>83.02%</td><td>681.62</td></tr>
</table>

The EIA does not give percentages. When percentages are calculated, it becomes clear that the proportion of agricultural land is 83%. In village Dudhala, for instance, it is almost entirely private agricultural land that will be lost to mining. It is quite clear that the brunt of the mining will be borne by the land losers and not the mining company or the government.
13. In Buffer Zone (p. C3-25)
A crucial omission in the EIA is that the villages falling in the buffer zone of the mining lease area have not been mentioned in the EIA. The buffer zone comprises the study area of the EIA (p. C1-10). The villages falling in the buffer zone of the mining lease area should be mentioned in the EIA and the omission is unacceptable.</td>
<td></td>
<td>33. In order to check further salinity ingression, large scale rainwater harvesting and artificial recharge measures shall be taken up in and around the core zone. The voids created due to excavation shall work as ground water recharge structures after the end of mine life. Positive pressure of fresh water on landward site will be created, this will push back the saline front, which may be at a lower elevation.

Company will deepen the salinity control bund area to improve the water storage capacity in consultation with Irrigation Department. Three canals will be constructed to enhance smooth flow of incoming water towards Samdhiayala salinity ingress control bund. As per suggestion of/ consultation with Irrigation Department, the Company will deepen the suggested landside upstream of salinity ingress control bund to improve the water storage.

34. Though private land is 565.9454 out of the 681.62 ha of area of all three villages, the entire private land will not be required for mining.

At this stage, land required for quarry area of 114.24 ha which comprises of Govt. Land 14.02 ha and Pvt. Land 100.22 ha.</td>
</tr>
</table>

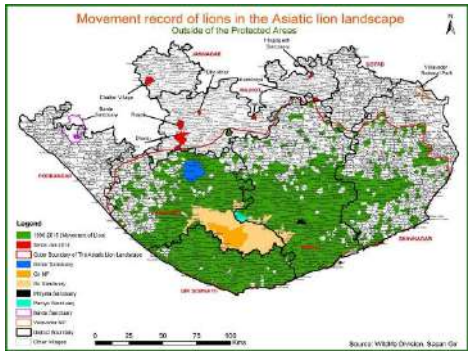
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			On page C3-25, C3-24 and C3-26 (of the 3 EIAs) the number of villages falling in the buffer zone are mentioned. The buffer zone covers 48, 40 and 49 villages. However, since the EIAs do not provide the names of the villages it is difficult to figure out which are core of which mine and which are buffer of which mine and which are overlapping. This is a serious and deliberate omission and is unacceptable. Further on page C3-26 (Gujarda EIA), the EIA states that "A perusal of Fig. no. C3-11 shows that the area under non-agricultural use accounts for a major portion (48.75%) followed by net sown area (39.06%)." This is deliberately misleading. It is misleading because fig. no. C3-12 (Map showing satellite imagery interpretation for 10 km. radius) reveals that the area under Sea (Gulf of Cambay), Reservoir/lake (Malan bandharo and Samadhiyala embankment), water logged area is included which takes the "area under non-agriculture use" to 48.75%. If we deduct this area from the calculation, then the area under agricultural use will come to 77.20% of the total land area. This is made amply clear by Figure C3-12 on page C3-28 (Map showing satellite imagery interpretation for 10 km. radius). Calculated thus the RF area will also increase from 0.55% to 1.06%. This way of presenting data is misleading and		Thus, only 14.7% of the private land will be required as per approved mining plan as against the 83% stated by Khedut Ekta Manch. This land will be purchased from the land owners with mutual consensus and commensurate with the local market conditions. Furthermore, 15.66 ha out of the 114.24 ha shall be backfilled and converted to the agricultural land and/ or to be utilized for plantation. Only that land shall be purchased from farmers that will be required for mining & allied activities (including greenbelt). Based on observations of EAC, MoEF&CC during meetings dated 23-24 May 2016 & 22-23 August 2016, the Company revised the initial mine lease proposal to a reduced area, thus, minimizing the impact on private agricultural land. 35. Complete list of the villages falling under the study area as per Census 2011 has been incorporated in the EIA at Annexure IX, XVI & XVII of 3 mines. On page C3-25, C3-24 and C3-26 (of the 3 EIAs respectively) only summarized part of Annexure IX is given. There is no omission since information was easily accessible in the referred Annexure on the aforementioned pages.

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			insulting to the intelligence of the people and the MoEFCC. 14. Permanent and irreversible damage to the ecosystem As argued above, the present project, like limestone mining projects elsewhere in the state and country, will entail excavation, blasting, crushing, loading, transportation of the mined limestone. All these activities will unleash permanent and irreversible damage to the fragile coastal ecosystem of the area. Given this knowledge and data, granting an EC to this project is tantamount to granting MoEFCC and GPCB's acquiescence to the destruction of the entire Saurashtra coast, its biodiversity, water, and socio-cultural way of life of the people. Further and more crucially, mining in such a huge area will damage the aquifers. As is well known Gujarat is situated along a Faultline. Mining will result in permanent changes to the geology and hydrology of the area. In such a situation the impact of seismic shocks will be compounded and felt further than normal and most likely may affect people who may otherwise not have been impacted by the seismic activity. 15. Cumulative impacts of mining, power plant and cement plant M/s Nirma Cement Ltd. has a cement factory		Details of land use is given as per Census 2011 in Table C 3-12 and Fig. C3-11. Land use break up of study area in this table is based on the Census of India 2011. Further, the latest land use of the study area has been interpreted using recent satellite imagery can be seen in Fig No. C3-12. The satellite imagery is of May 2021, summer season, hence, the water-logged areas of Bandharas are low. The land use classification used in the census land use data is different (based on Census classification) from the classification used in satellite imagery interpretation (based on the EIA guidance manuals). Hence, these two data are not directly comparable due to their different land use classification and date of data collection. 36. Mining is site specific project and mineral can only be excavated from where it is available. Excavated area at the end of life of Gujarda, Dudheri and Dudhala Mine shall be 114.24 ha (16.76%) out of total ML area of 681.62 ha, Vangar and Madhiya Mine shall be 197.0 ha (32.18%) out of total ML area of 612.1336 ha and Padhiyarka and Doliya Mine shall be 100.61 ha (30.28%) out of total ML area

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			in village Padhiarka and they are also going to put up their own power plant for generating electricity. Thus, the EIA must bring out the cumulative impacts of all three of these activities on the people, the land, the water, the flora and the fauna of the region. Only then can the impact be rightly assessed. 16. Skin diseases Limestone mines are known to induce skin and lung diseases. This crucial fact has not even been touched upon in the EIA. 17. History of limestone mining along with its impacts on environment and people Finally, any EIA must be mandatorily made to submit the long history of limestone mining in Gujarat and India along with its impacts on environment and people which has already manifested themselves in the course of the mining and which is extensively reported and documented. 18. Comparison of requirements mentioned in ToR & data provided in the EIA cost-benefit analysis (Table 1.4 Compliance of Generic ToR for Opencast Mine Project, p. 1, EIA Report) Chapter 9 on page no. C9-1 is about Environmental Cost Benefit analysis which has been carried out in line with "Guidelines for conducting cost-benefit analysis for projects involving diversion of forest land under the provisions of the Forest		of 332.24 ha. Thus, excavation shall be carried out in small area at this stage. Minimum blasting shall be carried out in hard strata only if require, otherwise continuous surface miner shall be used for mining. Drilling and blasting shall not be carried near the habitation, road and mine boundary. Continuous surface miner shall be used near these areas. The advantage in this project is the use of surface miners to most of the mineral excavation, which reduces the consequences of blasting and ground vibration. Completion of mining activities, shallow depth mining pits of 4 to 6 m shall be backfilled with soil and shall be utilized for agriculture/ plantation purpose in case of private land and plantation purpose in case of government land. This will minimize impact on land. Mine lease boundary of all three leases is outside the 500 m distance from the high tide line. Therefore, coastal ecosystem is safeguarded. In this regard, the CRZ map has been prepared by Institute of Remote Sensing, Anna University, Chennai and reproduced in Annexure XIX of EIA report. There will be no intersection of ground water table upto end of mine life in any of

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			(Conservation) Act, 1980" issued by Forest Conservation Division, MoEF&CC, GOI vide letter no. 7-69/2011-FC (Pt.) dt. 01-08-2017. Our submission in this regard is that: i. The Environment Cost Benefit Analysis (ECB) model is incomplete and fails to capture the entire gamut of loss that follows in the wake of such projects. Since the impacts of any project are not confined to the actual operational area of the project but the entire surrounding area, it is imperative that this model be amended to include the entire surrounding area under the ambit of the ECB. ii. It follows that the present ECB is also incomplete, since it has not taken cognizance of the effects of the mining operations on the surrounding area. ii. Moreover, the ECB is only confined to the mining pit area, i.e. 114.24 ha. which is a mere 16.76% of the entire mining lease area of 681.62 ha. The rest of the 567.38 ha. (83.24%) of the mining lease area has been left out of the purview of the ECB. This, to us, is a clear violation of the condition of the ToR. iv. The ECB has not considered the following points: a.The cropping pattern has not been considered; b.APMC data has not been analysed or calculated;		the three mines i.e., Padhiyarka & Doliya Mines, Vangar & Madhiya Mines and Gujarda, Dudheri & Dudhala Limestone mine. Limestone will be mined out in small patches only and that will be restricted upto a depth of +1 m above ground water table. Hence groundwater shall not be affected due to the mining activities. The mine leases are in seismic zone III and the precautions during construction of any structures within mine lease shall be followed as per BIS codes. 37. This EIA has been prepared for the mining projects only based on TOR point no. 8 which specifies "The Project Proponent needs to carry out the cumulative impact assessment by considering all the mining activity….". It does not include power plant and cement plant. EIA has been prepared in compliance to the ToR issued to Padhiarka & Doliya, Gujarda, Dudheri and Dudhala and Vangar & Madhiya Limestone Mine Vide Letter No. J-11015/154/2016-IA.II (M) dated 28th November 2022, Letter No. J-11015/153/2016-IA.II (M) dated 6th February, 2023 and Letter No. J-11015/152/2016-IA.II (M) dated 23rd

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			c.The loss of direct and indirect employment has not been calculated; only direct employment generation has been factored in. d.There is a vast difference between the current direct employment generation in agriculture and allied industries and the mere 84 direct jobs which will be created by the mining operation. There can be no comparison between the two situations. The dehydration plants, the cotton ginning mills, agro-business centers, onion and coconut transportation to the Azadpur Mandi - New Delhi and other parts of Northern India are bigger sources of employment and have not been calculated at all. e.No lifespan of direct employment in mining vis-à-vis agriculture and allied industries has been calculated and presented; f.The cost of environmental degradation and pollution has not been calculated. 19. Impact on wildlife (Table 1.4 Compliance of Generic ToR for Opencast Mine Project, p. 11, EIA Report) Our submission in this regard is that: iii. The fact is that this area is part of Bruhad Gir (Extended Gir) for Asiatic lions, no plan can mitigate the impact on Asiatic lions inhabiting here in good numbers. The		December, 2022 respectively by the MoEF&CC. The main impact of mining & transportation activities is on air quality and consequently on people and ecology due to incremental GLC's which have been assessed in 4.4.1 and Annexure XXI of EIA report. 38. Section 4.14.2 addresses various manners in which health of the workers may get affected which includes irritation in eyes, breathlessness etc. among other hazards to health. Precautions have been discussed. With respect to the public, section 4.14.3 discusses that incremental ground level concentrations of particulate matter due to mines show that the resultant levels will be well within the national ambient air quality standards, 2009 in the vicinity of the mines. Thus, there will not be any health impact envisaged on the villagers due to the mining activities. Air pollution control measures given in section 4.4.2 shall be strictly followed. 39. The EIAs are project specific documents that have been prepared in compliance to the ToRs issued to (i) Padhiarka & Doliya, (ii) Gujarda, Dudheri and Dudhala and (iiI) Vangar & Madhiya Limestone Mine vide letters no. J-11015/154/2016-IA.II (M) dated 28.11.2022, J-11015/153/2016-IA.II (M) dated 06.02.2023 and J-

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			data obtained through RTI by farmers shows that the numbers and its pug marks here are much bigger. ii. These villages have been included in the Bruhad Gir (Extended Gir) by the Dept. of Environment and Forests through GR no. WLP-1107-572-G.1 dated 18-5-2007. This has not been mentioned in the EIA. Iii. The map and data by the Principal Chief Conservator of Forest and Head of the Forest Force (PCCF & HoFF) (gujarat.gov.in) "The March of the Asiatic Lion" clearly shows that the area falls within the lion movement area as well.  "…lion has over the time carved out space for him and has successfully re-colonised some of its lost territory. As compared to the previous 1883.04 sq.km network of Gir Protected Area, the present Asiatic Lion Landscape (ALL) admeasures around 20,000sq km in Saurashtra (as per the 2015 census). The concept of ALL has been		11015/152/2016-IA.II (M) dated 23.12.2022 respectively by the MoEF&CC. 40. ● Environment Cost Benefit Analysis (ECB) model available from MOEF&CC has been followed and it covers the major contributing components to cost as well as benefit. The same model is followed by all projects seeking forest dereservation permission under Forest Act from MOEF&CC. ● Environment Cost Benefit Analysis has been carried out for the specific project only as per the prescribed ToR. The land which is coming under the pit area and for the required facility shall only be affected at this stage and hence, the same has been considered while estimating the cost to environment and society. ● Although the mine lease is large, the disturbed areas are smaller as observed in the representation. The impact on land shall be restricted to the pit area, dump area & infrastructure area as per the conceptual plan of approved mine plan and shall not cover the undisturbed area. Hence, there is no violation of the condition of the ToR. ● (a) The land which is being disturbed due to mining is being utilized for agricultural purposes and the benefit from the agricultural income has been considered while calculating the cost benefit analysis

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			adapted through which additional suitable habitats for lion have been developed. Lions now have a larger home range than before. The man power and infrastructure have been strengthened for intensive protection and conservation of lion in ALL." Also see Singh, H. (2017) Dispersion of the Asiatic Lion Panthera leo persica and its Survival in Human-Dominated Landscape Outside the Gir Forest, Gujarat, India. https://www.semanticscholar.org/paper/Dispersion-of-the-Asiatic-Lion-Panthera-leo-persica-Singh/311565d651df1fc52cf874dd5583bb01159a5893 Hence, stating that "There are no National park, Wildlife Sanctuary, Biospheres reserve or migratory Corridor within 15 km radius of ML area." (Executive Summary, p. 8) and "Lease area does not form a part of any Reserve Forest, National park, Wild life Sanctuary or National biosphere reserve" (EIA, p. C1-4) is untrue. 20. Water requirement (Table 1.4 Compliance of Generic ToR for Opencast Mine Project, p. 13-14, EIA Report) Our submission in this regard is that: 1.Narmada water has been cited as the source of water (EIA Report pt. 2.12, p. C2-28). The fact of the matter is that Narmada water is not sufficient even to provide irrigation to the command area. How will it provide water to industries		as given in Table C9-1. ● 4 (b) The cost of doing agriculture, if no project comes up has been considered as per the market rate of the crops. ● 4 (c) Indirect employment has been accounted for in Table C9-1, part B, points 3 & 4. ● 4 (d) The project will create opportunities for indirect employment on account of new trucks, company's vehicles, hired vehicles & create opportunities for indirect employment through stockists and retailers in Gujarat and other States in India as well and ancillary activities. With respect the mentioned "dehydration plants, the cotton ginning mills, agro-business centers, onion and coconut transportation to the Azadpur Mandi - New Delhi and other parts of Northern India", these will not get affected by the project and continue their business as usual ● 4 (e) The lifespan of the employment for mining has been considered as life of mine. ● 4 (f) Only the tangible costs of environmental degradation based on the MOEF&CC guidelines have been considered such as Ecosystem services losses, loss of animal husbandry productivity/ fodder/ public facilities, soil & moisture conservation cost, value of tree and Cost of the land.

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			which are ALL claiming to have Narmada as their source of water? 2.They have not provided any letter from SSNNL which has sanctioned this water to them. The EIA report states that "Ground water is the major source of water for irrigation as well as for drinking purpose in the study area. …" (Exe. Sum. p. 7). The impact of mining related blasting and removal of limestone, as is widely reported and known, leads to the disappearance of the ground water from the area. This has not been reported in the EIA and would be a major omission. The impact of this would be disastrous for the agriculture in the surrounding areas. Hence the impact of the project would not be confined to the 7 villages or the mining pit area only and will be felt much further than that and for far longer than 11 years of the mine life 21. R&R plan and compensation (Table 1.4 Compliance of Generic ToR for Opencast Mine Project, p. 3-4 and 15-16, EIA Report) Our submission in this regard is that: The land owners are NOT willing to sell or lease out their land; THE ISSUE OF COMPENSATION THEREFORE DOES NOT ARISE. Earlier, in 2008, when EC was granted, they had agitated strongly, including taking out a 350 km. long foot march from Mahuva to Gandhinagar,		41. Reply is as follows: ● The presence of Asiatic lions in the study area has been fully acknowledged and recorded in the EIA however there is no habitation observed in the mining lease area. Wildlife conservation plan prepared and approved by Forest Department. The company will take the necessary steps to ensure that its activity do not result in any conflict with the lions. ● Same as above, Bruhad Gir concept specifically has not been mentioned in the EIA but the Asiatic Lion, has been clearly mentioned and conservation plan prepared for it. As per authenticated map and letter No. WLP/32/C/426-427 dated 14.02.2022 received from Chief Wildlife Warden there is no any notified protected area (National Park, Sanctuaries, etc.) in 10 km area of the mines. (Letter given in Annexure XXV of EIA reports). ● Same as point 1 & 2. Hence, based on the letter received from Honourable Chief Wildlife Warden, who has jurisdiction over all the wildlife of the state, the following statements are true: * "There is no National park, Wildlife Sanctuary, Biospheres reserve or migratory Corridor within 15 km radius of ML area." (Executive Summary, p. 8) and * "Lease area does not form a part of any Reserve Forest, National park, Wild life Sanctuary or National biosphere reserve"

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			meeting the then CM (now PM) to register their strong opposition to the proposed cement plant and mining project. Their opposition to this project stands and they will continue their peaceful and non-violent protest. They are also submitting their letters spelling out their opposition and refusal to sell or lease out their land to the mining project. But the EIA is being dishonest when it argues that "…the main habitation of villages are outside the ML area, few scattered house/ hutments can be seen in the core zone" (pt. 3.11.1, p. C3-40) but only gives a break-up of the houses falling in the mining pit area (Table C3-21) and remains silent on the households residing in the core area. The immediate next line states that "These house/hutments will get disturbed during mining". However, it has claimed that no R&R may be required since they will not be disturbed. This is contradictory, and willful misleading and lying. There are 133 villages in Mahuva taluka, of which 35 fall in the buffer zone of this mine which is 26% of total villages of the taluka (per Gujarda EIA). To imply that the intrusion in their lives through the mine will be minimal is entirely and deliberately false. Since the village names have not been provided it is difficult to arrive at the exact numbers of people who may be affected		(EIA, p. C1-4). ● Gir National Park, Gir Wildlife Sanctuary & Mitiyala Wildlife Sanctuary are located at a distance more than 43 km from mining lease areas. ● Even in draft ESZ notification of Gir National Park, Gir Wildlife Sanctuary & Mitiyala Wildlife Sanctuary, no any village of mining lease areas included in Draft ESZ. 42. ● The permission for water shall be taken from the GWIL after obtaining the EC. It is completely under the purview of GWIL to decide the adequacy of water from the Narmada river and grant permission to industries for fulfilling their requirements. ● The letter has been given by GWIL and enclosed in Annexure XXIV of EIA report ● The EIA clearly mentions that there will be no intersection of ground water table up to end of mine life any of the three mines i.e., Padhiyarka & Doliya Mines, Vangar & Madhiya Mines and Gujarda, Dudheri & Dudhala Limestone mine. As limestone mining will be restricted upto a depth +1 m above ground water table. Also, regular monitoring of ground water level in the area shall be done. Hence groundwater shall not be affected due to the mining activities.

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			and this, to us, appears to be the real reason for not listing the villages by name. This is malafide. 22. Apparent anomaly in the ToR numbers and the dates The ToRs for the three mines vide letters number are as below: J-11015/152/2016 – IA.II(M) Dated 23rd December, 2022 for Vangar and Madhiya J-11015/153/2016 – IA.II(M) Dated 6th February, 2023 for Dudhala, Dudheri and Gujarda J-11015/154/2016 – IA.II(M) Dated 28th November, 2022 for Padhiarka and Doliya The numbering of 152, 153 and 154 and the dates are anomalous since the earlier number i.e. 152 was granted (i.e. in December '22) after the later number i.e. 154 which was granted earlier, i.e. in November '22. How did this happen? **Additional facts that the EIA has not mentioned or omitted or suppressed are:** The EIA does not mention the fact that the earlier EC was canceled owing to the tremendous opposition and resistance from the farmers and the local people. What makes them think that the resistance will be any less this time around? Apart from this, the following facts are completely suppressed in the EIA:		43. Main village habitation/residence area outside the mining lease area and scattered huts/house are seen in the ML area. The EIA has clearly explained that there is an ML area, which has presence of habitation, which has been acknowledged by the Khedut Ekta Manch. The entire habitation in the ML will not be displaced since entire area within the ML will not be used for mining. Only the habitation within the quarry will have to be removed. There is R&R related to quarry mining which is clearly mentioned against TOR 12. However, TOR 42 pertains to any R&R required for overburden dumps, which is not required as no displacement will be there due to overburden dumps. Therefore, there is no contradiction nor willful misleading nor lying. The company intends to purchase any private land from the land owners with mutual consent and commensurate with the local market conditions. The land which is coming under the pit area and for the required facility shall only be affected. No, surrounding land shall be disturbed due to mining. Proper safety rules will be flowed as per DGMS during mining. Void area of shallow depths shall be back filled and later on utilized for

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			xiii. Total capacity of the cement plant, daily requirement of mining and total land loss; xiv. Life of the cement plant and future limestone requirement; xv. How many mines have been approved on the coastal belt of Gujarat; xvi. Impact of the mining on salinity ingress; xvii. Total employment loss, present agricultural production and yield, and agro and allied industries in the area; (in the case of record unemployment in the country, destroying existing employments must have a strong and irrefutable justification); xviii. India is a 'High Climate Risk Zone' country, and within India, Gujarat is a high climate risk zone. Why such a project should be sanctioned in such a fragile climatic zone needed an explanation which is missing; Nine Indian states at high risk of damage due to climate change hazards: Report (scroll.in); XDI gross domestic weather risk report: 9 Indian states in the list (groundreport.in) xix. The fact that migratory birds have been regularly spotted at the Malan reservoir and the Samadhiyala salinity control bund has not been mentioned in the EIA; xx. The silting speed at Malan reservoir and the Samadhiyala salinity control bund had to be calculated and put in the EIA; xxi. A comparative study of contribution of mining to state revenue vis-à-vis loss to the people – land, water, livelihood,		agricultural and plantation purposes. So, the contention of malafied is not acceptable. 44. The files for the ToR application were first created in the MOEF&CC database in 2016, as evidenced by the number 2016 mentioned in the letter number. The same file number has been continued by MOEF&CC when the fresh application for ToR was applied in 2022. The ToR J-11015/154/2016 – IA.II(M) dated 28th November, 2022 for Padhiarka and Doliya has been issued before other two because this project was applied for ToR on 23.09.2022. Vangar & Madhiya (Letter No. J-11015/152/2016-IA.II (M) dated 23.12.2022) and Gujarda, Dudheri & Dudhala (Letter No. J-11015/153/2016-IA.II (M) dated 06.02.2023) were applied on 18.11.2022, therefore, their TOR letters were issued after Padhiarka and Doliya It is denied that information has been omitted or suppressed. The EIAs have been prepared as per the Terms of Reference issued by MOEF&CC. Our three mining projects have never been granted environmental clearance in the past, hence, question of cancellation of their EC does not arise.

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			opportunity, health –had to be done; xxii. A comparative study of the time span of incomes and livelihoods from mining and agriculture had to be done; xxiii. Impacts of blasting activity in other limestone mines in other states had to be studied and provided here which has not been done; xxiv. The net impact of mining on migration (in the absence of viable livelihoods) and stress on urban infrastructure had to be studied and reported, which has not been done.		This mining projects are still under process to receive the environmental clearance. The public hearing has been conducted in which the local people and farmers have recorded their objections and the company will take into consideration their concerns during finalizing the EIA. The company requests for support from local people. It is denied that information has been suppressed. 1.☐1.9 MTPA cement plant capacity is mentioned in section 1.2, Chapter 1 of all three EIA reports ☐The daily mining capacity of each mine is also mentioned in section 1.2, Chapter 1 of all three EIA reports ☐Land loss for cement plant is not pertinent since the EIAs have been prepared to obtain EC for the mining projects and not for the cement plant. 2. Not pertinent since the EIAs have been prepared to obtain EC for the mining projects and not for the Cement Plant. Furthermore, the limestone use is not restricted to cement plant. 3. The EIA study has been conducted based on study area, i.e. up to 10 km radius from the project area/ core zone and not throughout the coastal belt of Gujrat. This representation received from Khedut Ekta Manch itself contains such a list of mines, public hearing of which have been or will be conducted as part of EC process.

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					4. With respect to the intersection with ground water conceptual pit bottom level will be restricted upto a depth +1 m above ground water table in all three mines and no ground water will be intersect is envisaged. Also, all three mining lease areas are out of CRZ. Which will act as buffer area. So, there will be no possibility of sea water ingress. During operation and also after exhaustion of mineral, voids left will act as natural water harvesting structures and store fresh water. Collected water will stand and gradually percolate into the sub surface water. Positive pressure of fresh water on landward site will be created, this will push back the saline front, which may be at a lower elevation. The remedial suggestion has been incorporated in section 4.5.2 in the Draft EIA Report. In this way, this project will put good impact and check salinity ingress. 5. The land required for mining is both government land as well as agricultural land. The agricultural land will be taken from willing farmers only through purchase or lease basis. In case a land owner, whose land has limestone resource of depth <4 m is

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					desirous of only leasing the land for the duration of mining instead of perpetual sale, then the company will enter into a lease agreement for the pre-decided duration at a mutually agreed rent. The company will remove the top soil from the progressing face of the open cast pit and store it temporarily till it can be filled back on the exhausted portion of the open cast pit. After laying back the soil on the exhausted shallow pit (<4 m depth), the land will be returned back to the land owner. Thus, there will not be loss of income to the farmer who agrees to give land on lease since he will receive income through lease rent and go back to farming after completion of mining. It is expected that the farmers who sell land shall also be utilizing the money in a fruitful manner. Thus, no destruction of employment is intended by the project. 6 It is prudent to note that the referred news article explains that 'This increase and overall risk to the built environment in 2050 is driven predominately by sea level rise and secondarily by flooding and coastal inundation". The referred news article puts 9 states of India at high risk of extreme weather change hazards and

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					cities like Mumbai are mentioned. This does not imply that development should cease in Mumbai or the rest of the country. Taking the spirit of the article into consideration, projects should come up incorporating climate resilience measures and preparation measures to protect from hazards such as flooding and inundation, which are already covered in chapter 7 of the EIA. 10. A perusal of the list of birds given in Annexure XIII in EIA shows that various migratory birds such as flamingo, ibis, spoonbills, etc are observed in study area. A wildlife conservation plan has been prepared in which preservation of fauna of the study area has planned and the same has been approved by Forest Department. Approval letter & conservation plan are given in Annexure XXIII of EIA report. 11. Siltation at Malan reservoir and the Samadhiyala salinity control bund are impacted by a multitude of activities in their respective catchments. Mining activities will not have any impact on Malan reservoir since the mines are outside the drainage system of Malan. For Samdhiyala, the mines are planned to contribute to its water storage and mitigation measures for erosion control have been given for mining activities in

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					Chapter 4 of EIA. EIA has been prepared in compliance to the ToR issued by MOEF&CC. 12. In this regard detailed Cost to Benefit analysis has been carried out in Chapter 9. 10 In this regard detailed Cost to Benefit analysis has been carried out in Chapter 9. 12.EIA has been prepared in compliance to the ToRs issued by MOEF&CC. And the precautions for blasting along with the measures to ensure compliance to the DGMS norms for ground vibration has been given in Section 4.8 of the EIA report. 12.EIA has been prepared in compliance to the ToRs issued by MOEF&CC.
31	C31	Jagdish Ambalal Patel	He supported and welcomed the establishment of project.	D31	Company welcomed his support.
32	C32	Shantuben Narsinhbhai Chauhan, Katpur district panchayat	He submitted his representation dated 28/04/2023 which is enclosed as **Annexure – C32** in the minutes of PH given in Annexure XXX of EIA**.** Contents are same as given in serial no. 24 of this table.	D32	Points / questions raised by Shantuben Narsinhbhai Chauhan, are same as raised by Shri Mahuva Bandhara Khetivadi Paryavaran Bhachav Samiti (Sl. No. 24) Answers are given in reply of Serial No. 24. Moreover it was also informed that the MoEF&CC had canceled Cement Plant EC on the report given by Prof. Babu Committee and Prof. Vashaney Committee which was not accepted by Hon'ble NGT & Hon'ble NGT has set-aside/revived cement plant EC vide its

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					judgement dated 14.01.2015. Hon'ble Supreme court has not given any stay on Hon'ble NGT order. So the environment clearance of the company is in the same condition as it was. As per The High Court order, Company has already returned 100 Ha. for Samdhiyala Bund and we have to undertake deepening when the plant come so that we can increase the storage capacity of rain water. Due to this the capacity of the bund will increase by 200%. Company is willing to give land for school at Dudheri village and contribution for the same. Letter regarding our commitment is already inwarded to Collector Sir on 24/02/2023.
33.	C33	Ramjibhai Chitharbhai Dolshiya, katpur, village	1. The area to be used for mining has a permanent habitat for wildlife and its corridor. The area is a corridor area for Asiatic lions in Gujarat, which is listed in schedule 1. 2. The lion is observed by the forest deptt. and recorded regularly. 3. There is a 17 km long sweet water bandhara in this area which has also been declared as important Bird area by I.B.A. (Important Bird Area) in 2005. 4. 275 species of birds have been recorded here in the area sought for mining as well as	D33	1. The The Principal Chief conservator of Forest, Gujarat State, Gandhi Nagar has certified by its letter dated 13.01.2022s certified the map of our mining area and its surrounding buffer area and certified that "There are no National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar Sites, Tiger Elephant Reserves within the 10 km study area of the three mines. Copy of letter dated: 13.01.2022 from Deputy Conservator of Forests is available and according to the conservation plan approved by the forest department, conservation of schedule-1 and other wildlife will be implemented. 2. Authenticated list of flora and fauna of the

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			within a radius of 10 km from mining, of which 41 birds are in schedule 1 and 234 birds are in schedule 2.		mining lease area and its surrounding Buffer area has been given by the Forest Department, Gujarat State Department vide letter dated 05.02.2018 and the same is mentioned in the EIA, Wildlife Conservation Plan for schedule 1 including Lion is mentioned therein, is approved by the Wildlife Department and approved wildlife conservation plan will be implemented as soon as the initiation of mining activities in the area 3. According to the I.B.A. report-2016, the proposed mining lease area does not fall under the Important Bird Area (IBA) and not a Ramsar Site or any Important Area declared by the Forest Department. 4. Department of Industries and Mines of the State Government has granted mining leases in Limestone bearing area with the prior approval of the Central Government. No any forest, reserve forest or CRZ area falls in the proposed mining lease area. Hence wildlife and aquatic life will not be affected due to mining activity.. Authenticated list of flora and fauna of the mining lease area and its surrounding Buffer area has been given by the Forest Department, Gujarat State Department vide letter dated 05.02.2018. For conservation of birds measures as suggested in EIA report shall be followed. 5.

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34.	Gitaben Rameshbhai Makwana, President mahuva Muncipality	C34	She submitted his representation dated 28/04/2023 which is enclosed as **Annexure – C34** in the minutes of PH given in Annexure XXX of EIA**.** Contents are same as given in serial no. 24 of this table.	D34	Points / questions raised by Gitaben Rameshbhai Makwana, are same as raised by Shri Mahuva Bandhara Khetivadi Paryavaran Bhachav Samiti (Sl. No. 24) Answers are given in reply of Serial No. 24.
35	Vala Gopalsinh Ajitsinh, Dudhala no. 1 village	C35	He supported and welcomed the project.	D35	Company welcomed his support.
36.	Chhaganbhai Nanbhai Bhaliya, Doliya Village	C36	He submitted his representation dated 28/04/2023 which is enclosed as **Annexure – C36** in the minutes of PH given in Annexure XXX of EIA**.** Contents are same as given in serial no. 24 of this table.	D36	Points / questions raised by Chhaganbhai Nanbhai Bhaliya, are same as raised by Shri Mahuva Bandhara Khetivadi Paryavaran Bhachav Samiti (Sl. No. 24) Answers are given in reply of Serial No. 24.
37.	Viththal bhai Solanki, President, kisan Ekta Samiti	C37	He submitted his representation dated 28/04/2023 which is enclosed as **Annexure – C37** in the minutes of PH given in Annexure XXX of EIA**.** Contents are same as given in serial no. 30 of this table.	D37	Points / questions raised by Viththal bhai Solanki, are same as raised by Sagar Rabri, (Sl. No. 30) Answers are given in reply of Serial No. 30.
38.	Vala Temubha Raghubha, Village Dudhala no. 01	C38	He supported and welcomed the project.	D38	Company welcomed his support.

Sl.	Query in Annexure no. of PH minutes	Name and address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
39.	President, Kisan Ekta Samiti, Dudheri	C39	1. The land of these 7 villages is very fertile so it cannot be given for mining. 2. The Mining will take away the main livelihood of the area which is agriculture. 3. The stones lying in soil of these villages act as a protective wall. The sea salinity will have a terrible effect on the fertile land if these stones are removed. 3. As soon as mining is allowed, the youth will become unemployed and serious issue of displacement will arise. 4. Lions & other wild animals are living in the land of these seven villages. 5. National bird Peacock and other similar types of birds are living in the land of these seven villages. 6. Since the land of these seven villages are fertile, crops like vegetables, grains, pulses, cotton, groundnuts are produced in abundance in these lands, so it should not be allowed to go for mining. 7. In 2018, the farmers of these villages have jointly given undertaking that Nirma mining activity is not suitable for this area. So the hearing should be stopped.	D39	1. The Industries and Mines Department of the State Government has obtained the prior approval of the Central Government before granting mining leases in the Limestone bearing area. Mineral rights in all types of lands are held by the Government. However, the project will not acquire agricultural land for mining, if the farmers want to sell/consent their land for mining at market rates, the mine owner may, accordingly, sell the land/take consent of the land owner to mine that land. Thus, mining will be done in that land only after getting the consent of the land owner. 2. Agriculture along with mining will work simultaneously. The establishment of mining and related industries in the area will create direct and indirect employment and create more employment opportunities for the local people. 3. Mining leases of limestone are granted away from the Coastal Regulatory Zone of the sea. The ground water quality of seven villages is saline and the salinity is already increasing due to excessive extraction of ground water aquifers for agriculture. However, the retention of rainwater due to mining in the mined out pits will percolate into the soil, raising the groundwater table and prevent further salinity ingression. Accordingly, the rain water stored in the pits will act as a salinity barrier. Moreover, as per the approved mining plan,

Sl.	Query in Annexure no. of PH minutes	Name and address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
					the mining will not intersect the ground water table & will be done above it and the ground water will not be used for mining so that there will be no harm to the existing ground water condition. 4. The habitation, village and its surrounding area is not part of the mining lease area and it is outside the lease area. Hence there will be no disturbance to the village habitation. Youth have to go out for employment due to lack of industries. The establishment of mining and related industries in the area will create direct and indirect employment and create more employment opportunities for the local people. Local and land loosers will be given priority in employment as per their capability and educational qualification. 5. A Wildlife Conservation Plan has been approved by the Wildlife Department for the protection of Schedule I species and accordingly it will be implemented along with commencement of mining activities in the area. 6. Same as point 5 above 7. The soil in seven villages is not fertile as the ground water quality is saline. So crops are always dependent on monsoon water. 8. The Industries and Mines Department of the State Government has obtained the prior approval of the Central Government for granting mining leases in the Limestone bearing area. Mineral rights for all types of land are held by the Government. Although

Sl.	Query in Annexure no. of PH minutes	Name and address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
					the Government will not acquire agricultural land for Mining purpose. If the farmers want to sell/ give consent their land for mining at market rates, accordingly mine owner shall do the mining. Thus, mining will be done in that land only. In the year 2017, Mining Lease in Limestone bearing area was approved by Government and accordingly Lease Deed Agreement was executed by District Collector, Bhavnagar
40.	Chauhan Vishnubhai Panchabhai, Vangar village	C40	He supported and welcomed the project.	D40	Company welcomed his support.
41	Anjuben Ghelabhai Makwana	C41	He submitted his representation dated 28/04/2023 which is enclosed as **Annexure – C41** in the minutes of PH given in Annexure XXX of EIA**.** Contents are same as given in serial no. 24 of this table.	D41	Points / questions raised by Anjuben Ghelabhai Makwana, are same as raised by Shri Mahuva Bandhara Khetivadi Paryavaran Bhachav Samiti (Sl. No. 24) Answers are given in reply of Serial No. 24.
42	Himmatbhai D Makwana, village Vangar	C42	● The area to be used for mining has a permanent habitat for wildlife and its corridor The area is a corridor area for Asiatic lions in Gujarat, which is listed in schedule 1. ● Lion is observed by Forest Department and recorded regularly. 275 species of birds have been recorded in the area sought for mining as well as within a radius of 10 km from mining, out of which 41 birds are in	D42	● The Principal Chief conservator of Forest, Gujarat State, Gandhi Nagar has certified by its letter dated 13.01.2022s certified the map of our mining area and its surrounding buffer area and certified that "There are no National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar Sites, Tiger Elephant Reserves within the 10 km study area of the three mines. Copy of letter dated: 13.01.20220

Sl.	Query in Annexure no. of PH minutes	Name and address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
			schedule 1 and 234 birds are in schedule 2. The 17 km long embankment was declared bird area IBA in 2005. If mining happens, what about the habitat of these birds ? ● Noise pollution from mining (explosives) is harmful to wildlife and humans. ● The proposed route of transportation and area proposed for mining will lead to deforestation. ● Wildlife habitat will be destroyed. Corridor area of wildlife will be destroyed. ● The mining site should be close to the residential area so that wildlife will leave the existing site and move towards the human settlement area. ● Possibility of accidents with wild animals like lions, leopards, etc. ● The area is also home to reptiles and mainly such creatures live underground and spend their livelihood only in a short space. ● There is also threat to marine life. ● Due to mining, the environment and human life will also be affected. ● The mining area has grey stones which prevents sea from advancing, if mining takes place there will be a possibility of sea water flowing into the countryside. ● Loud noise from explosives used for mining will add to the noise pollution. ● It also includes land, water and vegetation which is the natural home of a wild animal, according to the Wildlife Protection Act, 1972.		from Deputy Conservator of Forests is enclosed herewith and according to the conservation plan approved by the forest department, conservation of schedule-1 and other wildlife will be implemented. ● Authenticated list of flora and fauna of the mining lease area and its surrounding Buffer area has been given by the Forest Department, Gujarat State Department vide letter dated 05.02.2018 and the same is mentioned in the EIA, Wildlife Conservation Plan for schedule 1 mentioned therein, is approved by the Wildlife Department and approved wildlife conservation plan will be implemented as soon as the initiation of mining activities in the area. According to the I.B.A. report-2016, the proposed mining lease area does not fall under the Important Bird Area (IBA) and not a Ramsar Site or any Important Area declared by the Forest Department. ● The management proposed in the EIA report to abate Noise pollution, will be implemented during mining. ● The mining lease area of limestone is not part of any bandhara land and is sanctioned away from the coastal regulatory zone of the sea. Further, as per the mining plan, the mining will not intersect the ground water table and will be carried out above it and the underground water will not be used for mining. However,

Sl.	Query in Annexure no. of PH minutes	Name and address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
			• EIA for Nirma Mining it is clearly mentioned in the report that the wild life and birds are permanently removed from the site due to the explosion.		rainwater percolating into the pits caused by mining will raise the water table and prevent further salinity Ingress. • Deputy Conservator of Forests, Bhavnagar has provided details vide his letter dated 27.01.2023 that turtle rearing/breeding center is located at Hathab, Taluka: Bhavnagar is located at about 70 km away from our mining lease and there is no turtle area in 10 km area from our lease area. • There is no any forest, reserve forest or any CRZ area falls in the proposed mining lease area. Hence, wildlife and aquatic life will not be affected due to mining activity. • According to the I.B.A. report-2016, the proposed mining lease area does not fall under the Important Bird Area (IBA) and not a Ramsar Site or any Important Area declared by the Forest Department. • The Deputy Conservator of Forests has authenticated the map of our mining lease area and surrounding Buffer area and certified that "There is no National Park, Sanctuaries Biosphere Reserves, Wildlife Corridor, Ramsar Site, Tiger / Elephant Reserve in the 10 km study area. Conservation plan for schedule-1 and other wildlife will be implemented as per conservation plan approved by the wildlife department. • The mining lease area of limestone is not part of any bandhara land and is sanctioned away from the coastal

Sl.	Query in Annexure no. of PH minutes	Name and address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
					regulatory zone of the sea. Further, as per the mining plan, the mining will not intersect the ground water table and will be carried out above it and the underground water will not be used for mining. However, rainwater percolating into the pits caused by mining will raise the water table and prevent further salinity Ingress. Measures to control the noise pollution are given in EIA report, will be implemented during mining. ● The Deputy Conservator of Forests has authenticated the map of our mining lease area and surrounding Buffer area and certified that "There is no National Park, Sanctuaries Biosphere Reserves, Wildlife Corridor, Ramsar Site, Tiger / Elephant Reserve in the 15 km study area. Conservation plan for schedule-1 and other wildlife will be implemented as per conservation plan approved by the wildlife department. ● Impacts from mining given as wildlife and birds may migrate from the area due to explosives. But In the EIA report, the measures have been suggested to prevent its impact and its implementation will minimize this impact.
43	C43	Vala Girirajsinh Pravinsinh,	He supported and welcomed the project.	D43	Company welcomed his support.

<table>
<tr><th>Sl.</th><th>Query in Annexure no. of PH minutes</th><th>Name and address</th><th>Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)</th><th>Response in Annexure no. of PH minutes</th><th>Response of the project proponent during public hearing and updated thereafter</th></tr>
<tr><td></td><td></td><td>Village Dudhala no. 1</td><td></td><td></td><td></td></tr>
<tr><td>44.</td><td>C44</td><td>Sarpanch& Member Dudheri Gram Panchayat</td><td rowspan="2"><table><tr><th>In letter of</th><th>No. of farmers (XXX)</th><th>Livestock to be lost</th></tr><tr><td>Sarpanch& Member Dudheri Gram Panchayat</td><td>188</td><td>555</td></tr><tr><td>Jorubhai Formar Surpanch-Madhiya</td><td>112</td><td>1500</td></tr></table>
1. Grant of environmental clearance for mining in all revenue survey no. other than village habitat, hence, no meaning of Panchayat
2. 188 farmers of our village will loose their land rights.
3. 555 livestock of our village will be lost due to mining in waste land areas, the herdsmen will have to migrate.
4. The Samdhiala Bund adjacent to our village will be finished.
5. Our water flow direction will be changed
6. The salinity will be increase and destroy the surrounding talukas as well.
7. If the agriculture and animal husbandry of the villages will be destroyed, then this area will become desolate, when the</td><td>D44</td><td rowspan="2">1. Mineral rights in all types of land are held by the government. According to which the State Government, Industry and Mines Dep’t, has granted Mining Lease in Limestone mineral bearing area after obtaining prior approval of Central Government.

2. No agricultural land shall be acquired by the Government for mining in the granted mining lease area. If the farmers want to sell or give consent for mining in their land at market rates, mine owner can mine the land only by taking land on sale or by consent for mining from the land owner. Thus, mining will be done in that land only after getting the consent of the land owner.

3. Mineral rights in all types of land are held by the government. According to which the State Government, Industry and Mines Dep’t, has granted Mining Lease in Limestone mineral bearing area after obtaining prior approval of Central Government.

4. The mining lease granted to Nirma Limited is located away from Samdhiyala Bandhara (Salinity ingress prevention bund). Hence there is no question of going to be impacted.

5. In is proposed to be construct garland drain in the sanctioned mining lease area to maintain</td></tr>
<tr><td>45</td><td>C45</td><td>Jorubhai Formar Surpanch-Madhiya</td><td>D45</td></tr>
</table>

Sl.	Query in Annexure no. of PH minutes	Name and address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
			villagers migrate. 8. Lions, Leopards, Chinkaras live in the revenue area of our village. 9. Both, Samdhiyala and Malan bandhara attract a large number of migratory birds in winter season. These birds will stop coming because of mining dust pollution and blasting.		the flow of water towards Samdhiyala Bandhara (salinity ingress prevention bund). Hence there is no question of changing water flow. 6. Mining lease areas are far away from the coastal regulatory zone (CRZ) area of the sea. Further, As per mine plan, the mining work shall not intersect the ground water table and shall be carried out well above it and shall not use underground water. However, rainwater harvesting in mined out pits, will raise the ground water table and prevent salinity ingress further. 7. Mineral rights in all types of land are held by the government. According to which mining lease has been granted in Limestone mineral bearing area after obtaining prior approval of the Central Government by the Industries and Mines Department of the State Government. No agricultural land will be acquired by the Government for mining in the sanctioned mining lease area. If the farmers want to give consent to sell their land for mining at the market rates, the mine owner can carry out mining work in the land only after taking the land owner's land on sale or by consent, so mining will be done in that land only after obtaining the consent of the land owner. So the question of destruction of agriculture or animal husbandry does not arise.

Sl.	Query in Annexure no. of PH minutes	Name and address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
					8. Wildlife conservation plan has been approved by the wildlife department for conservation of Schedule 1 wildlife in this area for this mining and this sanctioned wildlife conservation plan will be implemented along with the commencement of mining activities in the area. 9. The Wildlife Conservation Plan is approved by the Wildlife Department for the conservation of Schedule 1 wildlife and this approved wildlife conservation plan will be implemented as soon as commencement of mining activities in the area and the noise pollution will remain below the prescribed limit. There will be no harm to wildlife. In view of all the above, the points raised are either not correct or not properly addressed. In case of C45 we want to bring to attention of the government that as per our knowledge the term of this Gram Panchayat has been completed and the administrator has been appointed. The signatories are not Sarpanch at present, but, he has used letterhead of the village for signature & representation to mislead the Ministry – Govt. In view of this, we request you to not to consider this representation and consider as cancel.
46.	C46	Vala Vikramsinh Velubha) Village Dudhala no. 1	He supported and welcomed the project.	D46	Company welcomed his support.

Sl.	Query in Annexure no. of PH minutes	Name and address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
47.	C47	K.N. Makwana, Vangar, Village	1. He informed that Gujarat State Pollution Control Board, Gandhinagar have organized three Environmental Public Hearings on 28.04.2023 at Vangar village of Mahuva taluka regarding approval sought for Limestone & Marl mineral work transferred to Nirma Ltd. in various survey numbers and survey numbers of government waste land in total 1625 hectares of seven villages (Vangar, Madhia, Padhiarka, Doliya, Dudhala-1, Dudheri, Gujarda in Sea Coast area of Bhavnagar district, 2. The fact that a total of 332.24 hectares of government & private land of our Doliya, Padhiarka villages has been allocated to Nirma Ltd. for the mining of Limestone & Marl without our consent, which is not acceptable to us and we strongly protest against this entire mining. We have shown our oppose to your department on.27/07/2020 and 08/04/2023 by writing letters. The soil in this area of ours has pages of millions of years old diary with limestone wall visible at different places, thousands of hectares of land with such pages is like our mother earth with fossil evidence of age like 'Jurassic'. It is an open document of millions of years of history. 3. Humans, animals, birds, wild animals, micro-organisms, insects, one of the protectors of the flora protected in this our Mother Earth,. If such mining of our mother earth is allowed, the ecological balance will be disturbed and there is a possibility of severe damage to the environment. Due to this, living life becomes a helpless	D47	In pursuance of the above subject and in pursuance, your letter dated 28-04-2023 has been received regarding the environmental public hearing held regarding the mining lease of limestone and mineral minerals granted to Nirma Limited Company. The answer is given as below. 1. Mineral rights in all types of land are held by the government. According to which mining lease has been granted in Limestone mineral bearing area by getting prior approval of the Central Government by the Department of Industries and Mines of the State Government. 2.No agricultural land shall be acquired by the Government for mining in the granted mining lease area. If the farmers wish to sell their land for mining at market rates, accordingly, the mine owner can mine in the land only with the consent of the land owner. Thus, mining will be done in that land only after getting the consent of the land owner. 3. Limestone mining leases are granted far from the coastal regulatory zone of the sea. Furthermore, as per the mining plan, the mining will not deplete the ground water table although the rainwater in the pits caused by the mining will percolate into the ground, raising the ground water table and preventing further salinity ingress. 4. To carry out mining, Wildlife Conservation Plan has been approved by the Wildlife Department for conservation of wildlife Schedule 1 in this area and accordingly this approved wildlife conservation plan

Sl.	Query in Annexure no. of PH minutes	Name and address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
			hardship for the living creatures. Due to such indiscriminate mining, thousands of plant species are likely to disappear from the face of the earth. 4. In the above circumstances, the decision of the grant of Mining Lease by the Industries and Mines Department of the Government for the land of our Dolia, Padhiarka villages is wrong in principle. The villagers do not agree with this approval and we demand the cancellation of the above orders at the earliest.		will be implemented on initiation of mining activities in the area. In view of all the above, the points raised are either not correct or not properly addressed.
48.	C48	Vala Ajitsinh Lonhubha Village Dudhala no. 1	He supported and welcomed the project.	D48	Company welcomed his support.
49.	C49	Vala Dhanubha Surbha, Dudhala no. 1 village	He supported and welcomed the project.	D49	Company welcomed his support.
50.	C50	Dipubha Gulabsinh Vala Dudhala no. 1Village	He supported and welcomed the project.	D50	Company welcomed his support.
51.	C51	Vitthalbhai Madhubhai, Khared village	He submitted his representation dated 28/04/2023 which is enclosed as **Annexure – C51** in the minutes of PH given in Annexure XXX of EIA**.** Contents are same as given in serial no. 33 of this table.	D51	Points / questions raised by Vitthalbhai Madhubha, are same as raised by Ramjibhai Chitharbhai (Sl. No. 33) Answers are given in reply of Serial No. 33.

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<tr><th>Sl.</th><th>Query in Annexure no. of PH minutes</th><th>Name and address</th><th>Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)</th><th>Response in Annexure no. of PH minutes</th><th>Response of the project proponent during public hearing and updated thereafter</th></tr>
<tr><td>52.</td><td>C52</td><td>Sarpanch – Khared Gram Panchayat</td><td><table><tr><th>In letter of</th><th>No. of farmers (XXX)</th><th>Livestock to be lost (YYY)</th></tr><tr><td>Sarpanch – Khared Gram Panchayat</td><td>122</td><td>598</td></tr></table>He submitted his representation dated 28/04/2023 which is enclosed as Annexure – C52 in the minutes of PH given in Annexure XXX of EIA.

Contents are same as given in serial no. 44 except the figures given above in the table.</td><td>D52</td><td>Points / questions raised by Sarpanch – Khared Gram Panchayat are same as raised by Sarpanch & Member Dudheri Gram Panchayat except the figures given in the table. (Sl. No. 44) Answers are given in reply of Serial No. 44.</td></tr>
<tr><td>53.</td><td>C53</td><td>Vala Narendrasinh Andubha Dudhala no. 01 Village</td><td>He supported and welcomed the project.</td><td>D53</td><td>Company welcomed his support.</td></tr>
<tr><td>54.</td><td>C54</td><td>Sarpanch – Vangar Gram Panchayat</td><td><table><tr><th>In letter of</th><th>No. Of farmers (XXX)</th><th>Livestock to be lost</th></tr><tr><td>Sarpanch – Khared Gram Panchayat</td><td>196</td><td>674</td></tr></table>Contents are same as given in serial no. 44 except the figures given above in the table.</td><td>D54</td><td>Points / questions raised by Sarpanch – Vangar Gram Panchayat are same as raised by Sarpanch & Member Dudheri Gram Panchayat except the figures given in the table. (Sl. No. 44) Answers are given in reply of Serial No. 44.</td></tr>
<tr><td>55.</td><td>C55</td><td>Sarpanch – Dudhala Gram</td><td>Queries are same as given in the serial no. 54</td><td>D55</td><td>Queries have already been replied at point no. 54.</td></tr>
</table>

Sl.	Query in Annexure no. of PH minutes	Name and address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
		Panchayat			
56.	C56	Vala Kanaksinh Vikramsinh) Village Dudhala no. 01	He supported and welcomed the project.	D56	Company welcomed his support.
57	C57	Sarpanch& Member Katpar Gram Panchayat	Points/queries asked by Sarpanch& Member Katpar Gram Panchayat are same as asked by Sarpanch& Member Dudheri Gram Panchayat included in this table at serial no. 44.	D57	As far as the representation received from Padhiyarka Gram Panchayat is concerned, we would like to state that as per our knowledge the term of this Gram Panchayat has been completed in Dec 2021 and using of the letterhead of this panchayat is misleading to the government and to the people. However, reply is given as below 1. Mineral rights in all types of land are held by the government. According to which the State Government, Industry and Mines Dep't, has granted Mining Lease in Limestone mineral bearing area after obtaining prior approval of Central Government. 2. No agricultural land shall be acquired by the Government for mining in the granted mining lease area. If the farmers want to sell or give consent for mining in their land at market rates, mine owner can mine the land only by taking land on sale or by consent for mining from the land owner. Thus, mining will be done in that land only after getting the consent of the land owner.
62	C62	Sarpanch& Member Padhiyarka Gram Panchayat	Points/queries asked by Sarpanch& Member Padhiarka Gram Panchayat are same as asked by Sarpanch& Member Dudheri Gram Panchayat included in this table at serial no. 44.	D62	

Sl.	Query in Annexure no. of PH minutes	Name and address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
					3. Mineral rights in all types of land are held by the government. According to which the State Government, Industry and Mines Dep't, has granted Mining Lease in Limestone mineral bearing area after obtaining prior approval of Central Government. 4. The mining lease granted to Nirma Limited is located away from Samdhiyala Bandhara (Salinity ingress prevention bund). Hence there is no question of going to be impacted. 5. In is proposed to be construct garland drain in the sanctioned mining lease area to maintain the flow of water towards Samdhiyala Bandhara (salinity ingress prevention bund). Hence there is no question of changing water flow. 6. Mining lease areas are far away from the coastal regulatory zone (CRZ) area of the sea. Further, As per mine plan, the mining work shall not intersect the ground water table and shall be carried out well above it and shall not use underground water. However, rainwater harvesting in mined out pits, will raise the ground water table and prevent salinity ingress further. 7. Mineral rights in all types of land are held by the government. According to which mining lease has been granted in Limestone mineral bearing area after obtaining prior approval of the Central Government by the Industries and

Sl.	Query in Annexure no. of PH minutes	Name and address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
					Mines Department of the State Government. No agricultural land will be acquired by the Government for mining in the sanctioned mining lease area. If the farmers want to give consent to sell their land for mining at the market rates, the mine owner can carry out mining work in the land only after taking the land owner's land on sale or by consent, so mining will be done in that land only after obtaining the consent of the land owner. So the question of destruction of agriculture or animal husbandry does not arise. 8. Wildlife conservation plan has been approved by the wildlife department for conservation of Schedule 1 wildlife in this area for this mining and this sanctioned wildlife conservation plan will be implemented along with the commencement of mining activities in the area. 9.The Wildlife Conservation Plan is approved by the Wildlife Department for the conservation of Schedule 1 wildlife and this approved wildlife conservation plan will be implemented as soon as commencement of mining activities in the area and the noise pollution will remain below the prescribed limit. There will be no harm to wildlife. In view of all the above the contentions raised are either not correct or not properly addressed. And we want to bring to attention of the government that as per our knowledge the

Sl.	Query in Annexure no. of PH minutes	Name and address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
					term of this Gram Panchayat has been completed and the administrator has been appointed. The signatories are not Sarpanch at present, but, he has used letterhead of the village for signature & representation to mislead the Ministry – Govt. In view of this, we request you to not to consider this representation and consider as cancel.
58.	D58	Bhaliya Lakhman Narshi) Village Dudheri	He supported and welcomed the project.	D58	Company welcomed his support.
59.	D59	Chauhan Ajaybhai,	He mainly emphasized on why 7 adjoining villages divided into 3 different mining areas.	D59	The company had made three separate applications for grant of mining lease of limestone in the year 2004 and accordingly Department of Industries and Mines of the State Government granted mining leases through three different Letters of Intent in the year: 2008 on receipt of prior approval of the Central Government. Accordingly, in the year 2017, State Govt. has issued three separate detailed grant orders for grant of three separate mining leases. The details of which are as follows. 1. Padhiyarka & Doliya 332.24 hectares - Grant order dated 08.01.2017 – Lease deed execution dated 11.01.2017 2. Vangar & Madhiya – 612. 1336 hectares - Grant order dated 08.01.2017 - Lease deed execution dated 11.01.2017 3. Gujarda, Dudhala & Dudheri- 681.62 hectare - Grant order dated 08.01.2017 -

Sl.	Query in Annexure no. of PH minutes	Name and address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
					Lease deed execution dated 11.01.2017 As per above details, these three mining leases have been separately applied, granted and executed. Hence, the separate three EIA/EMP has been prepared for its environmental clearance. Along with this, Cumulative monitoring and summarization as per issued TOR for three mine leases has also been provided in the draft E.I.A. reports.
60.	C60	Bhaliya Vikram, Dudheri Village	He supported and welcomed the project.	D60	Company welcomed his support.
61.	C61	Sarpanch & Member Doliya Gram Panchayat	He submitted his representation dated 28/04/2023 which is enclosed as **Annexure – C61** in the minutes of PH given in Annexure XXX of EIA**.** Contents are same as given in serial no. 44 of this table.	D61	Points / questions raised by Sarpanch& Member Doliya Gram Panchayat are same as raised by Sarpanch & Member Dudheri Gram Panchayat. (Sl. No. 44) Answers are given in reply of Serial No. 44.
63.	C63	Joliya Arjan Devabhai, Dudheri Village	He supported and welcomed the project.	D63	Company welcomed his support.
64.	C64	Rabari Rajubhai Jashubhai, Vangar village	He submitted his representation dated 28/04/2023 which is enclosed as **Annexure – C64** in the minutes of PH given in Annexure XXX of EIA**.** Contents are same as given in serial no. 33 of this table.	D64	Points / questions raised by Rabari Rajubhai Jashubhai, Vangar village are same as raised by Ramjibhai Chitharbhai Dolshiya. (Sl. No. 33) Answers are given in reply of Serial No. 33.

Sl.	Query in Annexure no. of PH minutes	Name and address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
65.	C65	Bharatbhai Naranbhai Shiyal	He submitted his representation dated 28/04/2023 which is enclosed as **Annexure – C65** in the minutes of PH given in Annexure XXX of EIA**.** Contents are same as given in serial no. 24 of this table.	D65	Points / questions raised by Bharatbhai Naranbhai Shiya are same as raised by Shri Mahuva Bandhara Khetivadi Paryavaran Bhachav Samiti. (Sl. No. 24) Answers are given in reply of Serial No. 24.
66.	C66	Siyad Manish Vaghabhai, Vangar Village	He supported and welcomed the project.	D66	Company welcomed his support.
67	C67	Vala Kanaksinh Vikramsinh) Village Dudhala no. 01	He supported and welcomed the project.	D67	Company welcomed his support.
68	C69.	Nitish Bambhania, president, Jatayu nature club	He submitted his representation dated 28/04/2023 which is enclosed as **Annexure – C69** in the minutes of PH given in Annexure XXX of EIA**.** Contents are same as given in serial no. 25 of this table.	D69	Points / questions raised by Nitish Bambhania, are same as raised by Dev Bhati, President, Gir Foundation Nature Club. (Sl. No. 25) Answers are given in reply of Serial No. 25.
69.	C70	Saraswati foundation	1. How it is possible to do blasting and drilling as mentioned in the EIA report but no waste will come out of it. 2. How appropriate it is to leave land after mining for water storage. 3. State the effect of drilling & blasting on marine life as the project is at a distance of 500 m from the coast. 4. whether you have obtained CRZ approval	D70	1.No waste will be generated from the mining process. Mining will be done by surface miners. However, sometimes drilling and blasting will be carried out and necessary mitigation measures will be taken. In addition, mining will be done by taking safety measures as stated in the mining plan approved by IBM. 2.Some of the pits from mining will be used as

Sl.	Query in Annexure no. of PH minutes	Name and address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
			or not. 5. Kindly state what steps you will take to deal with the particulate matter in the air as a result of your mining activities 6. You will leave this land as a pond after mining, it is agricultural land. So why do you want to make this land non-reusable. 7. What are the measures being taken so that least damage could occur to the rivers in the study area. 8. Kindly request to provide detailed information as to why your mining area has been reduced by NGT. 9. As mentioned in EIA the undertaking of consultant is dated December 2022 and Tor is also received in December-2022. So you have indicated the monitoring time from March to June 2021, is it possible ? 10. What measures are being taken to avoid damage to salt manufacturing center and windmill present in the study area. 11. Can this mining be allowed as per CRZ rules? And kindly request to give us copies of all his statutory proofs if available. 12. CRZ of this area falls under which category.		artificial recharge structures and this will improve the groundwater quality and prevent intrusion & reduction of excess salinity as well as there will be freshwater ponds. 3. The mining will be done by surface miners. However, sometimes drilling and blasting will be carried out with necessary mitigation measures and it will not harm the area or the marine ecosystem. 4.The proposed lease area is not within the CRZ area and is at a distance of 500m hence CRZ approval is not applicable. 5.Following measures will be taken to control air pollution: • Water will be sprinkled on unpaved roads to prevent dust generation during transportation. • Trucks for transporting minerals will be covered with tarpaulin. • Ambient air quality will be monitored regularly to ensure that air pollutants remain within limits. • Tree plantation will be done to control air pollution. 6. At the end of the mine life, the backfilling area will be converted into agricultural land/ for tree planting and remaining void area shall be used used as an artificial recharge pit as per approved plan in the proposed IBM. 7.There are no rivers in the mining core zone. Mining will be done by surface miners. However, sometimes drilling and blasting will be carried out where necessary mitigation

Sl.	Query in Annexure no. of PH minutes	Name and address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
					measures will be taken. Mining activities shall not in any way intersect the ground water. So there is no possibility of intrusion of sea water due to mining activities. 8. There is no reduction in mining lease area by NGT. Undertaking of consultant in EIA report is dated 04.01.2023 and ToR was received on 28.11.2022. Baseline data results are valid for up to 3 years. 10. The mining lease has been granted as per the existing Acts and Rules and all environmental and related regulations shall be followed during mining. No impact on salt manufacturing center and windmill is envisaged as it is away from ML area 11. CRZ approval is not applicable to the proposed lease area. 12. As the proposed lease area does not fall under CRZ, it has no category.
70	C71	Dr. Kanubhai Kalasaria, Former MLA, 54, Mahuva C/o. Sadbhavna Trust Hospital, Vadli (Mahuva)(District Bhavnagar dated 28.04.2023	1. Since 2009, In this area, the Nirma Limited has obtained various approvals for the Integrated Cement Plant means Cement & Clinker project, and the granted the mining leases around it, including Environmental Clearance (EC) granted by the Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India at the time. But then due to the opposition of the people in the area and such environmental clearance was challenged before the reputed Gujarat High Court and the	D71	1. The Environmental Clearance (EC) granted by the Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India has not been quashed by the Hon'ble Supreme Court. Honorable NGT on 14/01/2015 has quashed Environment clearance canceled by MoEFCC. Both ECs are for separate processes. The EC received in 2008 was for a cement plant. The proposed public hearing is being held by the Gujarat Pollution Control Board for mining leases. All the issues raised have been addressed in

Sl.	Query in Annexure no. of PH minutes	Name and address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
			Supreme Court in which the said Supreme Court gave judgments as per reference 1 to 3 respectively, the said environmental clearance was canceled. So after about 13 years there will be an attempt to get environmental approval again by Nirma Limited, which is completely unfair and against the law. It is my humble request not to grant the environmental clearance to Nirma Limited. 2. It is my clear request not to grant good environmental clearance for the purpose of mining lease in this area as there are Samdhiyala Bandhara constructed for control of Salinity control department, habitat of Lion, various endangered species of animals and fauna, which are listed in schedule 1 wildlife. 3. At present, public hearings are being held to seek environmental clearance for three different mining leases by Nirma Limited, The mining leases consists of wholly owned private fertile agricultural lands, which in their possession, have not sold these lands to Nirma Limited Company, nor have they been acquired by the government, nor has the company paid any compensation to the farmers for these lands. 4. 760 hectares of land of 7 villages will be cultivated in future through public-		a proper scientific manner so there is no basis for rejecting the EC grant. Hon'ble Gujarat High Court and NGT have also given detailed scrutiny to this project and have given permission to set up the cement project. 2.The purpose of the Samdhiyala Salinity Ingress Control Bund is to prevent the rising of salty sea water towards the land. In which rainwater is collected, this bund has been planned to store water and increase the storage capacity. Three canals will be built around the cement plant to facilitate the flow of water towards the dam to prevent the spread of salinity. As per suggestion/advice of Irrigation Department the company will deepen the proposed land towards the embankment to increase water storage. No 'Bruhadgir Vistar' has been declared as Reserve Forest by Resolution No. WLP-1107-572-J G1 dated 18/05/2009 of Forest and Environment Department, Gandhinagar. And by the letter dated 09.11.2020 by the Deputy Conservator of Forests, the map of reserved forest has been certified and stated that "There is no National Park, Sanctuary, Biosphere Reserve, Wildlife Corridor, Ramsar Site, Tiger/Elephant reserved in the 15 km study area of the three mines". Also, the mining lease area has no habitat for wild life and schedule 1 species. A Conservation Plan has been approved by the Wildlife Department for the protection of

Sl.	Query in Annexure no. of PH minutes	Name and address	Questions/ suggestions/issue etc raised (as recorded in public hearing minutes)	Response in Annexure no. of PH minutes	Response of the project proponent during public hearing and updated thereafter
			constructed ponds and a government-sanctioned connection pipeline connecting Malan-Bandhara to Samdhiyala Bandhara. 5. Thus, when the ownership of the mining lease in question is present and earlier also the respective farmers have developed their land. Articles 14, 19, 21 and 300 of the Constitution of India in cases where the company has not obtained consent for the purpose of mining. Even if it is taken into consideration, the mining lease to be granted is wrong-illegal and contrary to the law in relation to the Constitution of India, it is considered illegal and unconstitutional to conduct environmental hearing and grant environmental clearance for such mining leases, so it is my humble request not to grant environmental clearance.		Schedule I wildlife. The Wildlife Conservation Plan dated 20.12.2021 has been approved by the Chief Conservator of Wildlife and will accordingly be implemented along with commencement of mining activities in the area. 3. A public hearing is being held for the first time for the proposed mining lease. Inform the villagers about the true facts. 4. The land in the proposed three mining lease areas is not fully privately owned land. It also includes government waste land. Limestone Mining Lease in Limestone Minerals rich area sanctioned by the Government in 2017 and the agreement deed executed by the Collector accordingly. Mineral rights in all types of land are held by the government. 5. However, the mine owner will not acquire agricultural land for mining if the farmers are willing to sell/consent their land for mining at market rates, accordingly the mine owner can mine the land with the sale/consent of the land owner. Thus, mining will be done in that land only after getting the consent of the land owner. Article 14, 19, 21,300(a) of the Constitution of India shown in these circumstances is absolutely not violated. The scheme connecting Malan Dam to Samdhiyala salt seepage dam is a government scheme.

7.6 BUDGET OF WELFARE EXPENDITURE BASED ON PUBLIC CONSULTATION

The total expenditure to meet public hearing demands will be Rs. 34 lakhs to be distributed over 3 years. The budget proposed to address the points raised during public hearings dated 28.04.2023 as detailed in **Table No. C7-3.**

TABLE NO. C7-3: BUDGET OF WELFARE EXPENDITURE BASED ON PUBLIC HEARING FOR VANGAR & MADHIYA LIMESTONE MINE, DISTRICT BHAVNAGAR

Sl. No.	Physical activity and action plan		Year of Implementation (Budget in Rs. lakhs)			Total Expenditure (Rs. in lakhs)		
	Name of the Activity	Physical Target	Year 1	Year 2	Year 3	Capital	Recurring for 3 years	Total
	Infrastructure Development							
1	Road Infrastructure	Maintenance of roads	1	1	1	-	3	6
		Provision of street light	1	1	1	-	3	
2	Rain Water Harvesting	Rain water harvesting through water channels shall be developed in and around the project area	-	-	-	-	-	-
3	Deepening of Bandhara	Deepening of Samdhiyala Salinity Ingress Control Bund & village ponds	-	-	-	-	-	-
4	Land for school development	Land for school development in Dudheri village	-	-	-	-	-	-
	Livelihood Support							
5.	Support for locals in transportation & other related business.	Contractual activities will get generated on commencement of mining operation	-	-	-	-	Contract amount (paid for contract period for different activities)	-
5	Vocational training programme for skill development	The company will facilitate vocational training along with skill development for getting better job opportunities	1	1	1	-	3	6

Sl. No.	Physical activity and action plan		Year of Implementation (Budget in Rs. lakhs)			Total Expenditure (Rs. in lakhs)		
	Name of the Activity	**Physical Target**	**Year 1**	**Year 2**	**Year 3**	**Capital**	**Recurring for 3 years**	**Total**
		Imparting training to build capacity for self-employment [stitching, embroidery, tailoring, pickles, dairy improvement, poultry farming, etc] to groups in villages	1	1	1	-	3	
	Education							
6.	Education facilities	➢ Repair/ renovation and/ or extension of existing school buildings and/ or their boundary walls/ toilets, etc. ➢ Scholarship to meritorious students and students from economically weaker sections ➢ Distribution of bags, study material (slate, globe, maps, charts, exercise book, duster, chalk etc.) as per demand from school. ➢ Assistance in the form of furniture, uniforms, sports kits and other miscellaneous items ➢ Any other aid required by the primary school to upgrade into middle & later secondary and senior secondary schools	5	5	5	0	15	15
	Health Care							
7	Provision of Ambulance.	The company shall have its own ambulance for the group of mining leases. The contact number for the ambulance shall be posted at Panchayat houses/ community centers in the villages and ambulance will be provided	-	-	-	-	1	1

Sl. No.	Physical activity and action plan		Year of Implementation (Budget in Rs. lakhs)			Total Expenditure (Rs. in lakhs)		
	Name of the Activity	**Physical Target**	**Year 1**	**Year 2**	**Year 3**	**Capital**	**Recurring for 3 years**	**Total**
		when a call is received.						
8	Medical facilities	Conducting mobile health camp (with Doctor, para-medical staff and free medicines) on a pre-determined frequency	1	1	1	-	3	6
		Conducting veterinary camps and provide access to a visiting veterinary doctor, according to pre-determined time table	1	1	1	-	3	
		Total	**11**	**11**	**11**	**-**	**34**	**34**

CHAPTER 8
PROJECT BENEFITS

This chapter comprises of project benefits in terms of employment potential and physical & social infrastructure development due to the project.

8.1 EMPLOYMENT POTENTIAL

The mining project is located in one of the undeveloped district of Gujarat State in view of industries. During operation phase, 58 persons will be directly employed at the mine. Many more thousands of persons will be indirectly engaged either on contract basis or in transportation of materials in provision of different services associated with the project. As majority of unskilled and semi-skilled persons will be from the surrounding villages, benefits will extend to the local population.

The project will create:

- direct employment in mining activities
- indirect employment on account of transportation by road, transportation of manpower, services required for operation and manpower, etc.
- indirect employment through stockists and retailers in Gujarat and outside.

The project may also induce the development of ancillary and related small-scale industries in the adjoining areas. The activities of the proposed mining operations will produce some improvements in the socio-economic levels in the study area.

8.2 PHYSICAL & SOCIAL INFRASTRUCTURE DEVELOPMENT DUE TO MINE

With the commencement of operation, amenities for communication, education, health, entertainment, canteen, etc. will be developed in and around the project area. These amenities will be available to local people also, in addition to those who are directly associated with the project. Thus, even those not associated in the project related activities will be benefited by these amenities. With the commencement of limestone mine, there shall be substantial improvement in the overall economy of the local people in the form of additional income through employment and development of infrastructure in surrounding areas as part of Corporate Social Responsibility (CSR).

The project will contribute additional revenue to the State and Central exchequer in the form of royalty, District Mineral Foundation Trust (DMFT), National Mineral Exploration Trust (NMET), cess and other taxes etc. These taxes also indirectly lead to physical and social infrastructure development in the State.

8.3 SOCIAL WELFARE INITIATIVES UNDERTAKEN BY M/S NIRMA LTD.

Nirma Ltd. has committed to its responsibility towards the society and has been doing several welfare activities in surrounding area and in Gujarat state based on specific needs and requirements. Company has already initiated the social-welfare activities in the vicinity of soda ash plant, proposed cement plant & proposed mining lease area, These are;

- Human Development & Capacity Building
- Infrastructure development:
- Health, medical care & hygiene
- Improvement in Socio economic condition
- Sports & recreation
- Education
- Religion, culture & other activities

CSR expenditure made earlier for villages near Padhiarka cement plant & proposed mining sites are as given in **Table No. C8-1**. When the operation of the mines will be commenced, such and other activities will be started again.

TABLE NO. C8-1: LIST OF ACTIVITIES/MATERIAL SUPPLIED (UNDER CSR) TO NEARBY VILLAGES OF CEMENT PLANT & LIMESTONE MINING COMPLEX AT MAHUVA, BHAVNAGAR

Sl. No.	Party or Purpose	Year	Issued Material			Cost in Rs. (Approx.)	Remarks
			Sand	Grit	Total		
1	Padhiyarka gram panchayat	2012-13	9	9	18	54000	-
2	Padhiyarka Gram Panchayat for Bajarang Das Bapa ni Madhi	2014-15	26	24	50	155200	R.C.C pipe 2.0 m long
3	Padhiyarka Gram Panchayat for levelling Below Paving Block At Samshan	2015-16	17	9	26	83200	-
4	Padhiyarka Gram Panchayat for Street levelling Below Paving Block at Padhiyarka	2016-17	16	15	31	102400	-
5	Padhiyarka & Madhiya Gram Panchayat for School compound wall At Padhiyarka & Ramji Madir etc.	2017-18	38	17	55	192500	White Stone 30 Nos.
6	Padhiyarka Gram Panchayat for Samshan new compound wall construction & road repairing work	2018-19	50	20	70	245000	-
7	Sand & Grit in tractor trolly provided to Padhiarka village for Road Paving Block work	2018-19	14	2	16	48000	
8	CSR work in Temple at Padhiarka for Remuneration	2018-19				48000	

Sl. No.	Party or Purpose	Year	Issued Material			Cost in Rs. (Approx.)	Remarks
			Sand	Grit	Total		
	of Pujari						
9	Sand & Grit in tractor trolly provided to Padhiarka village for Road Paving Block work	2019-20	26	6	32	96000	
10	CSR work in Temple at Padhiarka for Remuneration of Pujari	2019-20				48000	
11	Sand & Grit in tractor trolly provided to Padhiarka village for Road Paving Block work	2020-21	24	3	27	81000	
12	CSR work in Temple at Padhiarka for Remuneration of Pujari	2020-21				48000	
13	Sand & Grit in tractor trolly provided to Padhiarka village for Road Paving Block work	2021-22	79	84	163	489000	
14	CSR work in Temple at Padhiarka for Remuneration of Pujari	2021-22				48000	
15	Sand & Grit in tractor trolly provided to Padhiarka village for Road Paving Block work	2022-23	15	9	24	72000	
16	CSR work in Temple at Padhiarka for Remuneration of Pujari	2022-23				48000	
Total Cost						**Rs. 18,58,300**	

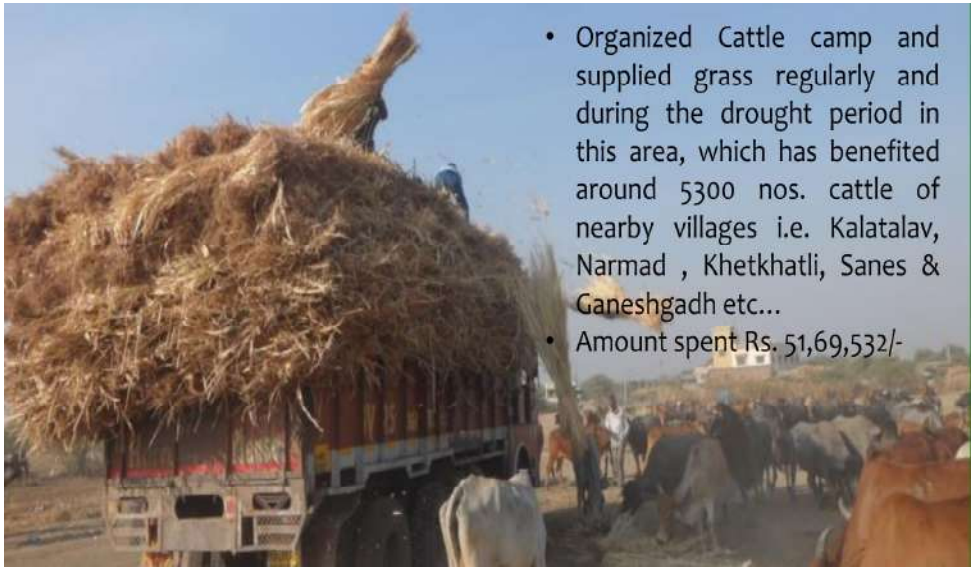
Company is also carrying various social development activities. Details of various CSR activities & expenditure made undertaken in last 10 years by M/s Nirma Ltd. for its Plant at village Kalatalav, District Bhavnagar is given in **Table 8.2**. **Fig No. C8-1** shows some glimpse of activities completed in the past.

TABLE 8.2: RECENT CSR ACTIVITIES & EXPENDITURE MADE IN LAST 10 YEARS BY M/S NIRMA LIMITED, BHAVNAGAR

Sr. No	CER Program	Financial Expenditure Made (Rs. In Lacs)				
		2013-2015	**2015-2017**	**2017-2019**	**2019-2021**	***2021-2023**
A	Human Development and Capacity Building	105.28	7.56	57.84	114.97	100.91
B	Infrastructure	194.1	138.52	142.07	179.91	305.92
C	Health & Hygiene and COVID-19	52.47	72	30.87	72.55	38.92
D	Socio-Economic Development	126.36	10.15	25.59	142.23	176.31
E	Sports & Recreation	36.57	10.14	21.16	34.09	24.49
TOTAL		**514.78**	**238.37**	**277.53**	**543.74**	**646.55**

****2021-23: Actual financial expenditure till March'23***

FIG NO. C8-1: SOME GLIMPSE OF PAST CSR ACTIVITIES CONDUCTED BY NIRMA LTD.













- Regularly organized "School Pravesh Utshav" to encourage the school going children in the villages of Kalatalav, Narmad, Khetkhatli, Savaiya nagar and Madhiya. Around 170 students has benefited
- Amount spent Rs. 45,304/-

FIG NO. C8-1: SOME GLIMPSE OF PAST CSR ACTIVITIES CONDUCTED BY NIRMA LTD. (CONTD…)





- Provided better infrastructures by construction and maintenance of school building at Kalatalav and Anganbadi of Khetakhatli village



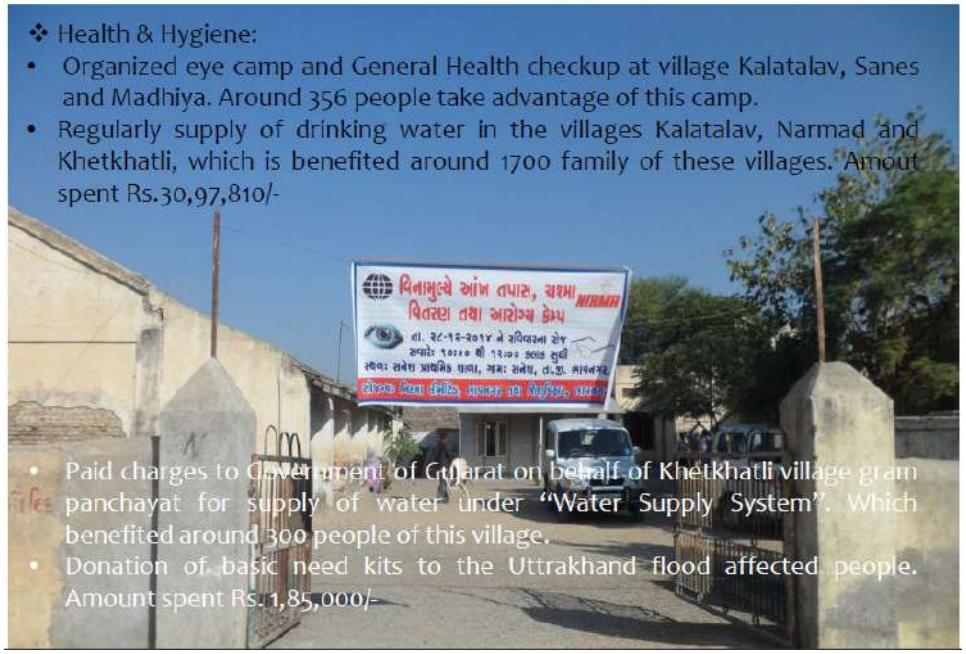
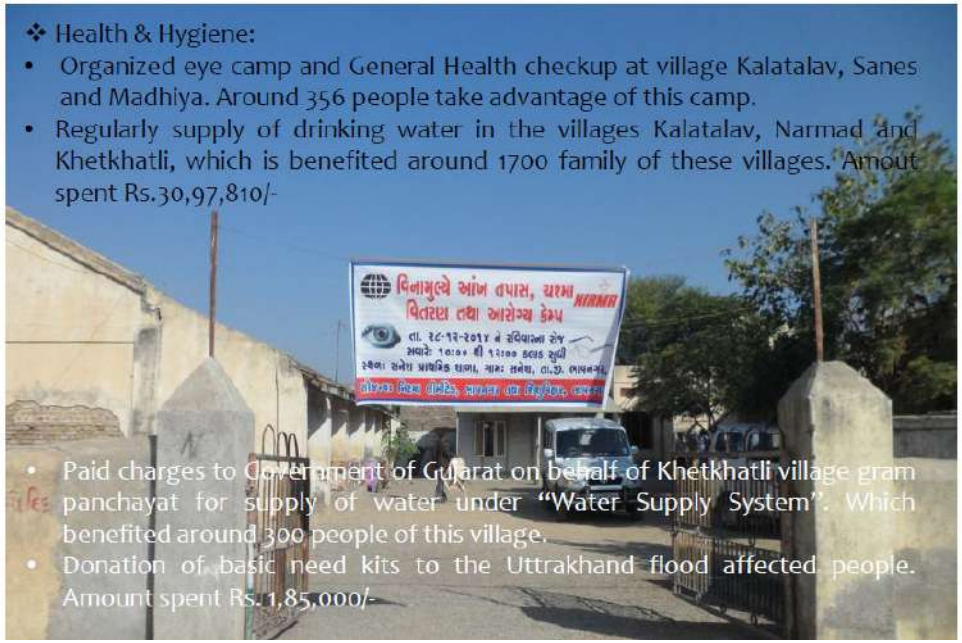


FIG NO. C8-1: SOME GLIMPSE OF PAST CSR ACTIVITIES CONDUCTED BY NIRMA LTD. (CONTD...)







8.4 NEED ASSESSMENT

The need assessment for infrastructure and/ or facilities has been carried out for the villages around the mine. Villages present around the project are:

Within project area:	Vangar & Madhiya
Within 2 km radius (8 nos.):	Vangar, Madhia, Pipalva Nana, Biladi, Dudhala, Amratvel, Padhiarka, Samdhiyala
Within 5 km radius (17 nos.):	Pipalva Mota, Bhanvad, Mota Jadra, Dudheri, Patva, Rabhada, Doliya, Dantardi, Sajnaiva, Kankot, Dundas, Haripara, Bhanvad, Malia, Devalia, Gujarda, Khared

Village level observations were made to identify deficiencies or needs related to selected sectors through physical survey and interaction with local persons in Vangar, Madhia, Pipalva Nana, Biladi, Dudhala, Amratvel, Dudhala, Padhiarka, Samdhiyala,

Additionally, the amenities as reported for the villages in Census 2011 were studied. As per Census 2011 data, several facilities are deficient. The field observations and local persons interaction indicate that they have concerns related to roads, health and education facilities. The summary of the sector wise findings, their present status, identified deficiency and proposed intervention are discussed in **Table C8-3.** The stated activities will be carried out in consultation with the government authorities and the agencies in-charge of the respective infrastructure in the areas of interest.

TABLE C8-3: PRESENT PHYSICAL & SOCIAL INFRASTRUCTURE, NEED ASSESSMENT AND PROPOSED INTERVENTIONS IN VILLAGES AROUND VANGAR & MADHIYA LIMESTONE MINE

Sector	Present status	Identified Deficiencies	Proposed intervention	Proposed timeline of implementation
(1)	(2)	(3)	(4)	
1. Roads	The village roads of Vangar, Madhia, Pipalva Nana, Biladi, Dudhala, Amratvel, Padhiarka, Samdhiyala are Kachcha, in part and some are PCC/ Black topped/ Paved block	➢ In summers specially, air borne dust is there due to condition of roads, whenever a vehicle moves inside a village ➢ Street lights are partially available along roadside	➢ Maintenance of roads as and when requested by villagers ➢ Provision of solar street lights will be taken up as per requirement. ➢ The stated activities will be carried out in consultation with the government authorities i.e. In collaboration with local Panchayats and Govt. Schemes if any.	➢ Will commence on commencement of mine working ➢ Continue throughout life of mine
2. Drinking Water	All of the villages have water of Narmada River pipeline having connection of PVC pipeline to meet their domestic water requirements.	Adequate water supply facility is available in villages	Water supply through tankers during festivals, fairs and other functions on requirement of panchayat/ villagers	➢ Will commence on commencement of mine working ➢ Continue throughout life of mine
3. Drainage	➢ Rain water drainage system is absent in settlements	➢ During monsoons, water logging, breeding of mosquitoes, odour problem and water borne diseases occur. ➢ Drainage system is required.	In collaboration with local Panchayats and Govt. Schemes, to undertake: ➢ Awareness camp to prevent water logging and water borne diseases ➢ Anti mosquito fumigation drive	➢ Will commence on commencement of mine working ➢ Continue throughout life of mine
4. Sanitation & solid waste manage	➢ Toilets with septic tanks are available in 45 to 80% of the homes of villages but not used by villagers due to lack	➢ Open urination and defecation in public places causes spread of diseases.	Swachh Bharat Mission has initiated construction of toilets, hence, the company will focus on improvement of overall hygiene & cleanliness in collaboration with local Panchayats and	➢ Will commence on commencement of mine working ➢ Continue

Sector	Present status	Identified Deficiencies	Proposed intervention	Proposed timeline of implementation
(1)	(2)	(3)	(4)	
ment	of awareness. ➢ Open defecation is still done by villagers, although in small numbers ➢ Dustbins are not there at public places, in schools etc. ➢ There is no vehicle designated for waste collection in villages. ➢ No solid waste management system was observed	➢ Due to lack of proper disposal of solid waste, the waste is being managed by individual households at their own level. Therefore, some burning of waste is done occasionally. ➢ Dustbins absent at public places, schools etc.	Govt. Schemes. Will undertaken following: ➢ Holding awareness camps about solid waste segregation and household composting to avoid burning of waste ➢ Purchase of dustbins for garbage collection in common areas of the village. ➢ Awareness drives against open urination and defecation ➢ Construction of public toilet ➢ Provide support for cleaning of common areas periodically. ➢ Help Panchayats to develop a sustainable solid waste management system	throughout life of mine
5. Market access and local livelihood means	➢ Nearest Mandi/ regular market exists at Mahuva (approximately 10 km from core zone). ➢ Local people are involved in agriculture for cotton,onion & millet. People are also involved in diamond polishing and other labour work	➢ Youth need training in ITIs in different vocations to prepare themselves for recruitment in the upcoming project. ➢ Other vocations, which are not dependent on industries also need to be taught to local people. ➢ Women empowerment to make them financially self-reliant is necessary. Hence, gender based skill development programs	➢ Imparting training to build capacity for self-employment [stitching, embroidery, tailoring, pickles, dairy improvement, poultry farming, etc] to groups in villages ➢ Training to people for improvement of agriculture and agriculture based products ➢ Plantation of those trees in villages which are fruit bearing and/ or have medicinal/ commercial importance.	➢ Will commence on receipt of environmental clearance & on commencement of mine working ➢ Continue throughout life of mine

Sector	Present status	Identified Deficiencies	Proposed intervention	Proposed timeline of implementation
(1)	(2)	(3)	(4)	
		are required.		
6. Education	➢ Primary school are available in all villages within 2 km radius i.e. Vangar, Madhia, Pipalva Nana, Biladi, Dudhala, Amratvel, Padhiarka, Samdhiyala ➢ Middle School is present in Madhiya village but secondary or senior secondary schools are not available in any of the villages in 2 km. They are available in Mahuva. ➢ One private Higher Secondary schools are available within 2 km. ➢ Degree college is available at Mahuva ➢ Engineering college is available at Bhavnagar	➢ Need to expand primary schools into middle and later secondary and senior secondary school within the villages, thus, eliminating long travel distance for students ➢ Adequacy of study material ➢ Measures are required for encouraging students to excel in studies	➢ Repair/ renovation and/ or extension of existing school buildings and/ or their boundary walls/ toilets, etc. ➢ Scholarship to meritorious students and students from economically weaker sections ➢ Distribution of bags, study material (slate, globe, maps, charts, exercise book, duster, chalk etc.) as per demand from school. ➢ Assistance in the form of furniture, uniforms, sports kits and other miscellaneous items ➢ Any other aid required by the primary school to upgrade into middle & later secondary and senior secondary schools	➢ Will commence on receipt of environmental clearance & on commencement of mine working ➢ Continue throughout life of mine
7. Health Care	➢ Absence of chemist shop, testing, diagnostic and ambulance facilities in the area. ➢ Anganwadi facility is available in every village ➢ There is no Primary Health Centre within villages in 2 km radius except in village	➢ Lack of adequate health facilities such as chemist shop, testing, diagnostic and ambulance facilities in the area. ➢ Fever and dysentery/ diarrhoea are commonly prevalent in the area, especially during monsoon.	➢ The company shall have its own ambulance for the group of mining leases. The contact number for the ambulance shall be posted at Panchayat houses/ community centers in the villages and ambulance will be provided when a call is received. ➢ Conducting mobile health camp (with Doctor, para-medical staff and free	➢ Will commence on commencement of mine working ➢ Continue throughout life of mine

Sector	Present status	Identified Deficiencies	Proposed intervention	Proposed timeline of implementation
(1)	(2)	(3)	(4)	
	Madhiya. ➢ Nearest multi-specialty hospitals, ambulances on call are from Mahuva (approximately 5 km away) ➢ Nearest veterinary hospital is at Mahuva	➢ General steps required to make medical access easier for local people ➢ Lack of ambulance available nearby for emergency condition	medicines) on a pre-determined frequency (quarterly/ six monthly) ➢ Conducting veterinary camps and provide access to a visiting veterinary doctor, according to a pre-determined time table. ➢ The stated activities will be carried out in consultation with the government authorities i.e. in collaboration with local Panchayats and Govt. Schemes if any.	
8. Sports and entertainment	➢ Sports Club/ Recreation Centre is not available in villages in 2 km radius ➢ Private water park is available in vicinity. ➢ Community centre is not available villages in 2 km radius.	➢ Lack of Sports facilities ➢ In adequate Community Centres in villages within 2 km	➢ Sponsorship to rural Sports events ➢ Sponsorship to local talent to participate at state & national levels ➢ Provide equipment to village level teams in different sports such as cricket, football, badminton etc.	➢ Will commence on commencement of mine working ➢ Continue throughout life of mine
9. Welfare of SC/ ST	➢ As per Census 2011, within the core zone, there is no ST. ➢ Within the 10km radius there are 209 ST persons, which are 0.13% of the population in study area ➢ There are 6568 SC in 10 km radius comprising 4.06% of the total population in the study area	➢ Lack of awareness amongst the people in order to avail these schemes	➢ Awareness program about available schemes ➢ Goal is to improve the efficiency of utilisation of Government Schemes by SC/ ST	➢ Will commence on receipt of environmental clearance & on commencement of mine working ➢ Continue throughout life of mine

Sector	Present status	Identified Deficiencies	Proposed intervention	Proposed timeline of implementation
(1)	(2)	(3)	(4)	
	➢ Current schemes of the Gujarat government in the study area are[1]: ○ Education related schemes = 34 nos. ○ Economic upliftment related schemes - 20 nos. ○ Health, housing construction and other related schemes - 15 nos. ○ Direction and Administration related schemes - 8 nos. ○ Poverty Eradication Program related schemes- 5 nos.			

[1] Source: https://sje.gujarat.gov.in/Dscw/Schemes?lang=English accessed 24.08.2023

8.5 PROPOSED CSR EXPENDITURE

The CSR Budget shall be as per the Companies Act 2013 which states that two percent (2%) of the average net profit of the company for last 3 (three) financial years as per the Annual Report of the company. Since the project is not yet operational or profit making, the expenditure on CSR shall be earmarked as per need assessement and directions from discussion with villagers and District Administration.

Project would initially target the villages within 2 km of limestone Mine and later. Additionally, the amenities as reported for the villages in Census 2011 were studied. As per Census 2011 data, almost all the facilities are available in the villages. The field observations and data analysis indicate that the villages have concerns related to safe drinking water & proper water supply system, connecting roads in the villages and sanitation.

8.6 ENVIRONMENTAL BENEFIT

Contribution to the District Mineral Foundation Trust (DMF):

M/s Nirma Limited shall contribute 30% of Royalty to the District Mineral Foundation Trust, Bhavnagar, established by the State Govt. to work for the interest and benefit of persons and areas affected mining related operations. As per the present maximum targeted production and rate of Royalty such contribution will be Rs. 3.84 crores annually. This amount will be in addition to the amount shown in CSR activity to be taken directly by the company.

At the end of conceptual period of Initial stage, out of 197.0 hectare of excavated area, 36.36 hectares of mined out area will be backfilled and converted into agricultural land and/ or to be utilized for plantation work as the case may be and the balance land of 160.64 hectares will remain to form a water storage ponds which will serve as recharge pits, sweet water for irrigation and as a source of water supply for public use.

Green belt shall be developed in 26.50 ha area within road barrier and boundary barrier within the mine lease area.

CHAPTER 9
ENVIRONMENTAL COST BENEFIT ANALYSIS

The Terms of Reference were issued for the preparation of EIA/EMP Report vide MOEF&CC's letter no. J-11015/152/2016-IA. II(M) dated 23.12.2022(copy given in **Annexure I**). The Environmental cost benefit analysis was prescribed at point no. (i) in specific Terms of reference in ToR.

This Environmental Cost Benefit Analysis (ECBA) have been done to understand the project benefits giving due consideration to environmental as well as social well being for the following scenario:

With reference to the open cast mining or to leave that reserve of limestone as it is (no mining scenario).

The Environmental Cost Benefit (ECB) Analysis has been carried out in line with "Guidelines for conducting Cost benefit analysis for projects involving diversion of forest land under the provisions of the Forest (Conservation) Act, 1980" issued by Forest Conservation Division, MoEF&CC, GOI vide letter no. 7-69/2011-FC(Pt.) dt. 01.08.2017.

Conclusion: It can be seen from the **Table No. C9-1** that the benefit: cost ratio is more in Opencast Method (**9.62**) compared to no mining scenario. Further, at local level direct employment will be there for 58 persons directly in the opencast mining. Thus, extraction of 14.913 mio. ton limestone reserve at shallow depth will be beneficial for proponent as well as for local society & Government through opencast mining method.

TABLE NO. C9-1: ENVIRONMENTAL COST BENEFIT (ECB) ANALYSIS FOR OPENCAST MINING VS. NO MINING SCENARIO

Sl. No.	Parameters	Remarks, if any	Evaluation of Scenario	
			Opencast Mining Scenario	No Mining Scenario
(1)	(2)	(3)	(4)	(5)
A	**Estimation of cost**			
1.	Ecosystem services losses due to proposed forest diversion	-	No loss of forest land, hence, Rs. 0	No loss of forest land, hence, Rs. 0
2.	Loss of animal husbandry productivity, including loss of fodder.	Considered as per gochar land to be acquired	Gouchar land =0 ha Rate = Rs. 13.00 Lakh/ha Total cost = Rs. 0 Lakhs (considering only that gouchar falling under mining pits)	=No gochar land lost, hence, Rs. 0
3.	Cost of human resettlement	R&R cost involved in the proposed project	There are 24 buildings located in proposed pit area. Compensation rate = Rs. 1 Lakh/ building **Total cost = Rs. 24 Lakhs**	Nil
4.	Loss of public facilities and administrative infrastructure (Roads, Building, Schools, Dispensaries, Electric lines, Railways etc.) on forest land, if these facilities were diverted due to this project		No loss of public facilities and administrative infrastructure	No loss of public facilities and administrative infrastructure
5.	Possession value of forest land diverted	The possession value of forest land diverted (as per guideline) shall be 30% of NPV due to loss of forest	Nil	Nil
6.	Habitat Fragmentation Cost	Habitat fragmentation Cost shall be 50% of NPV (as per guideline)	Nil as no habitat fragmentation shall occur.	Nil

Sl. No.	Parameters	Remarks, if any	Evaluation of Scenario	
			Opencast Mining Scenario	**No Mining Scenario**
(1)	**(2)**	**(3)**	**(4)**	**(5)**
7.	Compensatory afforestation and soil & moisture conservation cost	The cost @ Rs 400000 / Ha is taken for plantation and soil & moisture conservation.	No loss of forest land, hence, Rs. 0	No loss of forest land, hence, Rs. 0
8.	Value of tree	Economic benefit of one tree accruing monetized in terms of providing oxygen, fertilizer, water, soil moisture conservation, micronutrients and compost, etc. is Rs. 74,500[1]	= No. of trees to be cut in open cast pit area = 260 Cost to the society due to tree cutting of 260 nos. of trees @ Rs. 0.745 lakhs/ annum for 25 years life span = Total cost = **Rs. 4,841.2 Lakhs**	Nil
9.	Cost of the land	Area under quarry is 197.0 Ha (Govt. Land-7.24 ha and Pvt.Land-189.76ha) 36.36 Ha shall be backfilled and converted to the agricultural land and/ or to be utilized for planation work. 160.64 Ha of land shall be the final quarry area.	Cost of the quarry area = 13 Lac/ha x 189.76 ha =**Rs. 2466.8 Lakhs**	No excavation involved.
10.	Project Cost/ agriculture cost	Cost of mining project and the cost of doing agriculture if no project comes up (55% of Rs. 1.66 lakhs/ ha/ annum returns from agriculture)	**Rs. 2,500 lakhs**	Area = 189.76 ha Cost of doing agriculture for 13 years = Rs. 2,252.26 lakhs
	Total cost to society		**Rs. 9832.0 lakh**	**Rs. 2,252.26 Lakh**

[1] *According to the report submitted by 5 members SC committee comprised of Soham Pandya, B K Maji & others (refer case "Special Leave Petition (Civil) No. 25047 of 2018"), the monetary value of a tree is to be counted as – its age multiplied by Rs. 74,500.*

Sl. No.	Parameters	Remarks, if any	Evaluation of Scenario	
			Opencast Mining Scenario	No Mining Scenario
(1)	(2)	(3)	(4)	(5)
B.	**Estimating benefits**			
1.	Increase in productivity attribute to the specific project	There will be production of limestone from the mine. The representative prices at pit head considered, as on Sep 2022, are: Cement Grade - Rs. 517/ tonne	The cost of the 14.913 mio. ton reserves has been estimated as **Rs. 77,100 lakhs**	Nil
2.	Benefits to economy due to the specific project	The incremental economic benefit in monetary terms will be contribution towards Royalty, DMF, NMET, Infrastructure tax, Forest transit cess amounts to Rs106/T	Total contribution will be 14.913 mio. T X Rs. 106/ T **= Rs. 15807.78 Lakh***	Nil
3.	No. of population benefited due to specific project	There will be direct & indirect employment to various people in the proposed mining project. Besides this, local people will have income opportunity in various ancillary work & other activities.	• Direct - 58 nos. • Indirect- 100 nos.	Direct/ indirect - No employment.
4.	Economic benefits due to of direct and indirect employment due to the Specific project.	On an average salary for direct employees have been considered as Rs. 36, 000 Per Month and for Indirect beneficiary who	• **Direct** - 58 nos. X Rs. 0.36 Lakh X 12 Month = Rs.250.56 Lakh/ year • **Indirect**- 100 nos. X Rs. 0.20 Lakh X 12 Month = Rs. 240 Lakh/ year	Nil

Sl. No.	Parameters	Remarks, if any	Evaluation of Scenario	
			Opencast Mining Scenario	**No Mining Scenario**
(1)	**(2)**	**(3)**	**(4)**	**(5)**
		will be beneficiary at about Rs. 20,000 per month	Total life of mine is 13 years. Thus, the total benefit as salary (compounded @ 10%) will be = Rs. 490.56 (1+10/100)^13 = **Rs. 1,693.55 Lakh**	
5.	Economic benefits due to compensatory afforestation	-	No loss of forest land, hence, Rs. 0	No loss of forest land, hence, Rs. 0
6.	Agriculture Income	Average income considered Rs. 1.66 lakhs/ ha/ annum with 45% profit	Nil	Area = Rs. 189.76 ha Total profit for 13 years = **Rs. 1,842.75 Lakh**
	Total benefit due to diversion of agricultural land for non-agricultural activity		**94,601.33 lakh**	**1,842.75 Lakh**
COST BENEFIT ANALYSIS BASED ON VALUE OF PRODUCTS:				
A	Total Cost to the Society		**9832.0-lakh**	**Rs. 2,252.26 Lakh**
B	Total Benefit to the Society		**94,601.33 lakh**	**Rs.1,842.75**
	Benefit: Cost Ratio (Total Benefit/ Total Cost)		**9.62**	**0.82**

CHAPTER 10
ENVIRONMENT MANAGEMENT PLAN

10.1 ENVIRONMENT MANAGEMENT PLAN

The proposed mitigation measures have been tabulated along with safeguards to be adopted to comply with the applicable environmental standards and regulations in **Table No. C10-1**.

TABLE NO. C10-1: ENVIRONMENT MANAGEMENT MEASURES

Discipline	Potential impacts	Mitigation measures and action plan	Administrative aspect		Monitoring parameters
			Implementation	Monitoring	
Topography	• Out of the total project area of 612.1336 ha, there will be one temporary soil dump over 4.63 ha. The maximum height of the soil dumps will be 9.0 m above the ground level. • At the end of life of mine, 197.0 ha of land shall be excavated by opencast mining. 410. 5336 Ha shall remain undisturbed while rest of area shall be partly used for infrastructure and road.	• The soil dumps over 4.63 ha shall be rehandled and shall be utilized for backfilled simultaneously with mine working. • Of the excavated 197.0 ha, at the end of life of mine, 36.36 ha shall be backfilled area and converted into agricultural land/ utilized for plantation work. • 160.64 ha would remain as mine void • In the subsequent stage i.e. post mine closure stage, the mine void will be used for rainwater storage	Field Assistant under Environment Officer	Assistant Mine Manager	Measurement of material handling, inspections and reporting,
Drainage	• No specific drainage pattern is developed within the ML area. • Flash floods due to heavy rain in cyclonic conditions	• One sump will be developed for storage of adequate quantity of rain (sweet) water and to keep the working benches dry. Sump water will be pumped to the surface reservoir, suspended solids will be settled and water shall be reused.	Support Staff (civil)	Environment Officer	Verification of construction of proposed structures, construction orders and completion

Discipline	Potential impacts	Mitigation measures and action plan	Administrative aspect		Monitoring parameters
			Implementation	Monitoring	
		• Rainwater runoff will be managed by construction of garland drains around the mine pit, along roads and topsoil dumps areas. • The rainwater will be conveyed to the settling pond for settlement of suspended solids. Water collected in settling pond will be reutilized and excess will be released into the nearby Bandhara through natural nala. • Uninterrupted runoff flow from upstream to downstream of pit by construction of diversion channels wherever required • Hence, there will not be any adverse impact on the drainage system.			reports
Air quality	• Fly rock and fugitive dust generation during drilling and blasting operation. • PM_{10}, $PM_{2.5}$, SO_2, NO_2 emission due to ➢ operation of surface miner, excavators & loaders, ➢ Loading of dumpers (fugitive dust) ➢ Movement of dumpers on haul roads (dust & gases) ➢ Dumping (dust) ➢ Operation of other fossil fuel based equipment/ machinery	• The emission of dust will be restricted by the use of dust suppressing systems such as fixed or mobile water spraying system at fugitive sources (working faces & loading point), haul roads, stock yards, dumps, stock yard and wherever required. • Mobile sprinkling system will be used on haul roads to achieve 95% dust suppression with a frequency of 1 times/shift in winters and 2 times/ shift in summers. • Automatic water sprinkler system i.e. fixed sprinklers (Whirling) will be installed along main haulage road and where SPM are likely to be high constantly to suppress the dust. The efficiency of the static sprinklers shall be more than 95% in suppressing dust.	Pollution control Supervisor under Environment Officer	Mine Manager	Air quality parameters monitoring by self or by third party Verification of cover of trucks dust suppression measures & plantation

Discipline	Potential impacts	Mitigation measures and action plan	Administrative aspect		Monitoring parameters
			Implementation	Monitoring	
	• Fugitive dust emission due to movement of tippers/ dumpers on roads and PM, SO_2 and NO_2 from exhaust of dumpers. • Dust generation in Mineral Handling plant	• Transport vehicles will be maintained periodically as per the manufacturers' norms and maintained spill proof. They will be covered during transportation of mineral. No overloading shall be permitted. All heavy and light vehicles shall be well maintained and will have their "Pollution Under Control" (PUC) certificates. • Tree plantation will be carried out along the mine periphery (7.5 m), along the sides of haul roads (outside quarry area or working dumps) and other vacant area • Provision of reclamation of mine with backfill and plantation • Dust masks will be provided as safety measure to the workers, engaged at dust generation points like excavation site, loading/unloading points, Crusher plant, etc. • All equipment will be maintained periodically to minimize source emissions. Regular maintenance schedule will be adopted as per manufacturer's specification. • Good housekeeping will be enforced. • The mine ambient air quality will be regularly monitored and tested to detect the presence of any pollutants above prescribed limits and appropriate measures will be adopted.			
Water quality	Suspended solids due to • soil in run-off during heavy	• Mine water will be collected in the pit, from sump to surface reservoir and will be	Jointly by Assistant Mine Manager and	Mine Manager	Verification of settling tanks,

Discipline	Potential impacts	Mitigation measures and action plan	Administrative aspect		Monitoring parameters
			Implementation	Monitoring	
	precipitation • Wash offs from soil dumps • Pumping of mine water • Soil erosion from soil dump and roads • Oil spillage at the pit head, resulting in oil and grease contamination of surface water if appropriate control measures are not adopted. • Sewage generated from various facilities	utilized for mine activities, plantation, etc. after settlement of suspended solids. • Run-off around reclamation area will be controlled by providing catch drains • Run-off from soil stack will be collected through a series of contour drains which would be connected to a water retention pond. The clear water from this pond will be discharged to the natural water course. • Sewage generated from various facilities within the mining lease will be treated in septic tank & soak pit systems. • Septic tanks will be cleaned periodically by removal of sludge, which will be used as manure.	Chemist under Environment Officer		Monitoring of water quality prior to discharge
Water table	• Intersection of ground water table due to OC workings. • Decline of water table in radius of influence.	• No intersection of ground water is envisaged during plan period. • Supply of potable water in affected areas within radius of influence. • Rain water harvesting structures shall be there for ground water recharge.	Assistant Mine Manager	Mine Manager	Piezometer monitoring station, pumping records, monitoring of water quality parameters
Land	• The total project area is 612.1336 ha. Out of this, 197.0 ha land i.e. 32.18% will be disturbed by excavation till the end of life of mine. • The disturbed area within project during the plan period will comprise excavated land,	• An important aspect of the mitigating the impact on agricultural land is to attempt to save the fertile top soil. For that purpose, the reviewed mine plan has provisioned for 1.37 Mcum of top soil to be removed during the life of the mine and to be stacked separately on temporary basis. This top soil will be simultaneously	• Foreman • Mining mate • HEMM and pumps operatorr under Environment Officer	Assistant Mine Manager	Volume of material handled, survey for area measurements, plantation inventory.

Discipline	Potential impacts	Mitigation measures and action plan	Administrative aspect		Monitoring parameters
			Implementation	Monitoring	
	soil stack, mineral storage area, builtup area, etc.	reutilized in plantation of green belt along periphery and in safety zone • At the end of conceptual period, the excavated area will be backfilled (36.36 ha.) and 160.64 ha will be void area which will be used for storage of rainwater.			
Solid Waste	• Pollution of air due to handling of top soil, • Pollution of surface water due to suspended solids in runoff	• Trucks will be covered while transporting the topsoil. • The total topsoil generated will be 1.37 Mcum during the life of the mine which will temporary stored at designated place to maintain its fertility and later it will be reused in reclamation process. • Garland drains followed by settling tank will be provided around the top soil dump to arrest any soil from the dump from being carried away by the rain water. • The top soil dump will be stabilized on non working faces through plantation	• Mining mate • HEMM and pumps operator	• Assistant mines manager • Maintenance Engineer	• Log of solid waste handling and disposal • TS handling records • Surprise checks • Verification by observation
Noise	• Noise level will be high due to heavy earth moving machinery, vehicles and blasting. • The adverse impact can be more within the mining lease area, and may cause hearing loss and other related problems to the workmen, if mitigation through protective measures are not taken. • Impact can be there on the	• For the protection of the nearest settlement safety zone is proposed to be afforested. The afforested belt will act as a buffer to absorb noise and dust. • Dense green belt around the opencast working has been proposed. • Further, provision of greenbelt around mine infrastructures and both sides of haul road on the surface has been made. • Fitting of special silencer, proper lubrication and periodic maintenance of noise generating	Assistant Mine Manager	Mine Manager	Noise level, vibration level, tree inventory, PPE issue records and surprise inspections for compliance

Discipline	Potential impacts	Mitigation measures and action plan	Administrative aspect		Monitoring parameters
			Implementation	Monitoring	
	local people of nearest settlements, if proper control measures are not adopted.	machinery and transportation vehicles will be ensured. • To protect the workers from exposures to higher noise levels, the following measures will be adopted: i. Provision of protective devices like ear muffs/ear plugs to those workers who cannot be isolated from the source of noise. ii. Confining the noise by isolating the source of noise. iii. Reducing the exposure time of workers to the higher noise levels. iv. The operators of HEMM will be accommodated in cabins which are acoustically designed and air conditioned. It forms a part of the equipment so that level of sound inside the cabin is below 90 dB(A).			
Ground vibration & Blasting	• Ground vibrations on roads due to the movement of trucks and vehicles. • Drilling and blasting of exposed hard strata	• Vibration due to traffic can be reduced by constructing and maintaining the roads in good quality • Multi-row drilling and V-pattern drill holes shall be practiced for deep hole drilling and blasting. • Each blast will be carefully planned, checked, executed and observed. Blasting data will be recorded. During blasting, a responsible officer will be supervising the whole operation. • Blasting will be carried out during day time	Safety Officer	Assistant Mine Manager	Ground vibration study

Discipline	Potential impacts	Mitigation measures and action plan	Administrative aspect		Monitoring parameters
			Implementation	Monitoring	
		only. Blasting will not be carried out when strong winds are blowing towards the inhabited areas.			
Traffic impacts	Impact on air quality and noise due to vehicular movement resulting into impacts on habitation including flora and fauna falling along the mineral transportation route from mine lease area to Cement plant located near Padhiarka and Soda Ash Plant Located at Kalatalav.	• Improvement of internal roads by strengthening and its maintenance, • Optimum weight to be carried by the vehicle and over loading prohibited. • Periodic maintenance of the vehicles as per manufacturers specifications for best fuel efficiency. • The transportation vehicles will under go for "Pollution Under Control (PUC)" checkups on every six months to obtain PUC certificate. • Water sprinkling at loading points and covering of trucks with tarpaulin will be ensured. • Water sprinkling on roads within project area • Training to drivers and periodic awareness drives.	A separate supervisor for traffic management under Assistant Mine Manager	Mine Manager	Observation of condition of roads, Verification by observation and surprise checks
Terrestrial ecology & greenbelt	• Dust emission from mine due to excavation and transportation, affects the effective photosynthesis by covering the plant/ tree leaves by thin dust layer during dry months which however will be washed away in rainy months. • Disturbance to birds and animals due to bright light and	• Sprinkling of water around the excavation area and on haul roads to reduce the dust generation. • Establishment of greenbelt and plantation along various facilities and periphery. • Plantation shall also be carried out along roadside and around Administrative buildings, facilities and in vacant undisturbed areas as well.	Gardner under Ecologist/ Environment Officer	Environment Officer	Tree inventory, tree cutting permission, if required; boundary inspection, new plantation inventory and inspection, wastewater

Discipline	Potential impacts	Mitigation measures and action plan	Administrative aspect		Monitoring parameters
			Implementation	Monitoring	
	unusual noise during operation activity.	• The plantation program in the project area will be implemented in a phased manner throughout life of mine ***For safeguarding fauna*** • The greenbelt around facilities, periphery and along roads will result in developing a favourable habitat for small sized fauna such as squirrels, hare, etc., reptiles and birds in finding a favorable habitat. • The roads leading to and from the mine shall have caution boards warning drivers to slow down for animal crossings, if any develop in the future. • The drivers shall be sensitized not to hit stray animals on the road. • The emissions from the mines shall always be kept within the norms so that surrounding environment will always be clean and comfortable for humans, wildlife and vegetation. • Care shall be taken that no food or degradable waste is openly disposed. This could attract wild animals near to human habitation and create man-animal conflict. Hence, disposal of wastes shall always be on the designated and protected place. • While carrying out social welfare activities, awareness about the variety of faunal species, their status of endangerment and behavior will be spread through posters/			reuse log book

Discipline	Potential impacts	Mitigation measures and action plan	Administrative aspect		Monitoring parameters
			Implementation	Monitoring	
		seminars/workshops or discussions to sensitize the villagers. • Waste water from domestic sources (toilets/ canteens/ baths/ kitchens) will not be released into the environment but treated in septic tank system. Thus, the flora and fauna shall not be exposed to any contaminants. • Expenditure as envisaged towards wildlife conservation shall be spent by the company as planned			
Demography and socio-economics	• The project falls under two villages namely Vangar & Madhiya • Only 24 buildings in Vangar (17 nos.) & Madhiya villages (07 nos.) have been identified for rehabilitation and resettlement. • A total of 518_ project affected families including homestead, land losers, encroachers, livelihood losers, etc	• The displaced habitation in land of Vangar & Madhiya villages which are falling under the pit area will be compensated or resettled and rehabilitated. • The land losers who will be giving their land for quarry area shall also be given compensation. • The compensation or resettlement terms shall be as per mutually agreed rates, terms and conditions and commensurate with the latest market conditions for the type of homestead and land. • The company shall enter into written agreement with the homestead and land owners for the same.	Social/labour Welfare officer	Assistant Mine Manager	Monitoring of CER activities
Fire and safety	Accidents/disasters related to fire and safety	• Sufficient fire extinguishers will be installed during operation at selected locations • Sufficient number of water hydrants with sufficient hose pipes will be made available on the surface for fire protection.	Mine Safety Officer and Maintenance Engineer.	Assistant Mine Manager	Verification of approvals from safety inspector, training, verification of

Discipline	Potential impacts	Mitigation measures and action plan	Administrative aspect		Monitoring parameters
			Implementation	Monitoring	
		• Well trained professional groups will be there to control the emergency situations. The group will comprise three teams, namely, Fire fighting team, Rescue team and Support team • A tele-communication network and wireless will connect Site Emergency Control Room (SECR) to control various Departments of the mine, fire station and neighbouring industrial units/mines.			fire fighting equipment
Health and safety	Injury	Safety precautions will be implemented are as follows: • Erecting barbed wire fencing around the areas being excavated and dumped • Provision of personal protection devices to the workforce, regular maintenance of equipments, rotation of shift of workers exposed to noisy premises. • Periodic safety drills and celebrating the National Safety Week, Road Safety Week, World Environment Day, National Fire Service Week etc. Following measures will be taken to ensure good health of employees: • OHS centre & appointment of safety officer. • Warning announcements/signal and red flags before blasting, caution boards on roads and road crossings, fencing/ bunding around open pits, etc.	• Mine Safety officer • Medical Officer	• Assistant • Mines Manager	Examination records, training records, PPE disbursement record

Discipline	Potential impacts	Mitigation measures and action plan	Administrative aspect		Monitoring parameters
			Implementation	Monitoring	
		• A separate person will be designated to undertake administration of personal protective equipments. • Provision of drinking water at close distance, rehydration solution at standby, air conditioned cabins and rooms, wherever possible, ventilated and cool clothes, etc. • Close surveillance of the factors in working environment and work practices, which may affect environment and workers health. Monitoring of the values of various factors which may lead to occupational health hazards. • Periodical survey shall be conducted to see the impact on the health status of local people and to take remedial measures, wherever required. • Medical examination shall be carried out as per DGMS Circular No. DGMS(Tech.) (S&T) Circular No. 05 of 2011 in continuation with the Form-'O' under rule 29F (2) and 29L for the report of Medical Examination under rule 29B of Mines Rules,1955.			

10.2 CORPORATE ENVIRONMENT POLICY

Nirma Ltd. has a well laid down Environmental Policy which was approved by Board of Directors dated 01.01.2021, which is presented below:

NIRMA

ENVIRONMENT, HEALTH & SAFETY POLICY

Nirma is committed to operate all its facilities in a safe clean and socially responsible manner. Environment, Health & Safety are an integral part of all our activities.

Continual improvement in performance of Environment, Health & Safety is achieved through :

- **Sharing the responsibility of maintaining safe and healthy work environment by all stakeholders.**
- **Maintaining a vigilant, responsible and accountable team by imparting appropriate training.**
- **Organizing awareness programs for surrounding community.**
- **Periodical review of EHS practices.**
- **Complying with all legal and other requirements.**

DATE: 01.01.2021

SHAILESHBHAI V. SONARA
Occupier & Director (EHS)
NIRMA LIMITED

10.3 STANDARD OPERATING PROCESS / PROCEDURES TO ADDRESS DEVIATION/ VIOLATION

An Environmental Manual will be prepared, as part of the Environmental Management. The Manual shall be prepared to comply to the Corporate Environmental Policy covering the following aspects:

- Environment clearance conditions/ stipulations/ norms
- Consent to operate conditions / stipulations / norms
- Monitoring mechanism for compliance through periodic audits
- Reporting of the audit results
- Corrective and Preventive Actions to be taken
- Self improvement measures

10.3.1 Hierarchical systems to deal with the environmental issues and for ensuring compliance

Nirma Ltd. will handle environmental issues of Limestone Mine headed by the General Manager (Projects) posted at HO, Ahmedabad. At the project level, Mine Manager will have the responsibility for the compliance within the lease area. He will be assisted by the Mine Safety Officer & Environment Officer who will in turn take action down the line through various subordinates to implement various environmental conditions.

10.3.2 Systems of reporting of non compliances/ violations

Half yearly Progress Report to the conditions imposed by MOEF&CC in respect of Environmental Clearance of mines shall be uploaded at Company's website regularly. Deviations from the policy and cases of violation of Environmental Clearance conditions as found by MoEF&CC and GPCB or other public authority will be reported to Board of Directors and corrective as well as preventive action will be taken. The system will function as follows:

Inputs	➢ Periodic Manual monitoring data ➢ Perusal of data from manual or online AAQ monitoring systems ➢ NOC/ EC conditions compliance status ➢ Inspection report of MOEF&CC ➢ Inspection report of SPCB ➢ Complaints from local people, NGO or any other

	➢ Environmental statement (Form V)
Hierarchy of reporting upwards	The Mine Safety Officer and the Environment Officer --> Assistant Mine Manager -->Mine Manager-->Vice president-->GM (Projects), HO --> Executive Director --> Managing Director --> Board of Directors
Reporting	(1) Quarterly compliance Report (2) Event based report whenever any of the inputs reveals non compliance
Frequency of consideration by Board	Board of Directors meets regularly and considers the reports received as one of the agenda items. It is to be recorded in minutes of meeting. In case of non compliance, a decision for its resolution is to be taken and communicated down the line to the person executing the compliance. The Environmental Statement (Form V) is to be considered annually and recorded in the Annual Report.
Hierarchy of downward implementation	Board of Directors --> Director & Occupier mines--> GM (Projects), HO -->Vice president--> Mine Manager-->Assistant Mine Manager--> Environment Officer and the Safety officer --> Down the line personnel for implementation.

CHAPTER 11
SUMMARY AND CONCLUSION

11.1 INTRODUCTION

11.1.1 BACKGROUND OF THE PROJECT

M/s Nirma Ltd. has been allotted Mine by the State Govt. for mineral limestone and marl over an area of 1225.8553 ha vide letter no. MCR-102004-1827-CHH Dated 15.02.2008 for a period of 30 years from the date of execution. Meanwhile, during the process of our proposal for grant of EC, the Expert Appraisal Committee (Mining) of MoEF&CC recommended the proposal for grant of ToR in Vangar & Madhiya Limestone Mining Lease with reduced mining lease area of 612.1336 Ha and issued Terms of Reference (TOR) vide letter no. J-11015/152/2016-IA-II(M) dated 03.01.2017. Ministry of Mines, Govt. of India, New Delhi issued order titled "Mines & Minerals (Development and Regulations) Removal of Difficulties Order 2017" dated 04.01.2017. It is permitted to consider the grant of the mining lease in those cases where in the condition of obtaining Environment Clearance has not been complied herewith by the applicant on or before 11.01.2017 but all other conditions specified in LOI have been fulfilled.

Accordingly, the order for grant of mining lease was issued by Industries and Mines Department, Govt. of Gujarat, Gandhinagar vide letter no. MCR-102004-1827-CHH dated 08.01.2017 for reduced area of 612.1336 Ha for 50 years. In due course of time, the mining lease deed was executed on 11.01.2017 between Dist. Collector, Bhavnagar, State Govt. and the applicant Nirma Ltd. for a period of 50 years under the provision of MMDR Amendment Act, 2015 and also registered the executed mining lease deed with Sub, Registrar, Mahuva on 11.01.2017. Under provision of Minerals (other than Atomic Hydro Carbons Energy Minerals) Concession Rules, 2016, "Mine Development and Production Agreement' has been signed between State Govt. and proponent on 11.01.2017. After the reduction in ML area, the Modified Mining Plan with Progressive Mine Closure Plan under Rule 17(3) of Minerals (other than Atomic & Hydrocarbon Energy Minerals) Concession Rules, 2016 and 23 of MCDR 2017 has been submitted for approval of IBM. IBM has approved the Modified Mining Plan with Progressive Mine Closure Plan for the said mining lease with reduce area of 612.1336 Ha. vide approval letter no. 684(4)(1)/MP-196/2018-GNR dated 04.02.2019 which was valid up to 31.03.2021. Thereafter, on expiry of Modified Mining Plan, Review of Mining Plan with Progressive Mine Closure Plan over area of 612.1336 ha. for Vangar & Madhiya Limestone Mining Lease has been submitted and approved by Indian Bureau of Mines, Gandhinagar, Gujarat vide letter No. 684(4)(1)/MP-347(196)/2021-22 GNR/ 1125 dated 05.08.2021 for further five year period i.e. from 2021-22 to 2025-26. Annual production target shall be 1.6 million tonnes per annum at an overall stripping ratio of

1:0.00 tonne/cum. The total life of mine worked out is 13 years (Life of mine may be increased subject to conversions of resources under 333 category into category of reserves 111).

Meanwhile, the Company submitted the fresh proposal for grant of Terms of Reference vide letter No. NL/BH/ENV-152/1932/2022 dated 18.11. 2022.The EAC recommended the proposal in the 7th EAC (Non-Coal Mining) meeting held during 5th-6th December, 2022 for grant of Terms of Reference (ToR) under the provisions of EIA Notification, 2006 for M/s Nirma Limited for mining of Limestone in Vangar and Madhiya Limestone mine with production capacity of 1.6 MTPA in the mine lease area of 612.1336 ha. The Terms of Reference were issued for the preparation of EIA/EMP Report vide MOEF&CC's letter no. J-11015/152/2016-IA. II(M) dated 23.12.2022(copy given in **Annexure I**).

11.1.2 Justification for implementation of the project

- The mining project is located in one of the undeveloped district of Gujarat State in view of industries. During operation phase, 58 persons will be directly employed at the mine. Many more thousands of persons will get indirect employment either on contract basis or in transportation of materials.
- The project will also induce the development of ancillary and related small-scale industries in the adjoining areas. It is obvious to assume that the activities of the proposed mining operations will produce some improvements in the socio-economic levels in the study area.
- The project will contribute additional revenue to the State and Central exchequer in the form of royalty, District Mineral Foundation Trust (DMFT), National Mineral Exploration Trust (NMET), cess and other taxes etc.
- The project will create opportunities for indirect employment on account of new trucks, company's vehicles and hired vehicles & Create opportunities for indirect employment through stockists and retailers in Gujarat.
- With the commencement of operation, amenities for communication, education, health, entertainment, canteen, etc. will be developed in and around the project area. These amenities will be available to local people also, who are directly associated with the project.

11.1.3 Location and communication

The mine is located in villages Vangar and Madhiya, Tehsil Mahuva, District Bhavnagar, Gujarat. The mining lease area falls within the Survey of India Toposheet No. 41 O/12 (restricted). The area is bounded by Latitude Lat.: 21º01'44.54" to 21º 03' 40.04" N Longitude 71º38' 35.63" to 71º41'32. 67" E. The location map is given in **Fig No. C1-1** of Chapter 1.

The mining lease area is located at a distance of 6.2 km, NE of Mahuva town (Tehsil Headquarter) and is easily approachable by road. National Highway NH-8E/51 (Bhavnagar to Una) passes through the Mine Lease area. The nearest railway station Mahuva lies at approximately 7.7 km in ENE aerially. The nearest airport is at Bhavnagar, district HQ, about 100 km NE of ML area. Pipavav is the nearest Port at about 25 kms in west of ML area.

11.2 PROJECT DESCRIPTION

11.2.1 Geology and reserves

Saurashtra coastal tract is composed extensively of tertiary sediments, which are mostly calcareous in nature. The area forms part of the Late Tertiary Miliolitic Limestone, which is believed to have been deposited under a marine transgressive environment. Apart from the miliolitic limestone, lithological units of recent age are also seen in the area. The deposit is underlain by the Gaj Limestone and clays that have been encountered in the boreholes drilled in the adjoining areas which have similar geological setup. The deposit exhibits a simple structural setup. The dip of the area appears to be almost horizontal.

The mineable reserves are in accordance with threshold value issued by IBM i.e. CaO >34% & MgO <5%. The entire mineable reserves under UNFC 121 & 122 shall be made usable.

Total mineral resources are 35.539 million tonnes in which mineable reserve are 14.913 mio. Tonne respectively. The limestone is of the high / cement grade quality and is followed by Marly Limestone/ Marl down the quality parameter.

11.2.2 Mining

The Vangar and Madhiya deposit will be worked out by mechanized open cast method using Continuous Surface Miner (CSM) with combination of excavator/ loader and dumpers as well as conventional method i.e. drilling and blasting. Surface miner is environment friendly mining operation and will be used in area near road, habitation and boundary areas in order to avoid blasting. The excavation is proposed to be carried out by hydraulic excavator and pay loader for loading of limestone and transportation shall be done by means of dumper/tippers of 25 tonnes capacity. The destination of mined out limestone is proposed clinkerization unit with crushing unit for crushed material at the cement plant located at Padhiarka. Crusher is proposed in proposed cement plant in the vicinity of ML area. For use in Soda ash plant, excavated limestone mineral (ROM) shall be sent directly to the soda Ash Plant located at Kalatalav, Bhavnagar where further breaking of limestone into required size will be done before the feed.

The bench height is proposed 6.0 m. Due to absence of waste, no handling of waste is required as pre-production development except soil removal and preparation of haul/ mine road. Soil shall be removed first in order to remove limestone. Benches of 6 m height and working width 12-15 m (as per MMR) maintaining working bench slope of 80-85^0 in limestone shall be proposed.

Multi-row drilling and V-pattern drill holes shall be practiced for deep hole drilling and blasting. The diameter of the hole drilled shall not be more than 4". Since the proposed height of the benches is 6m, depth of the drill holes shall be kept 6.6m (about 10% extra taken as sub grade drilling).

Company will explore the possibility of reducing the mining with drilling & blasting by using ripper-dozer combination to eliminate the drilling & blasting for limestone use in cement plant.

For our soda ash plant, Company needs sized limestone, i.e. 25-100 mm for which drilling & blasting is essential to break in-situ limestone rock for required size. However, Company shall also explore the possibility to deploy rock breaker to eliminate the drilling & blasting. Rock breaker can be installed in excavator by replacing it bucket and can be used as per the requirement.

11.2.3 Site services

Core infrastructure like mine office & common facilities, power distribution system, road, telecommunication, First Aid centre, canteen etc. shall be established at the mine site. Explosive Magazine shall be established in company's adjacent mine which will be common for all three mines

Total requirement of water is estimated as 3 KLD for potable and 39 KLD for industrial purpose. Source of water required for potable shall be Narmada water pipeline/ water tankers and for mine activities shall be Reject water of RO /DM plant (proposed at Cement plant).

Total power requirement shall be 100 KW which will be met from Gujarat State Electricity Board / Captive Power Plant located at Cement Plant near Padhiyarka. D.G set of 5 KVA will be installed for emergency purpose.

11.2.4 Manpower

Total manpower required for mine and allied activities will be 58.

11.3 PRESENT ENVIRONMENTAL SCENARIO

The lease area is referred to as "core zone". Area falling within 10 km from boundary of core zone is referred to as "buffer zone". Together, both of them form the "study area". The map showing the study area is given in **Fig No. C3-2** of Chapter 3.

11.3.1 Topography and drainage

Core zone: Topography has gentle undulations. Western and eastern part is comparatively elevated from central and southern parts. Elevations ranges between 05 to 20.27 m above mean sea level (amsl) vegetation is sparse. Few small seasonal streams after passing through the ML area ultimately dissipate into the vast saline plain/ Samdhiyala salinity ingress control bund that is seen in the south-western part of the area and finally drains out to sea. No surface water body exists in the ML area.

Buffer zone: The general altitude of buffer zone area varies between 0 m. amsl to 68.0 m. amsl. There is no major river in the buffer zone except for the rivulet Malan, Garasawo & Bhambhali, which are seasonal river and flow roughly in south-easterly direction. The drainage pattern is dendritic. There is a bund near Samdhiyala village for prevention of the saline water ingress in the western/ south-western side of the project area and the water from the seasonal streams is partly flowing into its catchment and ultimately accumulate into said harvesting pond i.e. Samdhiyala salinity ingress control bund. In Buffer zone, Arabian Sea is situated at a distance of 3.8 km in the south of the mine lease.

11.3.2 Climate and micro-meteorology

The climate of the district is arid with large annual variations in rainfall and moderate humidity. The area experiences extreme climate conditions. January is the coldest month, with the temperature falling to 14.0°C. May is the hottest month of the year, when the maximum ambient temperature reaches 39.8°C. As per the Climatological table for Bhavnagar Meteorological station, the average annual rainfall (1991 to 2020) in the area is 718.0 mm while as per Disaster Management Cell, Bhavnagar it is 687 mm for Mahuva for 2011-2019.

Micro-meteorological data was recorded at site for 3 months from 1st March to 2nd June 2021. Temperature was recorded as a minimum of 20°C and maximum of 42.63°C, relative humidity as a minimum of 38.80% and maximum of 78.10% during the monitoring period. The wind speed varies between 0.00 to 28.52 km/hr and the predominant wind direction was observed from S with 18.08% of occurrences.

11.3.3 Ambient air quality

Ambient air quality was studied at sixteen locations from 1st March - 2nd May 2021. One station were established in project area and fifteen stations in the buffer zone. Ambient air quality stations were established at Vangar in core zone and Near cement plant, Padhiyarka (1.17 km, SE), villages Padhiyarka (1.0 km, S), Madhiya (0.4 km, E), Dudhala No. 1 (1.4 km, SE), Gujarda (3.1 km, SE) Patva (2.7 km, S), Samadhiyala No. 1 (1.9, SW), Doliya (3.2, SE) Rabhda (2.3 km, W), Nana Pipalva (0.5 km, N), Amrutvel (1.5 km, N), Mota

Jadra (2.1 km, NE), Devalia (4.0 km, E), Khared (6.0 km, E) and Gadhada (5.9 km, SE) in buffer zone. Concentration of PM_{10} range 27.6 to 71.1 µg/m^3, while that of $PM_{2.5}$ ranges from 11.2 to 40.0µg/m^3. The concentration of SO_2 is found between 2.7 to 10.2 µg/m^3 and NO_2 concentration ranges from 3.6 to 14.5µg/m^3. Heavy metals such as Pb, Ni and As have been found below detectable limits. All the parameters are within the prescribed limits as per National Ambient Air Quality Standards (NAAQS). Concentration of Silica in PM_{10} sample of core zone are found as 1.1µg/m^3, 0.9µg/m^3 and 1.2µg/m^3 in sample collected near cement plant, Padhiyarka, Vangar and Dudhala No.1 respectively.

11.3.4 Water environment and quality

Mainly ground water is the source of water for irrigation as well as for drinking purpose in the study area. The ground water is found with in the secondary porosity of limestone in the form of joints & fracture. The ground water in these formations occur in unconfined state. The geomorphology is the main controlling factor for occurrence and movement of ground water. Depth to Water level in the area ranges between 3.65 m to 26.50 m below ground level. The average seasonal fluctuation at average rainfall is about 2 m as reported in the field. The ground water storage in the area gets charged through rainfall alone. The regional ground water flow is towards the sea in the south direction.

Twelve ground water samples were collected from Core Zone i.e. from Madhiya and near Cement Plant at Padhiarka, villages Padhiyarka, Vangar, Madhiya, Dudheri, Dudhala near NH-8E, Gujarda, Doliya, Rabhada, Amratvel and Near Devlia. Three surface water samples were collected from Malan Bandhara near Khared, Malan River near Barpara Village and Arabian Sea near Doliya. The water of area is saline due to the presence of Arabian Sea in 10 km radius of Mine.

11.3.5 Land use pattern and soil quality

Land use: Total Mine lease area is 612.1336 ha. There is no reserve forest land present within core zone. Out of total ML area, private land is 586.4789 ha and Government waste Land is 25.6547 ha. As per Census data 2011, within study area, the area under net sown area (48.47%) accounts for a major portion followed by non-agricultural use (33.47%). Forest land in the study area is only 2.94%.

Soil Quality*:* The soil samples were collected from twelve locations namely, near Cement Plant - Padhiyarka, Vangar, Madhiya, Padhiarka, Dudhala near NH-8E, Doliya, Dudhala No. 1, Gujarda, Dudheri, Rabhada, Amratvel and near Devlia. The pH of soils is moderately alkaline in the core zone and pH of soil varies from 7.7 to 8.2 in study area. The electrical conductivity varies from 0.190 to 1.739 mS/cm in study area. Soil is normal at all locations except for one location at Vangar village where EC reaches 1.739 mS/cm and found to be

critical for germination. The soils have organic carbon varying from 0.22 to 2.26 which shows that soil is rich in organic carbon at four locations, optimum at two locations and deficient at six locations.

11.3.6 Noise and Traffic volume

The noise levels were measured at sixteen stations located in and around the project. The levels varied between 47.57 to 52.46 dB(A) during day time and 39.36 to 42.89 dB(A) during night time. These were well within the limits prescribed by National Ambient Air Quality Standards for Noise.

The traffic density survey was conducted on Bhavnagar to Una Road: NH - 8E/51 (Near Vangar Village). Total numbers of vehicles were found as 6793 per day and equivalent PCUs is 9382 per day.

11.3.7 Ecology

Forest: There are Reserve Forests present in the study area. They are RF near Patwa (2.1 km, S), RF near Dudheri village (3.9 km, SE), RF near Gujarada village (4.3 km, SE), RF near Doliya village (3.3 km, SSE), RF near Khared village (6.3 km, ESE). As per Census 2011, 1353.11 hectare (2.93%) Revenue Forest land within study area. Forest are classified as Tropical Dry Deciduous Forest and Northern Tropical Thorn Forest. No National Park, Wildlife Sanctuary, corridor etc exists within the ML area and also within 15km radius of ML area. Nearest National Park & Wildlife Sanctuary is the Gir National Park, Gir Wildlife Sanctuary & Mitiyala Wildlife Sanctuary located at a nearest distance of 76.0 km, 44.2km and 43.5 km respectively. There is no Forest land in project area i.e. core area. There are 5 Reserved Forest located in the buffer area.

Flora: The core zone is virgin land where mining is proposed to be carried out. The natural vegetation in the core area includes trees, shrubs, herbs etc. Prosopis juliflora is the dominant specie in the study area. Common species such as Neem, Mango, coconut, etc. are present in the buffer area.

Fauna: Common avifauna such as house sparrow, house crow, pigeon, common myna, owl, koel, were observed. Mammals such as hare, squirrel, common house rat, mongoose and porcupine have been observed. Amongst reptiles, common garden lizard, and Indian krait were seen or reported by villagers.

A total of about 70 faunal species were recorded during the field survey, comprising 11 species of mammals, 06 species of Reptiles & 53 Avifaunal species. Peafowl, chinkara and Asiatic lion are the Schedule I animal observed in the study area as per Wildlife Protection Act, 1972 amended upto 2019. After the amendments vide Act 18 of 2022, a number of additional species have been added into Schedule-I such as Leopard, Striped hyaena, Jackal, Bengal fox,

Indian porcupine, Jungle cat, Grey wolf, Dog faced water snake, Russell viper, Checkered Keelback, Indian Rat snake, Red sand boa and Naag/cobra.

Cropping pattern: The main food crops of the district are Bajra, Wheat, onion and Maize. The main non-food crops are Cotton, Groundnut, Til and Fodder. Pulses are also grown in the study area.

11.3.8 Socio-economic condition

Although, the main habitation of villages are outside the ML area, few scattered huts / structures can be seen in the core zone. As per Census 2011, total population is 161707 with 82467 (51.0%) males and 79240 (49 %) females. 58.78% of the total population is literate. The schedule castes comprise 4.06% and scheduled tribes comprise 0.13% of total population.

The average family size is 6 persons/ family. Main worker and marginal workers form 33.13% and 5.92% respectively of the total population. Other workers account for 42.91% of the main workers and 24.97% of the marginal workers.

In Vangar & Madhiya villages due to opencast mining activities, there will be 24 homestead losers & 207 private plots (survey nos.) falling in pit area. There will be 81 private plots (Survey Nos.) of Vangar village and 126 of Madhiya village. They will be compensated as per mutually agreed rates, terms and conditions and commensurate with the latest market conditions for the type of homestead and land.

11.3.9 Industries around the project area

There exist no major industries, except some salt pans i.e. salt manufacturing industries, wind mills and cotton gin mill in the study area.

11.3.10 Places of archaeological/ historical/ tourist/ religious importance

There are no places of tourist, religious, historical interest or archaeological importance in study area. Arabian Sea is present at a distance of 3.8 km from Lease area.

11.4 ANTICIPATED ENVIRONMENTAL IMPACT AND MITIGATION MEASURES

11.4.1 Topography and drainage

Impact on Topography: At the end of life of mine, out of total ML area, 197 Ha. of land shall be excavated, 410.5336 Ha shall remain undisturbed while rest of area shall be used for built up area and roads. The maximum depth of working as per presently approved mine plan will be at +1/+2 m AMSL. This impact will be of permanent in nature and will not be reversed, as there is insufficient material for backfilling to restore the land upto its original level.

However shallow depth mined out area shall be backfilled and utilized for agricultural/plantation use and rest of mined out area shall be converted into water reservoir. Another activity affecting the topography will be construction of various buildings and infrastructures, which will be removed on abandoning the mine except some, which are useful for the surrounding villages. Mining activities will not affect the topography outside the mine lease.

Management: At the end of conceptual period, 36.36 hectares of mined out area will be backfilled and will be converted into agricultural land/ utilized for plantation work and 160.64 ha. of land of void area at the end of life of mine will be used for storage of rainwater which will serve as recharge pits, water for plantation and as a source of water supply for public use.

Impact on Drainage: The drainage pattern is dendritic in nature. The storm water flows through streams and finally drains out to sea, except where caught by bandharas. Mining activities will not affect the drainage system outside the project area. Monsoon runoff volume may marginally reduce due to excavated areas.

Management: There are no major water body in the study area except for few rainwater storage ponds of Salinity Ingress bunds/ bandhara in the vicinity of the mining lease area. Rainwater run off will be managed by construction of garland drains around the mine pit, along roads and dumps areas.

The rainwater will be conveyed to the bandhara through settling pond for settlement of suspended solids. In contest of the dependent project, the cement plant, three canals will be constructed to enhance smooth flow of incoming water towards Samdhiyala salinity ingress control bunds. As per suggestion/ consultation with Irrigation Department, the Company will deepen the suggested landside upstream of bandhara to improve the water storage.

11.4.2 Climate and meteorology

Impact: The climatic conditions including temperature variations, wind direction and speed, rainfall and humidity are governed by regional factors and the monsoons. As such the mining and other allied activities will not tend to influence the climate. Emission of green house gases due to combustion of fossil fuels shall be there.

Management: Development of greenbelt, afforestation and rehabilitation in the mine lease area will contribute in a positive manner towards mitigation of greenhouse gases. The company will be undertaking all possible measures to minimise the CO_2 emissions. These include regular maintenance of all fossil fuel based machinery and equipment and ensuring their emissions within limit.

11.4.3 Air quality

Impact: The opencast mining operations are generally prone to generation of high levels of particulate matter due to material handling and to a lesser extent of sulphur dioxide, nitrogen dioxide and carbon monoxide due to fuel combustion. The sources of air pollutants will be drilling, blasting, loading and transportation. Air quality prediction modelling has been carried out to estimate ground level concentrations (GLCs) of various pollutants. Air quality prediction models called ISCST3 and CALINE 4 have been used. Maximum incremental values due to mining activity of 15.98 µg/m^3 for PM_{10}, 8.49 µg/m^3 $PM_{2.5}$, 0.054 µg/m^3 SO_2 and 1.75 µg/m^3 NO_2, respectively are anticipated at a distance of 100 from the mining lease boundary with control measure. Maximum additional incremental values at 50 m from road due to transportation have been estimated as 1.02 µg/m^3 for PM_{10}, 0.25 µg/m^3 for $PM_{2.5}$, 0.01 µg/m^3 for SO_2 and 0.44 µg/m^3 for NO_2 with control measured. Cumulative impact have also been modelled considering the probable impact of other two proposed mine of Nirma Ltd. in the vicinity. The cumulative impact shall be within the permissible standards as specified in National Ambient Air Quality Standards 2009.

Management: Although adequate control measures are proposed to be taken during mining operation, transportation and loading operations, PM_{10} and $PM_{2.5}$ management need additional attention in core zone. Dust suppression system (like water sprinkling systems) will be adopted on roads within the mine lease and whirling have been proposed with appropriate time controllers along haul roads to suppress the dust. Frequent watering will be done on dump area to mitigate dust. Green belt shall be developed around the mine and loading facilities. Dust masks will be provided to the workers. The ambient air quality will be regularly monitored and immediate corrections will be adopted to ensure that air pollutants remain within limits.

11.4.4 Water environment

Impact: There is no perennial surface water body within the mining lease area and hence there will not be any impact on surface water body within mining lease. No adverse impact on ground water quality is anticipated since no OB external dumps are there which could result in leaching & contamination. Considering the annual rainfall of 718.0 mm over a pit area of 197.0 ha, the total direct rainfall accumulation can be 1.4 MCM. Assuming, 50% losses to seepage and evaporation 0.7 MCM per annum can be available for plantation and agriculture use.

Presently no mining operation has been carried out. During the five years planning period of working, mining operations is envisaged up to a level of 13.0 m AMSL. As such no ground water table intersection is envisaged in plan period or upto 13^{th} year of operation. i.e. end of mine life. This shallow depth pit shall be backfilled simultaneously after mining for limestone and converted into agricultural land/utilized for plantation work.

As per Hydrogeological & Hydrological Studies of core and buffer zone of Vangar & Madhiya Limestone Mine, the qualitative aspects of ground water shows that salinity ingress from sea has taken place up to over 3 km from Arabian sea reaching center of buffer zone including mines falling in core zone.

Management: Mine water as well as domestic sewage will be treated to the norms prescribed by regulatory agencies. Mine water will be collected in the sump. This will act as a sedimentation lagoon. It will then be pumped to surface reservoir for utilisation. To minimise suspended solids in run-off, rain water around dump, mine pit and reclaimed areas will be collected in garland drains and settled in sedimentation tank. Thereafter, it will be reutilised and balance released to nearby salinity ingress control bund through natural drain. Domestic waste water from facilities in the mines will be treated in septic tanks. Rain water harvesting will be done in the mine lease area to collect water in surface reservoir for reuse.

11.4.5 Land environment

Impact: Mining activities introduce changes in the land use pattern. From non mining area, the area becomes mined out. There is creation of dumps, roads, facilities, mining pits, etc. Land degradation is inevitable during mining particularly in open cast mines, where the original soil ecosystem and structure are adversely affected. However, mitigation measures can restore the land & ecological status of the area.

Management: At the end of conceptual period, 36.36 hectares of mined out area will be backfilled and converted into agricultural land/utilized for plantation work and 160.64 ha of land of void area will be there. The water of void will be used for storage of rainwater which will serve as recharge pits, water for plantation and as a source of water supply for public use.

11.4.6 Noise and ground vibration

Impact: The main noise generating sources during operation will be proposed surface miners, HEMM and dumpers. Operation of machines & vehicles will continuously generate noise. The impact can be more within the ML area. Impact of noise will more near the machines being operated with continuous exposure and may cause hearing loss and other related problems if protective measures are not taken. Blasting has been proposed to remove the hard strata. Thus, flying fragments due to blasting or vibration and secondary cracking of structures on the surface may be there if the blast are not regulated as per control blasting techniques.

Management: There will be peripheral green belt along mine lease boundary, roads, mine infrastructures etc. Plantation will act as a noise absorbing medium. Mining operation shall be carried out as per norms of Directorate General of Mine Safety. Maintenance of noise generation machinery including

the transport vehicles will be ensured. Workers exposed to noisy areas will be provided earmuffs/ear plugs. Controlled blasting techniques shall be followed and compliance to the norms of DGMS shall be followed. Surface Miner which is eco-friendly in mining operation will be used in the area near habitation & village boundary area in order to avoid blasting. Ground vibration / air blast due to drilling blasting will be controlled / reduced by multi-row drilling, V-pattern drill holes etc.

11.4.7 Traffic

Impact: The limestone transportation shall be carried out through dumpers/ tippers to the cement plant located adjacent to the mine through Internal road and Soda Ash plant located at Kalatalav, Bhavnagar through National Highway. When conveying through internal haul roads, traffic movement will not interact or interfere with public transport and humans on the public roads. Underpass of Highway shall be used for mineral transportation. Water sprinkling facility will be available for haul road. Hence, the impact anticipated is negligible.

Management of traffic: Trucks will carry optimum weight, undergo periodic maintenance, under go "Pollution Under Control (PUC)" check ups periodically and be covered with tarpaulin. Company will also ensure that all dumpers follow the necessary safety procedure for accident free operation. Similarly, when the pits lying south of the highway are getting excavated during the life of the mine, the entire traffic movement will be through internal haul roads, therefore, eliminating any interaction or interference with public transport and humans on the public roads. Hence, the impact anticipated then is negligible. Water sprinkling on roads within lease area shall be done to mitigate dust. Plantation will be carried out along the transportation routes within project and along roads.

11.4.8 Solid waste impact & management

Impact: No waste in the form of Over burden/ Inter burden is envisaged as there is no waste observed in open dug well geology. Soil removed during five years of plan period 155670 cubic meter) is proposed to be disposed off by means of making a temporary stack (4.63 hectare) at the prescribed site. At the end of mine life, around 1.37 million cu.m soil will required to be removed for limestone mining.

The other wastes generated will be sludge from settling pond in mine, septic tanks and municipal solid waste from mine office.

Management: Soil removed during five years is proposed to be disposed off by means of making temporary stack. The height of the stack shall be about 9.0 m AGL with steps at an interval of 5.0 m each, which will cover an area of 4.63 ha. The stacking space selected shall be temporary in nature. So there will be no adverse impact on the space chose for the stacking purpose. At the end of

mine life, total soil removed shall be around 1.37 million cu.m and shall be utilised simultaneously for back filling of shallow depths pits of an area around 36.36 Ha and reclaimed area will be converted for agriculture use / plantation purposes.

For municipal solid waste, segregation shall be done. The biodegradable component shall be composted and utilized as manure in greenbelt. The recyclable component shall be sold to authorised recycling vendors. The settling pond in mine will be periodically cleaned.

11.4.9 Ecology

Impact: Ecological impacts from open cast mining will result from generation of pollutants both in air and water. Loss of vegetation and its dependent fauna due to excavation and dumping will be there. Also animals and birds will migrate to other places due to enhanced noise and lights at site. Trees existing along agricultural fields, habitation, ponds and open areas will get uprooted during mining activities.

Management: Management of ecology will comprise of compensatory afforestation as well as agro forestry and agriculture. Plantation will be done along roads, in safety barrier and undisturbed areas. Plantation will attract small fauna and birds and serve as micro habitats.

The company shall participate in wild life conservation through schemes of Forest Department. Requisite wildlife conservation plan has been prepared in consultation with Forest Dept. & got approved by PCCF, Govt. of Gujarat and will be implemented. Awareness to villagers for wildlife protection shall be a part of the social welfare activities with target to reduce man animal conflict. Company has a plan to plant saplings of trees and shrubs within the boundary barrier and road barrier. Plantation is proposed to be done at the rate of 1000 saplings per year. Sandy soil/ top soil removed during mining is proposed to be used for plantation at pit slope.

Total area covered under proposed plantation/greenbelt shall be 26.50 ha (16.50 ha.-Boundary Greenbelt and 10.00 ha. Road barrier) at end of mine life. Besides this, at the end of mine life, proposed backfilling area shall be converted into agriculture land/ utilize for plantation work. By the end of the mining plan period, an area of 5.0 ha will be under greenbelt which shall increase aesthetic beauty of the area.

11.4.10 Occupational Health

The Company will have qualified mining engineers and mine managers. They will plan, supervise, control, manage and direct mining operations as per mining regulations. All safety norms shall be followed. Personal protective equipment will be issued to workers. A Safety, Health and Environment officer

will also be appointed for effective implementation of safety rules and regulations. Regular Safety Committee meetings will be held at the mines to review the status of implementation of statutes. Regular safety training will be conducted. Safety posters and pamphlets in English, Hindi and Gujarati shall displayed and distributed to workers. Company shall put 100% efforts for a zero accident rate.

11.4.11 Socio-economics - Impact and Management

The mine lease area consists land of two villages Vangar & Madhiya. At initial stage, the land & hutments which are falling under the pit area will be compensated at mutually agreed rates. After exploration as shown in approved review of mining plan, mineral bearing area of lease will be increased and put into use for mining. Mining and allied activities will also provide job opportunities for eligible persons and many will find employment in service sector. Preference will be given to the land losers and local people for employment in the unskilled and semi-skilled categories. 58 manpower will be required for mining and ancillary activities. Preference will be given to local people to meet the manpower requirement in unskilled and semi skilled categories. Besides this, thousands of local people will get indirect employment by the interlinked cement project. Activities under Corporate Social Responsibility (CSR) shall be undertaken. The facilities and amenities like health and education shall be set up for the project which can also be used by the people of the nearby villages. Overall positive impact of the project is anticipated.

11.5 ANALYSIS OF ALTERNATIVES

Mining industry is very much site specific and a mineral has to be mined at the place where it exists in economically feasible quality and quantity. So, no site alternatives can be chosen. Opencast mining method with Continuous Surface Miner and conventional mining method i.e. Drilling & Blasting for mine working occasionally has been selected for the proposed mine.

11.6 ENVIRONMENTAL CONTROL AND MONITORING ORGANISATION

An environmental management cell is proposed and shall be responsible for the implementation of environmental control and mitigation measures. A reporting system as per hierarchy shall be created. The responsibility of environmental compliances will be with General Manager (Projects) at Head Office, Ahmedabad. At the project level, Mines Manager will be responsible for environmental compliances within the lease area. He will be assisted by Mining Engineer, Safety, Health & Environment Officer and a Medical Officer Incharge. All these managers will be assisted by engineers and supported by supervisors, helpers, water tanker operator, horticulturists and gardeners, etc. Regular monitoring of the important environmental parameters will be taken up.

The total investment on environmental improvement works is envisaged as Rs. 36.80 lakhs and recurring expenditure during the stage of production is Rs. 36.12 lakhs per year.

11.7 ADDITIONAL STUDIES: DISASTER MANAGEMENT PLAN

There are various factors, which can result in a disaster in the mine. In open cast mines, the hazards are due to machines, accidents due to poor visibility, on haul roads, due to bench failure, pit slope failure, dump failure, blasting, explosion, fire and inundation. The preventive and hazard management measures will be taken during operation phase. As a part of disaster management plan, a rescue team shall be formed by imparting specialized training from selected mining staff. All the statutory precautions will be followed.

11.8 PROJECT BENEFITS

Primary benefit will be of employment. Total manpower required will be 58 for mining and ancillary jobs. Preference will be given to local people to meet the manpower requirement in unskilled and semi skilled categories. Besides this, thousands of local people will get indirect employment by the interlinked cement project.

Nirma Ltd. under the Companies Act, 2013 is obligated to spend at least 2% of its profit after tax on CSR activities around its projects.

In addition, huge contribution towards District Mineral Foundation (DMF) at the rate of 30% of royalty payment will also be utilized for the benefit of persons and areas affected by mining related operations through District Mineral Foundation Trust. The amount roughly estimated is around Rs. 3.84 crores annually at the targeted maximum production & present royalty rate.

11.9 CONSULTANTS

The consultants engaged for the preparation of the EIA/EMP of the project are Centre for Envotech and Management Consultancy Pvt Ltd. (CEMC), Bhubaneshwar, Odisha. CEMC is one of the leading Environmental and Forest consultancy organisations in the state of Odisha. CEMC was established during 2005 and registered under Companies Act 1956 and is NABET, QCI accredited consultant. The baseline data collection was carried out by Min Mec R&D Laboratory, New Delhi. In June 2006, the laboratory received accreditation from NABL which has been renewed as per procedure (current certificate no. TC-6337 valid till 16.03.2024) and is recognised by MoEF&CC (Gazette Notification No. S.O. 3744 (E) dated 17.10.2019).

The Review of Mining Plan with Progressive Mine Closure Plan has been prepared by Mr. Rakesh Purohit and Shailendra Kumar Soni. Hydro-geological

and Rainwater harvesting Report has been prepared by Ground water & Mineral Investigation Consultancy Centre (P) Ltd. Wildlife Conservation Plan has been prepared by Min Mec Consultancy Pvt. Ltd, New Delhi.

CHAPTER 12
DISCLOSURE OF CONSULTANTS ENGAGED

12.1 CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY (P) LTD. (CEMC)

Centre for Envotech and Management Consultancy (P) Ltd. (CEMC) is an ISO 9001:2015, ISO 45001:2018 & ISO 14001:2015 certified leading Forest and Environmental consultancy empanelled by State Pollution Control Board (SPCB), Odisha. It was established in 2005 & its registered office is at Plot No. 522/3458, Pahal, Bhubaneswar-752101, Odisha. The consultancy/firm has well-furnished laboratory equipped with modern scientific instruments for analysis of various physico-chemical parameters of soil, water and air. The technical team of CEMC (P) Ltd. has wide experience in Mineral Exploration & Mining, Environmental Impact Assessment/Environmental Management Planning and Environmental Monitoring, Forest Diversion Planning, Development of Various Projects like Industry & Building Projects, in Commissioning of Various Pollution Control Devices, Air Quality modeling and Hydrogeological survey, and other technical assignment for various industries. CEMC Pvt. Ltd. is Accredited by National Accreditation Board for Education and Training (NABET), Quality Council of India (QCI) as 'A' Category Consultant Organization for carrying out EIA Studies in Mining of Minerals, Irrigation, Thermal Power, Coal Washery, Mineral Beneficiation including pelletisation, Metallurgical industries (ferrous and Non-ferrous), Highways, Common Municipal Solid Waste Management Facility, building and large construction projects.

CEMC Environment Laboratory got recognition by MoEF&CC, Govt. of India, under Environment (Protection) Act, 1986 and accredited by National Accreditation Board for Testing and Calibration of Laboratories (NABL- An Autonomous body under Department of Science and Technology) in accordance with the standard ISO/IEC 17025:2017.

Our aim is to provide sustainable development for the growth of Industries, a one stop service provider for all types of Industries/Mines related projects, particularly relating to environmental issue.

CORE TEAM:

The level of expertise available with us and the infrastructure we have made is imperative for us to think about of the consultancy in fulfilling its mandate of providing highest quality of works to their clients on monitoring of air, water and soil in mining and urban areas, GIS and geographical analysis, biodiversity and resource mapping of forest covers and their modeling, preparation of EIA, EMP of various projects. To make these activities successful the expert members in respective fields with their expertization are mentioned below:

KEY PERSONNELS OF THE COMPANY

Mr. Debashish Mishra (EIA coordinator)	
Qualification	M.Sc. (Botany), PG Diploma in Environmental Management
Experience	Fourteen years of experience in environment and socio-economic sector, mostly dealt with following assignments. Assisting in Preparing EIA /EMP report, Study of flora & fauna, Development of plantation strategy, Study the quality of top soil and suggest methods for it's conservation & reuse, Sampling, analysis and characterization of soil, Study on the impact of environmental factors on livelihood, Look after project on traditional seeds and live fence as means of sustainable livelihood, Documentation of medicinal plants, Organize seminars, workshops & meetings on conservation, propagation & cultivation of medicinal plants.
Mr. Dayananda Pandey (FAE-AP,WP,AQ,N)	
Qualification	M.Sc. (Environmental Science)
Experience	He has experience in data collection, preparation of documents for submission to MoEF, preparation of presentation for obtaining ToR, preparation of EIA/EMP report, Preparation of final presentation for EC.
Dr. Nihar Ranjan Das (FAE-LU, SE)	
Qualification	Doctorate Degree in Urban Development & EnvironmentalIssues. Master degree in Geography. Post Graduate Diploma in Remote Sensing and GIS during2001.
Experience	He is considered to be an expert in Remote Sensing and GIS Application in Land use planning and Geological Exploration. He provided expert consultancy in Remote Sensing Application to Large number of Govt. Departments and public and private sector undertakings. To his credit he has also provided consultancy for large number of projects in different areas related to ground and surface water resources and preparation of maps related to Forest Diversion Proposals based on the latest guidelines of Forest Conservation Act, 1980 and Wild Life Protection Act, 1972. He is the life member of various scientific societies.
Mr. Debashish Mishra (FAE-EB)	
Qualification	M.Sc. (Botany),Management P.G. Diploma in Environmental
Experience	Fourteen years of experience in environment and socio-economic sector, mostly dealt with following assignments.

	Assisting in Preparing EIA /EMP report, Study of flora & fauna, Development of plantation strategy, Study the quality of top soil and suggest methods for it's conservation & reuse, Sampling, analysis and characterization of soil, Study on the impact of environmental factors on livelihood, Look after project on traditional seeds and live fence as means of sustainable livelihood, Documentation of medicinal plants, Organize seminars, workshops & meetings on conservation, propagation & cultivation of medicinal plants.
Mr. Ashutosh Kanungo (FAE- HG, G)	
Qualification	M.Sc in Geology
Experience	He has experience in water quality analysis, data compilation and Hydrogeological tasks, in developing project strategy, Consultancy services provided to various agencies regarding well sitting and also in EIA report Preparation related to Geology/ Hydrogeology/ Ground water.
Er. Anata Prasad Barik (FAE-SHW,RH)	
Qualification	B.Sc. Engineering (Chemical)
Experience	He has experience in data collection, preparation of documents for submission to MoEF, preparation of presentation for obtaining ToR, preparation of EIA/EMP report, Preparation of final presentation for EC.
Dr. Dilip Kumar Pandey (FAE-NV) Empanelled	
Qualification	M.Sc. in Environmental Science and Ph.D. in Environmental Science (Dehradun)
Experience	He has experience in presentation of EIA/EMP reports for EC at MoEF/SPCB, coordination for preparation of EIA/EMP, supervising the baseline data collection in respect of Ecology Biodiversity, Noise and vibration parameters.
Dr. Rabindra Kumar Mishra (FAE –SC) Empanelled	
Qualification	Post Doctorate Degree in Germination Ecology.Doctorate Degree in Forest Ecology. Master Degree in Botany.
Experience	He has experience in survey of aquatic Biodiversity, study of physico - chemical behavior of soil and water, Survey, research and documentation on project related impact of disturbance on forest ecosystems, Preparation of EIA and EMP. Attended many International Workshops on various biological topics. Life Member of Indian Science Congress Association and Odisha Botanical Society, Bhubaneswar.

Dr. Bidyut Kumar Patra(FAE-AP, SW&HW)	
Qualification	Post Doctorate Degree in Environmental Science Master Degree in Environmental Science.
Experience	He has experience in presentation of EIA/EMP reports for EC at MoEF/SPCB, coordination for preparation of EIA/EMP, supervising the baseline data collection in respect of Air Pollution and Solid Hazardous Waste Management.
Mrs. Anupama Swain(FAE-WP)	
Qualification	Master Degree in Environmental Science.
Experience	She has experience in water quality analysis, supervising the baseline data collection in respect of water pollution, data compilation and water quality results in EIA report.
Mrs. Mitali Rout(FAE-AP,WP)	
Qualification	Master Degree in Environmental Science.
Experience	She has experience in Ambient air quality and water quality analysis, supervising the baseline data collection in respect of Air & water analysis, data compilation in EIA report.
Mr. Sudhansu Kumar Dash(FAE-SE)	
Qualification	Master of Social Work (MSW)
Experience	He has experience in presentation of EIA/EMP reports for EC at MoEF&CC/SPCB, coordination for preparation of EIA/EMP, supervising the Social Impact Assessment data collection in respect of socioeconomic survey.

Others consultants:

1. M/s Min Mec R&D Laboratory has collected baseline data through primary surveys for air quality, water quality, soil quality and noise levels. The laboratory is accredited by NABL (Certificate No. TC-6337 valid till 16.03.2024) and MoEF&CC Recognised (Gazette Notification No. S.O. 3744 (E) dated 17.10.2019 valid till 16.10.2024).

1. The Review of Mining Plan with Progressive Mine Closure Plan has been prepared by Mr. Rakesh Purohit and Shailendra Kumar Soni in 2021 and approved by IBM on 05.08.2021.

2. Hydrogeological & Hydrological studies of core and buffer zone of Vangar & Madhiya Limestone Mine and impact of mining on water regime near village Vangar & Madhiya, Taluka-Mahuva, district Bhavnagar, Gujarat of January 2022 has been prepared by Ground water & Mineral Investigation Consultancy Centre (P) Ltd.

3. Site Specific Wildlife Conservation Plan has been prepared in consultation with the Forest Department, as per the latest rules of the Govt. of Gujarat by Min Mec Consultancy Pvt. Ltd., New Delhi in November 2021.

ANNEXURES

ANNEXURE 5002

F. No: J-11015/152/2016-IA.II(M)
Government of India
Ministry of Environment, Forest and Climate Change
Impact Assessment Division
***

3rd Floor, Vayu Wing,
Indira Paryavaran Bhavan,
Jor Bagh Road, Aliganj,
New Delhi - 110 003.

Dated: 23rd December, 2022

To,

M/s Nirma Limited,
Nirma House, Ashram Road,
Ahmedabad – 380 009, Gujarat.

Subject: - Vangar & Madhiya Limestone Mine of M/s Nirma Limited for mining of Limestone with production capacity of 1.6 MTPA in the mine lease area of 612.1336 ha, located at Villages Vangar & Madhiya, Tehsil: Mahuva, District: Bhavnagar, Gujarat - Terms of Reference (ToR) regarding.

Sir,

This has reference to the online proposal no. IA/GJ/MIN/403568/2022 for grant of Terms of Reference (ToR) for mining of Limestone in Vangar & Madhiya Limestone Mine of M/s Nirma Limited for mining of Limestone with production capacity of 1.6 MTPA in the mine lease area of 612.1336 ha, located at Villages Vangar & Madhiya, Tehsil: Mahuva, District: Bhavnagar, Gujarat.

2. The details of the project as ascertained from the document submitted by the Project Proponent and as revealed from the discussions held during the meeting, are given as under:

i. The mine lease area is located between Latitude 21°02'2.35"N to 21°03'40.13"N and Longitude 71°39'18.3"E to 71°41'05"E. The mine lease area falls under the Survey of India Toposheet No: 41 O/12 (restricted) and falls in Seismic Zone-III.

ii. The proposed project activity is listed at schedule no. 1(a) Mining of Minerals and falls under Category "A" as the mining lease area is greater than 250ha and appraised at the Central level.

iii. The Project Proponent submitted that earlier Terms of Reference (ToR) was granted by the Ministry vide letter dated 03.01.2017 and extension of validity of ToR vide letter dated 16.03.2020. The draft EIA report was submitted to the Gujarat Pollution Control Board and public hearing was scheduled on 16.12.2021. However, Public hearing has been postponed by Gujarat Pollution Control Board due to "unavoidable circumstances" vide Board letter no. GPCB/PH/2020-21/Bhavnagar-42/608748 dated 13.12.2021. Since the conduct of public hearing has got delayed, Project Proponent will not be able to submit the Final EIA report within the stipulated time of validity of

ToR. Hence, the Project Proponent submitted the fresh proposal for grant of Terms of Reference.

iv. The Project Proponent submitted that the mining lease was granted by Industries and Mines Department, Govt. of Gujarat vide Order no: MCR-102004-1827-CHH dated 08.01.2017 for Limestone and Marl to M/s Nirma Limited over an area of 612.13.36 ha for a period of 50 years for its captive consumption.

v. Land Use/Land Cover of the Mine lease area:

Private land	586.4789 ha
Government land	25.6547 ha
Total Mining lease area (MLA)	612.1336 ha
Private land for crusher, workshop & other infrastructure outside the MLA	No facilities proposed outside the mine lease area. However crusher will be installed at company's Cement Plant.

vi. Details of Mining Plan:

Review and updation of Mining Plan along with Progressive Mine Closure Plan approved by Indian Bureau of Mines (IBM)	Letter No.	File No.: 684(4)(1)/MP-347(196)/2021-22 GNR/1125
	Date	05.08.2021
	Mineral	Limestone
	Mine lease area	612.1336 ha
	Validity	2021-22 to 2025-26 (31.03.2026)
Mining Parameters	Quantitative Description	
Method of Mining	Opencast mechanized	
Geological resource	35.539 Million Tonnes	
Mineable reserve	14.913 Million Tonnes	
Life of mine	13 years. Life of mine may be increased subject to conversions of resources under 333 category to category of reserves 111.	
Bench Height	6.0 m	
Bench Width	12-15m	
Individual bench slope	80-85°	
Overall pit slope	~ 45°	
Drilling/Blasting	Multi-row drilling and V-pattern drill holes for deep hole drilling and blasting. Parameters will be 6.6 m depth x 4.0 m spacing x 3.0 m burden. Slurry explosive -cap sensitive and non-cap sensitive.	
Transportation details	Internal haul road from mine face to crusher and by conveyor from crusher to the Cement plant adjacent to the mine lease/through dumpers/ trucks to the Soda Ash Plant located at Kalatalav, Bhavnagar.	
Dumpers capacity	25 tonnes	
Overburden	Nil	
Additional information (if any)	Mining will be carried out by using Continuous surface miner with combination of excavator / loader and dumpers. Conventional method i.e. Drilling & blasting shall be proposed for handling of limestone as well for 50% total handling at limestone mine.	

vii. Water requirement:

Total water requirement	42.0 KLD	Fresh water	3.0 KLD
		Treated water	39.0 KLD
Source	i. Fresh water source Narmada water pipeline/Water tanker ii. Water harvested within mine lease during rainy season iii. Treated water source- Reject water of RO /DM plant &Reject water of RO /DM plant (proposed at Cement plant)		
Permission	Permission for water withdrawal from Narmada water pipeline has been obtained vide letter No. GWIL/Bhavnagar/Ind.conn./1257 dated 04.06.2008.		

viii. Nearest village / town/ highway/railway station / water bodies/monument:

Particulars	Particular's Name	Distance & Direction
Village	Vangar Madhiya	0.25 km, NW 0.25 km, SE
Town	Mahuva	6.2km, ENE
Highway	NH-51 (Una-Mahuva highway)	Within
Railway Station	Amrutvel	2.0 km, N
Water bodies	Arabian Sea Coast	3.4 km, S to the HTL
	Samdiyala Bandhara	2.3 km, SSW
	Bhambhali River	0.9 Km, W
Monuments	Bhavani Temple, Mahuva	11.8 km, SE

ix. Presence of Environmentally Sensitive areas in the study area:

Forest Land/Protected Area/Environmental Sensitivity Zone	Yes/No	Details of Certificate/letter/Remarks
Forest Land	No	Nil
National park	No	
Wildlife Sanctuary	No	
Eco-Sensitive Zone(ESZ) /Eco-Sensitive Area(ESA)	No	
Schedule-I species	Yes	Peafowl, Chinkara and Asiatic lion are the Schedule - I species observed in the study area.
Status of Wildlife Conservation Plan	Yes	Wildlife Conservation Plan has been prepared.

x. Green belt/plantation details:

Proposed area for green belt/plantation	26.50 Ha
Budget for green plant& plantation till the end of life of mine.	80.35 Lakhs
Particulars for Green belt/plantation	Area covered (in Ha)
7.5 m barrier & non-mineralized zone	16.50
50 m safety zone of nallah, roads, electric lines	10.00
500 m safety zones of nearest habitation villages	-

xi. The Project Proponent submitted that baseline study conducted during 1st March 2021 to 2nd June 2021 (Summer season).

xii. Rehabilitation & Resettlement:

R & R details	The Project Proponent submitted that there is no displacement proposed from the mining lease area as habitation of villages falls outside the mining lease area.

xiii. The Project Proponent submitted that there is no litigation pending against the project and/or land in which the project is proposed to be set up.

xiv. The Project Proponent submitted that the total project cost is Rs 25.0 Cr and about 58 persons will get employment.

3. Observation and Recommendation of the Committee:

The EAC noted that the Project Proponent earlier obtained Terms of Reference vide letter dated 03.01.2017 and extension of validity of ToR vide letter dated 17.03.2020 for the period upto 12.11.2021 and the Project Proponent submitted the draft EIA report to the Gujarat Pollution Control Board and public hearing was scheduled on 16.12.2021. The Project Proponent informed the EAC that the Public hearing has been postponed by Gujarat Pollution Control Board due to "unavoidable circumstances" vide Board letter dated 13.12.2021 and since the conduct of public hearing has got delayed, Project Proponent will not be able to submit the Final EIA report within the stipulated time of validity of ToR and hence the fresh proposal for grant of Terms of Reference was submitted.

The Project Proponent presented the KML file to indicate the site features in the study area. The Project Proponent has shown the three mine leases located adjacent to each other. PP also informed that the Arabian Sea is located at a distance of 3.4 km, S to the HTL from the mine lease area. No National Park, Wildlife Sanctuary within 10 km radius of the study area. Further, PP has shown the working pits in the KML file. Then, the Project Proponent began the technical presentation.

The Project Proponent informed the EAC that the mining lease has been granted on 08.01.2017 for a period of 50 years. Baseline data was already collected during Summer Season, 2021. Mining Plan approved on 05.08.2021. Life of the mine is 13 years. Water requirement is 42.0 KLD. No groundwater intersection due to mining activity. The Limestone will be transported through internal haul road from mine face to crusher and by conveyor from crusher to the Cement plant adjacent to the mine lease through dumpers / trucks to the Soda Ash Plant located at Kalatalav, Bhavnagar. Crusher is proposed in proposed cement plant in the vicinity of ML area. Peafowl, Chinkara and Asiatic lion are the Schedule - I species observed in the study area. Mine working will be on two shift basis. The EAC asked the Project Proponent to submit the proposal for backfilling at the time of appraisal of EC.

After detailed deliberations made by the Project Proponent and the Consultant in the 7th EAC (Non-Coal Mining) meeting held during 5th - 6th December, 2022, the EAC **recommended** the proposal for grant of Terms of Reference (ToR) under the provisions of

EIA Notification, 2006 and its subsequent amendments for mining of Limestone in Vangar & Madhiya Limestone Mine of M/s Nirma Limited for mining of Limestone with production capacity of 1.6 MTPA in the mine lease area of 612.1336 ha, located at Villages Vangar & Madhiya, Tehsil: Mahuva, District: Bhavnagar, Gujarat for undertaking detailed EIA/EMP study subject to the specific conditions in addition to the standard ToR conditions applicable for non-coal mining projects.

4. The matter was examined in the EAC in accordance with the Environmental Impact Assessment Notification, 2006 and further amendments thereto and the undersigned is directed to say that the Ministry of Environment Forest & Climate Change after accepting the recommendation of EAC during its meeting held during 5th - 6th December, 2022 hereby accords Specific and Standard Terms of Reference (ToR) for mining of Limestone in Vangar & Madhiya Limestone Mine of M/s Nirma Limited for mining of Limestone with production capacity of 1.6 MTPA in the mine lease area of 612.1336 ha, located at Villages Vangar & Madhiya, Tehsil: Mahuva, District: Bhavnagar, Gujarat for undertaking detailed EIA/EMP study subject to the following specific conditions in addition to the standard ToR conditions applicable for non-coal mining projects.

A. SPECIFIC TERMS OF REFRERENCE

i. In view of the agricultural land proposed under the mining lease area, the Project Proponent needs to submit the Cost Benefit analysis comparing the current agricultural production and annual turnover including the cost and the benefits drawn by the local villages vis-a-vis the mineral cost and beneficiaries.

ii. The Project Proponent shall ensure that the shallow pits up to depth of 4 m shall be refilled and reclaimed and given back to the farmers as agriculture land. Return all the proposed non-mining area to farmers/owners of the land. The mining plan, *inter-alia*, should include the above mentioned details with regard to pits and reclamation.

iii. The Project Proponent needs to submit the detailed note on mining methodology with specific reference to Continuous Surface Miner.

iv. The Project Proponent needs to submit the action plan for backfilling.

v. The Project Proponent needs to submit the detailed measures to be taken for protection of turtle breeding sites and also needs to specifically address the movement of Lions and conservation in the Wildlife Conservation plan in consultation with the Forest Department.

vi. The Project Proponent should prepare the EMP considering the scenario of pollution to be generated for normative and peak total excavation for assessing air and noise pollution. PP also needs to submit the breakup of total excavation in tonnes.

vii. The Project Proponent needs to monitor the ambient air quality and noise level at the mine lease boundary, nearest village, predominant downwind direction and at other

sensitive receptors. Accordingly, Project Proponent shall propose to install Continuous Ambient Air Quality Monitoring Station within certain timeline.

viii. The Project Proponent needs to carry out the cumulative impact assessment by considering all the mining activity including the transport scenario of the mines in the study area and should indicate the capacity of each mine considered for predication of air quality modeling. The control case and worst case scenario needs to be demonstrated with controlling factor and GLCs values for all the pollutants needs to be clearly mentioned. The input parameters used for the modeling also needs to be submitted.

ix. The Project Proponent needs to revisit the location of the waste dump proposed in the mineralized zone and accordingly shall submit the map showing the revised location.

x. The Project Proponent needs to submit the detailed R&R plan covering all the components viz. number of Project Affected Families (PAF) and details of the land owned by them, break up of total compensation to be paid including method of calculation including the sources/references adopted and mode of payment etc. PP need to submit the plan for Socio economic development of the neighbourhood habitats based on the need based survey along with the time bound action plan. PP also needs to submit the possession certificate and timeline for acquiring the land at the time of appraisal of EC.

xi. The Project Proponent shall carry out the assessment of impact due to the proposed project as per the guidelines issued by the Central Ground Water Authority from time to time and submit the same as a part of the EIA/EMP. The project proponent shall conduct hydrological study for projects involving intersection of ground water table as per the guidelines issued by the Central Ground Water Authority from time to time and submit the same as a part of the EIA/EMP.

xii. The Project Proponent shall explore the possibility of reduction of specific water requirement by optimization / technology up gradation, etc. The efforts shall be delineated in the EIA/EMP.

xiii. The Project Proponent shall prepare the scheme for mandatory recycle/re-use of water as specified by the Central Ground Water Authority for different category areas seeking NoC for ground water withdrawal and the shall submit as part of EIA/EMP report.

xiv. The Project Proponent needs to carry out the Public Hearing as per provisions of EIA Notification, 2006. PP should also submit the time bound action plan on concerns of the public through a separate budget with capital expenditure with a timeline of 3 years. The Project proponent shall ensure that the activities proposed under the public hearing shall be different from the CSR activities.

xv. The Project Proponent needs to submit the documents related to part surrendered of the mine lease area at the time of appraisal of EC.

xvi. The Project Proponent shall conduct drone survey of the mine lease area and buffer area and submit during the appraisal for EC.

B. STANDARD TOR FOR MINING PROJECT

I. Project Details

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. The production details need to submit since inception of mine duly authenticated by Department of Mines & Geology, State Government.
2) A copy of the document in support of rightful lessee of the mine should be submitted. In case of new mines copy of LoI granted by State Government to be submitted. PP should ensure that LoI is valid at the time of grant of ToR. PP should submit the copy of lease deed/supplementary lease deed/extension letter/transfer deed, from its initial grant to subsequent renewals/ transfer/extension of validity.
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) PP should submit the District Survey Report (DSR) as per S.O. 3611(E) dated 25.07.2018 in case of minor minerals.
5) Brief of proposal to be submitted which include total excavation of the material required for the production of certain quantity of the minerals, location of the project, mining lease area, latitude longitude, seismic zone etc. In case of expansion project details of expansion viz. expansion in mining lease area or expansion in production of any particular mineral or expansion in total excavation, latest certified Compliance report (CCR) from IRO of conditions granted in existing EC needs to be submitted.
6) The PP should submit the real-time aerial video footage & video of the mining lease area and of the transportation route.
7) 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).
8) 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.
9) The PP should collect the Baseline data (BLD) in respect of initial level of the mining lease. For this permanent bench marks (BM) needs to be established at prominent

location preferably close to mining leases in question and should have precisely known relationship to the level datum of the area, typically mean sea level.

10) In case of sand mining, the entire mining lease area should be divided suitably into grids of 25 m x 25 m with the help of sections across the width of river and along the direction of flow of the river. The levels (MSL & RL) of the corner point of each grid needs to be recorded. Each Grid should be suitably numbered for identification. PP should identity grids which will be worked out and grids which will come under no mining zone i.e. safety barriers from the river bank. PP should comply with the sustainable sand mining management guidelines 2016 and enforcement and monitoring guidelines, 2020 etc.

11) 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.

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

13) 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.

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

15) 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.

16) Compliance of the Ministry's Office Memorandum No. F: 3-50/2017-IA.III (Pt.), dated 30.05.2018 on the judgment of Hon'ble Supreme Court, dated the 2nd August, 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India needs to be submitted and included in the EIA/EMP Report.

II. Forest

17) PP shall submit a certificate from Chief Conservator of Forests regarding involvement of Forest Land in the mining lease area if any. In case forest land is involved i) PP should submit the proof of application made for obtaining forest clearance and ii) a map clearly showing the forest & non-forest area.

18) 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.

19) 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.

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

III. Court Matters

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

IV. Land Environment

22) PP should submit the details of survey number [viz. survey no, area in hectare, classification of land (government, private, forest, grazing land etc.), villages] duly authenticated by State Government, falling in the mining lease area.

23) The study area will comprise of 10km 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.

24) 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.

25) 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.

V. Wildlife

26) 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.

27) A detailed biological study of the study area [core zone and buffer zone] 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. PP shall submit list of Schedule-1 species present in core and buffer zone duly authenticated by CWLW. 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/Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost. Proof of its submission of conservation plan to the CWLW needs to be submitted.

28) PP shall submit a certificate from Chief Wildlife Warden regarding distance of mining

lease from the protected area falling within 10 KM of the mining lease. In case project requires clearance under Wildlife (Protection) Act, 1972 then copy of application made for the same needs to be submitted.

VI. Baseline Environment:

29) 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.

30) Air quality modelling 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 modelling 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 windrose showing pre-dominant wind direction may also be indicated on the map.

31) The PP should submit the photograph of monitoring stations & sampling locations. The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this, PP should submit the original test reports and certificates of the labs from which samples were analyzed.

VII. Water Environment

32) The water requirement for the Project, its availability and source should be furnished. Quantity of surface or ground water to be used for the Project should be indicated. A detailed water balance should also be provided. Submit the year wise target for reduction in consumption of the ground/surface water by developing alternative source of water through rain water harvesting measures. 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. The capital and recurring expenditure to be incurred needs to be submitted.

33) 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.

VIII. Hydro Geology

34) 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.

35) 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.

36) 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 bench 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. In case of surface water is proposed to be utilized then Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.

IX. Transportation

37) 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.

X. Land Acquisition and R&R

38) 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.

39) 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.

XI. Socio-Economic Environment

40) 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.

41) 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

42) 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.

43) Activity-wise time-bound action plan on the issues raised and commitment made during public hearing to be submitted as part of the final EMP Report in compliance of the Ministry's OM F.No.22-65/2017-IA.III dated 30th September, 2020.

XII. Environmental Monitoring and Management

44) 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 proposed safeguard measures in each case should also be provided.

45) 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.

XIII. Critically Polluted Areas, Aravali & CRZ

46) 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.

47) 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).

XIV. Risk Assessment & Disaster Management

48) 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.

49) 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.

50) A Disaster Management Plan shall be prepared and included in the EIA/EMP Report.

XV. Miscellaneous

51) The general points are also to be followed: -

a) All documents to be properly referenced with index and continuous page numbering.

b) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.

c) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.

d) Where the documents provided are in a language other than English, an English translation should be provided.

e) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.

f) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.

g) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.

h) As per the circular no. J-11011/618/2010-IA.II (I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.

i) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

5. The prescribed TOR would be valid for a period of four years for submission of the EIA/EMP report, as per the notification S.O 751 (E) dated 17.02.2020. The instant TOR is valid up to four years from the date of issuance of TOR.

6. The Project Proponent should submit the EIA/EMP report as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006 after incorporating the details of public hearing conducted and covering the above-mentioned issues, to take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.

7. This issues with the approval of the Competent Authority.

Yours faithfully,

Pankaj Verma

(Pankaj Verma)
Scientist 'E'

Copy to:

i. **The Secretary,** Ministry of Mines, Government of India Shastri Bhawan, New Delhi-110 001.
ii. **The Secretary,** Department of Environment, Government of Gujarat, Gujarat.
iii. **The Secretary,** Department of Mines and Geology, Government of Gujarat, Gujarat.
iv. **The Secretary,** Department of Forests, Government of Gujarat, Gujarat.
v. **The Deputy Director General of Forests (C),** Ministry of Environment, Forest and Climate Change, Integrated Regional Office, Gandhi Nagar, A-Wing – 407 & 409, Aranya Bhawan, Near CH-3 Circle, Sector-10A, Gandhi Nagar – 382010.
vi. **The Chairman,** Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
vii. **The Chairman,** Gujarat Pollution Control Board, Paryavaran Bhavan, Sector-10A, Gandhinagar-382 010, Gujarat.
viii. **The Controller General,** Indian Bureau of Mines, Indira Bhavan, Civil Lines, Nagpur-440001.
ix. **The Member Secretary,** Central Ground Water Board, Ministry of Agriculture and Irrigation, 12/1 Jam Nagar House, Shahjahan road, New Delhi-110 011.
x. **The District Collector,** Bhavnagar District, Govt. of Gujarat.
xi. **Guard File.**
xii. **PARIVESH Portal.**

Pankaj Verma

(Pankaj Verma)
Scientist 'E'

આર.પી.એ.ડી.

ક્રમાંકઃ એમસીઆર-૧૦૨૦૦૪-૧૮૨૭-છ
ઉદ્યોગ અને ખાણ વિભાગ,
બ્લોક નં.૫, ચોથો માળ,
સચિવાલય, ગાંધીનગર
તા. ~~15 FEB 2008~~

15 FEB 2008

પ્રતિ,
મેનેજીંગ ડીરેકટરશ્રી,
નિરમા હાઉસ,
ઈન્કમટેક્ષ, આશ્રમરોડ,
અમદાવાદ.

વિષયઃ- લાઈમસ્ટોન ખનિજની માઈનીંગ લીઝ મંજુર કરવા બાબત.
મોજે. વાંગર અને માઢીયા, તા.મહુવા, જી.ભાવનગર.
સર્વે નં. જુદા જુદા, વિસ્તારઃ ૧૨૨૫.૮૫.૫૩ હેકટર,
અરજી તા.૨૧/૧/૦૪

શ્રીમાન,

ઉપર્યુકત વિષય પરત્વેની લાઈમસ્ટોન ખનિજની માઈનીંગ લીઝ અરજી અન્વયે જણાવવાનું કે, આપને મોજે વાંગર અને માઢીયા, તા. મહુવા, જી. ભાવનગર ના વિવિધ સર્વે નંબરમાં ૧૨૨૫.૮૫.૫૩ હેકટર વિસ્તાર માટેની માઈનીંગ લીઝ ૩૦ વર્ષની મુદત માટે કંપનીના સુચિત સીમેન્ટ પ્લાન્ટ માટે નીચેની શરતોને આધિન આપવાનું સરકારશ્રીએ નકકી કરેલ છે.

૧. આ પત્રની તારીખથી ૬ માસમાં એપ્રુવ્ડ માઈનીંગ પ્લાન તથા માઈનકલોઝર પ્લાન રજુ કરવાના રહેશે.
૨. માંગણીવાળા વિસ્તારનું નિયમાનુસાર સંશોધન ખર્ચ/સંશોધન અહેવાલની કિમત ભરપાઈ કરવાની રહેશે.
૩. વિસ્તાર ૫ (પાંચ) હેકટરથી વધુ હોવાથી ભારત સરકારનું એન્વયારમેન્ટ કલીયરન્સ સર્ટીફીકેટ મેળવવાનું રહેશે.
૪. લીઝીએ લાઈમસ્ટોનનો ઉપયોગ સ્વવપરાશ માટે કરવાનો રહેશે.
૫. માર્લ ખનિજ નિમ્ન કક્ષાનો લાઈમસ્ટોન હોવાથી માર્લ ખનિજ માટે પણ લાઈમસ્ટોનને લાગુ પડતા રોયલ્ટીના દરે જ રોયલ્ટી ભરવાની રહેશે.
૬. રાજય સરકાર દ્વરા ભવિષ્યમાં અન્ય સીમેન્ટ ઉદ્યોગકારો માટે લાઈમસ્ટોન વિસ્તાર ફાળવવા તેમજ સિમેન્ટ ઉદ્યોગ સ્થાપવા જે નીતિ બહાર પાડવામાં આવે તેની જોગવાઈઓ પણ બંધનકર્તા રહેશે.

ઉપર્યુકત શરતો પરીપૂર્ણ કર્યા બાદ માઈનીંગ લીઝ મંજૂરીના વિગતવાર હુકમો કરવામાં આવશે. જેની નોંધ લેવા વિનંતી.

આપનો વિશ્વાસુ,

(આર. કે. શાહ)
નાયબ સચિવ,
ઉદ્યોગ અને ખાણ વિભાગ

નકલ રવાના આર.પી.એ.ડી. દ્વારાઃ-

- કમિશ્નરશ્રી, ભુસ્તર વિજ્ઞાન અને ખનિજ, ઉદ્યોગ ભવન, ગાંધીનગર
- કલેકટરશ્રી, કલેકટર કચેરી (ખનિજ શાખા), જીલ્લોઃ ભાવનગર.
- નાયબ સચિવશ્રી(ખાણ)-ની અંગત ફાઈલ.
- પસંદગી ફાઈલ માટે
- નાયબ સેકશન અધિકારી ફાઈલ માટે

5017

ANNEXURE : II Contd.

(English Version)
RPAD

Letter No.MCR.102004-1827-CHH
Industries & Mines department
Block No.-5, 4th floor
Sachivalaya, Gandhinagar
Date: 15/02/2008

To,
Managing Director
Nirma House
Income tax,Ashram Road
Ahmedabad

Sub:- Regarding grant of Limestone mining lease
At Village Vangar and Madhia, Ta.Mahuva, Dist. Bhavnagar
Various survey nos., Area admeasuring -1225.8553 Ha.
Application date – 21/01/04

Dear Sir,

With respect to above-mentioned subject for limestone mining lease application, it is to inform you that Government has decided to grant mining lease at various survey nos., of village Vangar & Madhia, Ta. Mahuva, District Bhavnagar area admeasuring 1225.8553 Ha., for a period of 30 years for company's proposed cement plant subject to the conditions as mentioned below:

1. Submission of approved mining plan & mining closure plan within six months from the date of issue of this letter.
2. Exploration cost / charges of exploration report of applied mining lease area to be paid by you as per rule.
3. Since the lease area is greater than 5.0 Ha., Environment Clearance from Government of India, to be obtained.
4. Lessee shall use the limestone for captive use only.
5. Marl mineral is of inferior quality of limestone so royalty of marl mineral shall be paid as of limestone.
6. You will be bound to follow the policies framed by the State Govt. in future for grant of limestone mining lease area for other cement industries and establishing cement industries.

After compliance of the above-stipulated conditions, detailed orders will be issued for grant of mining lease. Kindly take a note of it.

Yours faithfully

(R.K. Shah)
Dy. Secretary
Industries & Mines Dept.

Copies sent by RPAD to:
- The Commissioner, Geology & Mines Dept, Udyog Bhavan, Gandhinagar
- The Collector, Collectorate Office (Mines Dept.), Dist- Bhavnagar
- Dy. Secretary (Mines) personal file
- Selected File
- Deputy Sectional Officer file.

ANNEXURE : II Contd... 5018

GOVERNMENT OF GUJARAT
Industries and Mines Department,
Sachivalaya, Gandhinagar,
Dated: 9/1/2017

ORDER:-

No.MCR-102004-1527-CHII:- In exercise of the powers conferred by Section 8(A) and 10 of the Mines and Minerals (Development And Regulation) Act, 1957, Government of Gujarat is pleased to grant a Mining Lease for Limestone and Marl Mineral to M/s Nirma Limited for its captive consumption for a period of 50 (Fifty) years in respect of the area in the Bhavnagar District as detailed below:-

TALUKA	VILLAGE	SURVEY NO.	AREA/ in HECTARES
Mahuva	Vangar & Madhia	Various Survey No.	612.13.36

2. The grant of the mining lease is subject to and as per terms and conditions mentioned below:

(a) The lessee will have to produce Environmental Clearance Certificate issued by Ministry of Environment, Forest and Climate Change as laid down under the Environment (Protection) Act,1986 and the rules made there under before commencing the mining activity as stated in Mines and Minerals(Development and Regulation) Removal of Difficulties Order, 2017 dated 4/1/2017. The final area will be as per Environmental Clearance Certificate and the area of the mining lease under consideration is accordingly amended will be bound to the lessee.

(b) The Mining lease shall be in respect of Limestone and Marl only. If any other minerals are found in association with this mineral, they should be brought to the notice of the Government.

(c) Royalty at the rate specified for the mineral Limestone and Marl in Schedule II of the Mines and Minerals (Development and Regulation) Act, 1957 as amended from time to time and dead rent at the rate mentioned in the IIIrd Schedule of the said Act, as amended from time to time whichever is greater shall be charged.

(d) Surface rent and cess/tax assessable on the land shall be charged.

(e) If beryl or any other substances prescribed under section 3 of the Atomic Energy Act, 1948 (XXIX of 1948) is found to occur in the property under the lease, the lessee shall make available such mineral to Government.

(f) The lease shall be subject to the provision of the following Act and Rules as amended from time to time:

i. The MMDR Act, 1957 and MCCTA And RCEMDC Rules,2016
ii. The Minerals (Evidence of Mineral contents) Rules, 2015
iii. The Minerals Conservation and Development Rules, 1988
iv. The Mines Act, 1952 and Rules made there under.
v. Environment (protection) Act, 1986 and Rules framed there under.
vi. Forest (Conservation) Act, 1980 and Rules made there under.
vii. Environment Impact Assessment Notification dated 27-1-1994 and orders/ notifications issued thereafter in this regard by Ministry of Environment & Forest.
viii. Bombay land Revenue Code- 1969
ix. Gujarat Panchayat Act, 1961
x. Indian Registration Act, 1908.
xi. Bombay Stamp Act, 1958 and any laws implemented in area by respective department of the State Government / Central Government as amended from time.
xii. Gujarat Mineral (Prevention of Illegal mining, transportation and storage) Rules-2005.

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(g) The lessee shall furnish to the Collector of Bhavnagar an accurate map of the area sanctioned under the lease together with the description giving the situation and boundaries duly attested by the District Inspector of Land Records. The Collector is authorized to get the area of the Mining Lease demarcated.

(h) The lessee shall pay to the Collector, Bhavnagar necessary performance security deposit as stated in the Rule 8(3)(a) of the Mineral (Other Than Atomic And Hydro Carbons Energy Minerals) Concession Rules, 2016.

(i) The lessee shall submit the progress report from time to time or when required to the Commissioner of Geology and Mining, Gujarat State, Gandhinagar or to an officer authorized by him along with the sample of the minerals collected during mining operations together with the analysis report.

(j) The lessee shall not use or sell the said Mineral or deal with it in whatsoever manner or knowingly allow anyone to use or sell the said mineral or deal with it in whatsoever manner as a minor mineral.

(k) If the area is likely to be submerged on account of the dam to be considered in near future the lessee shall on demand by Government or the Collector Bhavnagar return the mining lease forthwith without claiming any compensation of any kind including inter-alia any claim for land, minerals, machineries, equipment or for loss of business.

(l) The lease holder has to furnish financial assurance as provided in Rule 23(F) of the Minerals Conservation and Development Rules, 1988 before executing the mining lease deed.

(m) As the area under demand for lease is owned by a private owner, a statement in writing shall have to be produced that the surface rights over the area has been obtained or consent of the owner for starting mining operation is obtained. The area has to be converted to Non Agriculture before commencing the mining work in the said area.

(n) The lessee shall use all the Limestone and Marl excavated from the said area for captive use in his proposed/existing cement plant in Gujarat State.

(o) As per the condition of Letter of Intent (LoI) the mineral which is excavated from the lease shall be used only for the captive purpose and the lessee shall not trade or sell Limestone and Marl minerals other than using it for captive use.

(p) The lessee will have to adhere to the terms and conditions as mentioned in the letter that may be issued by the Ministry of Environment, Forest and Climate Change Impact Assessment Division, Government of India.

(q) The terms and conditions mentioned in the IBM, Ministry of Mines, Government of India letter No. 682(23)(622)/2008-UDAY dated 24/03/2009 will be binding to the lessee.

(r) The lessee will be bounded by the Rule-12 in Terms and Condition of the Mining Lease, as mentioned in the Mineral (Other Than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016.

(s) The lessee will have to pay the NMET fund apart from the royalty and any other levies as decided by the Central Government according to the National Mineral Exploration Trust Rules.

(t) The lessee will have to pay the DMF fund apart from the royalty and any other levies as decided by the Government according to the District Mineral Foundation Rules.

.....3/-

(u) All the Environmental related instructions/guidelines issued by Government of India/Government of Gujarat shall be adhered to.

(v) The lessee will have to abide by any changes made/any new terms and condition added to the present terms and condition by the Government of India or the State Government.

(w) The lessee shall execute Mine Development & Production Agreement (MDPA) with the competent authority in the format specified by the Central Government as per Rule 8(3)(b) of the Mineral (Other Than Atomic And Hydro Carbons Energy Minerals) Concession Rules, 2016.

(x) The State Government holds the right to make any amendment or addition in the lease deed. The lessee will abide by this and will have to pay the stamp duty and registration charges.

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

(B. G. Chaudhari)
Deputy Secretary
Industries and Mines Department

R.P.A.D.

To,
Nirma Limited,
Nirma House, Ashram Road,
Ahmedabad-380009

With a request to approach the Collector of Bhavnagar, Dist. Bhavnagar for execution of mining lease deed. The applicant is required to execute and register the lease deed for the said grant order as per the provisions prescribed in Rule 8(4) of Minerals (other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016

Copy to:-

- The Commissioner of Geology & Mining, Gujarat State, Gandhinagar.(By E-mail)
- The Collector of Bhavnagar, Dist. Bhavnagar. (By R.P.A.D. & E-mail)
  (The Collector is directed to execute the lease deed as per the provision in MMDR Act-1957 and MCR-2016.)
- The Assistant Geologist, Office of Geology & Mining, Dist. Bhavnagar.(By R.P.A.D.)
- The Regional Controller of Mines, Indian Bureau of Mines, Sector No.11, Hiran Magri, Sctcrne, Udaipur. 313001
- The Director General of Mines, Dhanbad-826001
- The Director of Mines Safety, Udaipur Region, 56, Shastri Marg, Udaipur-313 001
- The Revenue Department, Sachivalaya, Gandhinagar.
- The District Inspector of Land Records, Dist. Bhavnagar.(By R.P.A.D.)
- The Accountant General, Gujarat, Ahmedabad.
- The Accountant General, Gujarat, Rajkot
- The Controller General, Indian Bureau of Mines, 6th floor, Block No. B & C, Indira Bhavan, Civillines, Nagpur-440001
- The Forest and Environment Department, Sachivalaya, Gandhinagar.
- The Member Secretary, Gujarat Pollution Control Board, Sector 10-B, Gandhinagar
- Copy for D.S.(Mines), Industries and Mines Department. Select file.
- Copy for Dy.S.O.
- Select file.

ANNEXURE

SCHEDULE VII

[See rules 7(11), 8(4), 9(2), 12(1)(d)]

FORMAT OF MINING LEASE

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This deed for grant of a mining lease ("Lease") is made by and between the following:

PARTIES:

1 The Governor of Gujarat, acting through District Collector, Mining Branch, Bhavnagar, Gujarat State, (the "State Government")

AND

2 **M/s Nirma Limited**, incorporated in India under the Companies Act, 1956 with corporate identity number [CIN : U26240GJ1980PLC003670], whose registered office is at "Nirma House", Ashram Road, Ahmedabad -380009, Gujarat State, India and principal place of business is at Soda Ash plant at Village Kalatalav, Taluka & District Bhavnagar & at Birla Sagar, Porbandar of Porbandar District as well as upcoming cement plant at Village Padhiyarka of Mahuva Taluka in Bhavnagar District.

OR

[an individual who is citizen of India, having income tax permanent account number [number], residing at [address]]

OR

[persons listed in SCHEDULE A organised as a [firm/association of persons] in the name of [name of the firm or association of individuals], all of whom are Indian citizens and resident in India] (the "Lessee").

BACKGROUND:

A. The Lessee had been granted a Letter of Intent on 15.02.2006 with respect to which the Lessee has completed the requirements under the Mines and Minerals (Development and Regulation) Act, 1957 ("Act") for grant of a mining lease and State Govt. has granted the Mining Lease vide Industries and Mines Department, Gandhinagar order no. MCR-102004-1827-CHH dated 08.01.2017 for the period of 50 years

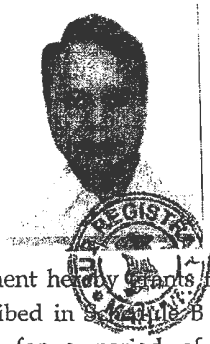
B. Accordingly, the State Government is now executing this deed for grant of a Lease to the Lessee in consideration of the fee, royalties, covenants and agreements hereinafter reserved and contained on the part of the Lessee to be paid, observed and performed.

1. **DEFINITIONS**

The expressions used in this Lease shall have the same meaning as ascribed to them under the Act and the rules made thereunder

FOR NIRMA LTD.

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2. GRANT OF LEASE

2.1. The State Government hereby grants the Mining Lease to the Lessee over an area described in Schedule B ("Lease Area") for conducting mining operations for a period of **50 years**, commencing from 11/01/2017 with respect to following mineral(s), **Limestone & Marl ("Minerals")**..

B-REGISTRAR HUVA

2.2. The Lease shall be with respect to all those the mines beds/veins seams of the Minerals situated lying and being in or under the Lease Area.

2.3. Subject to the Lessee paying the royalties and making other payments required to be paid and observing and performing all the covenants and agreements herein contained and on the part of the Lessee to be observed and performed shall and may quietly hold and enjoy the rights and premises of the Lease Area for and during the term hereby granted without any unlawful interruption from or by the State Government, or any person rightfully claiming under it.

3. RIGHTS AND OBLIGATIONS

3.1. The rights and obligations of the State Government and the Lessee shall be as specified in the Act and the rules made thereunder, including without limitation the Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016 and the Mine Development and Production Agreement dated 11/01/2017

3.2. Without prejudice to the generality of the foregoing,
(a) the Lessee shall:

(i) at all times comply with the provisions of the Act and the rules made thereunder and any other applicable law;

(ii) make prompt payment of royalty and any other payment required to be made by the Lessee;

(iii) pay such compensation as may be assessed by lawful authority in accordance with the law in force on the subject for all damage, injury, or disturbance which may be done by the Lessee in exercise of the powers granted by this Lease and to indemnify and keep indemnified fully and completely the State Government against all claims which may be by any person or persons in respect of any such damage, injury or disturbance and all costs and expenses in connection therewith;

(iv) take measures, at his own expense, for the protection of environment like planting of trees, reclamation of mined land, use of pollution-control devices, and such other measures as may be prescribed by the Central or State Government from time to time;

FOR NIRMA LTD.
AUTHORISED SIGNATORY

by Hon'ble Court



(v) without delay send to the Deputy Commissioner/Collector a report of any accident causing death or serious bodily injury or serious injury to property or seriously affecting or endangering life or property which may occur in the course of the operations under this Lease;

(vi) weigh or cause to be measured or weighed upon some part of the Lease Area all minerals from time to time won from the Lease Area, with 07 days prior notice being given to the Deputy Commissioner/Collector every such measuring or weighing in order that he or some person on his behalf may be present thereat;

(vii) submit to the State Government a full report of the work done by the Lessee and disclose all information acquired by the Lessee in the course of the operations carried on under this Lease regarding the geology and mineral resources of the area covered by the Lease; and

(viii) pay stamp duty and registration charges as may be applicable in respect of this deed.

(b) the State Government shall:

(i) have the right to, at all times to enter into and upon and to grant or demise to any person or persons whomsoever liberty to enter into and upon the Lease Area for all or any purposes other than those for which sole rights and Lease are hereby expressly conferred upon the Lessee, including without limitation, to make on, over or through the said lands such roads, tramways and ropeways as shall be considered necessary or expedient for any purposes and to obtain from and out of the said lands such stone, earth or other materials as may be necessary or requisite for making, repairing or maintaining such roads, tramways, railways and ropeways to pass and repass at all times over and along such roads, tramways, railways and ropeways for all purposes and as occasion shall require;

(ii) have the right to appropriate any performance security provided by the Lessee in accordance with terms of such performance security and require the Lessee to replenish the performance security. In case the performance security has been provided through a security deposit after termination of the Lease and fulfillment of all obligations of the Lessee, such security deposit shall be returned to the Lessee after appropriate deductions. It is clarified that the security deposit shall not carry any interest; and

FOR NIRMA LTD.

AUTHORISED SIGNATORY

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(iii) have the right to carry out or perform any work or matters which in accordance with the covenants in that behalf are to be carried out or performed by the Lessee, but have not been so carried out or performed within the time specified in that behalf, and the Lessee shall pay the State Government on demand all expenses which shall be incurred in such carrying out or performance of the same

3. If the State Government is desirous of exercising its right of pre-emption with respect to any mineral(s) the State Government shall pay the average sale price of such minerals as published by IBM prevailing at the time of pre-emption.

3.4. In the event of the existence of a state of war or emergency (of which existence the President of India shall be the sole judge and a notification to this effect in the Gazette of India shall be conclusive proof) the State Government with the consent of the Central Government shall from time to time and at all times during the said term have the right (to be exercised by a notice in writing to the Lessee/Lessees) forthwith take possession and control of the works, plant, machinery and premises of the Lessee on or in connection with the Lease Area or the operations under this Lease and during such possession or control, the Lessee shall conform to and obey all directions given by or on behalf of the Central or State Government regarding the use of employment of such works, plants, premises and minerals, provided that fair compensation, which shall be determined in default of agreement by the State Government shall be paid to the Lessee for all loss or damage sustained by him/them by reason or in consequence of the exercises of the powers conferred by this clause and provided also that the exercise of such power shall not determine the said term hereby granted or affect the terms and provisions of this clause.

3.5. If after the receipt of an offer of compensation for any damage which is likely to arise from the proposed operation of the Lessee, the occupier of the surface of any part of the said lands shall refuse his consent to the exercise of the rights and powers reserved to the State Government and granted by this Lease, the Lessee shall report the matter to the State Government and shall deposit with it the amount offered as compensation and if the State Government is satisfied that the amount of compensation is reasonable or if it is not so satisfied and the Lessee shall have deposited with it such further amount as the State Government may consider reasonable, the State Government shall order the occupier to allow the Lessee to enter upon the said land and carry out such operations as may be necessary for the purpose of the Lease. In assessing the amount of such compensation the State Government shall be guided by the principles of the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation & Resettlement Act, 2013.

FOR NMDC LTD.

AUTHORISED SIGNATORY

PARTNER.

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3.6. Every notice required to be given to the Lessee shall be given in writing to such person as may be nominated by the Lessee and such nomination shall be informed to the State Government in writing. If no such nomination is made then the notice shall be sent to the Lessee by registered post/speed post addressed to the Lessee at the address shown in the application for the Lease or at such other address in India as the Lessee may designate from time to time and every such service shall be deemed to be proper and valid service upon the Lessee and shall not be questioned or challenged by him.

3.7. If in any event the orders of the State Government are revised, reviewed or cancelled by the Central Government in pursuance of proceedings under the Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016, the Lessee shall not be entitled to compensation for any loss sustained by the Lessee in exercise of the powers and privileges conferred upon the Lessee by these presents.

4. GOVERNING LAW

This Lease and all questions of its interpretation shall be construed in accordance with the laws of India. In the event of any dispute in relation to the this Lease and in respect of all matters touching the relationship of the Lessee and the State Government, suits or petitions shall be filed in civil courts at Bhavnagar and it is hereby expressly agreed that neither party shall file a suit or appeal or bring any actions at any place other than the courts named above.

In witness whereof these presents have been executed at the Bhavnagar on 11-01-17

For and on behalf of the Governor of Gujarat

SHRI H. P. PATEL
I.A.S.

22/02/2017

Collector Bhavnagar

In Presence of,

1 SHRI U. K. Singh
Assistant Geologist

2 SHRI B. M. Makwana

Assistant Geologist
Geology & Mining Department
Government of Gujarat
BHAVNAGAR.
D.D.O.No.450, Cardex No.78

For and on behalf of Lessee M/s Nirma Limited
Shri Shailesh V. Sonara
In Presence of.

FOR NIRMA LTD.

AUTHORISED SIGNATORY

Witness

1 Sh. Ashwin R. Patel
Nirma Ltd., Bhavnagar

2 Sh. Umesh I. Bhavsar
Nirma Ltd., Ahmedabad

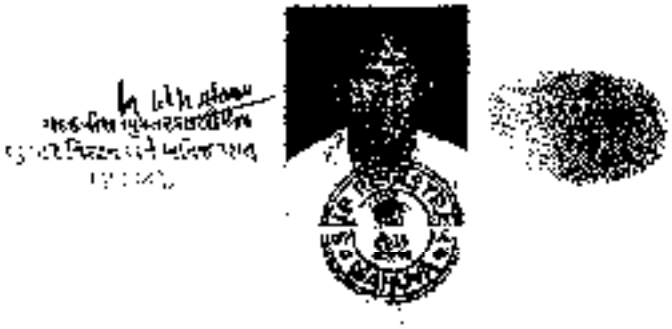
SCHEDULE A - LIST OF PERSONS

Not Applicable

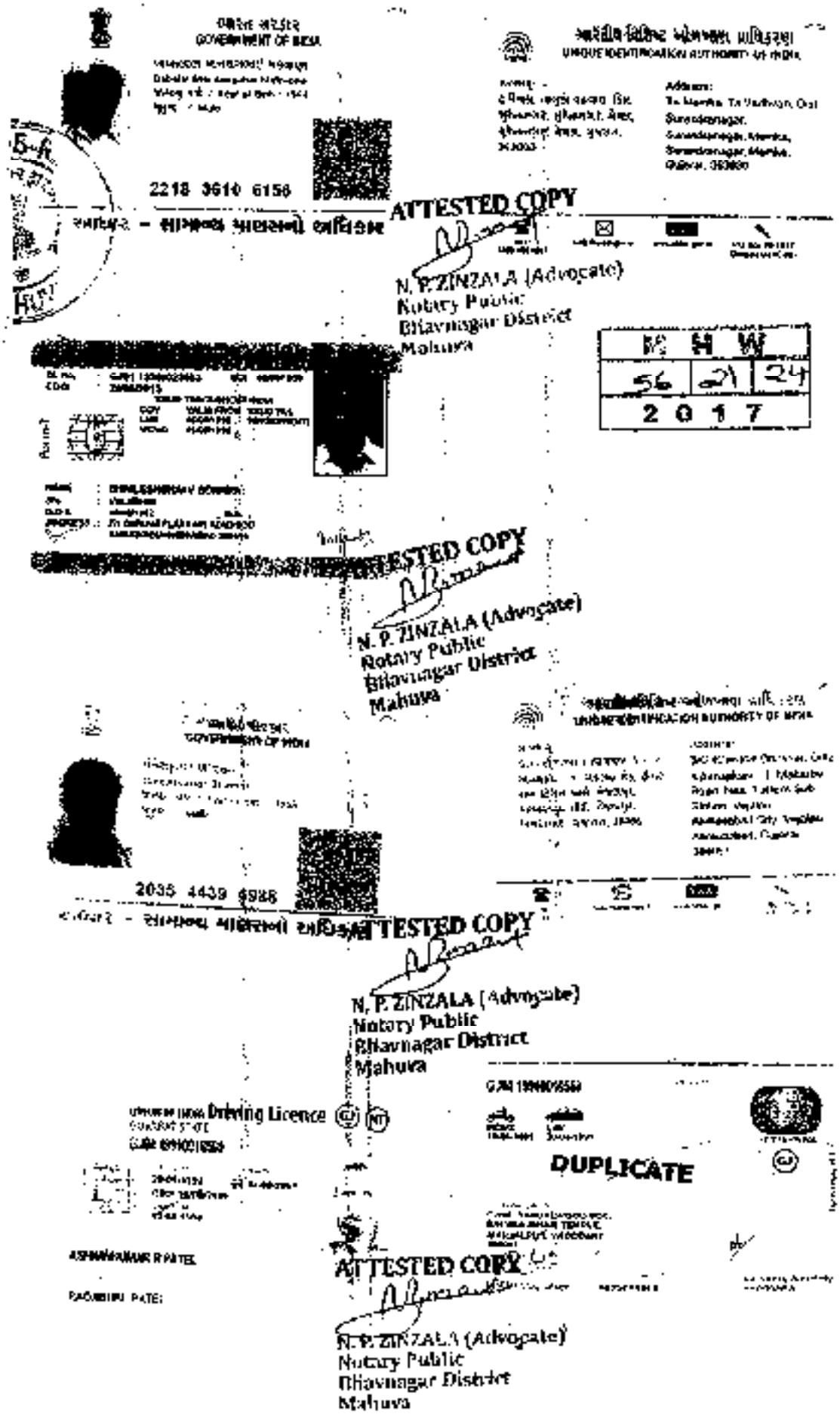
SCHEDULE B - AREA OF MINING LEASE

Details of Lease Area

District	:	Bhavnagar
Village	:	Vangau & Madhiya
Taluka	:	Mahuva
Survey no.	:	Various
Mining Lease Area	:	612.1336 Ha.
GPS coordinates of the area by GPS	:	Latitude / Longitude 1 21°3'6.36"N 71°38'38.98"E 2 21°1'45.50"N 71°39'15.27"E 3 21°3'15.11"N 71°41'32.39"E 4 21°3'40.06"N 71°41'14.68"E
Survey of India Toposheet number	:	41 O/12 (Restricted)






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Bhavnagar District
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N. P. ZINZALA (Advocate)
Notary Public
Bhavnagar District
Mahuva

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ANNEXURE : III

National Accreditation Board for Testing and Calibration Laboratories

NABL

CERTIFICATE OF ACCREDITATION

MIN MEC R & D LABORATORY

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

A- 121, PARYAVARAN COMPLEX, IGNOU ROAD, NEW DELHI, DELHI, INDIA

in the field of

TESTING

Certificate Number: TC-6337

Issue Date: 17/03/2022 Valid Until: 16/03/2024

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.
(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Name of Legal Identity : Min Mec Consultancy Pvt. Ltd.

Signed for and on behalf of NABL

N. Venkateswaran
Chief Executive Officer

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 17th October, 2019

S.O. 3744(E).—In exercise of the powers conferred by clause (b) of sub-section (1) of section 12 and section 13 of the Environment (Protection) Act, 1986 (29 of 1986), read with rule 10 of the Environment (Protection) Rules, 1986, the Central Government hereby makes the following further amendments in the notification of the Government of India in the erstwhile Ministry of Environment and Forests, *vide* number S.O. 1174(E), dated the 18th July, 2007, namely: -

in the said notification, in the table, –

(i) for serial numbers 3, 6, 27, 32, 33, 35, 37, 44, 49, 50, 55, 58, 65, 66, 97, 98, 105, 107, 108, 110 and 112 the entries relating thereto, the following serial numbers and entries shall be substituted, namely: -

(1)	(2)	(3)		(4)
"3	M/s Dhagavathi Ana Labs Pvt. Ltd. 7-2-C7, 8/4 & 14, Industrial Estate, Sanath Nagar, Hyderabad 500018, Telangana	(ii) (iii)	Mr. M.V. Raghavacharyulu Ms. D. Radha Kumari	17th October,2019 To 16th October, 2024"
"6	M/s Jeedimetla Effluent Treatment Ltd. Plot No. 267, Phase-I, IDA-Jeedimetla, Hyderabad-500055, Telangana	(ii) (iii) (iii)	Mr. I. Srinivasa Rao Mr. K. Venkata Subbareddy Mr. Ch. Satish	17th October,2019 To 16th October, 2024"
"27	M/s Startech Labs Pvt. Ltd. H. No. 1-58/7, 2nd Floor, S.M.R Chambers, Madinaguda, Hyderabad-500050, Telangana	(i) (ii) (iii)	Dr. Upendra M Tripathi Mr. Godavarthi Rambabu Ms. I. Annapurna	17th October,2019 To 16th October, 2024"
"32	M/s Enviro-International Plot No. 138-139, Udyog Kendra-II Extn., Eco Tech-III, Greater Noida, G.B. Nagar-201306, Uttar Pradesh	(i) (ii) (iii)	Dr. Vipul Kumar Mr. Ravinder Pal Marwah Mrs. Manisha Srivastav	17th October,2019 To 16th October, 2024"
"33	M/s Shriram Institute for Industrial Research (A unit of Shriram Scientific and Industrial Research Foundation) 19 University Road, Delhi-110007	(ii) (iii) (iii)	Dr. V.K. Verma Dr. Jagdish Kumar Dr. Mukesh Garg	17th October,2019 To 16th October, 2024"
"35	M/s SGS India Pvt. Ltd. CS Plot No. 512(P), Mouza-Hauspukuria, Diamond Harbour Road, PO- Joka, Dist- South 24 Parganas, Kolkata-700104, West Bengal	(ii) (iii) (iii)	Mr. Satya Charan Manna Mr. Monaj Roy Mr. Sumallya Bhattacharjee	17th October,2019 To 16th October, 2024"
"37	M/s Netel (India) Limited W-408, Rabale MIDC, TTC Industrial Area, Navi Mumabi-400701, Maharashtra	(i) (ii) (iii)	Mrs. Shraddha Sriram Kere Ms. Neelima Dhondiram Dalvi Ms. Surekha Sitaram Jamdar	17th October,2019 To 16th October, 2024"
"44	M/s Progathi Labs & Consultants Pvt. Ltd. Plot No. B15 & 16, Industrial Estate, Behind Pollution Control Board, Sanath Nagar, Hyderabad-500018, Telangana	(i) (ii) (iii)	Dr. Madala Ravi Kiran Mr. Kambhampati Sreedhar Mr. I. Rama Murthy	17th October,2019 To 16th October, 2024"
"49	M/s Padmaja Aerobiologicals Pvt. Ltd "Nandan", Plot No. 36, Sector-24, Near Bank of India, Turbhe, Navi Mumbai-400705, Maharashtra	(i) (ii) (iii)	Dr. Nandkishor T. Joshi Mr. Kishor P. Potekar Mr. Ramdas B. Choudhari	17th October,2019 To 16th October, 2024"
"50	M/s Shiva Test House 1st Floor, Rajhans Niketan, Near Canal, Rokunpura, Bailey Road, Patna-800014, Bihar	(i) (ii)	Dr. Shiheswar Prasad Dr. (Mrs.) Shreyasee Prasad	17th October,2019 To 16th October, 2024"
"55	M/s Anacon Laboratories Pvt. Ltd. FP-34, 35 Food Park, 5 Star Industrial Estate, Butibori, Nagpur-441122, Maharashtra	(i) (ii) (iii)	Dr. Dattatraya Gajanan Garway Dr. (Mrs.) Sugandha Dattatraya Garway Mrs. Kavita Sanjay Saygaonkar	17th October,2019 To 16th October, 2024"

"58	M/s Interstellar Testing Centre Private Limited Plot No. 86, Industrial Area, Phase-I, Panchkula- 134109, Haryana	(i) (ii) (iii)	Dr. Parkash Kaur Mr. Prem Kumar Mr. Gaurav Goyal	17th October,2019 To 16th October, 2024"
"65	M/s Enviroclesigns Eco Labs Eco Tower, Janatha Jn. Palarivattom, Kochi-682025, Kerala	(i) (ii) (iii)	Dr. K.L. Anthony Mrs. Susan Abraham Ms. Jesty M.T	17th October,2019 To 16th October, 2024"
"66	M/s J.M. Envirolab Pvt. Ltd. 424, Ground Floor, Udyog Vihar, Phase IV, Gurugram, Haryana 122015	(i) (ii) (iii)	Mr. Surendra Yadav Mr. Raj Kumar Yadav Mr. Ghanshyam Yadav	17th October,2019 To 16th October, 2024"
"97	M/s Min Mec R&D Laboratory A-121, Paryavaran Complex, IGNOU Road, New Delhi-110030	(i) (ii) (iii)	Mr. B.D. Sharma Dr. Manisha Sharma Ms. Rashmi Gupta	17th October,2019 To 16th October, 2024"
"98	M/s Bhagwati Enviro Care Pvt. Ltd 28,29 & 30, Parmeshwar Estate-II, Opp. AMCO Bank, Phase-I, GIDC Estate, Vatva, Ahmedabad-382445 Gujarat	(i) (ii)	Mr. Shailesh Patel Mr. Mahesh Oza	17th October,2019 To 16th October, 2024"
"105	M/s Anvanira Biotech (P) Ltd Kinedo Innovation Park, D-1 Block, Plot No. 18/1 Part, MIDC Chinchwad, Pune-411019, Maharashtra	(i) (ii) (iii)	Dr. Bikash Ajit Aich Ms. Sarita Jayant Upadhye Dr. Neeta Hiten Zalakia	17th October,2019 To 16th October, 2024"
"107	M/s EMTRC Consultants Pvt. Ltd. F-66, Road No.2, Phase-1, Masuri Gulawathi Road, UPSIDC Industrial Area, Ghaziabad-201009, Uttar Pradesh	(i) (ii) (iii)	Mr. Jayanta Kumar Moitra Mr. Mukesh Kumar Mr. Om Prakash Singh	17th October,2019 To 16th October, 2024"
"108	M/s Visiontek Consultancy Pvt. Ltd Plot M22 & M23, Chandaka Industrial Estate, Patia, Bhubaneswar-751024, Odisha	(i) (ii) (iii)	Mr. B.K. Mishra Ms. Puja Mohanty Mrs. Chanchala Pattanaik	17th October,2019 To 16th October, 2024"
"110	M/s SMS Labs Services Private Limited No. 3946, Thiruvallur High Road, Puduchatram Post, Thirumazhisai (Via), Poonamallee TK, Chennai-600124, Tamil Nadu	(i) (ii) (iii)	Dr. K. Thulasi Raman Mr. K. Elakkiyathasan Mr. R. Iyappan	17th October,2019 To 16th October, 2024"
"112	M/s Bureau Veritas (India) Pvt. Ltd., No.F-2, Thiru Vi Ka Industrial Estate, Phase-III, Ekkattuthangal Guindy, Chennai-600032, Tamil Nadu	(i) (ii) (iii)	Mr. K. Hari Chandra Prasad Mr. M. Ramesh Mr. M. Shanthi	17th October,2019 To 16th October, 2024"

(ii) after serial number 178 and the entries relating thereto, the following serial numbers and entries shall be inserted, namely: -

(1)	(2)	(3)		(4)
"179	M/s Agss Analytical and Research Lab Pvt. Ltd. C-37/2, Lawrence Road Industrial Area, Delhi-110035	(i) (ii) (iii)	Dr. Shivlal Singh Mr. Jaswant Ray Mr. Lalit Kumar Agarwal	17th October,2019 To 16th October, 2024
180	M/s Alpha Test House 198 199, M.I.E. Phase 1, Bahadurgarh 124507, Haryana	(i) (ii) (iii)	Mr. Vivek Tyagi Mr. Anup Singh Ms. Pratibha Rawat	17th October,2019 To 16th October, 2024
181	M/s Avantha Centre for Industrial Research & Development Paper Mill Campus, Yamuna Nagar-135001, Haryana	(i) (ii) (iii)	Dr. Sunil Kumar Dr. Subir Barnic Mr. Vipul Gupta	17th October,2019 To 16th October, 2024
182	M/s Cats Labs & Research Pvt. Ltd., S-78, First Floor, Okhla Industrial Area Phase-II, New Delhi-110020	(i) (ii) (iii)	Mr. Jagmohan Singh Chadha Mr. Sunil Dutt Panwar Ms. Noorie Naqvi	17th October,2019 To 16th October, 2024

183	M/s Centre for Environment and Food Technology Pvt. Ltd. 1st & 2nd Floor, DLF Industrial Area, Moti Nagar, New Delhi-110015	(i) (ii) (iii)	Mr. Hemant Singh Mr. Manoj Singh Ms. Shweta Sharma	17th October,2019 To 16th October, 2024
184	M/s Eco Green Solution Systems Pvt. Ltd. Plot #48/A-1, Kiadb Industrial Area, Veerapura Post, Doddaballapur, Bengaluru-561203, Karnataka	(i) (ii) (iii)	Mr. P.Hanumanthaiah Mr. Suhas S.S Mrs. Tushali Jagwani	17th October,2019 To 16th October, 2024
185	M/s Ecosteps Laboratory Private Limited D-79, Sector-6, Noida-201301, Uttar Pradesh	(i) (ii) (iii)	Ms. Saudamini Sharma Ms. Sneh Smita Ms. Deep Shikha	17th October,2019 To 16th October, 2024
186	M/s Environ Tech Laboratories Plot No. 62, 1st Floor, JLPL Industrial Area, Sector 82, Airport Road, S.A.S. Nagar, Mohali, Punjab	(i) (ii) (iii)	Mr. Jasvir Singh Mr. Amit Kumar Ms. Manisha	17th October,2019 To 16th October, 2024
187	M/s Global Environment & Mining Services 3rd Main Road, Basaveshwara Badavane, Hosapete-583201, Bellari District, Karnataka	(i) (ii) (iii)	Dr. Vikas Gupta Ms. S. Shameem Banu Mr. J Ravi Kumar	17th October,2019 To 16th October, 2024
188	M/s Greenleaf Enviotech Pvt. Ltd. 304, Kankavati Complex, Singanpur-Causway Road, Katargam, Surat-395004, Gujarat	(i) (ii) (iii)	Mr. Kalpesh Gordhanbhai Ghiya Ms. Kena Prabodhchandra Jariwala Ms. Rekha Vaghajibhai Dore	17th October,2019 To 16th October, 2024
189	M/s Green Enviro Sr. No. 45A/1-4A/4, "Parshuram" Fliphastop Road, Bopodi, Pune-411003, Maharashtra	(i) (ii) (iii)	Mrs. Kanchan Prashant Khatole Mrs. Swati Manoj Joshi Mr. Vinay Ramchandra Govande	17th October,2019 To 16th October, 2024
190	M/s Green Vision Testing & Enviro Services Plot No. 21, First Floor, Aarna-2 Tower, Kananpura Industrial Area, 22 Godam, Jaipur-302006, Rajasthan	(i) (ii)	Mr. Umesh Kumar Sharma Mr. Mukesh Kumar Gupta	17th October,2019 To 16th October, 2024
191	M/s Global Enviro Laboratories Plot No. 4, Khasra No. 45, Opposite Shree Maman Dham Temple, Industrial Area 8KM Milestone, Meerut Road, Ghaziabad-201003, Uttar Pradesh	(i) (ii) (iii)	Mr. Arvind Kumar Srivastava Mr. Kishad Parwez Ms. Shikha Bhatiya	17th October,2019 To 16th October, 2024
192	M/s Interstellar Testing Centre Pvt. Ltd. Plot No. 2, S. No.122A, Industrial Estate Perungudi, Chennai-600096, Tamil Nadu	(i) (ii) (iii)	Mr. Tharun Kumar T Mr. Vijayanand M Mr. Prabakaran V	17th October,2019 To 16th October, 2024
193	M/s Jubilant Pharma & Chemical Lab, Surya Gayatri CHS, Shop No. 10 to 15, Plot No. 14/15, Sector No. 6, New Panvel (East), Navi Mumbai-410206, Maharashtra	(i) (ii)	Mrs. Ashwini Dinesh Mule Mr. Meghanath Changdev Thakur	17th October,2019 To 16th October, 2024
194	M/s Metamorphosis Laboratory Private Limited Prakruti Bhavan, #200, 1st & 2nd Floor, 1st Cross 40th Main, Behind Central Silk Board, BTM Layout II Stage, Bengaluru-560068, Karnataka	(i) (ii) (iii)	Dr. Shanth A. Thimmaiah Mr. Sreekantan Nair P Mr. Suresh Babu H S	17th October,2019 To 16th October, 2024
195	M/s Nakshatra Enviro Services 16, Solitaire Industrial Park, Dahmi Kalan Bagru, Jaipur-303007, Rajasthan	(i) (ii) (iii)	Mr. Jagmohan Sharma Mrs. Meenu Sharma Mr Laxmi Chand Nagar	17th October,2019 To 16th October, 2021
196	M/s Nitya Laboratories 81B, Sector-5, Channi Himmat-180015, Jammu, Jammu & Kashmir	(i) (ii) (iii)	Mr. Ravinder Kumar Smt. Radha Devi Mr. Ajay Sharma	17th October,2019 To 16th October, 2024
197	M/s OneEarth Enviro Labs 1st Floor, KSIA Building Baikampady Industrial Area Road, Mangaluru-575011, Karnataka	(i) (ii) (iii)	Mr. Murlidhar S M Mr. Dinesh S M Dr. Sandesh Kamath B	17th October,2019 To 16th October, 2024

198	M/s Shree Krishna Analytical Services A-5/4, Phase-II, Mayapuri Industrial Area, New Delhi-110064	(i) (ii) (iii)	Mr. Vinay Kumar Mr. Narendra Kumar Giri Mr. Surjeet Das	17th October,2019 To 16th October, 2024
199	M/s Spectro Analytical Labs Limited, S-1, GNEPIP, Surajpur Industrial Area, Phase-V, Kasna, Greater Noida, Uttar Pradesh	(i) (ii) (iii)	Mr. Yogesh Malik Mrs. Astha Vig Mrs. Rukmi Rajput	17th October,2019 To 16th October, 2024
200	M/s Trans Thane Creek Waste Management Association, P-128, TTC Industrial Area, Near L&T Infotech, Shil Mahape Road, Mahape, Navi Mumbai-400710	(i) (ii) (iii)	Dr. Nitin Ramchandra Nimkar Dr. Dada Bahan Mandhare Mr. Jayesh Narayan Idate	17th October,2019 To 16th October, 2024
201	M/s Vsix Analytical Labs Pvt. Ltd. #77,502/503), 2nd Floor, 21st 'D' Cross Muthumayaswamy Layout, Srigandakaval, Sunkadakatte, Bengaluru-560091, Karnataka	(i) (ii) (iii)	Mrs. Nagalakshmi N.S Mrs. Gunavathy M.K Mrs. Apeksha Shenoy	17th October,2019 To 16th October, 2024".

[F. No. Q. 15018/21/2017-CPW]

JIGMET TAKPA, Jt. Secy.

Note : The principal notification was published in the Gazette of India, Extraordinary, *vide* number S.O. 1174(E), dated the 18th July, 2007 and was last amended by notification No. S.O. 5768(E), dated the 15th November, 2018.

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DAILY AVERAGE OF MICRO-METEOROLOGICAL MONITORED DATA (1 MARCH, 2021 TO 2 JUNE, 2021)

DATE	CALM	<---------- DIRECTION WISE AVERAGE WIND SPEED (km/hr) EXCLUDING CALM ---------->																TEMP.	REL_HUM
	<1.8kmph	E	ENE	NE	NNE	N	NNW	NW	WNW	W	WSW	SW	SSW	S	SSE	SE	ESE	(°C)	(%)
01/03/21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.76	0.00	0.00	0.00	0.00	0.00	16.30	22.26	0.00	0.00	24.96	59.00
02/03/21	0.50	24.53	10.35	0.00	0.00	0.00	0.00	4.94	0.00	14.87	14.17	1.94	0.00	14.81	0.00	19.00	16.86	25.05	66.00
03/03/21	0.00	19.16	14.34	15.65	0.00	0.00	0.00	14.80	0.00	19.17	0.00	12.35	0.00	20.37	6.57	22.49	0.00	24.81	66.00
04/03/21	0.53	19.09	0.00	0.00	0.00	0.00	0.00	16.69	13.70	14.10	4.49	19.81	0.00	22.34	21.92	16.89	12.09	25.36	65.00
05/03/21	0.75	12.65	0.00	0.00	0.00	0.00	0.00	3.96	12.92	11.70	3.26	21.00	20.95	19.22	22.44	20.03	0.00	25.49	65.00
06/03/21	0.00	23.44	3.39	2.07	0.00	0.00	0.00	10.87	15.28	19.06	20.61	0.00	0.00	20.51	0.00	21.14	10.76	25.27	65.00
07/03/21	0.00	18.17	14.46	17.23	0.00	0.00	0.00	7.77	15.07	4.11	0.00	22.05	2.79	21.91	12.22	22.69	5.51	25.65	65.00
08/03/21	0.74	5.80	6.94	19.60	0.00	0.00	0.00	10.54	14.37	17.85	0.00	2.75	19.70	21.10	0.00	14.50	10.49	25.55	65.00
09/03/21	0.81	0.00	0.00	12.98	0.00	0.00	0.00	5.57	0.00	12.93	0.00	12.47	0.00	21.08	0.00	18.54	11.94	25.85	65.00
10/03/21	0.65	14.43	11.14	0.00	0.00	0.00	0.00	11.62	2.79	10.75	0.00	2.89	5.38	21.21	2.61	19.40	19.53	25.82	64.00
11/03/21	0.00	16.43	0.00	0.00	0.00	0.00	0.00	8.93	7.73	0.00	5.89	26.09	0.00	21.85	12.12	20.27	14.20	25.92	64.00
12/03/21	0.00	6.65	0.00	0.00	0.00	0.00	0.00	6.44	12.67	5.51	0.00	12.56	2.49	21.58	13.76	15.16	9.07	25.99	64.00
13/03/21	0.60	2.24	0.00	0.00	0.00	0.00	0.00	12.81	4.50	19.92	0.00	20.24	0.00	23.10	12.72	19.94	13.43	26.08	64.00
14/03/21	0.00	16.45	6.86	0.00	0.00	0.00	0.00	6.49	5.65	10.40	0.00	23.02	18.99	22.33	22.68	13.14	22.77	26.24	64.00
15/03/21	0.00	6.01	12.87	0.00	0.00	0.00	0.00	16.66	0.00	12.73	0.00	19.17	20.23	22.07	12.90	17.72	16.56	26.38	63.00
16/03/21	0.56	12.78	0.00	14.36	0.00	0.00	0.00	10.10	21.15	4.71	0.00	3.15	4.24	19.20	0.00	16.29	0.00	26.58	63.00
17/03/21	0.00	13.16	11.64	8.66	0.00	0.00	0.00	5.29	23.15	8.76	0.00	12.68	0.00	21.18	22.79	16.94	5.39	26.47	63.00
18/03/21	0.17	17.87	2.63	21.34	0.00	0.00	0.00	6.38	11.73	0.00	0.00	21.79	0.00	21.26	17.13	0.00	2.13	26.74	63.00
19/03/21	0.50	13.19	0.00	12.11	0.00	0.00	0.00	19.20	0.00	26.02	10.00	3.14	0.00	18.36	6.57	16.22	0.00	26.58	63.00
20/03/21	0.00	0.00	20.94	23.20	0.00	0.00	0.00	7.20	15.67	0.00	9.24	3.91	20.78	21.01	22.91	13.19	19.40	26.89	62.00
21/03/21	0.00	20.65	0.00	0.00	0.00	0.00	0.00	17.08	0.00	13.16	0.00	20.92	0.00	18.16	0.00	10.80	11.79	27.29	62.00
22/03/21	0.45	3.19	12.76	0.00	0.00	0.00	0.00	13.67	0.00	18.99	21.18	6.52	0.00	21.27	0.00	14.04	20.73	27.54	61.00
23/03/21	0.24	16.50	0.00	10.21	0.00	0.00	0.00	12.86	20.46	0.00	9.30	12.07	0.00	17.62	3.44	16.08	21.62	27.59	61.00
24/03/21	0.00	20.45	21.38	8.16	0.00	0.00	0.00	3.74	24.70	18.88	0.00	0.00	0.00	17.97	0.00	22.16	12.04	27.48	61.00
25/03/21	0.42	0.00	22.96	21.51	0.00	0.00	0.00	12.78	4.94	13.16	0.00	11.93	0.00	18.09	0.00	14.45	0.00	27.63	61.00
26/03/21	0.25	0.00	0.00	20.25	0.00	0.00	0.00	11.70	17.20	8.25	0.00	21.34	0.00	16.35	21.63	18.28	0.00	27.90	61.00
27/03/21	0.57	22.04	2.63	22.68	0.00	0.00	0.00	9.08	0.00	10.74	11.29	22.37	0.00	21.40	22.22	9.32	0.00	27.97	60.00
28/03/21	0.00	8.46	14.18	0.00	0.00	0.00	0.00	9.85	0.00	0.00	13.19	22.36	0.00	21.62	20.54	13.28	0.00	28.20	60.00
29/03/21	0.00	0.00	12.68	11.23	0.00	0.00	0.00	10.36	0.00	9.37	0.00	4.30	0.00	18.77	0.00	15.88	3.95	28.12	60.00
30/03/21	0.00	16.11	18.23	21.15	0.00	0.00	7.79	5.15	13.47	7.69	20.10	19.94	0.00	21.84	12.68	6.19	0.00	28.31	60.00
31/03/21	0.45	8.88	8.73	0.00	0.00	0.00	6.59	14.80	4.22	5.95	0.00	2.77	0.00	20.88	0.00	18.18	11.53	28.31	60.00
01/04/21	0.00	0.00	21.19	22.26	0.00	0.00	0.00	4.15	15.30	14.69	0.00	0.00	3.45	19.34	0.00	20.43	8.13	28.52	60.00
02/04/21	0.00	22.98	19.66	1.86	0.00	0.00	0.00	10.87	0.00	28.52	20.80	7.74	0.00	23.72	15.87	14.36	0.00	28.61	59.00
03/04/21	0.00	20.45	11.44	0.00	0.00	0.00	0.00	10.12	16.50	11.90	5.52	12.75	18.91	22.16	0.00	0.00	0.00	28.66	59.00
04/04/21	0.00	0.00	6.11	11.95	0.00	0.00	0.00	5.16	0.00	8.69	20.08	23.80	6.25	21.39	4.51	17.10	23.40	28.67	59.00
05/04/21	0.76	6.32	0.00	0.00	0.00	0.00	0.00	14.76	9.20	0.00	21.52	25.27	0.00	21.57	2.09	16.72	19.75	28.71	58.00
06/04/21	0.00	20.52	0.00	22.41	0.00	0.00	0.00	11.43	18.51	5.54	0.00	6.80	21.26	17.08	12.19	3.64	17.77	29.33	58.00
07/04/21	0.00	22.69	16.67	0.00	0.00	0.00	0.00	12.66	15.81	24.52	0.00	10.72	0.00	16.06	0.00	21.97	17.73	28.86	58.00
08/04/21	0.00	22.82	20.65	24.26	0.00	0.00	0.00	11.58	12.40	0.00	0.00	3.88	20.53	19.06	0.00	8.56	0.00	29.08	58.00
09/04/21	0.50	11.78	7.76	0.00	0.00	0.00	0.00	7.46	9.84	2.72	17.84	0.00	5.93	21.41	22.17	22.03	14.82	29.37	57.00
10/04/21	0.00	14.22	22.61	4.63	0.00	0.00	0.00	8.65	10.46	15.75	15.79	21.10	4.70	20.80	3.72	23.55	0.00	29.57	57.00
11/04/21	0.00	11.59	2.78	8.92	0.00	0.00	0.00	13.43	4.77	24.15	0.00	10.15	0.00	21.60	21.75	17.73	0.00	29.54	57.00
12/04/21	0.28	0.00	3.70	0.00	0.00	0.00	0.00	17.20	14.81	22.87	0.00	22.07	19.21	18.10	0.00	19.71	6.03	29.77	57.00
13/04/21	0.00	22.76	1.99	14.47	0.00	0.00	0.00	5.36	0.00	8.89	21.61	0.00	3.67	22.59	3.88	21.21	11.67	29.32	57.00
14/04/21	0.00	19.47	20.57	13.35	0.00	0.00	0.00	5.44	12.20	0.00	20.51	0.00	0.00	18.41	0.00	17.87	0.00	30.22	56.00
15/04/21	0.35	13.29	7.60	0.00	0.00	0.00	0.00	15.03	19.88	16.79	0.00	20.82	5.67	21.88	20.14	17.08	19.52	30.56	56.00
16/04/21	0.00	13.09	12.25	20.85	0.00	0.00	0.00	5.72	0.00	11.53	0.00	11.21	4.62	21.46	23.30	14.03	0.00	30.42	56.00
17/04/21	0.81	14.40	17.79	2.55	0.00	0.00	0.00	12.41	6.17	4.77	0.00	0.00	5.17	22.48	3.31	24.14	12.31	30.31	55.00
18/04/21	0.00	22.15	17.78	5.83	0.00	0.00	5.80	8.30	0.00	12.64	0.00	23.25	0.00	21.93	19.97	13.86	9.26	30.51	56.00

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DAILY AVERAGE OF MICRO-METEOROLOGICAL MONITORED DATA (1 MARCH, 2021 TO 2 JUNE, 2021)

DATE	CALM	<---------- DIRECTION WISE AVERAGE WIND SPEED (km/hr) EXCLUDING CALM ---------->																TEMP.	REL_HUM
	<1.8kmph	E	ENE	NE	NNE	N	NNW	NW	WNW	W	WSW	SW	SSW	S	SSE	SE	ESE	(°C)	(%)
19/04/21	0.08	11.13	6.98	6.89	0.00	0.00	0.00	13.13	0.00	0.00	0.00	16.20	20.17	20.11	21.18	20.24	0.00	31.00	55.00
20/04/21	0.00	19.96	12.31	0.00	0.00	0.00	0.00	12.19	18.08	8.63	6.81	3.41	9.23	19.86	19.54	15.53	0.00	30.60	55.00
21/04/21	0.25	21.30	16.91	0.00	0.00	0.00	0.00	9.47	0.00	0.00	0.00	13.08	0.00	21.49	0.00	20.59	22.00	30.94	55.00
22/04/21	0.00	15.22	15.00	14.16	0.00	0.00	6.11	8.52	0.00	12.44	20.88	20.54	0.00	23.24	0.00	22.13	13.12	31.24	54.00
23/04/21	0.00	16.69	3.98	0.00	0.00	0.00	0.00	12.66	0.00	10.43	0.00	5.18	0.00	21.90	7.00	8.29	5.99	31.14	54.00
24/04/21	0.56	20.24	10.52	0.00	0.00	0.00	0.00	13.21	22.64	0.00	0.00	12.68	0.00	21.53	5.67	0.00	19.51	31.43	54.00
25/04/21	0.27	16.88	0.00	7.91	0.00	0.00	0.00	13.77	10.64	3.01	0.00	13.47	0.00	20.79	21.71	16.31	0.00	31.72	54.00
26/04/21	0.73	22.32	15.95	0.00	0.00	0.00	0.00	4.14	5.64	20.63	0.00	4.51	19.61	17.97	22.95	19.97	21.54	31.66	54.00
27/04/21	0.73	16.06	12.69	0.00	0.00	0.00	0.00	9.12	16.28	20.61	8.95	0.00	0.00	20.42	21.63	2.69	11.27	31.54	53.00
28/04/21	0.00	22.25	0.00	12.47	0.00	0.00	0.00	11.66	20.52	13.98	3.96	22.51	0.00	22.06	6.40	19.97	0.00	31.66	53.00
29/04/21	0.75	22.34	9.25	12.52	0.00	0.00	0.00	16.10	5.51	17.19	4.54	0.00	0.00	19.09	0.00	23.24	0.00	31.82	53.00
30/04/21	0.81	15.59	14.40	7.48	0.00	0.00	0.00	11.55	0.00	18.19	14.44	6.81	2.76	21.87	13.72	23.82	13.60	31.85	53.00
01/05/21	0.54	16.53	3.74	0.00	0.00	0.00	0.00	6.47	11.11	12.63	22.20	0.00	0.00	18.77	6.72	16.89	0.00	31.86	53.00
02/05/21	0.00	15.87	6.62	0.00	0.00	0.00	0.00	12.27	12.14	13.98	0.00	20.18	0.00	18.74	20.74	15.71	0.00	32.13	52.00
03/05/21	0.95	14.51	6.01	18.90	0.00	0.00	0.00	9.62	6.12	0.00	0.00	6.94	0.00	21.22	12.57	22.35	9.63	32.38	52.00
04/05/21	0.00	16.66	0.00	7.58	0.00	0.00	0.00	15.08	6.26	17.75	6.05	14.55	0.00	21.04	16.66	8.98	8.98	32.52	52.00
05/05/21	0.00	23.17	10.22	20.72	0.00	0.00	0.00	10.31	11.56	10.15	0.00	4.98	10.87	21.46	7.66	6.03	11.25	32.59	51.00
06/05/21	0.00	0.00	6.44	0.00	0.00	0.00	0.00	15.46	4.29	14.53	21.26	0.00	0.00	18.57	0.00	21.97	21.11	32.51	51.00
07/05/21	0.59	21.81	0.00	12.03	0.00	0.00	0.00	8.95	2.97	13.94	0.00	22.09	0.00	16.49	0.00	14.12	0.00	32.60	51.00
08/05/21	0.00	19.75	21.71	16.93	0.00	0.00	0.00	6.87	9.69	11.18	0.00	3.44	0.00	19.21	0.00	10.03	0.00	32.91	50.00
09/05/21	0.19	0.00	19.52	11.07	0.00	0.00	0.00	7.82	15.26	10.12	7.34	3.21	0.00	21.53	12.29	22.71	9.03	33.09	50.00
10/05/21	0.00	17.63	0.00	0.00	0.00	0.00	0.00	10.48	4.93	4.37	0.00	9.68	0.00	21.91	0.00	12.78	12.54	33.21	50.00
11/05/21	0.22	22.88	7.97	0.00	0.00	0.00	6.28	14.18	21.81	7.48	0.00	0.00	20.95	21.67	0.00	11.19	2.29	33.22	50.00
12/05/21	0.41	21.34	14.95	0.00	0.00	0.00	0.00	6.42	14.62	13.21	20.47	21.68	0.00	16.17	19.71	15.33	0.00	33.34	50.00
13/05/21	0.00	0.00	15.35	14.59	0.00	0.00	0.00	5.73	13.20	4.20	0.00	11.39	0.00	21.79	20.22	24.20	10.37	33.51	49.00
14/05/21	0.00	20.67	22.11	17.66	0.00	0.00	0.00	10.32	7.70	11.80	0.00	0.00	19.98	18.22	0.00	6.58	0.00	33.50	49.00
15/05/21	0.43	0.00	18.53	19.22	0.00	0.00	0.00	13.53	21.97	9.10	21.95	4.94	0.00	21.34	0.00	13.00	22.61	33.78	49.00
16/05/21	0.93	0.00	20.96	9.05	0.00	0.00	0.00	11.60	3.04	0.00	20.57	15.69	0.00	22.65	0.00	15.43	0.00	34.09	48.00
17/05/21	0.00	17.88	12.51	12.50	0.00	0.00	0.00	5.80	11.32	19.00	0.00	4.38	3.97	0.00	0.00	0.00	10.78	34.59	59.00
19/05/21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.10	0.00	8.02	21.71	0.00	0.00	21.10	21.14	21.60	22.51	36.38	60.00
20/05/21	0.00	19.87	16.71	20.63	0.00	0.00	0.00	6.01	9.77	14.18	0.00	15.11	0.00	21.88	22.18	19.95	0.00	34.38	49.00
21/05/21	1.00	0.00	0.00	14.62	0.00	0.00	0.00	4.30	0.00	10.74	0.00	10.26	0.00	16.05	22.57	19.74	0.00	34.59	48.00
22/05/21	0.00	23.22	11.15	13.02	0.00	0.00	0.00	15.31	2.84	15.13	0.00	13.19	20.92	21.47	0.00	12.26	20.32	34.42	48.00
23/05/21	0.51	3.40	0.00	21.40	0.00	0.00	0.00	13.62	0.00	15.45	0.00	13.48	0.00	21.10	22.56	12.97	0.00	34.82	47.00
24/05/21	0.00	20.79	7.60	0.00	0.00	0.00	0.00	14.80	3.27	12.51	22.03	11.80	2.90	23.03	20.53	19.58	5.15	34.52	48.00
25/05/21	0.00	21.61	16.66	20.33	0.00	0.00	0.00	17.38	0.00	22.18	26.64	14.71	4.02	20.77	13.10	10.52	0.00	34.59	47.00
26/05/21	0.99	21.81	19.80	17.24	0.00	0.00	0.00	14.02	16.32	0.00	0.00	11.63	0.00	16.99	22.63	17.64	7.69	34.88	47.00
27/05/21	0.48	20.36	23.52	0.00	0.00	0.00	0.00	12.44	0.00	20.83	20.56	4.94	0.00	21.35	0.00	5.26	14.31	34.75	47.00
28/05/21	0.44	19.03	20.08	0.00	0.00	0.00	0.00	16.41	22.54	14.94	0.00	24.09	4.44	21.72	5.67	19.06	0.00	35.39	46.00
29/05/21	0.00	15.89	0.00	18.89	0.00	0.00	0.00	15.60	13.70	27.29	0.00	7.17	9.17	21.92	21.14	4.94	18.61	35.16	46.00
30/05/21	0.00	0.00	18.22	22.87	0.00	0.00	0.00	10.56	2.02	14.51	0.00	18.88	22.14	21.68	0.00	17.78	2.56	35.34	46.00
31/05/21	0.36	16.29	4.08	0.00	0.00	0.00	0.00	10.65	19.89	6.70	20.84	3.51	0.00	18.55	19.54	18.67	3.19	35.55	45.00
01/06/21	0.50	17.88	12.51	12.50	0.00	0.00	0.00	5.80	11.32	19.00	6.34	4.38	20.33	21.23	22.69	0.00	10.78	34.05	49.00
02/06/21	1.01	0.00	0.00	16.35	0.00	0.00	0.00	6.05	9.13	10.90	11.36	3.63	4.21	0.00	4.65	14.46	11.65	34.11	49.00

Note : The above has been processed from hourly data recorded from automatic weather station.
Shut down during extreme weather phenomenon for safety reasons on 18/05/2023.

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ANNEXURE : V

Customer's Name & Address

Nirma Ltd.
Nirma House, Ashram Road
Ahemadabad – 380009

Contact Person : Ms. Tejal Patel

Sample Particulars

Type of Sample	:	Ambient Air
Work Order No.	:	NNL/CP-43/LOI-095/2020-21/PTV/
Sampling Location	:	In and around Doliya & Padhiyarka; Dudhala Dudheri & Gujarda; & Vangar & Madhiya Limestone Mines, District Bhavnagar, Gujarat
Sampling Procedure	:	IS 5182 (Part 2) 2001 for SO_2, CPCB guidelines NAAQMS 96/2012-13 for PM_{10}, NO_2,& Lab SOP/09 for $PM_{2.5}$
Sample Duration	:	24 hours
Sampling Team	:	MMRDL (Ravikant)
Sample Reg. No	:	MMA/2021S1L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, L15 & L16/01-24
Date of Sampling	:	01/03/2021 to 30/05/2021
Date of Receipt	:	19/03/2021 to 08/06/2021
Date of Report	:	18/06/2021
Test Report No.	:	MMA/06-2021/68
ULR No.	:	TC633721000000140F
Page	:	1 of 5

TEST REPORT

Sl. No.	Location:→	Near Cement Plant at Padhiarka				Vangar Village				Dhdhala No. 1			
	Date of sampling↓	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)
1	1 - 02-03-2021	51.4	24.1	4.6	7.0	68.8	27.5	7.7	8.2	62.9	30.4	6.2	8.9
2	5 - 06-03-2021	60.8	22.8	4.6	7.7	65.8	27.8	6.7	7.4	61.1	24.6	5.2	9.7
3	9 - 10-03-2021	50.3	27.5	4.6	7.8	63.5	26.8	5.2	8.5	59.6	30.1	5.2	9.3
4	12 - 13-03-2021	50.8	25.0	5.1	6.6	59.2	25.9	7.7	10.5	59.8	24.7	6.2	7.8
5	16 - 17-03-2021	62.3	25.8	5.7	7.4	58.5	27.7	5.2	7.4	64.1	34.6	6.7	8.1
6	19 - 20-03-2021	60.3	31.8	4.6	6.2	59.8	34.6	6.2	7.4	63.9	35.5	6.2	7.4
7	23 - 24-03-2021	49.6	20.4	4.6	7.4	64.6	33.1	5.7	10.5	61.7	26.0	4.6	8.5
8	27 - 28-03-2021	64.6	28.0	5.1	5.8	57.6	24.7	6.2	9.7	58.6	22.1	5.7	8.2
9	1 - 02-04-2021	62.0	24.3	5.5	6.4	61.5	24.2	5.5	10.5	58.6	31.3	5.5	9.3
10	5 - 06-04-2021	64.8	29.6	5.4	6.0	66.3	37.4	5.4	7.2	60.1	27.2	6.1	9.7
11	9 - 10-04-2021	53.1	20.4	4.1	6.8	63.4	35.3	6.1	8.5	61.3	23.0	5.5	8.9
12	12 - 13-04-2021	59.1	25.0	5.5	5.6	62.2	28.4	5.5	8.9	65.1	30.6	6.1	7.7
13	16 - 17-04-2021	56.9	27.6	4.8	5.6	59.6	25.4	5.4	8.9	60.3	24.6	6.8	9.2
14	19 - 20-04-2021	49.5	19.6	5.5	7.3	60.9	22.5	6.1	10.5	63.2	28.0	4.1	9.7
15	23 - 24-04-2021	56.2	23.8	4.8	7.7	66.5	30.1	6.1	7.2	62.6	31.2	6.8	8.1
16	27 - 28-04-2021	63.4	32.6	4.8	7.2	60.9	34.6	5.5	9.7	66.3	34.6	4.1	8.4
17	1 - 02-05-2021	53.8	23.3	5.5	5.2	58.5	32.1	6.8	8.9	56.4	25.8	4.8	6.4
18	4 - 05-05-2021	50.4	25.4	4.1	4.4	60.8	30.9	4.8	6.4	54.5	28.3	4.8	6.8
19	8 - 09-05-2021	50.7	20.1	4.8	5.2	54.9	22.9	6.1	8.9	52.5	26.4	6.1	8.1
20	11 - 12-05-2021	46.0	20.8	5.5	5.6	52.1	24.1	4.8	9.7	57.3	30.8	4.1	7.6
21	14 - 15-05-2021	54.8	27.9	5.3	6.5	60.2	25.8	5.3	8.5	58.4	31.5	3.7	8.9
22	19 - 20-05-2021	38.2	14.6	4.3	4.9	40.8	21.8	5.4	4.9	43.0	22.1	4.3	6.9
23	23 - 24-05-2021	43.2	22.1	3.7	4.9	46.1	23.0	4.8	7.3	40.9	23.8	3.7	6.9
24	27 - 28-05-2021	42.9	19.6	3.2	5.7	47.5	21.7	5.3	7.7	41.3	23.7	4.8	5.3
Minimum		**38.2**	**14.6**	**3.2**	**4.4**	**40.8**	**21.7**	**4.8**	**4.9**	**40.9**	**22.1**	**3.7**	**5.3**
Maximum		**64.8**	**32.6**	**5.7**	**7.8**	**68.8**	**37.4**	**7.7**	**10.5**	**66.3**	**35.5**	**6.8**	**9.7**
Average		**54.0**	**24.3**	**4.8**	**6.3**	**59.2**	**27.8**	**5.8**	**8.4**	**58.1**	**28.0**	**5.3**	**8.2**
98 percentile		**64.7**	**32.2**	**5.6**	**7.8**	**67.7**	**36.4**	**7.7**	**10.5**	**65.7**	**35.1**	**6.8**	**9.7**

NOTES:

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Test Report No. : MMA/06-2021/68
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ANNEXURE : V Contd..

Sl. No.	Location:→	Gujarda Village				Samadhiyala No. 1				Doliya Village			
	Date of sampling↓	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)
1	1 - 02-03-2021	63.1	33.5	6.7	7.8	55.3	21.7	6.7	6.6	50.7	22.5	6.7	9.7
2	5 - 06-03-2021	62.1	25.0	4.6	7.8	56.2	31.3	5.7	8.5	57.9	32.5	7.7	10.5
3	9 - 10-03-2021	67.1	35.9	6.2	7.7	60.6	32.8	4.6	7.4	57.0	29.7	6.7	8.5
4	12 - 13-03-2021	62.2	27.1	6.7	7.8	53.7	25.9	4.6	8.6	56.7	31.3	7.2	9.7
5	16 - 17-03-2021	58.5	24.1	5.7	7.4	59.4	26.7	4.6	7.8	53.3	23.4	7.2	7.4
6	19 - 20-03-2021	56.7	32.2	5.7	5.8	63.4	35.0	5.7	7.4	51.5	28.0	6.7	8.9
7	23 - 24-03-2021	62.0	28.4	6.2	6.6	49.4	21.3	5.1	7.0	53.1	22.6	7.7	9.3
8	27 - 28-03-2021	56.4	23.7	6.2	7.0	55.1	28.0	4.6	8.1	56.9	26.3	7.2	9.7
9	1 - 02-04-2021	63.4	27.2	5.5	6.1	63.2	36.0	5.5	8.5	56.7	30.1	7.5	9.3
10	5 - 06-04-2021	62.8	36.6	6.8	6.8	59.0	27.0	4.8	8.0	58.0	25.4	6.8	10.1
11	9 - 10-04-2021	64.6	24.6	4.8	7.7	51.3	28.3	4.8	7.7	55.3	31.0	6.8	9.7
12	12 - 13-04-2021	68.0	30.4	4.8	5.6	61.9	30.9	4.1	8.5	50.1	18.4	6.1	9.7
13	16 - 17-04-2021	66.0	33.0	5.5	6.5	55.0	21.3	5.5	8.1	57.6	32.0	6.1	9.3
14	19 - 20-04-2021	66.0	30.9	4.1	7.7	59.7	34.8	6.1	8.9	59.4	31.3	7.5	8.0
15	23 - 24-04-2021	66.8	28.6	4.8	6.0	55.1	29.3	4.8	7.7	51.2	30.2	7.5	10.1
16	27 - 28-04-2021	55.5	31.7	6.1	6.4	60.4	32.9	6.8	6.9	54.1	25.7	7.5	10.9
17	1 - 02-05-2021	61.1	26.2	4.8	4.8	46.8	21.7	3.4	6.0	47.5	26.3	6.1	9.7
18	4 - 05-05-2021	58.4	32.9	5.4	4.8	55.6	24.3	6.1	6.5	47.0	22.2	6.1	7.7
19	8 - 09-05-2021	60.8	34.7	5.5	5.2	42.9	19.2	4.1	7.6	52.3	21.2	6.1	9.3
20	11 - 12-05-2021	60.9	28.3	6.1	5.6	54.8	29.6	4.1	6.8	53.6	27.8	6.8	7.6
21	14 - 15-05-2021	49.0	18.4	6.4	6.1	54.0	22.9	5.9	6.9	48.6	26.2	6.4	7.3
22	19 - 20-05-2021	47.0	24.6	3.2	3.6	38.8	20.9	2.7	4.9	41.2	21.2	5.3	6.1
23	23 - 24-05-2021	37.2	18.8	3.7	3.6	43.9	17.5	4.8	5.7	38.7	20.5	5.4	6.5
24	27 - 28-05-2021	38.5	21.3	3.7	5.7	34.0	17.9	4.8	6.1	35.0	14.1	4.8	7.3
Minimum		**37.2**	**18.4**	**3.2**	**3.6**	**34.0**	**17.5**	**2.7**	**4.9**	**35.0**	**14.1**	**4.8**	**6.1**
Maximum		**68.0**	**36.6**	**6.8**	**7.8**	**63.4**	**36.0**	**6.8**	**8.9**	**59.4**	**32.5**	**7.7**	**10.9**
Average		**58.9**	**28.3**	**5.4**	**6.3**	**53.7**	**26.6**	**5.0**	**7.3**	**51.8**	**25.8**	**6.7**	**8.8**
98 percentile		**67.6**	**36.3**	**6.8**	**7.8**	**63.3**	**35.5**	**6.8**	**8.7**	**58.8**	**32.3**	**7.7**	**10.7**

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Test Report No. : MMA/06-2021/68
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ANNEXURE : V Contd..

Sl. No.	Location:→	Padhiarka Village				Rabhda Village				Amrutvel Village			
	Date of sampling↓	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)
1	02 - 03-03-2021	55.8	23.8	6.2	9.3	51.3	27.5	4.6	6.2	61.8	29.6	6.7	7.4
2	06 - 07-03-2021	57.0	24.6	5.2	7.8	55.4	23.0	4.6	8.2	59.1	29.3	7.7	8.9
3	10 - 11-03-2021	47.4	20.1	6.7	7.4	49.2	23.4	6.7	7.8	60.4	32.9	5.7	8.9
4	13 - 14-03-2021	59.5	28.7	6.2	10.1	52.0	25.4	5.1	7.0	60.6	23.9	5.1	9.3
5	17 - 18-03-2021	61.0	34.5	5.7	8.1	56.1	24.1	4.6	8.1	54.6	24.9	6.2	7.7
6	20 - 21-03-2021	54.1	28.0	5.1	7.0	46.3	23.3	7.2	8.5	61.3	25.9	6.7	9.7
7	24 - 25-03-2021	60.0	27.2	4.6	10.5	46.6	22.2	6.2	6.2	53.8	28.4	6.7	7.4
8	28 - 29-03-2021	50.8	23.9	5.7	8.9	53.4	24.7	6.7	7.4	61.9	33.4	5.1	8.5
9	02 - 03-04-2021	51.1	21.6	4.8	10.9	49.7	19.5	4.8	6.4	59.5	22.5	7.5	9.7
10	06 - 07-04-2021	49.8	19.1	5.5	9.3	57.5	22.5	5.5	6.5	61.3	28.0	8.2	8.0
11	10 - 11-04-2021	51.8	21.7	6.8	10.9	54.2	30.0	5.5	6.5	59.1	26.3	6.1	8.5
12	13 - 14-04-2021	55.3	30.5	4.8	8.5	46.2	17.1	6.8	8.1	55.1	23.7	5.4	7.2
13	17 - 18-04-2021	50.6	20.0	6.8	7.7	57.3	21.3	6.8	8.5	59.5	33.7	7.5	8.5
14	20 - 21-04-2021	48.1	24.6	5.5	10.5	45.3	22.9	6.8	7.7	59.2	25.8	6.8	8.0
15	24 - 25-04-2021	47.4	24.1	4.8	8.5	45.8	22.5	5.4	6.8	57.1	31.6	6.1	7.7
16	28 - 29-04-2021	58.7	23.4	4.8	9.3	48.6	23.4	6.1	8.5	56.0	30.5	4.8	7.6
17	02 - 03-05-2021	52.2	22.0	5.5	7.2	50.1	27.1	5.5	6.0	53.2	25.8	6.1	8.5
18	05 - 06-05-2021	45.7	20.0	5.5	7.3	49.8	25.9	4.1	6.8	51.6	28.5	6.1	7.3
19	09 - 10-05-2021	46.8	20.4	4.8	8.5	51.4	23.3	5.5	6.5	52.8	28.8	5.5	8.5
20	12 - 13-05-2021	46.6	25.4	4.8	8.1	51.6	24.6	4.8	5.6	53.6	20.9	6.1	8.5
21	15 - 16-05-2021	46.3	17.5	5.3	8.5	41.9	22.6	5.4	7.3	54.9	24.2	5.3	8.9
22	20 - 21-05-2021	35.8	16.3	3.2	5.3	34.2	17.1	4.8	6.1	38.3	19.6	5.3	6.9
23	24 - 25-05-2021	35.5	16.3	3.7	6.5	34.4	19.2	3.2	4.9	42.6	20.0	3.7	5.7
24	28 - 29-05-2021	33.1	16.7	4.3	5.7	35.0	15.8	3.7	4.9	41.2	20.4	4.3	6.1
Minimum		**33.1**	**16.3**	**3.2**	**5.3**	**34.2**	**15.8**	**3.2**	**4.9**	**38.3**	**19.6**	**3.7**	**5.7**
Maximum		**61.0**	**34.5**	**6.8**	**10.9**	**57.5**	**30.0**	**7.2**	**8.5**	**61.9**	**33.7**	**8.2**	**9.7**
Average		**50.0**	**22.9**	**5.3**	**8.4**	**48.5**	**22.9**	**5.4**	**6.9**	**55.4**	**26.6**	**6.0**	**8.1**
98 percentile		**60.5**	**32.7**	**6.8**	**10.9**	**57.4**	**28.9**	**7.0**	**8.5**	**61.9**	**33.6**	**8.0**	**9.7**

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ANNEXURE : V Contd..

Sl. No.	Location:→	Devaliya Village				Patva Village				Gadhada Village			
	Date of sampling↓	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)
1	02 - 03-03-2021	61.5	34.3	5.2	7.0	52.8	24.5	5.7	7.8	41.9	23.4	5.1	5.8
2	06 - 07-03-2021	54.0	26.2	6.7	7.4	52.2	30.4	6.7	8.1	44.4	25.9	5.7	5.8
3	10 - 11-03-2021	60.0	27.1	7.2	7.8	52.1	30.1	5.7	7.8	42.9	23.3	4.6	6.6
4	13 - 14-03-2021	58.2	22.0	6.2	7.0	53.3	26.6	4.6	7.8	45.1	21.2	4.6	5.8
5	17 - 18-03-2021	49.8	23.0	5.7	5.8	48.3	26.6	5.7	7.8	38.5	17.9	4.6	5.4
6	20 - 21-03-2021	59.1	25.5	6.2	7.4	51.3	19.6	5.1	7.0	45.5	24.6	5.7	7.4
7	24 - 25-03-2021	51.0	26.6	4.6	7.4	53.1	21.2	5.7	7.0	48.6	24.2	4.1	7.4
8	28 - 29-03-2021	54.5	30.1	7.2	7.4	50.7	26.2	5.7	6.6	42.9	20.4	5.7	7.4
9	02 - 03-04-2021	57.7	29.5	4.8	6.0	58.1	24.9	5.4	7.2	40.7	17.5	6.1	6.8
10	06 - 07-04-2021	52.6	30.5	6.8	7.6	51.6	30.6	5.5	6.9	40.3	16.7	4.8	6.4
11	10 - 11-04-2021	53.2	25.9	6.8	8.1	57.5	23.8	4.8	7.2	44.4	22.5	4.8	5.6
12	13 - 14-04-2021	49.9	20.0	6.8	7.7	59.3	22.1	6.1	7.2	48.2	23.4	5.5	7.3
13	17 - 18-04-2021	64.7	27.9	4.8	5.6	51.5	28.3	6.8	6.9	46.9	25.4	5.5	6.1
14	20 - 21-04-2021	60.2	23.0	4.8	7.7	47.9	20.1	4.8	7.7	45.2	18.7	6.8	7.3
15	24 - 25-04-2021	57.2	23.7	4.8	7.3	55.4	31.7	4.8	7.7	48.1	21.7	6.8	7.2
16	28 - 29-04-2021	50.2	21.6	5.5	7.2	59.8	32.1	5.5	7.7	41.8	18.8	6.1	7.2
17	02 - 03-05-2021	51.4	25.9	5.5	7.3	52.3	27.9	5.4	6.8	34.2	20.0	4.1	6.4
18	05 - 06-05-2021	54.9	23.8	4.8	6.0	41.9	18.0	5.5	6.5	41.0	23.8	5.5	5.2
19	09 - 10-05-2021	46.3	26.3	4.1	4.8	42.1	21.4	5.5	6.0	43.5	17.9	5.5	6.9
20	12 - 13-05-2021	49.2	23.7	4.1	6.8	45.4	21.2	6.1	6.0	35.5	18.4	4.1	5.2
21	15 - 16-05-2021	52.2	28.2	4.8	6.5	49.1	26.3	5.9	6.1	34.7	17.9	5.4	6.9
22	20 - 21-05-2021	38.4	20.9	5.3	4.4	37.7	19.1	4.8	4.9	32.8	16.6	4.8	3.6
23	24 - 25-05-2021	35.3	18.0	5.4	5.7	36.8	16.3	3.7	5.3	27.6	11.2	3.2	3.6
24	28 - 29-05-2021	44.3	23.2	4.8	4.0	34.6	19.3	4.8	5.3	32.9	13.7	3.7	4.0
Minimum		**35.3**	**18.0**	**4.1**	**4.0**	**34.6**	**16.3**	**3.7**	**4.9**	**27.6**	**11.2**	**3.2**	**3.6**
Maximum		**64.7**	**34.3**	**7.2**	**8.1**	**59.8**	**32.1**	**6.8**	**8.1**	**48.6**	**25.9**	**6.8**	**7.4**
Average		**52.7**	**25.3**	**5.5**	**6.7**	**49.8**	**24.5**	**5.4**	**6.9**	**41.2**	**20.2**	**5.1**	**6.1**
98 percentile		**63.2**	**32.6**	**7.2**	**7.9**	**59.6**	**31.9**	**6.8**	**8.0**	**48.4**	**25.7**	**6.8**	**7.4**

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Test Report No. : MMA/06-2021/68
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ANNEXURE : V Contd..

Sl. No.	Location:→	Madhiya Village				Nana Pipalva Village				Mota Jadra Village				Khared Village			
	Date of sampling↓	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)
1	3 - 04-03-2021	64.9	24.3	8.8	9.3	51.4	23.0	6.7	7.4	53.7	22.9	5.7	8.1	57.0	24.1	6.2	7.0
2	7 - 08-03-2021	61.9	23.0	8.2	14.0	57.3	23.8	5.7	8.1	52.4	26.4	5.2	7.0	53.9	25.4	5.7	7.0
3	11 - 12-03-2021	61.4	27.1	9.8	11.2	59.2	22.4	7.2	7.4	57.7	27.6	5.7	7.8	48.3	24.6	5.2	7.4
4	14 - 15-03-2021	59.4	23.4	7.2	13.6	57.3	28.4	5.1	6.6	59.8	25.0	4.6	8.5	55.7	28.7	5.1	6.2
5	18 - 19-03-2021	70.8	31.7	9.3	10.9	51.6	26.7	6.2	6.2	53.4	30.5	6.7	8.1	52.9	21.2	7.2	8.1
6	21 - 22-03-2021	63.2	33.7	8.2	14.3	58.3	27.5	5.7	7.4	58.0	25.6	7.2	7.8	57.8	31.2	6.7	7.8
7	25 - 26-03-2021	70.5	32.6	7.2	9.3	58.8	24.6	5.7	8.2	59.0	28.0	7.2	8.2	56.0	20.5	5.7	5.8
8	29 - 30-03-2021	71.1	34.7	9.3	10.9	49.6	22.6	5.1	8.2	56.1	21.3	5.7	9.3	51.1	23.7	5.1	7.4
9	3 - 04-04-2021	71.0	40.0	8.9	11.7	56.7	25.9	4.8	6.4	56.3	23.7	4.8	8.9	52.6	20.8	4.8	8.1
10	7 - 08-04-2021	67.9	29.5	8.9	11.3	48.3	23.4	6.1	6.4	57.8	30.9	6.1	7.2	60.3	26.6	6.8	7.7
11	11 - 12-04-2021	63.1	23.7	8.2	14.5	57.6	24.1	6.8	7.3	52.4	20.0	4.8	8.1	56.3	26.3	6.1	6.0
12	14 - 15-04-2021	59.3	32.5	9.5	13.3	52.5	24.3	5.5	6.9	59.0	26.4	6.1	7.7	50.1	22.5	4.8	7.7
13	18 - 19-04-2021	60.7	30.5	8.9	11.3	50.8	20.4	6.1	8.1	57.8	27.1	6.8	8.8	54.3	29.7	6.1	7.7
14	21 - 22-04-2021	67.9	36.3	8.9	12.9	50.5	19.2	5.5	6.1	55.6	23.3	6.8	7.2	61.6	26.7	4.8	8.1
15	25 - 26-04-2021	58.4	29.6	10.2	14.1	50.0	29.1	6.1	7.7	59.8	22.1	4.8	9.3	47.2	23.8	5.5	5.6
16	29 - 30-04-2021	58.8	25.1	9.5	10.9	56.5	28.8	6.1	8.5	58.6	32.1	7.5	7.7	62.5	27.5	6.8	8.1
17	3 - 04-05-2021	62.0	29.7	6.8	8.1	47.7	25.0	4.8	6.0	51.1	26.8	4.8	6.4	44.3	19.1	6.8	7.2
18	6 - 07-05-2021	52.4	23.4	6.8	10.1	45.0	26.3	4.8	6.0	49.6	18.7	6.1	7.3	56.6	22.5	6.8	6.4
19	10 - 11-05-2021	55.2	28.9	6.8	9.3	46.5	20.8	4.1	5.6	50.6	24.3	5.5	7.7	54.8	30.0	6.8	6.4
20	13 - 14-05-2021	57.5	27.5	7.5	9.7	46.6	24.6	4.8	7.3	47.2	23.4	6.1	6.8	50.9	21.3	4.8	4.8
21	16 - 17-05-2021	64.6	35.1	6.4	10.5	50.6	27.9	5.9	6.1	51.6	28.3	6.4	7.3	52.4	23.3	6.4	7.3
22	21 - 22-05-2021	47.7	24.2	5.4	7.7	38.1	16.7	4.8	5.3	40.0	20.4	5.3	4.9	42.4	16.3	4.3	4.0
23	25 - 26-05-2021	45.1	17.5	5.3	6.5	37.3	15.9	4.8	4.5	38.9	18.3	4.3	5.3	39.9	17.5	5.3	3.6
24	29 - 30-05-2021	42.6	19.2	5.4	6.9	38.6	20.9	3.7	5.7	38.3	16.6	4.8	5.7	39.8	21.3	3.7	4.0
Minimum		**42.6**	**17.5**	**5.3**	**6.5**	**37.3**	**15.9**	**3.7**	**4.5**	**38.3**	**16.6**	**4.3**	**4.9**	**39.8**	**16.3**	**3.7**	**3.6**
Maximum		**71.1**	**40.0**	**10.2**	**14.5**	**59.2**	**29.1**	**7.2**	**8.5**	**59.8**	**32.1**	**7.5**	**9.3**	**62.5**	**31.2**	**7.2**	**8.1**
Average		**60.7**	**28.5**	**8.0**	**10.9**	**50.7**	**23.8**	**5.5**	**6.8**	**53.1**	**24.6**	**5.8**	**7.5**	**52.4**	**23.9**	**5.7**	**6.6**
98 percentile		**71.1**	**38.3**	**10.0**	**14.4**	**59.0**	**29.0**	**7.0**	**8.4**	**59.8**	**31.5**	**7.4**	**9.3**	**62.1**	**30.6**	**7.0**	**8.1**

Parameter	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)
Protocol of Measurement	**IS:5182 (Part 23)**	**Lab SOP/09**	**IS:5182 (Part 2)**	**IS:5182 (Part 6)**
National Ambient Air Quality Standards (2009) for Concentration in Ambient Air for Industrial, Residential, Rural & Other areas.				
Industrial, Residential, Rural & Other areas	**100 (24 hours)**	**60 (24 hours)**	**80 (24 hours)**	**80 (24 hours)**

Prepared by

Rashmi Gupta
Administrative Manager

Checked by

Dr. Marisha Sharma
Authorised Signatory

- end of report -

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ANNEXURE : V Contd..

Customer's Name & Address Nirma Ltd. Nirma House, Ashram Road Ahemadabad – 380009 Contact Person : Ms. Tejal Patel		
Sample Particulars		
Type of Sample	:	Ambient Air
Work Order No.	:	NNL/CP-43/LOI-095/2020-21/PTV/
Sampling Location	:	Doliya & Padhiyarka; Dudhala Dudheri & Gujarda; & Vangar & Madhiya Limestone Mines, District Bhavnagar, Gujarat
Sampling Procedure	:	IS 5182 (Part 2) 2001 for SO_2, CPCB guidelines NAAQMS 96/2012-13 for PM_{10}, NO_2,& Lab SOP/09 for $PM_{2.5}$
Sample Duration	:	24 hours
Sampling Team	:	MMRDL (Ravikant)
Sample Reg. No	:	MMA/2021S1L1/20, MMA/2021S1L2/20 & MMA/2021S1L3/20
Date of Sampling	:	11/05/2021 to 12/05/2021
Date of Receipt	:	20/05/2021
Date of Report	:	18/06/2021
Test Report No.	:	MMA/06-2021/69
ULR No.	:	TC633721000000141F
Page	:	1 of 1

TEST REPORT

Parameter	Protocol	Near Cement Plant at Padhiarka	Vangar Village	Dhdhala No. 1
Arsenic (as As), ng/m^3	IS 3025 (Part-2)	BDL	BDL	BDL
Nickel (as Ni), ng/m^3	IS 3025 (Part-2)	BDL	BDL	BDL
Lead (as Pb), µg/m^3	IS 3025 (Part-2)	BDL	BDL	BDL

Note: BDL of Pb<0.07µg/m^3, As<0.4, Ni<0.6ng/m^3

Parameter	Pb (µg/m^3)	As (ng/m^3)	Ni (ng/m^3)
Protocol of Measurement	**Method of Measurement IS 3025 (Part 2) ICP Method**		
National Ambient Air Quality Standards (2009) for Concentration in Ambient Air for Industrial, Residential, Rural & Other areas.			
Industrial, Residential, Rural & Other areas	**1.0 (24 hours)**	**06 (Annual)**	**20 (Annual)**

Prepared by

Rashmi Gupta
Administrative Manager

Checked by

Dr. Marisha Sharma
Authorised Signatory

- end of report -

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ANNEXURE : 5042

NATIONAL AMBIENT AIR QUALITY STANDARDS

CENTRAL POLLUTION CONTROL BOARD

NOTIFICATION

Delhi, the 18th November, 2009

No.B-29016/20/90/PCI-I.— In exercise of the powers conferred by Sub-section (2) (h) of section 16 of the Air (Prevention and Control of Pollution) Act, 1981 (Act No.14 of 1981), and in supersession of the Notification No(s). S.O. 384(E), dated 11th April, 1994 and S.O. 935(E), dated 14th October, 1998, the Central Pollution Control Board hereby notify the National Ambient Air Quality Standards with immediate effect, namely:-

NATIONAL AMBIENT AIR QUALITY STANDARDS

S. No.	Pollutant	Time Weighted Average	Concentration in Ambient Air		
			Industrial, Residential, Rural and Other Area	Ecologically Sensitive Area (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO_2), $\mu g/m^3$	Annual*	50	20	- Improved West and Gaeke
		24 hours**	80	80	-Ultraviolet fluorescence
2	Nitrogen Dioxide (NO_2), $\mu g/m^3$	Annual*	40	30	- Modified Jacob & Hochheiser (Na-Arsenite)
		24 hours**	80	80	- Chemiluminescence
3	Particulate Matter (size less than 10µm) or PM_{10} $\mu g/m^3$	Annual*	60	60	- Gravimetric - TOEM
		24 hours**	100	100	- Beta attenuation
4	Particulate Matter (size less than 2.5µm) or $PM_{2.5}$ $\mu g/m^3$	Annual*	40	40	- Gravimetric - TOEM
		24 hours**	60	60	- Beta attenuation
5	Ozone (O_3) $\mu g/m^3$	8 hours**	100	100	- UV photometric - Chemilminescence
		1 hour**	180	180	- Chemical Method
6	Lead (Pb) $\mu g/m^3$	Annual*	0.50	0.50	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper - ED-XRF using Teflon filter
		24 hours**	1.0	1.0	
7	Carbon Monoxide (CO) mg/m^3	8 hours**	02	02	- Non Dispersive Infra Red (NDIR) spectroscopy
		1 hour**	04	04	

(1)	(2)	(3)	(4)	(5)	(6)
8	Ammonia (NH_3) $\mu g/m^3$	Annual* 24 hours**	100 400	100 400	-Chemiluminescence -Indophenol blue method
9	Benzene (C_6H_6) $\mu g/m^3$	Annual*	05	05	- Gas chromatography based continuous analyzer - Adsorption and Desorption followed by GC analysis
10	Benzo(a)Pyrene (BaP) - particulate phase only, ng/m^3	Annual*	01	01	- Solvent extraction followed by HPLC/GC analysis
11	Arsenic (As), ng/m^3	Annual*	06	06	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni), ng/m^3	Annual*	20	20	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper

* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note. — Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.

SANT PRASAD GAUTAM, Chairman
[Advt-III/4/184/09/Exty.]

Note: The notifications on National Ambient Air Quality Standards were published by the Central Pollution Control Board in the Gazette of India, Extraordinary vide notification No(s). S.O. 384(E), dated 11th April, 1994 and S.O. 935(E), dated 14th October, 1998.

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ANNEXURE : VII

TEST REPORT

Customer's Name & Address

Nirma Ltd.
Nirma House
Ashram Road, Ahemdabad - 380009
Contact Person: Ms. Tejal Patel

Sample Particulars

Type of Sample : Ground water
Work Order No. : NNL/CP-43/LOI-095/2020-21/PTV/
Sampling location : In and around Doliya & Padhiyarka; Dudhala Dudheri & Gujarda; & Vangar & Madhiya Limestone Mines. District - Bhavnagar, Gujarat.
Sampling procedure : IS 3025 (part 1)
Sample Vol./Qty. : 1 lit.
Sampling Team : MMRDL (Ravikant)
Sample Reg. No. : MMW/06-2021/1.1-1.12
Date of Sampling : 30-05-2021
Date of Receipt : 02-06-2021
Date of Testing : 02/06/2021 to 11/06/2021
Date of Report : 18-06-2021
Test Report No. : MMW/06-2021/62
ULR Number : TC633721000000136F

Parameters	Drinking water limits (IS: 10500:2012 & Amendment 1)		Protocol	TEST RESULTS			
	Acceptable	Permissible	.	Near Cement Plant at Padhiyarka Village (Well)	Padhiyarka Village (Bore Well)	Vangar Village (Bore Well)	Madhiya Village (Bore Well)
Turbidity, NTU	1	5	IS 3025 (Part 10)	0.701	0.613	1.139	0.262
pH value	6.5 - 8.5	No relaxation	IS 3025 (Part 11)	7.2	7.0	7.8	7.7
Specific conductance, µS/cm	-	-	IS 3025 (Part 14)	9202	8403	4301	5402
Total Dissolved Solids, mg/l	500	2000	IS 3025 (Part 16)	5276	5382	2688	3512
Total Suspended Solids, mg/l	-	-	IS 3025 (Part 17)	64	116	40	40
Total Hardness as CaCO3, mg/l	200	600	IS 3025 (Part 21)	1760	2000	560	620
Alkalinity, mg/l	200	600	IS 3025 (Part 23)	425	400	505	1025
Sulphate as SO4 mg/l	200	400	IS 3025 (Part 24)	270	134	155	115
Chloride as Cl, mg/l	250	1000	IS 3025 (Part 32)	2740	2720	1042	1193
Calcium as Ca, mg/l	75	200	IS 3025 (Part 40)	377	409	112	109
Sodium as Na, mg/l	-	-	IS 3025 (Part 45)	1262	1068	696	953
Potassium as K, mg/l	-	-	IS 3025 (Part 45)	16	15	9	10
Magnesium as Mg, mg/l	30	100	IS 3025 (Part 46)	197	235	67	84
Iron as Fe, mg/l	1.0	No relaxation	IS 3025 (Part 53)	BDL	0.30	BDL	BDL
Fluoride as F, mg/l	1.0	1.5	APHA 4500-F-D	1.23	0.33	1.03	1.13
Silver as Ag, mg/l	0.1	No relaxation	IS 3025 (Part 2)	0.063	0.065	0.039	0.031
Barium as Ba, mg/l	0.7	No relaxation	IS 3025 (Part 2)	0.107	0.553	0.034	0.021

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ANNEXURE : VII Contd..

Parameters	Drinking water limits (IS: 10500:2012 & Amendment 1)		Protocol	TEST RESULTS			
	Acceptable	Permissible	.	Near Cement Plant at Padhiyarka Village (Well)	Padhiyarka Village (Bore Well)	Vangar Village (Bore Well)	Madhiya Village (Bore Well)
Cadmium as Cd, mg/l	0.003	No relaxation	IS 3025 (Part 2)	BDL	BDL	BDL	BDL
Chromium as Cr,mg/l	0.05	No relaxation	IS 3025 (Part 2)	BDL	BDL	BDL	BDL
Copper as Cu, mg/l	0.05	1.5	IS 3025 (Part 2)	BDL	0.010	BDL	BDL
Manganese as Mn, mg/l	0.1	0.3	IS 3025 (Part 2)	BDL	0.012	0.031	BDL
Nickel as Ni, mg/l	0.02	No relaxation	IS 3025 (Part 2)	BDL	BDL	BDL	BDL
Selenium as Se, mg/l	0.01	No relaxation	IS 3025 (Part 2)	BDL	BDL	BDL	BDL
Arsenic as As, mg/l	0.01	No relaxation	IS 3025 (Part 2)	BDL	BDL	BDL	BDL
Zinc as Zn, mg/l	5	15	IS 3025 (Part 2)	BDL	BDL	0.011	BDL
Acidity mg/l CaCO3	-	-	IS 3025 (Part 22)	20 at pH 8.3	30 at pH 8.3	7.5 at pH 8.3	7.5 at pH 8.3
Nitrate as NO3, mg/l	45	No relaxation	APHA (4500-NO3-B)	1.36	8.91	29.01	29.89
Hexavalent Chromium, mg/l	-	-	APHA 3500-Cr B	BDL	BDL	BDL	BDL

NOTE : BDL(Below Detection Limit) of Turbidity (NTU)<0.001, Fe<0.1, Ag<0.01, Ba<0.01, Cd<0.002, Cr<0.01, Cu<0.01, Mn<0.01, Ni<0.01, Se<0.01, As<0.01, Zn<0.01, Cr6+<0.1 mg/l

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ANNEXURE : VII Contd..

TEST REPORT

Customer's Name & Address							
Nirma Ltd. Nirma House Ashram Road, Ahemdabad - 380009 Contact Person: Ms. Tejal Patel							
Sample Particulars							
Type of Sample : Ground water							
Work Order No. : NNL/CP-43/LOI-095/2020-21/PTV/							
Sampling location : In and around Doliya & Padhiyarka; Dudhala Dudheri & Gujarda; & Vangar & Madhiya Limestone Mines. District - Bhavnagar, Gujarat.							
Sampling procedure : IS 3025 (part 1)							
Sample Vol./Qty. : 1 lit.							
Sampling Team : MMRDL (Ravikant)							
Sample Reg. No. : MMW/06-2021/1.1-1.12							
Date of Sampling : 30-05-2021							
Date of Receipt : 02-06-2021							
Date of Testing : 02/06/2021 to 11/06/2021							
Date of Report : 18-06-2021							
Test Report No. : MMW/06-2021/62							
ULR Number : TC633721000000136F							
Parameters	**Drinking water limits (IS: 10500:2012 & Amendment 1)**		**Protocol**	**TEST RESULTS**			
	Acceptable	**Permissible**	.	**Dudhala Village (Bore Well)**	**Dhudheri Village (Well)**	**Dudhala near NH-8E (Bore Well)**	**Gujarda Village (Well)**
Turbidity, NTU	1	5	IS 3025 (Part 10)	0.175	0.35	0.788	3.56
pH value	6.5 - 8.5	No relaxation	IS 3025 (Part 11)	7.2	7.0	7.2	7.1
Specific conductance, µS/cm	-	-	IS 3025 (Part 14)	1032	13265	14860	3970
Total Dissolved Solids, mg/l	500	2000	IS 3025 (Part 16)	602	8340	9360	2442
Total Suspended Solids, mg/l	-	-	IS 3025 (Part 17)	42	270	156	718
Total Hardness as CaCO3, mg/l	200	600	IS 3025 (Part 21)	320	3580	3880	920
Alkalinity, mg/l	200	600	IS 3025 (Part 23)	115	300	100	700
Sulphate as SO4 mg/l	200	400	IS 3025 (Part 24)	21	214	190	31
Chloride as Cl, mg/l	250	1000	IS 3025 (Part 32)	288	4427	5062	973
Calcium as Ca, mg/l	75	200	IS 3025 (Part 40)	64	745	729	224
Sodium as Na, mg/l	-	-	IS 3025 (Part 45)	77	1464	1655	446
Potassium as K, mg/l	-	-	IS 3025 (Part 45)	11	13	13	38
Magnesium as Mg, mg/l	30	100	IS 3025 (Part 46)	38	413	494	86
Iron as Fe, mg/l	1.0	No relaxation	IS 3025 (Part 53)	BDL	0.10	BDL	0.22
Fluoride as F, mg/l	1.0	1.5	APHA 4500-F-D	0.24	0.98	0.80	1.21
Silver as Ag, mg/l	0.1	No relaxation	IS 3025 (Part 2)	0.019	0.069	0.071	0.061
Barium as Ba, mg/l	0.7	No relaxation	IS 3025 (Part 2)	0.017	0.240	0.146	0.267

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ANNEXURE : VII Contd..

Parameters	Drinking water limits (IS: 10500:2012 & Amendment 1)		Protocol	TEST RESULTS			
	Acceptable	Permissible	.	Dudhala Village (Bore Well)	Dhudheri Village (Well)	Dudhala near NH-8E (Bore Well)	Gujarda Village (Well)
Cadmium as Cd, mg/l	0.003	No relaxation	IS 3025 (Part 2)	BDL	BDL	BDL	BDL
Chromium as Cr,mg/l	0.05	No relaxation	IS 3025 (Part 2)	BDL	BDL	BDL	BDL
Copper as Cu, mg/l	0.05	1.5	IS 3025 (Part 2)	BDL	0.014	0.015	BDL
Manganese as Mn, mg/l	0.1	0.3	IS 3025 (Part 2)	BDL	0.033	0.021	0.016
Nickel as Ni, mg/l	0.02	No relaxation	IS 3025 (Part 2)	BDL	BDL	BDL	BDL
Selenium as Se, mg/l	0.01	No relaxation	IS 3025 (Part 2)	BDL	BDL	BDL	BDL
Arsenic as As, mg/l	0.01	No relaxation	IS 3025 (Part 2)	BDL	BDL	BDL	BDL
Zinc as Zn, mg/l	5	15	IS 3025 (Part 2)	0.053	0.022	0.115	0.016
Acidity mg/l CaCO3	-	-	IS 3025 (Part 22)	12.5 at pH 8.3	45 at pH 8.3	27.5 at pH 8.3	50 at pH 8.3
Nitrate as NO3, mg/l	45	No relaxation	APHA (4500-NO3-B)	BDL	27.36	27.84	1.87
Hexavalent Chromium, mg/l	-	-	APHA 3500-Cr B	BDL	BDL	BDL	BDL

NOTE : BDL(Below Detection Limit) of Turbidity (NTU)<0.001, Fe<0.1, Ag<0.01, Ba<0.01, Cd<0.002, Cr<0.01, Cu<0.01, Mn<0.01, Ni<0.01, Se<0.01, As<0.01, Zn<0.01, Cr6+<0.1 mg/l

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ANNEXURE : VII Contd..

TEST REPORT

Customer's Name & Address							
Nirma Ltd. Nirma House Ashram Road, Ahemdabad - 380009 Contact Person: Ms. Tejal Patel							
Sample Particulars							
Type of Sample : Ground water							
Work Order No. : NNL/CP-43/LOI-095/2020-21/PTV/							
Sampling location : In and around Doliya & Padhiyarka; Dudhala Dudheri & Gujarda; & Vangar & Madhiya Limestone Mines. District - Bhavnagar, Gujarat.							
Sampling procedure : IS 3025 (part 1)							
Sample Vol./Qty. : 1 lit.							
Sampling Team : MMRDL (Ravikant)							
Sample Reg. No. : MMW/06-2021/1.1-1.12							
Date of Sampling : 30-05-2021							
Date of Receipt : 02-06-2021							
Date of Testing : 02/06/2021 to 11/06/2021							
Date of Report : 18-06-2021							
Test Report No. : MMW/06-2021/62							
ULR Number : TC633721000000136F							
Parameters	**Drinking water limits (IS: 10500:2012 & Amendment 1)**		**Protocol**	**TEST RESULTS**			
	Acceptable	**Permissible**	.	**Doliya Village (Bore Well)**	**Rabhda Village (Hand Pump)**	**Amrutvel Village (Hand Pump)**	**Near Devlia Village (Hand Pump)**
Turbidity, NTU	1	5	IS 3025 (Part 10)	0.087	0.438	0.262	BDL
pH value	6.5 - 8.5	No relaxation	IS 3025 (Part 11)	7.4	7.5	7.6	7.9
Specific conductance, µS/cm	-	-	IS 3025 (Part 14)	3510	3672	1383	4763
Total Dissolved Solids, mg/l	500	2000	IS 3025 (Part 16)	2220	2308	874	3006
Total Suspended Solids, mg/l	-	-	IS 3025 (Part 17)	42	18	8	20
Total Hardness as CaCO3, mg/l	200	600	IS 3025 (Part 21)	900	540	380	280
Alkalinity, mg/l	200	600	IS 3025 (Part 23)	175	925	525	1150
Sulphate as SO4 mg/l	200	400	IS 3025 (Part 24)	67	92	26	136
Chloride as Cl, mg/l	250	1000	IS 3025 (Part 32)	1104	647	129	794
Calcium as Ca, mg/l	75	200	IS 3025 (Part 40)	112	64	72	32
Sodium as Na, mg/l	-	-	IS 3025 (Part 45)	397	571	145	883
Potassium as K, mg/l	-	-	IS 3025 (Part 45)	27	11	5	32
Magnesium as Mg, mg/l	30	100	IS 3025 (Part 46)	149	91	48	48
Iron as Fe, mg/l	1.0	No relaxation	IS 3025 (Part 53)	BDL	BDL	BDL	BDL
Fluoride as F, mg/l	1.0	1.5	APHA 4500-F-D	0.36	0.72	1.25	1.20
Silver as Ag, mg/l	0.1	No relaxation	IS 3025 (Part 2)	0.050	0.029	0.050	BDL
Barium as Ba, mg/l	0.7	No relaxation	IS 3025 (Part 2)	0.099	BDL	0.316	0.013

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ANNEXURE : VII Contd..

Parameters	Drinking water limits (IS: 10500:2012 & Amendment 1)		Protocol	TEST RESULTS			
	Acceptable	Permissible	.	Doliya Village (Bore Well)	Rabhda Village (Hand Pump)	Amrutvel Village (Hand Pump)	Near Devlia Village (Hand Pump)
Cadmium as Cd, mg/l	0.003	No relaxation	IS 3025 (Part 2)	BDL	BDL	BDL	BDL
Chromium as Cr,mg/l	0.05	No relaxation	IS 3025 (Part 2)	BDL	BDL	BDL	BDL
Copper as Cu, mg/l	0.05	1.5	IS 3025 (Part 2)	BDL	BDL	BDL	BDL
Manganese as Mn, mg/l	0.1	0.3	IS 3025 (Part 2)	BDL	BDL	0.050	BDL
Nickel as Ni, mg/l	0.02	No relaxation	IS 3025 (Part 2)	BDL	BDL	BDL	BDL
Selenium as Se, mg/l	0.01	No relaxation	IS 3025 (Part 2)	BDL	BDL	BDL	BDL
Arsenic as As, mg/l	0.01	No relaxation	IS 3025 (Part 2)	BDL	BDL	BDL	BDL
Zinc as Zn, mg/l	5	15	IS 3025 (Part 2)	BDL	0.393	1.698	BDL
Acidity mg/l CaCO3	-	-	IS 3025 (Part 22)	12.5 at pH 8.3	12.5 at pH 8.3	12.5 at pH 8.3	25 at pH 8.3
Nitrate as NO3, mg/l	45	No relaxation	APHA (4500-NO3-B)	3.84	29.90	28.47	4.42
Hexavalent Chromium, mg/l	-	-	APHA 3500-Cr B	BDL	BDL	BDL	BDL

NOTE : BDL(Below Detection Limit) of Turbidity (NTU)<0.001, Fe<0.1, Ag<0.01, Ba<0.01, Cd<0.002, Cr<0.01, Cu<0.01, Mn<0.01, Ni<0.01, Se<0.01, As<0.01, Zn<0.01, Cr6+<0.1 mg/l

Prepared By
Rashmi Gupta
Administrative Manager

Checked By
Dr. Marisha Sharma
Authorised Signatory

:: End of Report ::

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ANNEXURE : VII Contd..

TEST REPORT

Customer's Name & Address

Nirma Ltd.
Nirma House
Ashram Road, Ahemdabad - 380009
Contact Person: Ms. Tejal Patel

Sample Particulars

Type of Sample : Surface water
Work Order No. : NNL/CP-43/LOI-095/2020-21/PTV/
Sampling location : In and around Doliya & Padhiyarka; Dudhala Dudheri & Gujarda; & Vangar & Madhiya Limestone Mines. District - Bhavnagar, Gujarat.
Sampling procedure : IS 3025 (Part 1)
Sample Vol./Qty. : 2 lit.
Sampling Team : MMRDL (Ravikant)
Sample Reg. No. : MMW/06-2021/2.21-2.3
Date of Sampling : 31-05-2021
Date of Receipt : 02-06-2021
Date of Testing : 02/06/2021 to 11/06/2021
Date of Report : 18-06-2021
Test Report No. : MMW/06-2021/63
ULR Number : TC633721000000137F

Parameters	Drinking water limits (IS: 10500:2012 & Amendment 1)		Protocol	TEST RESULTS		
	Acceptable	Permissible	.	Pond near Khared Village	Malan River Near Barpara Village	Arabian Sea, near Doliya Village
Turbidity, NTU	1	5	IS 3025 (Part 10)	6.332	5.346	7.099
pH value	6.5 - 8.5	No relaxation	IS 3025 (Part 11)	7.3	7.3	7.8
Specific conductance, µS/cm	-	-	IS 3025 (Part 14)	1752	2751	25481
Total Dissolved Solids, mg/l	500	2000	IS 3025 (Part 16)	1018	1704	16050
Total Suspended Solids, mg/l	-	-	IS 3025 (Part 17)	20	18	760
Total Hardness as CaCO3, mg/l	200	600	IS 3025 (Part 21)	360	480	8300
Alkalinity, mg/l	200	600	IS 3025 (Part 23)	275	375	500
Sulphate as SO4 mg/l	200	400	IS 3025 (Part 24)	54	84	2303
Phosphorous as P, mg/l	-	-	IS 3025 (Part 31)	0.010	1.417	0.092
Chloride as Cl, mg/l	250	1000	IS 3025 (Part 32)	437	695	7345
Calcium as Ca, mg/l	75	200	IS 3025 (Part 40)	40	56	1571
Dissolved oxygen, mg/l	-	-	IS 3025 (Part 38)	5.8	5.9	6.3
Biochemical Oxygen Demand (BOD), mg/l	-	-	IS 3025 (Part 44)	20	15	180
Chemical Oxygen Demand (COD), mg/l	-	-	APHA 5220 D	46	36	410
Sodium as Na, mg/l	-	-	IS 3025 (Part 45)	220	357	2044
Potassium as K, mg/l	-	-	IS 3025 (Part 45)	16	23	390

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Recognised by MOEF&CC (Sl. No. 97 of S.O. 3744 (E) Dated 17/10/2019)

ANNEXURE : VII Contd..

Parameters	Drinking water limits (IS: 10500:2012 & Amendment 1)		Protocol	TEST RESULTS		
	Acceptable	Permissible	.	Pond near Khared Village	Malan River Near Barpara Village	Arabian Sea, near Doliya Village
Magnesium as Mg, mg/l	30	100	IS 3025 (Part 46)	62	82	1051
Iron as Fe, mg/l	1.0	No relaxation	IS 3025 (Part 53)	0.14	0.3	3.31
Fluoride as F, mg/l	1.0	1.5	APHA 4500-F-D	0.46	0.35	1.26
Silver as Ag, mg/l	0.1	No relaxation	IS 3025 (Part 2)	0.010	0.056	0.048
Barium as Ba, mg/l	0.7	No relaxation	IS 3025 (Part 2)	0.029	0.037	BDL
Cadmium as Cd, mg/l	0.003	No relaxation	IS 3025 (Part 2)	BDL	BDL	BDL
Chromium as Cr,mg/l	0.05	No relaxation	IS 3025 (Part 2)	BDL	BDL	BDL
Copper as Cu, mg/l	0.05	1.5	IS 3025 (Part 2)	BDL	BDL	BDL
Manganese as Mn, mg/l	0.1	0.3	IS 3025 (Part 2)	BDL	0.041	BDL
Nickel as Ni, mg/l	0.02	No relaxation	IS 3025 (Part 2)	BDL	BDL	BDL
Selenium as Se, mg/l	0.01	No relaxation	IS 3025 (Part 2)	BDL	BDL	BDL
Arsenic as As, mg/l	0.01	No relaxation	IS 3025 (Part 2)	BDL	BDL	BDL
Zinc as Zn, mg/l	5	15	IS 3025 (Part 2)	BDL	0.138	0.041
Acidity mg/l CaCO3	-	-	IS 3025 (Part 22)	17.5 at pH 8.3	22.5 at pH 8.3	52.5 at pH 8.3
Nitrate as NO3, mg/l	45	No relaxation	APHA (4500-NO3-B)	0.38	2.05	3.00
Hexavalent Chromium, mg/l	-	-	APHA 3500-Cr B	BDL	BDL	BDL

NOTE : BDL(Below Detection Limit) of Ba<0.01, Cd<0.002, Cr<0.01, Cu<0.01, Mn<0.01, Ni<0.01, Se<0.01, As<0.01, Zn<0.01, Cr6+<0.1 mg/l

Prepared By
Rashmi Gupta
Administrative Manager

Checked By
Dr. Marisha Sharma
Authorised Signatory

:: End of Report ::

NOTES :
* Total liability of the laboratory is limited to the invoice amount
* The certificate shall not be reproduced wholly or in part without prior written consent of the laboratory
* Unused balance of sample received shall be destroyed after one month from the date of issue of test report, unless otherwise specified
* The report shall not be used in any advertising media or as evidence in the court of law without prior written consent of the laboratory
* Complaint register is available with the laboratory, in case required

An ISO 9001 : 2015 approved company

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Recognised by MOEF&CC (Sl. No. 97 of S.O. 3744 (E) Dated 17/10/2019)

5052

ANNEXURE : VII Contd..

TEST REPORT

Customer's Name & Address						
Nirma Ltd. Nirma House Ashram Road, Ahemdabad - 380009 Contact Person: Ms. Tejal Patel						
Sample Particulars						
Type of Sample : Surface water						
Work Order No. : NNL/CP-43/LOI-095/2020-21/PTV/						
Sampling location : In and around Doliya & Padhiyarka; Dudhala Dudheri & Gujarda; & Vangar & Madhiya Limestone Mines. District - Bhavnagar, Gujarat.						
Sampling procedure : IS 3025 (Part 1)						
Sample Vol./Qty. : 2 lit.						
Sampling Team : MMRDL (Ravikant)						
Sample Reg. No. : MMW/06-2021/2.21-2.3						
Date of Sampling : 31-05-2021						
Date of Receipt : 02-06-2021						
Date of Testing : 02/06/2021 to 07/06/2021						
Date of Report : 18-06-2021						
Test Report No. : MMW/06-2021/64						
Parameters	**Drinking water limits (IS: 10500:2012 & Amendment 1)**		**Protocol**	**TEST RESULTS**		
	Acceptable	**Permissible**	.	**Pond near Khared Village**	**Malan River Near Barpara Village**	**Arabian Sea, near Doliya Village**
Total Coliform (MPN/100ml)	-	-	APHA 9221 B	21	43	140
E. Coli	-	-	APHA 9221 F	Present	Present	Present

Prepared By
Rashmi
Rashmi Gupta
Administrative Manager

Checked By
Marisha
Dr. Marisha Sharma
Authorised Signatory

:: End of Report ::

NOTES :
* Total liability of the laboratory is limited to the invoice amount
* The certificate shall not be reproduced wholly or in part without prior written consent of the laboratory
* Unused balance of sample received shall be destroyed after one month from the date of issue of test report, unless otherwise specified
* The report shall not be used in any advertising media or as evidence in the court of law without prior written consent of the laboratory
* Complaint register is available with the laboratory, in case required

CPCB's Water Quality Criteria

Designated-Best-Use	Class of water	Criteria
Drinking Water Source without conventional treatment but after disinfection	A	• Total Coliforms Organism MPN/100ml shall be 50 or less • pH between 6.5 and 8.5 • Dissolved Oxygen 6mg/l or more • Biochemical Oxygen Demand 5 days 20C 2mg/l or less
Outdoor bathing (Organised)	B	• Total Coliforms Organism MPN/100ml shall be 500 or less pH between 6.5 and 8.5 Dissolved Oxygen 5mg/l or more • Biochemical Oxygen Demand 5 days 20C 3mg/l or less
Drinking water source after conventional treatment and disinfection	C	• Total Coliforms Organism MPN/100ml shall be 5000 or less pH between 6 to 9 Dissolved Oxygen 4mg/l or more • Biochemical Oxygen Demand 5 days 20C 3mg/l or less
Propagation of Wild life and Fisheries	D	• pH between 6.5 to 8.5 Dissolved Oxygen 4mg/l or more • Free Ammonia (as N) 1.2 mg/l or less
Irrigation, Industrial Cooling, Controlled Waste disposal	E	• pH between 6.0 to 8.5 • Electrical Conductivity at 25C micro mhos/cm Max.2250 • Sodium absorption Ratio Max. 26 • Boron Max. 2mg/l
	Below-E	Not Meeting A, B, C, D & E Criteria

Source: https://cpcb.nic.in/water-quality-criteria/ updated by CPCB on 11 Oct 20219

Drinking water standards IS 10500 : 2012

Table 1 Organoleptic and Physical Parameters

(Foreword and Clause 4)

Sl No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Method of Test, Ref to Part of IS 3025	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
i)	Colour, Hazen units, Max	5	15	Part 4	Extended to 15 only, if toxic substances are not suspected in absence of alternate sources
ii)	Odour	Agreeable	Agreeable	Part 5	a) Test cold and when heated b) Test at several dilutions
iii)	pH value	6.5-8.5	No relaxation	Part 11	—
iv)	Taste	Agreeable	Agreeable	Parts 7 and 8	Test to be conducted only after safety has been established
v)	Turbidity, NTU, Max	1	5	Part 10	—
vi)	Total dissolved solids, mg/l, Max	500	2 000	Part 16	—

NOTE — It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.

Table 2 General Parameters Concerning Substances Undesirable in Excessive Amounts
(*Foreword* and *Clause* 4)

Sl No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Method of Test, Ref to	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
i)	Aluminium (as Al), mg/l, *Max*	0.03	0.2	IS 3025 (Part 55)	—
ii)	Ammonia (as total ammonia-N), mg/l, *Max*	0.5	No relaxation	IS 3025 (Part 34)	—
iii)	Anionic detergents (as MBAS) mg/l, *Max*	0.2	1.0	Annex K of IS 13428	—
iv)	Barium (as Ba), mg/l, *Max*	0.7	No relaxation	Annex F of IS 13428* or IS 15302	—
v)	Boron (as B), mg/l, *Max*	0.5	1.0	IS 3025 (Part 57)	—
vi)	Calcium (as Ca), mg/l, *Max*	75	200	IS 3025 (Part 40)	—
vii)	Chloramines (as Cl_2), mg/l, *Max*	4.0	No relaxation	IS 3025 (Part 26)* or APHA 4500-Cl G	—
viii)	Chloride (as Cl), mg/l, *Max*	250	1 000	IS 3025 (Part 32)	—
ix)	Copper (as Cu), mg/l, *Max*	0.05	1.5	IS 3025 (Part 42)	—
x)	Fluoride (as F) mg/l, *Max*	1.0	1.5	IS 3025 (Part 60)	—
xi)	Free residual chlorine, mg/l, *Min*	0.2	1	IS 3025 (Part 26)	To be applicable only when water is chlorinated. Tested at consumer end. When protection against viral infection is required, it should be minimum 0.5 mg/l
xii)	Iron (as Fe), mg/l, *Max*	0.3	No relaxation	IS 3025 (Part 53)	Total concentration of manganese (as Mn) and iron (as Fe) shall not exceed 0.3 mg/l
xiii)	Magnesium (as Mg), mg/l, *Max*	30	100	IS 3025 (Part 46)	—
xiv)	Manganese (as Mn), mg/l, *Max*	0.1	0.3	IS 3025 (Part 59)	Total concentration of manganese (as Mn) and iron (as Fe) shall not exceed 0.3 mg/l
xv)	Mineral oil, mg/l, *Max*	0.5	No relaxation	Clause 6 of IS 3025 (Part 39) Infrared partition method	—
xvi)	Nitrate (as NO_3), mg/l, *Max*	45	No relaxation	IS 3025 (Part 34)	—
xvii)	Phenolic compounds (as C_6H_5OH), mg/l, *Max*	0.001	0.002	IS 3025 (Part 43)	—
xviii)	Selenium (as Se), mg/l, *Max*	0.01	No relaxation	IS 3025 (Part 56) or IS 15303*	—
xix)	Silver (as Ag), mg/l, *Max*	0.1	No relaxation	Annex J of IS 13428	—
xx)	Sulphate (as SO_4) mg/l, *Max*	200	400	IS 3025 (Part 24)	May be extended to 400 provided that Magnesium does not exceed 30
xxi)	Sulphide (as H_2S), mg/l, *Max*	0.05	No relaxation	IS 3025 (Part 29)	—
xxii)	Total alkalinity as calcium carbonate, mg/l, *Max*	200	600	IS 3025 (Part 23)	—
xxiii)	Total hardness (as $CaCO_3$), mg/l, *Max*	200	600	IS 3025 (Part 21)	—
xxiv)	Zinc (as Zn), mg/l, *Max*	5	15	IS 3025 (Part 49)	—

NOTES

1 In case of dispute, the method indicated by '*' shall be the referee method.

2 It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.

Table 3 Parameters Concerning Toxic Substances

(*Foreword* and *Clause* 4)

Sl No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Method of Test, Ref to	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
i)	Cadmium (as Cd), mg/l, *Max*	0.003	No relaxation	IS 3025 (Part 41)	—
ii)	Cyanide (as CN), mg/l, *Max*	0.05	No relaxation	IS 3025 (Part 27)	—
iii)	Lead (as Pb), mg/l, *Max*	0.01	No relaxation	IS 3025 (Part 47)	—
iv)	Mercury (as Hg), mg/l, *Max*	0.001	No relaxation	IS 3025 (Part 48)/ Mercury analyser	—
v)	Molybdenum (as Mo), mg/l, *Max*	0.07	No relaxation	IS 3025 (Part 2)	—
vi)	Nickel (as Ni), mg/l, *Max*	0.02	No relaxation	IS 3025 (Part 54)	—
vii)	Pesticides, µg/l, *Max*	See Table 5	No relaxation	See Table 5	—
viii)	Polychlorinated biphenyls, mg/l, *Max*	0.000 5	No relaxation	ASTM 5175* or APHA 6630	—
ix)	Polynuclear aromatic hydrocarbons (as PAH), mg/l, *Max*	0.000 1	No relaxation	APHA 6440	—
x)	Total arsenic (as As), mg/l, *Max*	0.01	0.05	IS 3025 (Part 37)	—
xi)	Total chromium (as Cr), mg/l, *Max*	0.05	No relaxation	IS 3025 (Part 52)	—
xii)	Trihalomethanes:				
	a) Bromoform, mg/l, *Max*	0.1	No relaxation	ASTM D 3973-85* or APHA 6232	—
	b) Dibromochloromethane, mg/l, *Max*	0.1	No relaxation	ASTM D 3973-85* or APHA 6232	—
	c) Bromodichloromethane, mg/l, *Max*	0.06	No relaxation	ASTM D 3973-85* or APHA 6232	—
	d) Chloroform, mg/l, *Max*	0.2	No relaxation	ASTM D 3973-85* or APHA 6232	—

NOTES

1 In case of dispute, the method indicated by '*' shall be the referee method.

2 It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.

Table 4 Parameters Concerning Radioactive Substances

(*Foreword* and *Clause* 4)

Sl No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Method of Test, Ref to Part of IS 14194	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
i)	Radioactive materials:				
	a) Alpha emitters Bq/l, *Max*	0.1	No relaxation	Part 2	—
	b) Beta emitters Bq/l, *Max*	1.0	No relaxation	Part 1	—

NOTE — It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.

Amendment 1	***June 2015***	[*Page* 2, *Table* 2, *Sl No.* xii), *col* 3] —Substitute '1.0' *for* '0.3'. [*Page* 3, *Table* 3, *Sl No.* x) , *col* 4] —Substitute 'No relaxation' *for* '0.05'.
Amendment 2	***September 2018***	(*Page* 1, *clause* **4.1.1**, *line* 6) — Substitute 'IS 15185' *for* 'IS 1622'. [*Page* 2, *Table* 2, *Sl No*. (v), *col* 4] — Substitute '2.4' *for* '1.0'.
Amendment 3	***February 2021***	[*Page* 2, *Table* 2, *Sl. No.* (xv), *col* 3] — Substitute '1.0' *for* '0.5'. (*Page* 2, *Table* 2, *Notes*) — Substitute the following for the existing Notes: 'NOTES **1** Approved and validated international test methods from ISO/ APHA/ ASTM/ AOAC/ EPA/ EN may also be followed. **2** In case of dispute, methods given at column 5 and wherever indicated by '*' shall be the referee method. **3** It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.' (*Page* 3, *Table* 3) — Insert the following new entry at the end:

Table 3

Sl No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Method of Test, Ref to	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
xiii)	Uranium, mg/l, *Max*	0.03	No relaxation	IS 3025 (Part 65)	—

(*Page* 3, *Table* 3, *Notes*) — Substitute the following for the existing:

'NOTES

1 Approved and validated international test methods from ISO/ APHA/ ASTM/ AOAC/ EPA/ EN may also be followed.

2 In case of dispute, methods given at column 5 and wherever indicated by '*' shall be the referee method.

3 It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.'

(*Page* 5, *clause* **4.2.7**) — Substitute the following for the existing clause:

'4.2.7 MS2 phage are indicators of viral contamination in drinking water and have been taken as representatives for presence of viruses for the purpose in this standard. MS2 phage shall be absent in 1 litre of water when tested in accordance with USEPA method 1601 or USEPA method 1602. In case of dispute, USEPA method 1602 shall be the referee method.

NOTE (for guidance purpose only) — If MS2 phage are detected in the drinking water, the virological examination is to be done by the Polymerase Chain Reaction (PCR) method as given in Annex B or the USEPA method in Manual of Method for Virology Chapter 16, June 2001. If viruses are detected, the cause must be determined by immediate further investigation by the concerned authorities.'

(*Page* 5, *clause* **4.2.7**) — Insert the following new clause:

'**4.2.8** The information given in clauses **4.2.1** to **4.2.6** is for guidance purposes only.'

(*Page 6, clause* **4.3.10**) — Substitute the following for the existing clause:

'4.3.10 The drinking water is expected to be free from microscopic organisms such as algae, zooplanktons, flagellates, parasites and toxin producing organisms. An illustrative (and not exhaustive) list is given in Annex C for guidance.'

(*Page* 6, *clause* **4.3.10**) — Insert the following after clause **4.3.10**:

'4.3.11 The information given in clauses **4.3.1** to **4.3.7** and **4.3.10** is for guidance purposes only.'

(*Page* 6, *clause* **5**) — Substitute the following for the existing clause:

'5 SAMPLING

Representative samples of water shall be drawn as prescribed in IS 1622 and IS 3025 (Part 1). For bacteriological requirements, representative samples of water shall be drawn as given in IS 15185.'

(*Page* 6, *Annex* A) — Insert the following new entries at appropriate places:

IS No.	*Title*
3025 (Part 65) : 2014	Methods of sampling and test (physical and chemical) for water and waste water : Part 2 Application of inductively coupled plasma mass spectrometry (ICP-MS) — Determination of 62 elements
15185 : 2016	Water quality — Detection and enumeration of *Escherichia coli* and coliform bacteria — Membrane filtration method for water with low bacterial background flora (*first revision*)

Amendment 4	***November 2021***	[*Page* 3, *Table* 3, *Sl. No*. (xiii), *col* 5 (*see also Amendment No*. 3)] — Substitute 'IS 3025 (Part 65)* or IS 14194 (Part 3)' for 'IS 3025 (Part 65)'. (*Page* 6, *Annex* A) — Insert the following reference at appropriate place: *IS No.* — *Title* 14194 (Part 3) : 2021 — Radionuclides in environmental samples — Method of estimation: Part 3 Uranium (*first revision*)

POPULATION AND LANDUSE OF STUDY AREA, CENSUS 2011 (Ha.)
VANGAR MINE OF NIRMA LIMITED

Town/ village code	Town/village name	Population	Total area	Forest land	Area under Non-Agricultural Uses	Barren & Un-cultivable Land	Permanent Pastures and Other Grazing Land	Land Under Misc. Tree Crops etc.	Culturable Waste Land	Fallows Land other than Current Fallows	Current Fallows	Net Area Sown	Total Unirrigated Land	Area Irrigated by Source	Canals	Wells/ Tube Wells	Tanks/ Lakes	Waterfall	Other Source
District	**Amreli**																		
Sub Distt.	**Rajula**																		
515953	Mandal	3684	893.96	0.00	19.50	55.14	100.77	0.00	0.99	0.00	0.00	717.56	553.33	164.23	0.00	164.23	0.00	0.00	0.00
515954	Morangi	3496	825.63	0.00	8.73	93.14	95.91	0.00	8.30	0.51	1.51	617.53	454.32	163.21	0.00	0.00	5.84	0.00	157.37
515955	Mobhiyana Mota	279	351.75	0.00	0.00	14.54	38.02	0.00	0.00	0.00	0.00	299.19	200.00	99.19	0.00	99.19	0.00	0.00	0.00
515956	Mobhiyana Nana	280	272.42	0.00	0.00	9.55	6.68	0.00	0.00	2.70	0.00	253.49	203.49	50.00	0.00	50.00	0.00	0.00	0.00
515957	Rampara No-1	342	318.66	0.00	3.00	10.65	22.04	0.00	0.00	0.00	0.00	282.97	193.74	89.23	0.00	89.23	0.00	0.00	0.00
515958	Zinzka	1378	752.56	0.00	4.24	1.42	24.61	5.83	23.31	28.34	46.52	618.29	547.02	71.27	0.00	0.00	0.00	0.00	71.27
515959	Dungarparda	680	289.55	0.00	1.86	45.00	17.40	1.15	0.00	0.00	0.42	223.72	190.50	33.22	0.00	0.00	1.17	0.00	32.05
515960	Dungar	7129	2166.00	4.00	20.77	205.00	18.84	0.00	36.14	0.00	0.00	1881.25	1010.07	871.18	0.00	871.18	0.00	0.00	0.00
515974	Sajanavav	1181	561.12	0.00	8.00	34.25	49.50	0.00	23.65	0.00	6.24	439.48	289.48	150.00	0.00	150.00	0.00	0.00	0.00
515975	Rabhda	1266	628.20	3.00	5.50	45.60	41.68	0.00	2.52	0.00	0.00	529.90	435.27	94.63	0.00	94.63	0.00	0.00	0.00
515976	Nesdi No -1	365	233.12	0.00	4.72	3.85	14.60	0.00	0.00	0.00	3.85	206.10	150.23	55.87	0.00	55.87	0.00	0.00	0.00
515977	Majadar	611	482.29	0.00	4.35	42.13	35.23	0.00	4.79	0.00	0.00	395.79	393.29	2.50	0.00	2.50	0.00	0.00	0.00
515987	Visaliya	2958	525.99	0.00	3.00	101.50	38.44	0.00	0.00	7.56	0.00	375.49	300.49	75.00	0.00	0.00	0.00	0.00	75.00
515988	Dantardi	2393	1405.33	120.62	177.61	137.23	0.00	0.00	0.61	0.00	0.00	969.26	842.08	127.18	0.00	127.18	0.00	0.00	0.00
515989	Samadhiyala No-1	2427	777.95	0.00	10.13	197.37	30.00	0.00	71.29	0.00	79.89	389.27	285.15	104.12	0.00	104.12	0.00	0.00	0.00
515990	Patva	2013	869.87	0.00	118.20	231.95	35.85	0.00	0.00	0.00	3.08	480.79	389.56	91.23	0.00	91.23	0.00	0.00	0.00
515991	khera	4191	803.50	3.24	128.40	109.00	5.23	0.00	129.42	0.84	127.29	300.08	210.87	89.21	0.00	89.21	0.00	0.00	0.00
515993	Kathivadar	1623	2318.64	1089.70	0.00	569.05	96.76	0.00	0.00	27.00	0.00	536.13	421.72	114.41	114.41	0.00	0.00	0.00	0.00
	Sub total	**36296**	**14476.54**	**1220.56**	**518.01**	**1906.37**	**671.56**	**6.98**	**301.02**	**66.95**	**268.80**	**9516.29**	**7070.61**	**2445.68**	**114.41**	**1988.57**	**7.01**	**0.00**	**335.69**
District	**Bhavnagar**																		
Sub Distt.	**Mahuva**																		
516739	Bambhaniya	1902	774.28	0.00	5.00	10.00	45.00	0.00	10.28	0.00	194.00	510.00	120.00	390.00	0.00	390.00	0.00	0.00	0.00
516740	Dudhala No.2	1496	666.56	0.00	4.00	0.00	44.45	0.00	0.00	28.00	10.11	580.00	260.00	320.00	0.00	320.00	0.00	0.00	0.00
516762	Lakhupara	392	234.48	0.00	3.00	12.48	5.00	0.00	4.00	3.00	0.00	207.00	67.00	140.00	0.00	140.00	0.00	0.00	0.00
516763	Bhadra	2256	990.87	0.00	14.17	0.00	348.00	0.00	125.00	70.30	25.40	408.00	158.00	250.00	0.00	250.00	0.00	0.00	0.00
516764	Lusadi	1594	631.57	10.00	71.57	24.00	0.00	0.00	0.00	0.00	0.00	526.00	325.00	201.00	0.00	201.00	0.00	0.00	0.00
516765	Gundarani	1390	817.05	0.00	7.00	0.00	49.00	0.00	0.00	0.00	35.05	726.00	706.00	20.00	0.00	20.00	0.00	0.00	0.00
516766	Nana Jadra	2200	703.30	5.00	15.00	31.00	31.00	0.00	2.00	8.00	14.30	597.00	398.00	199.00	0.00	199.00	0.00	0.00	0.00
516767	Tavida	2031	606.82	18.00	9.02	22.60	12.00	0.00	2.00	0.00	1.20	542.00	242.00	300.00	0.00	300.00	0.00	0.00	0.00
516780	Nesvad	10501	646.64	0.00	106.04	8.00	19.40	0.00	0.00	59.00	54.00	400.20	200.20	200.00	0.00	200.00	0.00	0.00	0.00
516781	Haripara	462	341.97	0.00	0.00	2.97	37.00	0.00	0.00	0.00	10.00	292.00	292.00	0.00	0.00	0.00	0.00	0.00	0.00
516782	Visavadar	521	184.94	0.00	1.34	30.60	13.00	0.00	2.00	0.00	0.00	138.00	88.00	50.00	0.00	50.00	0.00	0.00	0.00
516783	Dundas	1506	802.68	0.00	81.08	5.60	45.00	0.00	5.00	0.00	5.00	661.00	560.00	101.00	0.00	101.00	0.00	0.00	0.00
516784	Mota Pipalva	1672	367.36	0.00	0.00	0.00	30.00	0.00	20.36	6.00	0.00	311.00	111.00	200.00	0.00	200.00	0.00	0.00	0.00
516785	Kankot	556	271.77	0.00	6.97	7.71	14.00	0.00	0.00	0.00	8.09	235.00	225.00	10.00	0.00	10.00	0.00	0.00	0.00
516786	Nana Pipalva	1259	202.89	0.00	9.99	0.00	7.00	0.00	10.00	0.90	10.00	165.00	145.00	20.00	0.00	20.00	0.00	0.00	0.00
516787	Bildi	4367	660.34	0.00	12.34	16.00	80.00	0.00	15.00	20.00	25.00	492.00	412.00	80.00	0.00	80.00	0.00	0.00	0.00
516788	Amrutvel	1184	517.82	0.00	9.20	1.20	26.00	0.00	2.00	1.00	16.42	462.00	193.00	269.00	0.00	269.00	0.00	0.00	0.00
516789	Bhanvad	864	753.89	0.90	3.98	21.01	13.00	0.00	14.00	15.00	1.00	685.00	457.00	228.00	0.00	228.00	0.00	0.00	0.00
516790	Mota Jadra	3297	1038.83	0.00	40.00	45.40	80.00	0.00	38.03	0.00	10.40	825.00	400.00	425.00	0.00	425.00	0.00	0.00	0.00
516791	Maliya	2030	337.23	0.00	20.23	0.00	80.00	0.00	55.00	0.00	0.00	182.00	10.00	172.00	0.00	0.00	172.00	0.00	0.00
516794	Devaliya	1361	237.63	0.00	10.00	0.00	0.00	0.00	50.63	0.00	2.00	175.00	85.00	90.00	0.00	90.00	0.00	0.00	0.00

POPULATION AND LANDUSE OF STUDY AREA, CENSUS 2011 (Ha.)

VANGAR MINE OF NIRMA LIMITED

Town/ village code	Town/village name	Population	Total area	Forest land	Area under Non-Agricultural Uses	Barren & Un-cultivable Land	Permanent Pastures and Other Grazing Land	Land Under Misc. Tree Crops etc.	Culturable Waste Land	Fallows Land other than Current Fallows	Current Fallows	Net Area Sown	Total Unirrigated Land	Area Irrigated by Source	Canals	Wells/ Tube Wells	Tanks/ Lakes	Waterfall	Other Source
516795	Dudhala No.1	1405	325.81	0.00	5.00	1.40	7.00	0.00	6.00	4.41	0.00	302.00	202.00	100.00	0.00	0.00	100.00	0.00	0.00
516796	Madhiya	1170	517.52	0.00	0.00	1.02	12.00	0.00	22.50	0.00	0.00	482.00	482.00	0.00	0.00	0.00	0.00	0.00	0.00
516797	Vangar	2838	765.73	0.00	41.77	9.73	0.00	0.00	0.00	0.00	10.43	703.80	353.00	350.80	0.00	350.80	0.00	0.00	0.00
516798	Padhiyarka	1495	388.39	0.00	180.40	1.00	0.00	0.00	1.00	0.00	9.99	196.00	196.00	0.00	0.00	0.00	0.00	0.00	0.00
516799	Doliya	3224	505.59	0.00	4.20	0.00	9.00	0.00	142.00	0.00	11.39	339.00	339.00	0.00	0.00	0.00	0.00	0.00	0.00
516800	Dudheri	3544	772.90	30.65	11.08	106.00	61.00	0.00	5.17	2.00	0.00	557.00	557.00	0.00	0.00	0.00	0.00	0.00	0.00
516801	Gujarda	3496	639.04	32.00	15.00	3.04	15.00	0.00	11.00	99.00	0.00	464.00	264.00	200.00	0.00	200.00	0.00	0.00	0.00
516802	Khared	4250	768.16	36.00	4.16	265.00	0.00	0.00	88.00	14.00	5.00	356.00	256.00	100.00	0.00	100.00	0.00	0.00	0.00
516803	Gadhada	2792	895.26	0.00	2.26	0.00	395.00	0.00	68.00	148.00	0.00	282.00	182.00	100.00	0.00	100.00	0.00	0.00	0.00
802557	Mahuva (M + OG)	58356	1700.00	-	1700.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sub total	**125411**	**19067.32**	**132.55**	**2393.80**	**625.76**	**1477.85**	**0.00**	**698.97**	**478.61**	**458.78**	**12801.00**	**8285.20**	**4515.80**	**0.00**	**4243.80**	**272.00**	**0.00**	**0.00**
	Gulf of Khambhat		12500.00	0.00	12500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	GRAND TOTAL	**161707**	**46043.86**	**1353.11**	**15411.81**	**2532.13**	**2149.41**	**6.98**	**999.99**	**545.56**	**727.58**	**22317.29**	**15355.81**	**6961.48**	**114.41**	**6232.37**	**279.01**	**0.00**	**335.69**
	%		**100.00**	**2.94**	**33.47**	**5.50**	**4.67**	**0.02**	**2.17**	**1.18**	**1.58**	**48.47**	**33.35**	**15.12**	**1.64**	**89.53**	**4.01**	**0.00**	**4.82**

ANNEXURE : IX Contd...

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ANNEXURE : X

TEST REPORT

Customer's Name & Address
Nirma Ltd.
Nirma House, Ashram Road
Ahemadabad - 380009

Contact Person : Ms. Tejal Patel

Sample Particulars		
Type of Sample	:	Noise
Work Order No.	:	NNL/CP-43/LOI-095/2020-21/PTV/
Sampling Location	:	In and around Doliya & Padhiyarka; Dudhala Dudheri & Gujarda; & Vangar & Madhiya Limestone Mines, District Bhavnagar, Gujarat
Sampling Procedure	:	Protocol for Ambient Level Noise Monitoring, CPCB
Sample Duration	:	24 hours
Sampling Team	:	MMRDL (Ravikant)
Sample Reg. No.	:	MMN/06-2021/1.1-1.16
Date of Monitoring	:	02/05/2021 to 25/05/2021
Date of Receipt	:	05/06/2021
Date of Report	:	18/06/2021
Test Report No.	:	MMN/06-2021/67
ULR No.	:	TC633721000000139F
Page	:	1 of 6

Day Time : 6 am to 10 pm

Date of Monitoring→	02-03/05/2021	03-04/05/2021	04-05/05/2021	05-06/05/2021	07-08/05/2021	08-09/05/2021
Hours↓	Near Cement Plant at Padhiarka	Padhiarka Village	Vangar Village	Madhiya Village	Dhdhala No. 1	Gujarda Village
6-7	47.3	52.1	46.8	44.7	39.2	41.6
7-8	43.4	45.6	42.8	47.3	48.6	41.4
8-9	47.1	55.5	51.7	51.4	44.9	50.2
9-10	49.6	50.4	49.9	52.0	49.4	49.2
10-11	46.2	52.3	49.2	50.4	49.8	50.8
11-12	47.1	56.4	50.6	50.8	55.0	48.0
12-1	46.4	50.3	49.7	49.1	50.3	50.0
1-2	45.5	53.0	48.2	50.1	51.7	45.4
2-3	48.3	50.8	50.4	48.4	50.6	50.5
3-4	47.6	52.5	50.7	46.9	48.4	48.0
4-5	47.7	53.0	51.0	47.1	52.5	48.2
5-6	47.9	48.4	48.9	51.5	49.0	45.8
6-7	43.9	49.1	45.2	49.8	50.7	46.3
7-8	47.7	53.8	44.3	52.6	49.4	47.1
8-9	50.5	51.1	46.3	50.0	45.1	46.8
9-10	47.6	50.3	44.6	50.0	49.0	48.1

NOTES :

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Test Report No. : MMN/06-2021/67
Page : 2 of 6

ANNEXURE : X Contd..

Night Time : 10 pm to 6 am						
Date of Monitoring→	**02-03/05/2021**	**03-04/05/2021**	**04-05/05/2021**	**05-06/05/2021**	**07-08/05/2021**	**08-09/05/2021**
Hours↓	**Near Cement Plant at Padhiarka**	**Padhiarka Village**	**Vangar Village**	**Madhiya Village**	**Dhdhala No. 1**	**Gujarda Village**
10-11	43.5	47.1	45.3	41.5	40.5	38.4
11-12	43.1	41.0	44.9	42.1	45.0	38.8
12-1	40.5	40.4	38.0	40.1	37.8	41.0
1-2	37.6	39.8	36.7	39.8	39.9	39.4
2-3	38.4	44.7	41.4	37.2	39.6	38.7
3-4	36.6	40.3	38.6	36.3	41.8	38.4
4-5	37.8	41.5	39.7	40.9	39.3	38.4
5-6	36.5	42.3	36.7	38.3	39.2	38.8
Day time Leq.	**47.57**	**52.46**	**48.95**	**50.11**	**50.34**	**48.20**
Night time Leq.	**40.09**	**42.89**	**41.42**	**39.93**	**40.96**	**40.11**

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Test Report No. : MMN/06-2021/67
Page : 3 of 6

ANNEXURE : X Contd..

Day Time : 6 am to 10 pm						
Date of Monitoring→	**09-10/05/2021**	**10-11/05/2021**	**12-13/05/2021**	**13-14/05/2021**	**14-15/05/2021**	**15-16/05/2021**
Hours↓	**Patva Village**	**Samadhiyala No. 1**	**Doliya Village**	**Rabhda Village**	**Nana Pipalva Village**	**Amrutvel Village**
6-7	41.8	47.3	48.3	47.0	48.1	45.2
7-8	44.4	48.0	46.2	47.5	45.9	46.0
8-9	49.9	51.4	53.7	50.3	47.8	52.7
9-10	52.0	49.7	51.8	50.7	49.9	51.2
10-11	46.6	50.1	52.7	49.7	49.5	53.1
11-12	51.3	50.1	51.5	55.4	48.6	54.1
12-1	49.3	49.4	51.4	48.4	49.0	53.4
1-2	46.6	52.3	49.1	50.6	48.3	51.0
2-3	50.0	48.2	50.7	50.7	47.9	50.0
3-4	45.3	51.1	49.8	49.6	49.7	53.2
4-5	44.7	51.3	49.2	50.7	52.2	50.4
5-6	49.0	48.1	46.2	51.2	49.9	49.4
6-7	48.8	50.1	48.6	47.8	49.8	53.1
7-8	44.9	46.6	44.9	50.5	47.7	51.2
8-9	43.5	51.6	49.7	52.2	45.9	54.1
9-10	50.4	46.5	48.2	51.7	46.6	52.6

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Test Report No. : MMN/06-2021/67
Page : 4 of 6

ANNEXURE : X Contd..

Night Time : 10 pm to 6 am						
Date of Monitoring→	**09-10/05/2021**	**10-11/05/2021**	**12-13/05/2021**	**13-14/05/2021**	**14-15/05/2021**	**15-16/05/2021**
Hours↓	**Patva Village**	**Samadhiyala No. 1**	**Doliya Village**	**Rabhda Village**	**Nana Pipalva Village**	**Amrutvel Village**
10-11	44.9	40.2	40.9	46.5	42.2	41.8
11-12	44.3	42.9	43.5	43.5	45.2	42.4
12-1	40.0	39.4	36.7	38.9	41.7	39.2
1-2	39.6	39.5	37.5	38.7	40.1	38.9
2-3	38.7	38.2	35.2	40.6	40.2	41.4
3-4	39.0	36.7	35.4	39.0	41.3	39.3
4-5	39.0	36.1	37.8	40.2	40.2	39.0
5-6	39.5	38.5	40.5	38.9	38.4	42.1
Day time Leq.	**48.65**	**49.85**	**50.51**	**50.72**	**48.96**	**51.86**
Night time Leq.	**41.35**	**39.42**	**39.36**	**41.76**	**41.62**	**40.75**

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Test Report No. : MMN/06-2021/67
Page : 5 of 6

ANNEXURE : X Contd..

Day Time : 6 am to 10 pm				
Date of Monitoring→	**21-22/05/2021**	**22-23/05/2021**	**23-24/05/2021**	**24-25/05/2021**
Hours↓	**Mota Jadra Village**	**Devaliya Village**	**Khared Village**	**Gadhada Village**
6-7	47.5	46.7	43.7	37.3
7-8	44.7	44.3	49.2	47.9
8-9	52.9	51.5	50.0	48.4
9-10	51.1	50.3	50.4	49.5
10-11	49.3	51.4	49.8	54.8
11-12	47.1	50.3	53.8	53.6
12-1	47.9	49.0	52.0	51.0
1-2	49.7	45.3	50.6	51.9
2-3	50.5	45.6	48.1	50.2
3-4	51.0	48.7	52.8	49.1
4-5	46.6	49.1	47.3	53.3
5-6	50.1	46.9	52.0	49.6
6-7	51.6	44.3	48.2	51.1
7-8	47.3	44.6	47.2	52.1
8-9	50.7	48.8	48.7	54.1
9-10	49.8	45.0	45.8	51.6

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Test Report No. : MMN/06-2021/67
Page : 6 of 6

ANNEXURE : X Contd..

Night Time : 10 pm to 6 am				
Date of Monitoring→	**21-22/05/2021**	**22-23/05/2021**	**23-24/05/2021**	**24-25/05/2021**
Hours↓	**Mota Jadra Village**	**Devaliya Village**	**Khared Village**	**Gadhada Village**
10-11	43.7	39.1	45.4	43.5
11-12	40.8	43.7	42.0	43.1
12-1	39.4	36.8	40.3	37.2
1-2	40.0	38.9	37.0	39.3
2-3	38.4	40.9	40.1	40.2
3-4	38.5	37.4	38.4	39.1
4-5	40.8	40.9	38.1	38.6
5-6	36.9	37.7	39.2	37.3
Day time Leq.	**49.97**	**48.69**	**50.07**	**51.83**
Night time Leq.	**40.27**	**40.01**	**40.89**	**40.40**

Category of area	**Ambient Air Quality Standards in Respect of Noise in db (A) Leq as per Noise Pollution (Regulation and Control) Rules 2000**	
	Day time	**Night time**
Industrial area	75	70
Commercial area	65	55
Residential area	55	45
Silence zone	50	40

Source: Pollution Control Acts, Rules and Notifications Issued Thereunder, Pollution Control Law Series: PCLS/02/1992 (Fourth edition) of Central Pollution Control Board, Sept -2001, Page 711

Prepared by

Rashmi Gupta
Administrative Manager

Checked by

Dr. Marisha Sharma
Authorised Signatory

- end of report -

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ANNEXURE : XI

THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000
SCHEDULE

[See Rule 3(1) and 4(1)]

Ambient Air Quality Standards in respect of Noise

Area Code	Category of Area/Zone	Limits in dB(A) Leq*	
		Day Time	Night Time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence Zone	50	40

Note :

1. Day time shall mean from 6.00 a.m. to 10.00 p.m.

2. Night time shall mean from 10.00 p.m. to 6.00 a.m.

[a][3. Silence zone is an area comprising not less than 100 metres around hospitals, educational institutions, courts, religious places or any other area which is declared as such by the competent authority].

4. Mixed categories of areas may be declared as one of the four above mentioned categories by the competent authority.

* dB(A) Leq denotes the time weighted average of the level of sound in decibels on scale 'A' which is relatable to human hearing.

A "decibel" is a unit in which noise is measured.

"A", in dB(A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.

Leq : It is an energy mean of the noise level over a specified period.

SOURCE : Pollution Control Acts, Rules and Notifications Issued Thereunder, Pollution Control Law Series : PCLS/02/1992 (Fourth Edition) of Central Pollution Control Board, September 2001, pp 711

[a] Substituted by Rule 4 of the Noise Pollution (Regulation and Control) (Amendment) Rules, 2000 notified vide S.O. 1046(E), dated 22.11.2000.

ANNEXURE : XI Contd..

SCHEDULE XXIV OF MODEL RULES UNDER THE FACTORIES ACT, 1948
(Corrected up to 01-3-2019)

PART -A HIGH NOISE LEVELS

Table 1: Permissible exposure in cases of continuous noise

Total time of exposure (continuous short term exposures)	Sound pressure level in or a number of dBA per day, in hours
8	85
6	87
4	90
3	92
2	95
1 ½	97
1	100
3/4	102
½	105
1/4	110

Notes : 1. No exposure in excess of 110 dBA is to be permitted.
2. For any period of exposure falling in between any figure and the next higher or lower figure as indicated in column 1, the permissible sound pressure level is to be determined by extrapolation on a proportionate basis.

Table 2: Permissible exposure levels of impulsive or impact noise

Peak sound pressure level in dB	Permitted number of impulses or impact per day
140	100
135	315
130	1,000
125	3,160
120	10,000

Notes: 1.No exposure in excess of 140 dB peak sound pressure level is permitted
2. For any peak sound pressure level falling in between any figure and the next higher or lower figure as indicated in column 1, the permitted number of impulses or impacts per day is to be determined by extrapolation on a proportionate basis.

PART-B HIGH VIBRATION LEVELS

Exposure limit values and action values :

(1) For hand-arm vibration—

(a) the daily exposure limit value is 5 $m/s^2A(8)$;

(b) the daily exposure action value is 2.5 $m/s^2A(8)$, and daily exposure shall be ascertained on the basis set out in the relevant National/International Standards specified in table 1 below.

(2) For whole body vibration—

(a) the daily exposure limit value is 1.15 $m/s^2A(8)$;

(b) the daily exposure action value is 0.5 $m/s^2A(8)$, and daily exposure shall be ascertained on the basis set out in the relevant National/International Standards

Table 1:The Threshold Limit Values (TLVs) for exposure of the hand to vibration in X, Y, or Z direction of axes in the three dimensional system shall be as given below:

Total Daily Exposure Duration (hours)	Maximum value of frequency weighted acceleration (m/s^2) in any direction
4 to less than 8 hours	4
2 to less than 4 hours	6
1 to less than 2 hours	8
less than 1hour	12

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ANNEXURE : XII

TRAFFIC VOLUME MONITORING DATA

NIRMA LTD.

Date of monitoring : 27-28/05/2021

Location: Near Vangar Village on NH-8E, Up direction

Hours	Cycle	Motor Cycles & Scooters	LMV (car, jeep, van, three (wheelers etc.)	Buses	Trucks	Animal drawn vehicles	Others	Total
7.00 - 8.00	3	80	15	2	8	0	18	**126**
8.00 - 9.00	0	131	51	2	24	1	5	**214**
9.00 - 10.00	1	161	48	0	14	2	11	**237**
10.00 - 11.00	1	146	39	0	14	1	4	**205**
11.00 - 12.00	1	84	24	0	7	1	0	**117**
12.00 - 13.00	0	109	98	4	55	0	23	**289**
13.00 - 14.00	0	116	57	0	22	0	3	**198**
14.00 - 15.00	10	118	46	1	12	0	5	**192**
15.00 - 16.00	0	92	50	2	7	0	5	**156**
16.00 - 17.00	0	122	84	5	24	0	24	**259**
17.00 - 18.00	26	106	50	1	10	0	3	**196**
18.00 - 19.00	1	71	36	4	18	2	21	**153**
19.00 - 20.00	0	94	54	4	26	0	17	**195**
20.00 - 21.00	0	69	40	2	23	0	4	**138**
21.00 - 22.00	0	62	26	6	38	0	0	**132**
22.00 - 23.00	0	26	18	4	50	0	0	**98**
23.00 - 24.00	0	7	10	3	35	0	0	**55**
0.00 - 1.00	0	2	7	7	31	0	0	**47**
1.00 - 2.00	0	1	3	2	43	0	0	**49**
2.00 - 3.00	0	0	0	0	31	0	0	**31**
3.00 - 4.00	0	2	5	12	39	0	0	**58**
4.00 - 5.00	0	14	14	5	32	0	3	**68**
5.00 - 6.00	0	21	14	5	22	0	0	**62**
6.00 - 7.00	0	36	22	4	27	0	5	**94**
TOTAL	**43**	**1670**	**811**	**75**	**612**	**7**	**151**	**3369**

Source: Min Mec R&D Laboratory, New Delhi

ANNEXURE : XII Contd..

TRAFFIC VOLUME MONITORING DATA

NIRMA LTD.
Date of monitoring : 27-28/05/2021
Location: Near Vangar Village on NH-8E, Down direction

Hours	Cycle	Motor Cycles & Scooters	LMV (car, jeep, van, three (wheelers etc.)	Buses	Trucks	Animal drawn vehicles	Others	Total
7.00 - 8.00	0	72	38	2	14	0	7	**133**
8.00 - 9.00	1	122	64	3	9	0	14	**213**
9.00 - 10.00	1	134	75	2	8	0	4	**224**
10.00 - 11.00	2	77	59	8	10	2	2	**160**
11.00 - 12.00	1	72	60	3	15	1	8	**160**
12.00 - 13.00	0	74	79	0	21	2	16	**192**
13.00 - 14.00	0	103	60	0	21	0	13	**197**
14.00 - 15.00	0	122	10	0	33	0	0	**165**
15.00 - 16.00	3	131	108	2	42	0	12	**298**
16.00 - 17.00	0	94	75	10	33	0	19	**231**
17.00 - 18.00	11	98	69	4	37	3	29	**251**
18.00 - 19.00	0	89	106	5	60	0	18	**278**
19.00 - 20.00	0	113	121	2	50	0	10	**296**
20.00 - 21.00	0	90	59	5	42	0	6	**202**
21.00 - 22.00	0	51	40	4	52	0	0	**147**
22.00 - 23.00	0	19	31	7	35	0	0	**92**
23.00 - 24.00	0	13	13	5	51	0	0	**82**
0.00 - 1.00	0	4	8	3	37	0	0	**52**
1.00 - 2.00	0	0	3	1	29	0	0	**33**
2.00 - 3.00	0	0	2	2	44	0	0	**48**
3.00 - 4.00	0	3	7	9	23	0	0	**42**
4.00 - 5.00	0	10	16	10	40	0	0	**76**
5.00 - 6.00	0	29	22	5	27	0	6	**89**
6.00 - 7.00	4	49	38	2	12	0	4	**109**
TOTAL	**22**	**1375**	**1061**	**89**	**722**	**8**	**147**	**3424**

Source: Min Mec R&D Laboratory, New Delhi

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ANNEXURE : XIII

નાયબ વન સંરક્ષકશ્રીની કચેરી

ભાવનગર વન વિભાગ, બહુમાળી ભવન,
એનેક્ષી બિલ્ડીંગ, બ્લોક–૮/૯/૧૦, ભાવનગર
ફોન નં.૦૨૭૮–૨૪૨૮૬૪૪, ફેક્સ નં.૦૨૭૮–૨૪૨૭૩૧૭
e-mail: forestinformation@yahoo.in

ક્રમાંક: અ/જમન/ટે.૧૧/2303 /૧૭-૧૮
તા.૫/૨/૨૦૧૮

પ્રતિ,
નિરમા લીમીટેડ,
નિરમા હાઉસ,આશ્રમ રોડ,
અમદાવાદ.

Sub.: List of Flora & Fauna, endangered, endemic, RET species for core & buffer zone(10 km) of Vangar & Madhiya Limestone Mining Lease Area(612.1336 Ha.) of M/s. Nirma Limited in Village: Vangar & Madhiya, Taluka: Mahuva, Dist.:Bhavnagar.

Ref.: આપના પત્રાંક - NL/EVN-152/927 Dt. 14/11/2017

સવિનય ઉપરોકત વિષય તથા આપના સંદર્ભીતપત્ર અન્વયે આપના દ્વારા માંગવામાં આવેલ માહીતી જેવી કે, મંજુર લીઝના વિસ્તારથી ૧૦ કિ.મી ના વિસ્તારમાં જોવા મળતા વન્યપ્રાણીઓ,વનસ્પતીઓ,જીવજંતુઓ,સુક્ષમજીવાણું,લુપ્ત થતી વનસ્પતીઓ વગેરેની માહીતી આ સાથે સામેલ રાખી મોકલવામાં આવે છે.

આ ઉપરાંત મંજુર લીઝ વિસ્તારથી ૧૦ કિ.મી ના વિસ્તારમાં આવેલ અનામત જંગલો ની માહીતી અત્રેથી ઉપલબ્ધ વર્કીંગ પ્લાન મુજબ સામેલ રાખી મોકલવામાં આવે છે. નેશનલ પાર્ક,અભ્યારણ્ય,રામસર સાઇટ વગેરે અત્રેના વિભાગ હેઠળ આવતું નથી.જેની જાણ થવા વિનંતી છે.

નાયબ વન સંરક્ષક
ભાવનગર વન વિભાગ
ભાવનગર

Table No: 1

Inventory of Floral Diversity in the Core & Buffer Zone of Proposed Mine Site

Based on Actual Sighting, based on inputs from locals and Perused from Secondary Literature

Habits Tree (T), Shrub (S), Herb (H) and Grass (G)

(+) Shows Presence of the species and (-) Shows Absence of the species

Sl. No.	Scientific name	Local name	Family	Habit	Core Zone	Buffer Zone
1	Morinda tinctoria	Aal (Ranjani)	Rubiaceae	T	+	+
2	Phyllanthus emblica	Amla	Euphorbiaceae	T	+	+
3	Alangium salvifolium	Ankol	Alangiaceae	T	+	-
4	Terminalia arjuna	Arjun	Combretaceae	T	+	+
5	Terminalia bellirica	Bahada	Combretaceae	T	+	+
6	Zizyphus mauritiana	Bordi	Rhamnaceae	T	+	+
7	Zizyphus glaberrima	Shatbor	Rhamnaceae	T	-	+
8	Prosopis juliflora	Gando Baval	Mimosaceae	T	+	+
9	Acacia nilotica	Desi Babool	Mimosaceae	T	+	+
10	Cordia dichotoma	Gundi	Ehretiaceae	T	+	+
11	Acacia leucophloea	Hatmo	Mimosaceae	T	+	+
12	Erythrina suberosa	Jungle Khakhro	Fabaceae	T	+	+
13	Pongamia pinnata	Karanj	Fabaceae	T	+	+
14	Cordia monoica	Kath-gundi	Ehretiaceae	T	+	+
15	Balanites aegyptica	Ingoriyo	Balanitaceae	T	-	+
16	Salvadora persica	Khakhjas	Salvadoraceae	T	+	+
17	Prosopis cineraria	Khejdo	Mimosaceae	T	+	+
18	Peltophorum ferrugineum	Peltophorum	Caesalpiniaceae	T	+	+
19	Ficus racemosa	Piper	Moraceae	T	+	+
20	Manilkara hexandra	Rayan	Sapotaceae	T	+	+
21	Adansonia digitata	Rukhdo	Bombacaceae	T	+	+
22	Terminalia crenulata	Sadad	Combretaceae	T	+	+
23	Casuarina equisetifolia	Saru	Casuarinaceae	T	+	+
24	Leucaena leucocephala	Subabool	Mimosaceae	T	-	+
25	Ficus racemosa	Umro	Moraceae	T	+	+
26	Bombax ceiba	Shemlo	Bombacaceae	T	-	+
27	Nyctanthes arbortristis	Parijatak	Oleaceae	T	-	+
28	Crateava narvala	Vayvarno	Capparaceae	T	-	+
29	Wrightia tomentosa	Indrajav	Apocynaceae	T	+	+
30	Mimusops elengi	Bovshi	Sapotaceae	T	+	+
31	Alstonia scholaris	Shiptarni	Apocynaceae	T	+	+
32	Limonia acidissima	Kothi	Rutaceae	T	-	+
33	Terminalia chebula	Harde	Combretaceae	T	-	+
34	Helicteres isora	Mirchai	Rubiaceae	T	+	+

36	Gmelina arborea	Sevan	Verbenaceae			
37	Dalonix regia	Gulmohar	Fabaceae	T	+	
38	Cassia fistula	Amaltas	Caesalpiniaceae	T	+	
39	Albizia lebbeck	Kala Sirki	Mimosaceae	T	+	+
40	Dalbergia latifolia	Shisham	Fabaceae	T	+	+
41	Mangifera indica	Aam	Anacardiaceae	T	+	+
42	Cocos nucifera	Nadal	Arecaceae	T	+	+
43	Pongamia pinnata	Kanari	Fabaceae	T	-	+
44	Acacia farnesiana	Israeli Baval	Mimosaceae	T	+	+
45	Ficus benghalensis	Bad	Moraceae	T	+	+
46	Ficus religiosa	Pipal	Moraceae	T	+	+
47	Cordia dichotoma	Gundi	Ehretiaceae	T	+	+
48	Syzygium cumini	Jamun	Myrtaceae	T	-	+
49	Moringa oleifera	Saragvo	Moringaceae	T	+	+
50	Tamarindus indica	Imli	Caesalpiniaceae	T	-	+
51	Clerodendrum multiflorum	Arni	Verbenaceae	S	-	+
52	Cassia auriculata	Awal	Caesalpiniaceae	S	-	+
53	Zizyphus nummularia	Chanibor	Rhamnaceae	S	+	+
54	Grewia tenax	Gangeri	Tiliaceae	S	-	+
55	Pandanus fascicularis	Gokhru	Pandaliaceae	S	+	+
56	Hibiscus vitifolius	Jungli Bhindo	Malvaceae	S	+	+
57	Ocimum americanum	Jungali Tulsi	Lamiaceae	S	+	+
58	Haloxylon recurvum	Khari Lani	Chenopodiaceae	S	-	+
59	Celosia argentea	Lapnadi	Amarantaceae	S	+	+
60	Solanum nigrum	Piludi	Solanceae	S	+	+
61	Maytenus emarginata	Vilido (Viluro)	Celasteraceae	S	+	+
62	Dodonaea viscosa	Vilayati Mehandi	Sapindaceae	S	-	+
63	Triumfetta rhomboidea	Zipto	Tiliaceae	S	-	+
64	Hibiscus rosa sinensis	Jasud	Malvaceae	S	-	+
65	Psoralea corylifolia	Bavchi (Takmariya)	Leguminosae	S	-	+
66	Boerhavia diffusa	Satodi	Nyctaginaceae	S	-	+
67	Plumbago zeylanica	Chitrak	Plumbaginaceae	S	-	+
68	Piper longum	Lidiphar	Piperaceae	S		

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ભચાઉ

No.	Scientific name	Local name	Family	Habit	Core Zone	Buffer Zone
69	*Clerodendrum multiflorum*	Arni	Verbenaceae	S	+	+
70	*Grewia flavescens*	Kanchka	Malvaceae	S	+	+
71	*Ocimum sanctum*	Tilsi	Labiatae	S	+	+
72	*Eclipta prostrata*	Bhangro	Compositeae	S	+	+
73	*Tephrosia purpurea*	Jethi Madh	Papilionaceae	S	+	+
74	*Commiphora wightii*	Guggul	Burseraceae	S	+	+
75	*Euphorbia neriifolia*	Kantalo Thor	Euphorbiaceae	S	+	+
76	*Lawsonia inermis*	Mehendi	Lythraceae	S	+	+
77	*Adhatoda vasica*	Adusa	Acanthaceae	S	+	+
78	*Abrus precatorius*	Kumar Pethu	Idiaceae	S	+	+
79	*Zizyphus mauritiana*	Mota bor	Rhamnaceae	S	+	+
80	*Zizyphus nummularia*	Ghanti bor	Rhamnaceae	S	+	+
81	*Capparis aphylla*	Kerdo	Capparaceae	S	+	+
82	*Carissa carandas*	Karondi	Apocynaceae	S	+	+
83	*Withania somnifera*	Ashwagandha	Solanaceae	S	+	+
84	*Lantana camara*	Rainvuni	Verbenaceae	S	+	+
85	*Datura metal*	Dhatura	Solanaceae	S	+	+
86	*Opuntia dillenii*	Hathio Thor	Cactaceae	S	+	+
87	*Indigofera linnaei*	Gadi	Fabaceae	S	+	+
88	*Agave americana*	Ratki	Agavaceae	S	+	+
89	*Vitex negunda*	Nirgundi	Verbenaceae	H	+	+
90	*Martynia annua*	Bichchu	Martyniaceae	H	+	+
91	*Solanum surattense*	Dant kateli	Solanaceae	H	+	+
92	*Argemone mexicana*	Mexican poppy	Papaveraceae	H	+	+
93	*Abrus precatorius*	Chanothi	Fabaceae	C	+	+
94	*Rivea hypocrateriformis*	Pang	Convolvulaceae	C	+	+
95	*Tinospora cordifolia*	Gilo	Menispermaceae	C	+	+
96	*Asparagus gonoclados*	Satawari	Liliaceae	C	+	+
97	*Mucuna pruriens*	Kauchh	Leguminaceae	C	+	+
98	*Asparagus racemosus*	Shatavri	Asparagaceae	C	+	+
99	*Aristida mutica* spp. *arbiata*	Bhangoru	Poaceae	G	+	+
100	*Bothriochloa intermedia*	Dardido	Poaceae	G	+	+
101	*Ischaemum rugosum*	Dhadki	Poaceae	G	+	+
102	*Iseilema laxum*	Ghanki	Poaceae	G	+	+

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ANNEXURE : XIII Contd..

S. No.	Scientific name	Local name	Family	Habit	Core Zone	Buffer Zone
103	Bambusa bamboo	Kand vans	Poaceae	G	+	+
104	Dinebra retroflexa	Kharlu	Poaceae	G	-	+
105	Themeda quadrivalvis	Ratad	Poaceae	G	+	+
106	Cymbopogon martini	Rosha	Poaceae	G		
107	Sehima sulcatum	Sankar	Poaceae	G	+	
108	Bothriochloa ischaemum	Zinzvo	Poaceae	G	+	+
109	Setaria glauca	Ziptighas	Poaceae	G	+	+
110	Dichanthium annulatum	Karad, Jagra	Poaceae	G	+	+
111	Aristida adscensionis	Lapdu	Poaceae	G	+	+
112	Desmostachya bipinnata	Darbha	Poaceae	G	+	+
113	Eragrostis poaeoides	Chaku Maku	Poaceae	G	-	+
114	Dendrocalamus strictus	Bamboo	Poaceae	G	-	+
115	Cymbopogon flexuosa	Gandharu	Poaceae	G		
116	Heteropogon contortus	Surwala, Kalitamp	Poaceae	G	-	+
117	Cynodon dactylon	Durva	Poaceae	G	+	+

Table No. 2

List of Vegetation in Forest Area

Based on Actual Sighting, based on Inputs from locals and Perused from Secondary Literature

Habit: Tree (T), Shrub (S), Herb (H) and Grass (G)

S. No.	Scientific Name	Common name	Family	Habit
1	Acacia nilotica	Desi Babool	Mimosaceae	T
2	Ailanthus excelsa	Aldu	Simaroubaceae	T
3	Acacia jacquemontii	Kumta	Mimosaceae	T
4	Butea monosperma	Dhak	Fabaceae	T
5	Balanites aegyptiaca	Hingot	Zygophyllaceae	T
6	Anogeissus latifolia	Dhaodo	Combretaceae	T
7	Lannea coromandelica	Gurjan	Anacardiaceae	T
8	Sterculia urens	Kariya	Malvaceae	T
9	Azadirachta indica	Neem	Meliaceae	T
10	Gmelina arborea	Sevan	Verbenaceae	T
11	Cassia fistula	Amaltas	Caesalpiniaceae	T
12	Albizia lebbeck	Kala Sirs	Mimosaceae	T
13	Parkinsonia aculeata	Ram Bavai	Caesalpiniaceae	T
14	Commiphora wightii	Guggul	Burseraceae	S
15	Euphorbia spartium	Kharsani Thor	Euphorbiaceae	S
16	Solanum nigrum	Piludi	Solanaceae	S
17	Aristida adscensionis	Lapdo	Poaceae	G

Table No. – 3

Inventory of Faunal Diversity in the Core & Buffer Zone of Proposed Mine Site

Based on Actual Sighting, based on Inputs from locals and Perused from Secondary Literature

S. No.	Scientific Name	Common Name	Status according to IWPA- 1972	Core Zone	Buffer Zone
Mammals					
1	Panthera leo persica	Asiatic Lion	Sch. I	+	+
2	Panthera pardus	Leopard		+	+
3	Hyaena hyaena	Hyena	Sch. III	+	+
4	Sus scrofa	Wild boar	Sch. III	+	+
5	Gazella gazella bennetti	Chinkara	Sch. I	+	+
6	Axis axis	Spotted Deer	Sch. III	+	+
7	Funambulus pennanti	Five- striped Palm Squirrel	Sch. IV	+	+
8	Canis aureus	Jackal	Sch. II	+	+
9	Vulpes bengalensis	Common fox	Sch. II	+	+
10	Hystrix indica	Indian Porcupine	Sch. IV	+	+
11	Boselaphus tragocamelus	Nilgai	Sch.III	+	+
12	Felis chaus	Jungle cat	Sch. II	+	+
13	Herpestes edwardsii	Common Mongoose	Sch. II	+	+
14	Canis lupus	Wolf		+	+

सी. पी. पांडा
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ANNEXURE : XIII Contd..

S. No.	Scientific Name	Common Name	Status according to IWPA- 1972	Core Zone	Buffer Zone
		Reptiles			
1	Typhlops porrectus	Common blind snake	Sch. IV	+	+
2	Eryx conicus	Common sandboa	Sch. IV	+	+
3	Lycodon aulicus	Common wolf snake	Sch. IV	+	+
4	Boiga trigonata	Common cat snake	Sch. IV	+	+
5	Cerberus rynchops	Dog faced water snake	Sch. IV	+	+
6	Bungarus caeruleus	Common Indian Krait	Sch. IV	+	+
7	Viper russelli	Russell's viper	Sch. II	+	+
8	Echis carinatus	Saw scaled viper	Sch. II	+	+
9	Xenochrophis piscator	Checkered keelback water snake	Sch. II	+	+
10	Ptyas mucosus	Indian Rat snake	Sch. II	+	+
11	Bungarus caeruleus	Common Indian krait	Sch. IV	+	+
12	Eryx johnii	Red sand Boa	Sch. IV	+	+
13	Naja naja	Naag/Kobya	Sch. II	+	+
		Amphibians			
1.	Rana limnocharis	Indian cricket Frog	Sch. IV	+	+
2.	Hoplobatrachus tigerinus	Indian bull frog	Sch. IV	+	+
3.	Rana tigrina	Common Frog	Sch. IV	+	+
4.	Bufo melanostictus	Common Indian toad	Sch-IV	+	+
		Butterflies			
1	Danaus chrysippus	Plain tiger	-	+	+
2	Papilio polytes	Common mormon	-	+	+
3	Ixias pyrene	Yellow orange tip	-	+	+
4	Belenois aurota aurota	Pioneer	-	+	+
5	Ixias marianne	White orange tip	-	+	+
6	Catopsilia pyranthe	Mottled Emigrant	-	+	+
7	Vanessa cardui	Painted lady butterfly	-	+	+
8	Colotis eucharis	Plain orange tip	-	+	+
9	Tarucus nara	Striped pierrot	-	+	+
10	Junonia orithya	Blue pansy	-	+	+
11	Chilades parrhasius	Small cupid	-	+	+
12	Papilio demoleus	Lime butterfly	-	+	+
13	Pieris napi	Green-veined white butterfly	-	+	+
14	Catopsilia pomona	Common Emigrant	-	+	+
15	Eurema brigitta	Small grass yellow	-	+	+
		Arthropods			
1	Apis indica	Chotj Madhumakkhi	-	+	+
2.	Apis dorsata	Badi Madhumakkhi	-	+	+
3	Periplaneta americana	Cockroach	-	+	+
4	Buthus sp.	Scorpion	-	+	+
5	Sympetrum fonscolombii	Red veined darter dragonfly	-	+	+
6	Diplacodes trivialis	Ground skimmer dragonfly	-	+	+
7	Stegodyphus sp.	Social Spider	-	+	+

વધા. જે. વોલ
સહાયક ડીરેક્ટર
નકુમ

Table No. - 4

Inventory of Avifaunal Diversity in the Core & Buffer Zone of Proposed Mine Site

Based on Actual Sighting, based on inputs from locals and Perused from Secondary Literature

S. No.	Scientific Name	Common Name	Status according to WPA-1972	Core Zone	Buffer Zone
1.	Bubulcus ibis	Cattle Egret	Sch. IV	+	+
2.	Egretta garzetta	Little Egret	Sch. IV	+	+
3.	Ardea intermedia	Intermediate egret	Sch. IV	+	+
4.	Vanellus indicus	Red-wattled Lapwing	Sch. IV	+	+
5.	Vanellus malabaricus	Yellow-wattled lapwing	Sch. IV	+	+
6.	Columba livia	Blue Rock Pigeon	Sch. IV	+	+
7.	Spilopelia senegalensis	Laughing Dove	Sch. IV	+	+
8.	Streptopelia chinensis	Spotted dove	Sch. IV	+	+
9.	Halcyon smyrnensis	White-throated Kingfisher	Sch. IV	+	+
10.	Ceryle rudis	Pied kingfisher	Sch. IV	+	+
11.	Dicrurus macrocercus	Black drongo	Sch. IV	+	+
12.	Merops orientalis	Small Bee Eater	Sch. IV	+	+
13.	Merops philippinus	Blue tailed bee eater	Sch. IV	+	+
14.	Coracias benghalensis	Indian Roller	Sch. IV	+	+
15.	Pseudibis papillosa	Black Ibis	Sch. IV	+	+
16.	Plegadis falcinellus	Glossy Ibis	Sch. IV	+	+
17.	Threskiornis melanocephalus	Oriental White Ibis	Sch. IV	+	+
18.	Sturnia pagodarum	Brahminy Starling	Sch. IV	+	+
19.	Pastor roseus	Rosy starling	Sch. IV	+	+
20.	Platalea leucorodia	Spoonbill	Sch. IV	+	+
21.	Acridotheres tristis	Common Myna	Sch. IV	+	+
22.	Acridotheres ginginianus	Bank Myna	Sch. IV	+	+
23.	Motacilla maderaspatensis	White Browed wagtail	Sch. IV	+	+
24.	Motacilla flava	Yellow wagtail	Sch. IV	+	+
25.	Upupa epops	Common Hoopoe	Sch. IV	+	+
26.	Cinnyris asiaticus	Purple Sunbird	Sch. IV	+	+
27.	Pycnonotus cafer	Red Vented Bulbul	Sch. IV	+	+
28.	Corvus splendens	Common Crow	Sch. V	+	+
29.	Himantopus himantopus	Black-Winged Stilt	Sch. IV	+	+
30.	Tringa glareola	Wood Sandpiper	Sch. IV	+	+
31.	Tringa stagnatilis	Marsh sandpiper	Sch. IV	+	+
32.	Tringa totanus	Common redshank	Sch. IV	+	+
33.	Gallinago gallinago	Common snipe	Sch. IV	+	+
34.	Copsychus saularis	Oriental magpie robin	Sch. IV	+	+
35.	Saxicoloides fulicata	Indian Robin	Sch. IV	+	+
36.	Turdoides caudata	Common babbler	Sch. IV	+	+
37.	Turdoides striatus	Jungle babbler	Sch. IV	+	+
38.	Megalaima viridis	Coppersmith barbet	Sch. IV	+	+

[illegible]

S. No.	Scientific Name	Common Name	Status according to [illegible]	Core	Buffer
39.	Francolinus pondicerianus	Grey francolins	Sch. IV		
40.	Phoenicopterus roseus	Greater flamingo	Sch. IV	-	+
41.	Ploceus philippinus	Baya-weaver	Sch. IV	+	+
42.	Centropus sinensis	Greater coucal	Sch. IV	-	+
43.	Euthynnnya scolopaceo	Asian koel	Sch. IV	+	+
44.	Psittacula krameri	Rose-ringed parakeet	Sch. IV	+	+
45.	Anas crecca	Common teal	Sch. IV	-	+
46.	Microcarbo niger	Little cormorant	Sch. IV	-	+
47.	Pavo cristatus	PEACOCK	Sch.I	+	+

(+) Shows: Presence of the species and (-) Shows: Absence of the species

Table No. – 5

Inventory of Aquatic Diversity in the Buffer Zone of Proposed Mine Site

Based on Actual Sighting, based on inputs from locals and Perused from Literature

S. No.	Scientific name	Local name	Family	Core Zone	Buffer Zone
Aquatic flora					
1.	Hydrilla verticillata	Saval	Hydrocharitaceae	-	+

Table No. – 6

Inventory of Mangrove Ecosystem with Associated Biodiversity in Buffer Zone of [illegible]

Based on Actual Sighting, based on Inputs from locals and Perused from secondary [illegible]

S. No.	Scientific name	Local name	Family	Habit
Floral diversity				
1.	Kandelia candel	Kandal, Narrow leaved mangrove	Rhizophoreceae	T
2.	Rhizophora mucronata	Bhora, Asiatic mangrove	Rhizophoraceae	T
Faunal diversity				
1.	Solenocera crassicornis	Goastal Mud Shrimp	Solenoceridae	Arthropods

[illegible]

STATEMENT SHOWING THE DETAILS OF AREAS DECLARED AS RESERVE FORESTS (SECTION 20) OF INDIAN FOREST ACT, 1927.

Sr. No.	Village	Taluka	Range	Area (ha.)	Notification No. & Date
1	Khared	Mahuva	Mahuva	24.28	AKH/220/FLD/1665/37967-P, Dt.04-04-66
2	Kalpar	–"–	–"–	32.37	AKH/336/FLD/1666/56145-P, Dt.05/06-09-66
3	Dayal	–"–	–"–	40.47	AKH/245/FLD/1665/40143-P, Dt.15-04-66
4	Kalsar	–"–	–"–	80.94	AKH/347/FLD/1666/56135-P, Dt.14-09-66
5	Kotada Nicha	–"–	–"–	50.58	AKH/347/FLD/1666/56135-P, Dt.14-09-66
6	Vaghnagar	–"–	–"–	20.23	AKH/58/FLD/1667/14094-P, Dt.13-04-67
7	Dudheri	–"–	–"–	30.35	AKH/229/FLD/1667/44019-P, Dt.22-12-68
8	Kotada Uncha	–"–	–"–	32.37	AKH/126/FLD/1671/82790-P, Dt.20-04-71
9	Doliya	–"–	–"–	14.09	AKH/120/FLD/1672/73952-P, Dt.17-05-72
10	Gujarda	–"–	–"–	32.37	AKH/229/FLD/1667/44019-P, Dt.22-12-68
11	Karmadiya	–"–	–"–	238.93	AKH/219/FLD/1671/92758-P, Dt.05-10-71
12	Ratanpar	–"–	–"–	486.74	AKH/219/FLD/1671/92758-P, Dt.05-10-71
13	Moda	–"–	–"–	44.26	AKH/219/FLD/1671/92758-P, Dt.05-10-71
14	Talaniya	–"–	–"–	83.67	AKH/219/FLD/1671/82758-P, Dt.05-10-71
15	Bede	–"–	–"–	730.23	AKH/252/FLD/1671/8799-P, Dt.17-10-71
16	Karjala	–"–	–"–	182.65	AKH/252/FLD/1671/8799-P, Dt.17-11-71
17	Jetsar	–"–	–"–	499.79	AKH/16/80/FLD/1676, Dt.29-11-80
TOTAL				2626.31	
1	Pedari	Taleja	Mahuva	40.47	AKH/335/FLD/1666/56136-P, Dt.05/06-09-66
2	Chopra	–"–	–"–	20.23	AKH/335/FLD/1666/56136-P, Dt.05/06-09-66
3	Madhuvan	–"–	–"–	33.30	AKH/123/FLD/1467/25600-P, Dt.04-06-67
4	Pratapara	–"–	–"–	74.91	AKH/123/FLD/1467/25600-P, Dt.04-06-67
5	Zanzmer	–"–	–"–	26.30	AKH/123/FLD/1467/25600-P, Dt.04-06-67

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ANNEXURE : XIII Contd..

6	Medhala	-"-	-"-	742.90	AKH/123/FLD/1467/25600-P, Dt.04-08-67
7	Khandhera	-"-	-"-	108.46	AKH/410/FLD/1069/54574-P, Dt.06-06-69
8	Sarlanpar	-"-	-"-	59.73	AKH/383/FLD/1068/40001-P, Dt 12-03-69
9	Tarsara	-"-	-"-	42.49	AKH/271/75/FLD/1671/83061-P, Dt.15-07-75
10	Asmla	-"-	-"-	80.94	GVN/1998/20/JJM/1690/781-K, Dt.01-06-98
11	Pingali	-"-	-"-	80.94	GVN/2000/21/JJM/1098/4240-K, Dt.16-03-2000
12	Bakhetaka	-"-	-"-	121.48	GVN/1998/21/JJM/1690/781-K, Dt.01-06-98
13	Sakhadesar-2	-"-	-"-	43.02	AKH/484/FLD/1668/80737-P, Dt.18-11-69
14	Hansipara	-"-	-"-	64.33	AKH/484/FLD/1668/80737-P, Dt.18-11-69
15	Kundhada	-"-	-"-	456.69	AKH/484/FLD/1668/80737-P, Dt.18-11-69
16	Raigon	-"-	-"-	8.09	GVN/1999/17/JJM/1095/4306-K, Dt.20-05-99
TOTAL				2003.47	

Table No. – 3 of letter by DCF dated 05.02.2018 updated as per Act 18 of 2022

Inventory of Faunal Diversity in the Core & Buffer Zone of Proposed Mine Site Based on Actual sighting, based on inputs from local and perused from secondary Literature

Sl. No.	Scientific Name	Common Name	Status according to IWPA-1972 (Schedule)	Reference to schedule as the Wild Life Protection amendment act, 2022			Present in Core Zone	Present in Buffer Zone
				Schedule	Part	Serial		
	Mammals							
1.	*Panthera leo persica*	Asiatic Lion	I	I	A	35	+	+
2.	*Panthera pardus*	Leopard	I	I	A	43	+	+
3.	*Hyaena hyaena*	Striped hyaena	III	I	A	89	+	+
4.	*Sus scrafa*	Wild boar	III	Not listed, (IUCN-LC)			+	+
5.	*Gazella bennettii*	Chinkara	I	I	A	2	+	+
6.	*Axis axis*	Spotted deer/ Cheetal	III	II	A	11	+	+
7.	*Funambulus pennantii*	Five-stripped palm squirrel	IV	Not listed, (IUCN-LC)			+	+
8.	*Canis aureus*	Jackal	II	I	A	22	+	+
9.	*Vulpes bengalensis*	Bengal fox	II	I	A	84	+	+
10.	*Hystrix Indica*	Indian porcupine	IV	I	A	120	+	+
11.	*Boselaphus tragocamelus*	Nilgai	III	II	A	1	+	+
12.	*Felis Chaus*	Jungle cat	II	I	A	42	+	+
13.	*Herpestes edwardsii*	Common mongoose	II	Appendix III		19	+	+
14.	*Canis Lupus*	Grey wolf	-	I	A	21	+	+
	Reptiles							
1.	*Typhlops porrectus*	Common blind snake	IV	II	C	15	+	+
2.	*Eryx conicus*	Common sandoba	IV	Not Listed (IUCN-NT)			+	+
3.	*Lycodon aulicus*	Common wolf snake	IV	Not Listed (IUCN-LC)			+	+
4.	*Bolga trigonata*	Common cat snake	IV	Not Listed (IUCN-LC)			+	+
5.	*Cerberus rynchops*	Dog faced water snake	IV	I	C	27	+	+
6.	*Bungarus caeruleus*	Common Indian Krait	IV	Not Listed (IUCN-LC)			+	+
7.	*Vipera Russelli*	Russell viper	II	I	C	30	+	+
8.	*Echis carinatus*	Saw scaled viper	II	Not Listed (IUCN-LC)			+	+
9.	*Fowlea piscator*	Checkered Keelback	II	I	C	25	+	+
10.	*Ptyas mucosus*	Indian Rat snake	II	I	C	26	+	+
11.	*Bungarus caeruleus*	Common Indian Krait	IV	Not Listed (IUCN-LC)			+	+

ANNEXURE : XIII Contd..

Sl. No.	Scientific Name	Common Name	Status according to IWPA-1972 (Schedule)	Reference to schedule as the Wild Life Protection amendment act, 2022			Present in Core Zone	Present in Buffer Zone
				Schedule	Part	Serial		
12.	*Eryx johnil*	Red sand boa	IV	I	C	1	+	+
13.	*Naja Naja*	Naag/cobra	II	I	C	18	+	+
	Amphibians							
1.	*Fejervarya limnocharis*	Indian cricket Frog	IV	Not Listed (IUCN-LC)			-	+
2.	*Hoplobatrachus tigerinus*	Indian bull frog	IV	II	D	13	-	+
3.	*Rana tigrina*	Common frog	IV	Appendix II		322	+	+
4.	*Duttaphrynus melanostictus*	Common Indian toad	IV	Not Listed (IUCN-LC)			+	+
	Butterflies							
1.	*Danaus chrysippus*	Plain tiger	-				+	+
2.	*Papillo Polytes*	Common Mormon	-				+	+
3.	*Ixias pyrene*	Yellow orange tip	-				+	+
4.	*Belenols aurota aurota*	Pioneer	-				+	+
5.	*Ixias Marianne*	White orange tip	-				+	+
6.	*Catopsilla pyranthe*	Mottled Emigrant	-				+	+
7.	*Vanessa Cardul*	Painted lady butterfly	-				+	+
8.	*Colotis eucharis*	Plain orange tip	-				+	+
9.	*Tarucus nala*	Striped plerrot	-				+	+
10.	*Junonia orithya*	Blue pansy	-				+	+
11.	*Chilades parrhasius*	Small cupid	-				+	+
12.	*Papilio demoleus*	Lime butterfly	-				+	+
13.	*Pleris napi*	Green-veined white butterfly	-				+	+
14.	*Catopsilia Pomona*	Common emigrant	-				+	+
15.	*Eurema brigitta*	Small grass yellow	-				+	+
	Arthropods							
1.	*Apls Indica*	Choti Madhumakkhi	-				+	+
2.	*Apis dorsata*	Badi Madhumakkhi	-				+	+
3.	*Periplarieta amercana*	Cockroach	-				+	+
4.	*Buthus sp.*	Scorpion	-				+	+
5.	*Sympetrum fonscolombii*	Red veined darter dragonfly	-				+	+
6.	*Diplacodes trivjallis*	Ground skimmer dragonfly	-				+	+
7.	*Stegodyphus sp.*	Social Spider	-				+	+

Table No. – 4 of letter by DCF dated 05.02.2018 updated as per Act 18 of 2022.

Inventory of Avifauna Diversity in the Core & Buffer Zone of proposed mine site based on actual sighting, based on inputs from locals and perused from Secondary Literature

Sl. No.	Scientific Name	Common Name	Status according to IWPA-1972 (Schedule)	Reference to schedule as the Wild Life Protection amendment act, 2022			Present in Core Zone	Present in Buffer Zone
				Schedule	Part	Serial		
1.	*Bubulcus Ibis*	Cattle egret	IV	II	B	29	-	+
2.	*Egretta garzetta*	Little egret	IV	II	B	40	+	+
3.	*Ardea Intermedia*	Intermediate egret	IV				-	+
4.	*Vanellus Indicus*	Red-wattled Lapwing	IV	II	B	795	-	+
5.	*Vanellus malabaricus*	Yellow wattled lapwing	IV	II	B	798	-	+
6.	*Columba livia*	Blue rock pigeon	IV	Not Listed (IUCN-LC)			+	+
7.	*Spilopelia senegalensis*	Laughing dove	IV	II	B	742	+	+
8.	*Streptopelia chinnesis*	Spotted done	IV	II	B	753	-	+
9.	*Halcyon smyrnensis*	White-throated Kingfisher	IV	II	B	499	+	+
10.	*Ceryle rudis*	Lesser Pied kingfisher	IV	II	B	496	-	+
11.	*Dicrurus macrocercus*	Black drongo	IV	II	B	223	+	+
12.	*Merops orientalis*	Green bee - eater	IV	II	B	26	+	+
13.	*Merops phillppinus*	Blue tailed bee-eater	IV	II	B	22	-	+
14.	*Coracias benghalensis*	Indian roller	IV	II	B	829	+	+
15.	*Pseudibis papillosa*	Red-naped Ibis	IV	II	B	484	+	+
16.	*Plegadis falcinellus*	Glossy ibis	IV	II	B	483	-	+
17.	*Threskiornis melanocephalus*	Black-headed Ibis	IV	II	B	482	-	+
18.	*Sturnia pagodarum*	Brahminy starling	IV	II	B	951	-	+
19.	*Pastor roseus*	Rosy starling	IV	II	B	963	-	+
20.	*Platalea leucorodia*	Eurasian spoonbill	IV	II	B	59	-	+
21.	*Acridotheres tristris*	Common myna	IV	II	B	955	+	+
22.	*Acridotheres ginginianus*	Bank myna	IV	II	B	950	+	+
23.	*Motacilla maderaspatensis*	Whitebrowed wagtail	IV	II	B	775	+	+
24.	*Motacilla flava*	Western yellow wagtail	IV	II	B	773	-	+
25.	*Upupa epops*	Common hoopoe	IV	II	B	479	+	+

ANNEXURE : XIII Contd..

Sl. No.	Scientific Name	Common Name	Status according to IWPA-1972 (Schedule)	Reference to schedule as the Wild Life Protection amendment act, 2022			Present in Core Zone	Present in Buffer Zone
				Schedule	Part	Serial		
26.	*Cinnyris asiaticus*	Purple sunbird	IV	II	B	983	-	+
27.	*Pycnonotus cafer*	Red-vented bulbul	IV	II	B	63	+	+
28.	*Corvus splendens*	Common crow	V	Not Listed (IUCN-LC)			+	+
29.	*Himantopus Himantopus*	Black winged stilt	IV	II	B	967	-	+
30.	*Tringa glareola*	Wood sandpiper	IV	II	B	874	-	+
31.	*Tringa stagnatilis*	Marsh sandpiper	IV	II	B	857	-	+
32.	*Tringa totanus*	Common redshank	IV	II	B	843	-	+
33.	*Gallinago gallinago*	Common snipe	IV	II	B	845	-	+
34.	*Copychus saularis*	Oriental magpie robin	IV	II	B	384	+	+
35.	*Saxicoloides fulicata*	Indian Robin	IV	II	B	372	+	+
36.	*Argya caudata*	Common babbler	IV	II	B	537	+	+
37.	*Argya striata*	Jungle babbler	IV	II	B	543	-	+
38.	*Psilopogon haemacephalus*	Coppersmith barbet	IV	II	B	11		
39.	*Francolinus pondicerianus*	Grey francolin	IV	II	B	701	-	+
40.	*Phoenicopterus roseus*	Greater flamingo	IV	II	B	326	+	+
41.	*Ploceus Philippinus*	Baya-weaver	IV	II	B	1084	+	+
42.	*Centropus sinenis*	Greater coucal	IV	II	B	201	-	+
43.	*Eudynamys scolopaceus*	Asian Koel	IV	II	B	194	+	+
44.	*Psittacula Krameri*	Rose-ringed parakeet	IV	II	B	693	+	+
45.	*Anas crecca*	Common teal	IV	II	B	236	-	+
46.	*Microcarbo niger*	Little cormorant	IV	II	B	165	-	+
47.	*Pavo cristatus*	Indian peafowl	I	I	B	161	+	+

(+) Shows: Presence of the species and (-) Shows: Absence of the species

ANNEXURE : XIV

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No. WLP/32/C/ 826-827 /2021-22

Office of the

Principal Chief Conservator of forests

Block No. B/1, Aranya Bhavan,

Ch-3 Circle, Sector - 10/A,

Gujarat State, Gandhinagar.

Dated: 13 .01.2022

To.

M/s. Nirma Limited.

Nirma House, Ashram road,

Ahmedabad- 380 009

Sub:- Authentication of map showing location of any Protected areas within 10 km of the proposed Limestone Mines of M/s Nirma limited located at Villages- Vangar, Madhiya, Padhiarka, Doliya, Gujarda, Dudheri and Dudhala, Taluka- Mahuva, Dist. Bhavnagar, Gujarat.

Ref :- Chief Conservator Of Forest, Junagadh Circle letter No. AJMN/T.12/1809-10/2021-22, Dt. 18/12/2021

With reference to the subject and letter quoted above, M/s Nirma Limited requested to issue authentication of map showing location of any Protected areas within 10 km of the proposed Limestone Mines located at Villages- Vangar, Madhiya, Padhiarka, Doliya, Gujarda, Dudheri and Dudhala, Taluka- Mahuva, Dist. Bhavnagar.

Please find enclosed herewith a copy of map showing location of any Protected areas within 10 km of the limestone mining project as ANNEXURE-A, map showing distance between protected areas and proposed limestone mine as ANNEXURE-B.

Encl. As above

13/1

(Shyamal Tikadar)

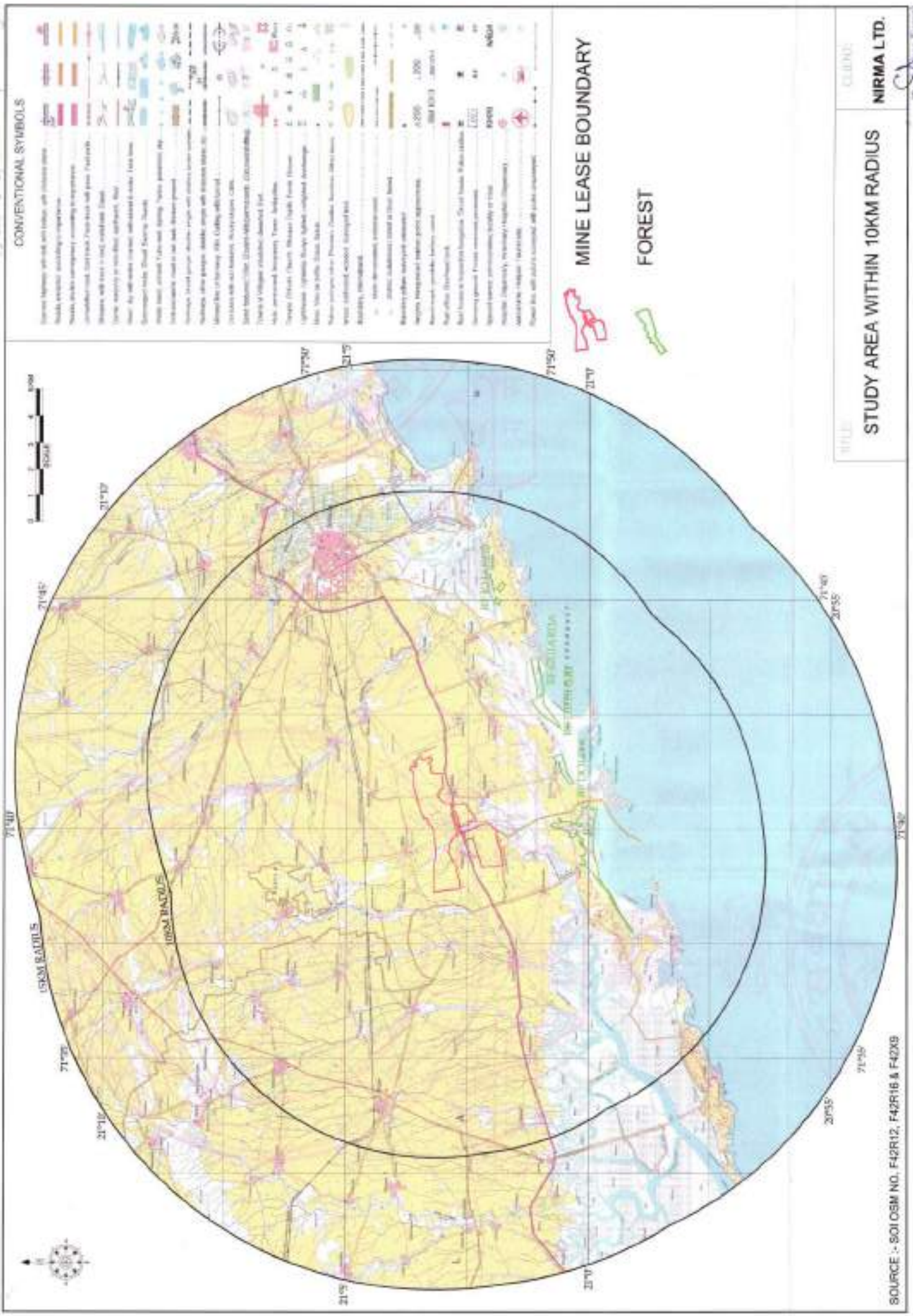
Chief Wildlife Warden

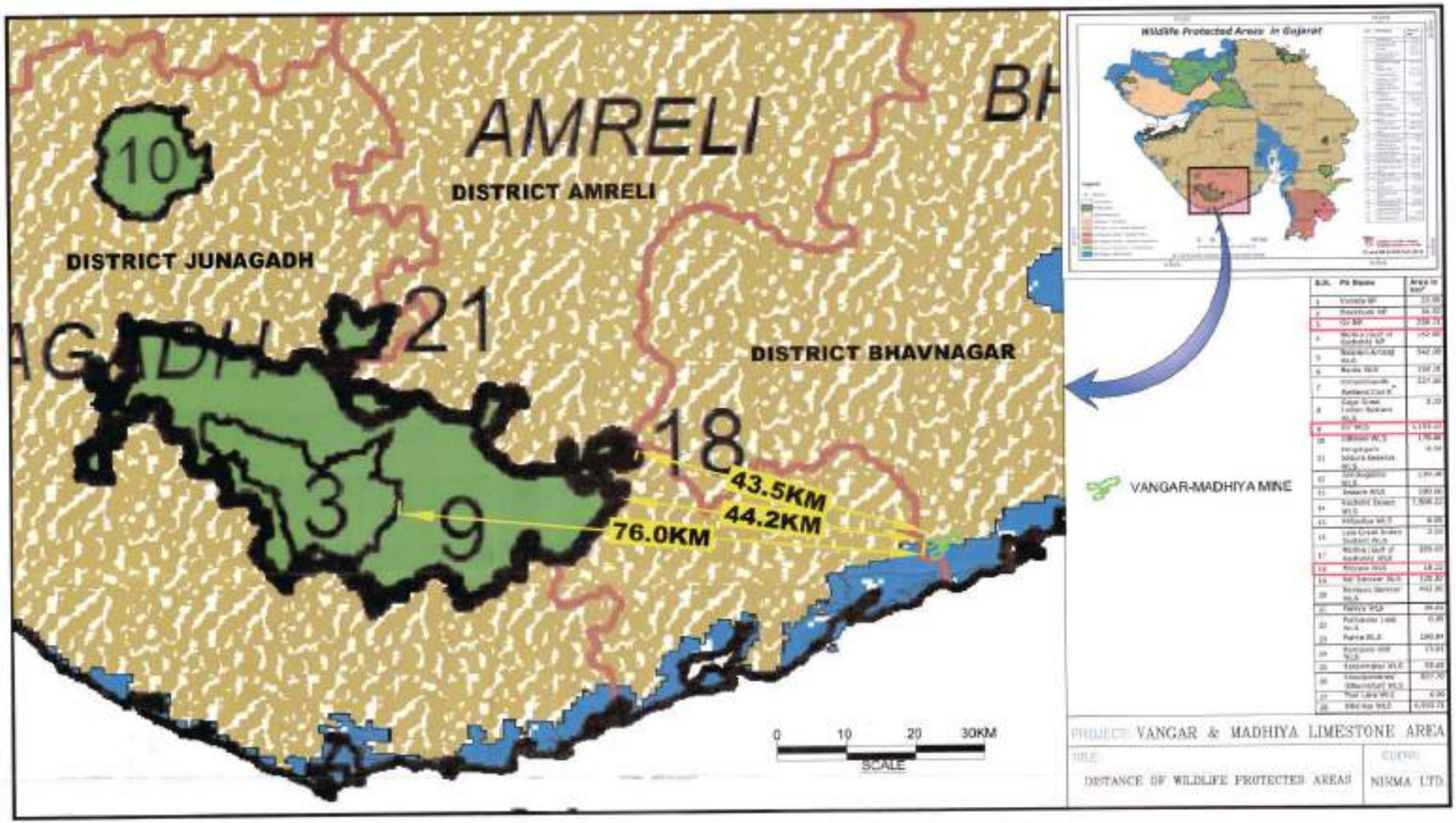
Gujarat State, Gandhinagar

Copy to: Chief Conservator of Forests, Junagadh Circle for information and necessary action.

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ANNEXURE : XIV Contd..





: A-85 :

ANNEXURE : XIV

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(Dr. Sanjay Kumar)
Deputy Conservator of Forests
Bhavnagar Forest Division
Bhavnagar

No WLP/32/C/926-927 /2021-22

Principal Chief Conservator of Forests,

Block No. B/1, Aranya Bhawan,

Ch -3 Circle, Sector -3 A,

Gujarat State, Gandhinagar.

Date 14 .02.2022

To,

M/s Nirma Limited,

Nirma House, Ashram Road,

Ahmedabad – 380 009

Sub: Authentication of map showing location of any Protected areas within 10 km of the proposed Limestone Mines of M/s Nirma limited located at Villages- Vangar, Madhiya, Padhiarka, Doliya, Gujarda, Dudheri and Dudhala, Taluka- Mahuva, Dist. Bhavnagar, Gujarat.

Ref: Our Office letter no WLP/32/C/826-827, dated: 13.01.2022.

With reference to our office letter dated 13.01.2022 issued authenticated map showing location of any Protected areas within 10 km of the Limestone mines at Padhiarka & Dolia, Vangar & Madhiya, Gujarda, Dudhala & Dudheri of Nirma Limited located in Mahuva taluka, District Bhavnagar, Gujarat state

As shown in issued authenticated maps, the distance between Protected areas and Limestone mines is as shown below.

Protected Areas	Distance between Limestone Mines and Protected areas.		
	Vangar & Madhiya Mines	Gujarda, Dudheri & Dudhala Mines	Padhiarka & Dolhya Mines
Gir National Park,	76 km	80.9 km	79 km
Gir Wildlife Sanctuary,	44.2 km.	48.8 km	17.6 km
Mitiyala Wildlife Sanctuary	43.5 km	48.1 km	46.7 km

(Shyamal Tikadar)
Chief Wildlife Warden
Gujarat state, Gandhinagar

Copy to: Chief Conservator of Forests, Junagadh circle for information & necessary action

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ANNEXURE : XV

TEST REPORT

Customer's Name & Address Nirma Ltd. Nirma House, Ashram Road Ahemadabad - 380009 Contact Person : Ms. Tejal Patel	
Customer Particulars	
Type of Sample	: Soil
Work Order No.	: NNL/CP-43/LOI-095/2020-21/PTV/
Sampling Location	: In and around Doliya & Padhiyarka; Dudhala Dudheri & Gujarda; & Vangar & Madhiya Limestone Mines, District Bhavnagar, Gujarat.
Sampling Procedure	: IS 2720 (Part-1)
Sample Volume/ Quantity	: 1.25 Kg
Sampling Team	: MMRDL (Ravikant)
Sample Reg. No.	: MMS/06-2021/1.1-1.12
Date of Monitoring	: 30/05/2021
Date of Receipt	: 02/06/2021
Date of Testing	: 07/06/2021 to 14/06/2021
Date of Report	: 18-06-2021
Test Report No.	: MMS/06-2021/65
ULR No.	TC633721000000138F
Page	: 1 of 1

Parameters	Protocol	Near Cement Plant at Padhiarka Village	Padhiarka Village	Vangar Village	Madhiya Village	Dudhala Village	Dudheri Village
pH	IS 2720 (P26)	8.0	8.1	7.7	8.0	7.9	8.0
E.C. (mS/cm)	IS 14767:2000	0.525	0.207	1.739	0.373	0.335	0.301
$CaCO_3$ (%by mass)	IS 2720 (P23)	21.5	2.5	32.0	40.5	25.5	28.0
Specific Gravity	IS : 2720 (P 3/Sec 1) -1980	3.30	2.11	2.01	2.13	2.04	1.77
Moisture (%by mass)	IS 2720 (P 2)	25.718	33.82	23.108	21.837	30.845	19.541
Sodium (Kg/ha)	Method no. 14*	1907.4	705.6	2044.0	2038.4	622.7	1086.4
Potassium (Kg/ha)	Method no. 14*	357.0	343.0	233.0	157.0	571.0	468.0

Parameters	Protocol	Dudhala Near NH-8E	South side of Dudhala Mine	Doliya Village	Rabhda Village	Amrutvel Village	Near Devlia Village
pH	IS 2720 (P26)	8.2	8.0	7.9	7.7	7.8	7.9
E.C. (mS/cm)	IS 14767:2000	0.501	0.266	0.329	0.248	0.190	0.597
$CaCO_3$ (%by mass)	IS 2720 (P23)	9.0	40.5	35.5	22.0	27.5	16.5
Specific Gravity	IS : 2720 (P 3/Sec 1) -1980	2.64	1.97	1.91	2.09	2.80	3.22
Moisture (%by mass)	IS 2720 (P 2)	20.661	14.795	13.101	21.927	21.578	11.024
Sodium (Kg/ha)	Method no. 14*	1730.4	501.8	506.2	417.8	378.6	1317.1
Potassium (Kg/ha)	Method no. 14*	845.0	227.0	180.0	458.0	250.0	632.0

Note: – *Methods Manual, Soil Testing in India, Department of Agriculture & Cooperation, Ministry of Agriculture (MOA), Government of India

Prepared by

Rashmi Gupta
Administrative Manager

Checked by

Dr. Marisha Sharma
Authorised Signatory

-end of report-

NOTES:

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ANNEXURE : XV Contd..

TEST REPORT

Customer's Name & Address Nirma Ltd. Nirma House, Ashram Road Ahemadabad - 380009 Contact Person : Ms. Tejal Patel	
Customer Particulars	
Type of Sample	: Soil
Work Order No.	: NNL/CP-43/LOI-095/2020-21/PTV/
Sampling Location	: In and around Doliya & Padhiyarka; Dudhala Dudheri & Gujarda; & Vangar & Madhiya Limestone Mines, District Bhavnagar, Gujarat.
Sampling Procedure	: IS 2720 (Part-1)
Sample Volume/ Quantity	: 1.25 Kg
Sampling Team	: MMRDL (Ravikant)
Sample Reg. No.	: MMS/06-2021/1.1-1.12
Date of Monitoring	: 30/05/2021
Date of Receipt	: 05/06/2021
Date of Testing	: 07/06/2021 to 14/06/2021
Date of Report	: 18-06-2021
Test Report No.	MMS/06-2021/66
Page	: 1 of 3

Parameters	**Protocol**	**Near Cement Plant at Padhiarka Village**		**Padhiarka Village**		**Vangar Village**	
Textural Classification	IS 1498:1970	Medium grained sand		Medium grained sand		Medium grained sand	
Grain size analysis	IS 2720 (P 4)	% retain	% finer	% retain	% finer	% retain	% finer
2.0 mm		26.06	73.94	24.52	75.48	25.53	74.47
425 µm		40.14	33.8	42.06	33.42	45.72	28.75
75 µm		24.47	9.33	23.79	9.63	23.81	4.94
<75 µm		9.33	-	9.63	-	4.94	-
Colour	-	Blackish		Blackish		Blackish	
Organic Carbon (% by mass)	Method no. 9*	0.51		0.45		0.45	
Organic Matter (% by mass)	Method no. 9*	1.13		1.01		1.01	
Phosphorous (mg/kg)	Method no. 13*	0.65		0.73		0.32	
Nitrate-Nitrogen (mg/kg)	Method no. 12*	7.59		5.1		1.01	
Calcium^{2+} me/100 gram Soil	Method no. 16.a*	19.4		11.6		23.9	
Magnesium^{2+} me/100 gram Soil	Method no. 16.b*	6.9		4.6		4.7	

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Test Report No. : MMN/06-2021/66

ANNEXURE : XV Contd..

Parameters	Protocol	Madhiya Village		Dudhala Village		Dudheri Village	
Textural Classification	IS 1498:1970	Medium grained sand		Medium grained sand		Medium grained sand	
Grain size analysis	IS 2720 (P 4)	% retain	% finer	% retain	% finer	% retain	% finer
2.0 mm		31.15	68.85	27.25	72.75	17.1	82.9
425 µm		40.83	28.02	52.21	20.54	49.05	33.85
75 µm		20.81	7.21	18.37	2.17	29.9	3.95
<75 µm		7.21	-	2.17	-	3.95	-
Colour	-	Blackish		Blackish		Blackish	
Organic Carbon (% by mass)	Method no. 9*	0.90		1.01		0.67	
Organic Matter (% by mass)	Method no. 9*	2.01		2.26		1.51	
Phosphorous (mg/kg)	Method no. 13*	0.16		0.24		0.49	
Nitrate-Nitrogen (mg/kg)	Method no. 12*	2.19		3.8		5.4	
Calcium2^{+} me/100 gram Soil	Method no. 16.a*	17.2		20.3		17.5	
Magnesium2^{+} me/100 gram Soil	Method no. 16.b*	3.1		8.2		6.9	

Parameters	Protocol	Dudhala Near NH-8E		South side of Dudhala Mine		Doliya Village	
Textural Classification	IS 1498:1970	Medium grained sand		Medium grained sand		Fine grained sand	
Grain size analysis	IS 2720 (P 4)	% retain	% finer	% retain	% finer	% retain	% finer
2.0 mm		27.53	72.47	13.66	86.34	10.39	89.61
425 µm		48.35	24.12	44.17	42.17	34.52	55.09
75 µm		21.12	3	39.14	3.03	51.35	3.74
<75 µm		3	-	3.03	-	3.74	-
Colour	-	Blackish		Blackish		Blackish	
Organic Carbon (% by mass)	Method no. 9*	1.01		0.51		0.22	
Organic Matter (% by mass)	Method no. 9*	2.26		1.13		0.50	
Phosphorous (mg/kg)	Method no. 13*	0.65		0.89		0.24	
Nitrate-Nitrogen (mg/kg)	Method no. 12*	12.57		9.73		12.28	
Calcium^{2+} me/100 gram Soil	Method no. 16.a*	17.0		14.6		16.7	
Magnesium^{2+} me/100 gram Soil	Method no. 16.b*	8.4		2.1		3.7	

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Test Report No. : MMN/06-2021/66

ANNEXURE : XV Contd..

Parameters	Protocol	Rabhda Village		Amrutvel Village		Near Devlia Village	
Textural Classification	IS 1498:1970	Medium grained sand		Medium grained sand		Medium grained sand	
Grain size analysis	IS 2720 (P 4)	% retain	% finer	% retain	% finer	% retain	% finer
2.0 mm		22.1	77.9	20.38	79.62	14.67	85.33
425 µm		62.32	15.58	54.16	25.46	57.79	27.54
75 µm		14.19	1.39	24.23	1.23	24.74	2.8
<75 µm		1.39	-	1.23	-	2.8	-
Colour	-	Blackish		Blackish		Blackish	
Organic Carbon (% by mass)	Method no. 9*	0.39		2.24		0.67	
Organic Matter (% by mass)	Method no. 9*	0.88		5.02		1.51	
Phosphorous (mg/kg)	Method no. 13*	0.16		0.41		0.97	
Nitrate-Nitrogen (mg/kg)	Method no. 12*	4.15		2.85		1.9	
Calcium^{2+} me/100 gram Soil	Method no. 16.a*	23.5		14.0		17.7	
Magnesium^{2+} me/100 gram Soil	Method no. 16.b*	3.9		21.5		6.0	

Note: – *Methods Manual, Soil Testing in India, Department of Agriculture & Cooperation, Ministry of Agriculture (MOA), Government of India

Prepared by
Rashmi Gupta
Administrative Manager

Checked by
Dr. Marisha Sharma
Authorised Signatory

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VILLAGE WISE POPULATION AND LITERACY WITHIN THE STUDY AREA (CENSUS 2011)
VANGAR MINE OF NIRMA LIMITED

Town/ village code	Town/village name	No. of house-holds	Population break-up			Population (0-6 years)			Schedule Caste	Schedule Tribe	Literacy level		
			Total	Male	Female	Total	Male	Female			Total literates	Male literates	Female literates
District	**Amreli**												
Sub Distt.	**Rajula**												
515953	Mandal	617	3684	1825	1859	585	297	288	454	57	1990	1130	860
515954	Morangi	553	3496	1740	1756	531	273	258	409	62	2189	1277	912
515955	Mobhiyana Mota	54	279	131	148	38	18	20	34	0	194	101	93
515956	Mobhiyana Nana	54	280	147	133	23	9	14	55	0	203	120	83
515957	Rampara No-1	62	342	180	162	57	26	31	0	0	143	91	52
515958	Zinzka	217	1378	703	675	203	99	104	103	0	684	412	272
515959	Dungarparda	125	680	337	343	112	60	52	3	0	450	252	198
515960	Dungar	1258	7129	3543	3586	988	483	505	397	4	4341	2508	1833
515974	Sajanavav	214	1181	597	584	125	53	72	0	0	783	462	321
515975	Rabhda	234	1266	639	627	169	94	75	190	0	830	492	338
515976	Nesdi No -1	67	365	185	180	62	30	32	30	0	164	100	64
515977	Majadar	102	611	304	307	98	47	51	37	0	259	164	95
515987	Visaliya	445	2958	1511	1447	516	260	256	0	0	1374	940	434
515988	Dantardi	469	2393	1220	1173	322	167	155	140	0	1460	871	589
515989	Samadhiyala No-1	355	2427	1225	1202	390	191	199	56	0	1045	668	377
515990	Patva	253	2013	1039	974	401	217	184	0	0	821	472	349
515991	khera	735	4191	2136	2055	619	326	293	0	0	2259	1395	864
515993	Kathivadar	283	1623	808	815	241	113	128	17	0	931	589	342
	Sub total	**6097**	**36296**	**18270**	**18026**	**5480**	**2763**	**2717**	**1925**	**123**	**20120**	**12044**	**8076**
District	**Bhavnagar**												
Sub Distt.	**Mahuva**												
516739	Bambhaniya	314	1902	965	937	317	169	148	22	2	1118	652	466
516740	Dudhala No.2	283	1496	743	753	175	88	87	96	0	893	530	363
516762	Lakhupara	58	392	203	189	47	30	17	0	0	291	160	131
516763	Bhadra	385	2256	1138	1118	318	161	157	183	0	1387	836	551
516764	Lusadi	290	1594	824	770	277	143	134	338	0	851	502	349
516765	Gundarani	210	1390	702	688	171	80	91	66	0	1032	576	456
516766	Nana Jadra	391	2200	1101	1099	296	153	143	493	0	1393	810	583
516767	Tavida	370	2031	1045	986	265	131	134	124	7	1209	753	456
516780	Nesvad	1832	10501	5407	5094	1725	902	823	263	1	6364	3821	2543
516781	Haripara	94	462	242	220	56	30	26	0	0	312	185	127
516782	Visavadar	99	521	282	239	108	61	47	37	0	251	181	70
516783	Dundas	298	1506	764	742	206	121	85	85	0	754	445	309
516784	Mota Pipalva	211	1672	825	847	326	150	176	0	0	806	516	290
516785	Kankot	82	556	297	259	61	34	27	86	0	375	240	135
516786	Nana Pipalva	211	1259	633	626	236	120	116	0	0	645	428	217
516787	Bildi	631	4367	2216	2151	762	389	373	68	0	1649	1060	589
516788	Amrutvel	272	1184	615	569	170	101	69	250	0	654	396	258
516789	Bhanvad	156	864	454	410	121	64	57	67	0	584	349	235

VILLAGE WISE POPULATION AND LITERACY WITHIN THE STUDY AREA (CENSUS 2011)
VANGAR MINE OF NIRMA LIMITED

Town/ village code	Town/village name	No. of house-holds	Population break-up			Population (0-6 years)			Schedule Caste	Schedule Tribe	Literacy level		
			Total	Male	Female	Total	Male	Female			Total literates	Male literates	Female literates
516790	Mota Jadra	488	3297	1670	1627	524	254	270	95	0	1804	1116	688
516791	Maliya	261	2030	1028	1002	298	155	143	91	0	1161	716	445
516794	Devaliya	213	1361	728	633	266	153	113	0	0	699	444	255
516795	Dudhala No.1	236	1405	701	704	252	124	128	30	0	751	462	289
516796	Madhiya	224	1170	592	578	198	107	91	42	0	576	344	232
516797	Vangar	478	2838	1450	1388	427	221	206	44	0	1384	883	501
516798	Padhiyarka	255	1495	762	733	211	105	106	17	0	752	488	264
516799	Doliya	475	3224	1623	1601	584	283	301	0	0	1262	855	407
516800	Dudheri	527	3544	1831	1713	625	335	290	18	0	1548	1044	504
516801	Gujarda	521	3496	1798	1698	625	332	293	44	0	1338	859	479
516802	Khared	682	4250	2201	2049	713	369	344	47	0	1761	1201	560
516803	Gadhada	467	2792	1392	1400	517	259	258	0	0	978	644	334
802557	Mahuva (M + OG)	10429	58356	29965	28391	7428	3880	3548	2037	76	40344	22521	17823
	Sub total	**21443**	**125411**	**64197**	**61214**	**18305**	**9504**	**8801**	**4643**	**86**	**74926**	**44017**	**30909**
	GRAND TOTAL	**27540**	**161707**	**82467**	**79240**	**23785**	**12267**	**11518**	**6568**	**209**	**95046**	**56061**	**38985**
	Percentage		**100.00**	**51.00**	**49.00**	**14.71**	**7.59**	**7.12**	**4.06**	**0.13**	**58.78**	**34.67**	**24.11**

VILLAGE WISE EMPLOYMENT PATTERN IN THE STUDY AREA (CENSUS 2011)
VANGAR MINE OF NIRMA LIMITED

Town/ village code	Town/village name	Employment pattern											
		Total workers	Main workers					Marginal workers					Non workers
			Total	Cultivators	Agri. Labours	HH ind.	Others	Total	Cultivators	Agr. Labours	HH ind.	Others	
District	**Amreli**												
Sub Distt.	**Rajula**												
515953	Mandal	1823	1049	475	372	16	186	774	130	597	6	41	1861
515954	Morangi	1198	972	334	451	14	173	226	18	190	3	15	2298
515955	Mobhiyana Mota	102	91	19	59	0	13	11	0	0	4	7	177
515956	Mobhiyana Nana	135	88	34	47	2	5	47	10	2	0	35	145
515957	Rampara No-1	121	114	99	11	0	4	7	6	1	0	0	221
515958	Zinzka	434	296	210	63	0	23	138	83	47	8	0	944
515959	Dungarparda	263	256	8	241	0	7	7	0	6	0	1	417
515960	Dungar	2948	2240	546	1010	16	668	708	136	505	1	66	4181
515974	Sajanavav	422	415	100	164	0	151	7	2	2	2	1	759
515975	Rabhda	436	434	144	176	0	114	2	0	0	0	2	830
515976	Nesdi No -1	168	127	58	30	0	39	41	28	11	1	1	197
515977	Majadar	213	119	99	1	0	19	94	9	77	0	8	398
515987	Visaliya	1290	1147	211	728	1	207	143	44	88	0	11	1668
515988	Dantardi	1233	992	249	464	11	268	241	131	99	3	8	1160
515989	Samadhiyala No-1	1170	1168	121	950	0	97	2	0	2	0	0	1257
515990	Patva	1096	1008	460	521	1	26	88	77	11	0	0	917
515991	khera	1834	1222	68	1024	2	128	612	3	563	0	46	2357
515993	Kathivadar	678	652	178	231	3	240	26	1	9	0	16	945
	Sub total	**15564**	**12390**	**3413**	**6543**	**66**	**2368**	**3174**	**678**	**2210**	**28**	**258**	**20732**
District	**Bhavnagar**												
Sub Distt.	**Mahuva**												
516739	Bambhaniya	549	524	230	93	0	201	25	9	10	0	6	1353
516740	Dudhala No.2	467	455	185	131	3	136	12	4	2	0	6	1029
516762	Lakhupara	114	53	47	1	0	5	61	2	2	0	57	278
516763	Bhadra	681	669	242	246	2	179	12	6	3	0	3	1575
516764	Lusadi	776	763	158	541	3	61	13	0	6	0	7	818
516765	Gundarani	535	535	176	158	2	199	0	0	0	0	0	855
516766	Nana Jadra	754	731	141	184	17	389	23	13	8	0	2	1446
516767	Tavida	1196	1094	387	541	24	142	102	38	45	1	18	835
516780	Nesvad	3963	3635	130	1912	55	1538	328	15	193	10	110	6538
516781	Haripara	154	87	50	13	0	24	67	10	41	0	16	308
516782	Visavadar	336	104	32	72	0	0	232	11	219	0	2	185
516783	Dundas	882	811	122	654	8	27	71	36	31	0	4	624
516784	Mota Pipalva	930	697	40	650	0	7	233	23	208	0	2	742
516785	Kankot	189	189	39	82	0	68	0	0	0	0	0	367
516786	Nana Pipalva	529	268	43	153	0	72	261	24	202	0	35	730
516787	Bildi	1221	1179	205	854	0	120	42	4	20	1	17	3146
516788	Amrutvel	717	561	186	283	7	85	156	16	135	1	4	467
516789	Bhanvad	307	306	113	72	0	121	1	1	0	0	0	557

VILLAGE WISE EMPLOYMENT PATTERN IN THE STUDY AREA (CENSUS 2011)
VANGAR MINE OF NIRMA LIMITED

Town/ village code	Town/village name	Employment pattern											
		Total workers	Main workers					Marginal workers					Non workers
			Total	Cultivators	Agri. Labours	HH ind.	Others	Total	Cultivators	Agr. Labours	HH ind.	Others	
516790	Mota Jadra	1394	1029	292	411	14	312	365	122	173	15	55	1903
516791	Maliya	803	759	124	312	0	323	44	36	8	0	0	1227
516794	Devaliya	611	595	54	385	2	154	16	2	9	0	5	750
516795	Dudhala No.1	521	519	100	309	0	110	2	1	1	0	0	884
516796	Madhiya	654	358	165	117	7	69	296	173	101	1	21	516
516797	Vangar	1261	1159	351	584	17	207	102	4	93	0	5	1577
516798	Padhiyarka	849	579	105	343	7	124	270	2	261	0	7	646
516799	Doliya	1572	960	470	396	8	86	612	252	306	18	36	1652
516800	Dudheri	1692	1541	344	1030	2	165	151	0	147	0	4	1852
516801	Gujarda	1148	1044	204	690	3	147	104	7	75	1	21	2348
516802	Khared	2227	1511	169	1248	4	90	716	4	697	0	15	2023
516803	Gadhada	1384	1384	94	1250	2	38	0	0	0	0	0	1408
802557	Mahuva (M + OG)	19168	17078	281	970	412	15416	2090	32	256	127	1676	39188
	Sub total	**47584**	**41177**	**5279**	**14685**	**599**	**20615**	**6407**	**847**	**3252**	**175**	**2134**	**77827**
	GRAND TOTAL	**63148**	**53567**	**8692**	**21228**	**665**	**22983**	**9581**	**1525**	**5462**	**203**	**2392**	**98559**
	Percentage	**39.05**	**33.13**	**16.23**	**39.63**	**1.24**	**42.91**	**5.92**	**15.92**	**57.01**	**2.12**	**24.97**	**60.95**

AMENITIES AVAILABLE IN VILLAGES WITHIN THE STUDY AREA (CENSUS 2011)

VANGAR MINE OF NIRMA LIMITED

Town/ village code	Town/village name	EDUCATION FACILITIES																											
		PPS		PS		MS		SS		SSS		DCAS		EC		MC		MI		P		VTS/ITI		NFTC		SFD		EO	
		Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.
	District : Amreli																												
	Sub distt.: Rajula																												
515953	Mandal	(10+ km)	-	1	1	N.A.	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
515954	Morangi	(10+ km)	-	1	-	N.A.	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
515955	Mobhiyana Mota	(10+ km)	-	1	-	N.A.	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
515956	Mobhiyana Nana	(10+ km)	-	1	-	N.A.	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
515957	Rampara No-1	(10+ km)	-	1	-	N.A.	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
515958	Zinzka	(10+ km)	-	1	-	N.A.	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
515959	Dungarparda	(10+ km)	-	1	-	N.A.	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
515960	Dungar	(10+ km)	-	4	-	N.A.	-	1	-	1	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
515974	Sajanavav	(10+ km)	-	1	-	N.A.	-	(<5 km)	-	(<5 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
515975	Rabhda	(10+ km)	-	1	-	N.A.	-	(10+ km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
515976	Nesdi No -1	(10+ km)	-	1	-	N.A.	-	(<5 km)	-	(<5 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
515977	Majadar	(10+ km)	-	1	-	N.A.	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
515987	Visaliya	(10+ km)	-	1	-	N.A.	-	(10+ km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
515988	Dantardi	(10+ km)	-	1	-	N.A.	-	1	-	-	1	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
515989	Samadhiyala No-1	(10+ km)	-	1	-	N.A.	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
515990	Patva	(10+ km)	-	1	-	N.A.	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
515991	khera	(5-10 km)	-	1	-	N.A.	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
515993	Kathivadar	(10+ km)	-	2	-	N.A.	-	(10+ km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
	District : Bhavnagar																												
	Sub distt.: Mahuva																												
516739	Bambhaniya	(10+ km)	-	2	-	N.A.	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
516740	Dudhala No.2	(10+ km)	-	1	-	N.A.	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
516762	Lakhupara	(10+ km)	-	1	-	N.A.	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
516763	Bhadra	(5-10 km)	-	1	-	N.A.	-	(5-10 km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
516764	Lusadi	(10+ km)	-	1	-	N.A.	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
516765	Gundarani	(5-10 km)	-	1	-	N.A.	-	(5-10 km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
516766	Nana Jadra	(5-10 km)	-	1	-	N.A.	-	(5-10 km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	N.A.	-
516767	Tavida	(5-10 km)	-	1	-	N.A.	-	(5-10 km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	N.A.	-
516780	Nesvad	(<5 km)	-	4	2	N.A.	-	-	1	(5-10 km)	-	(<5 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(<5 km)	-	(<5 km)	-	(10+ km)	-	N.A.	-
516781	Haripara	(5-10 km)	-	1	-	N.A.	-	(5-10 km)	-	(<5 km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	N.A.	-
516782	Visavadar	(10+ km)	-	1	-	N.A.	-	(10+ km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
516783	Dundas	(10+ km)	-	3	-	N.A.	-	(10+ km)	-	(<5 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
516784	Mota Pipalva	(10+ km)	-	1	-	N.A.	-	(10+ km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
516785	Kankot	(10+ km)	-	1	-	N.A.	-	(10+ km)	-	(<5 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
516786	Nana Pipalva	(10+ km)	-	1	-	N.A.	-	(10+ km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
516787	Bildi	(10+ km)	-	1	1	N.A.	-	(10+ km)	-	(<5 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
516788	Amrutvel	(5-10 km)	-	1	-	N.A.	-	(5-10 km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	N.A.	-
516789	Bhanvad	(5-10 km)	-	1	-	N.A.	-	(5-10 km)	-	(<5 km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	N.A.	-
516790	Mota Jadra	(5-10 km)	-	2	-	N.A.	-	(5-10 km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	N.A.	-
516791	Maliya	(<5 km)	-	1	-	N.A.	-	(<5 km)	-	(<5 km)	-	(<5 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(<5 km)	-	(<5 km)	-	(10+ km)	-	N.A.	-

AMENITIES AVAILABLE IN VILLAGES WITHIN THE STUDY AREA (CENSUS 2011)

VANGAR MINE OF NIRMA LIMITED

Town/ village code	Town/village name	EDUCATION FACILITIES																									
		PPS		PS		MS		SS		SSS		DCAS		EC		MC		MI		P		VTS/ITI		NFTC		SFD		EO	
		Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.
516794	Devaliya	(5-10 km)	-	1	-	N.A.	-	(5-10 km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	N.A.	-
516795	Dudhala No.1	(5-10 km)	-	1	-	N.A.	-	(5-10 km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	N.A.	-
516796	Madhiya	(5-10 km)	-	1	-	N.A.	-	1	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	N.A.	-
516797	Vangar	(10+ km)	-	1	-	N.A.	-	(<5 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
516798	Padhiyarka	(5-10 km)	-	1	-	N.A.	-	(<5 km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
516799	Doliya	(10+ km)	-	1	-	N.A.	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
516800	Dudheri	(10+ km)	-	1	-	N.A.	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	N.A.	-
516801	Gujarda	(5-10 km)	-	1	-	N.A.	-	(5-10 km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	N.A.	-
516802	Khared	(5-10 km)	-	1	-	N.A.	-	(5-10 km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	N.A.	-
516803	Gadhada	(5-10 km)	-	1	-	N.A.	-	(5-10 km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(10+ km)	-	(5-10 km)	-	(5-10 km)	-	(10+ km)	-	N.A.	-

AMENITIES AVAILABLE IN VILLAGES WITHIN THE STUDY AREA (CENSUS 2011)

VANGAR MINE OF NIRMA LIMITED

Town/ village code	Town/village name	MEDICAL FACILITIES																			
		CHC	PHC	PHSC	MCWC	TBC	HA	HAM	D	VH	MHC	FWC	NGMF-OP	NGMF-IOP	NGMF-C	NGMF-MBBS	NGMF-OD	NGMF-ND	NGMF-TPFH	NGMF-MS	NGMF-O
	District : Amreli																				
	Sub distt.: Rajula																				
515953	Mandal	(5-10 km)	(10+ km)	1	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	1	-	6	1	-
515954	Morangi	(10+ km)	(5-10 km)	1	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	-	-	-	-	-
515955	Mobhiyana Mota	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	-	-	-	-	-
515956	Mobhiyana Nana	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	-	-	-	-	-
515957	Rampara No-1	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	-	-	-	-	-
515958	Zinzka	(10+ km)	(5-10 km)	(5-10 km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	-	-	-	-	-
515959	Dungarparda	(10+ km)	(5-10 km)	(5-10 km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	-	-	-	-	-
515960	Dungar	(10+ km)	1	1	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	1	(10+ km)	(10+ km)	-	-	-	-	-	-	-	2	-
515974	Sajanavav	(10+ km)	(<5 km)	1	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(<5 km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	-	-	-	-	-
515975	Rabhda	(10+ km)	(<5 km)	(<5 km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(<5 km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	-	-	-	-	-
515976	Nesdi No -1	(10+ km)	(<5 km)	(<5 km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(<5 km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	-	-	-	-	-
515977	Majadar	(10+ km)	(10+ km)	(10+ km)	(5-10 km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	-	-	-	-	-
515987	Visaliya	(10+ km)	(5-10 km)	(5-10 km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(5-10 km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	-	-	-	-	-
515988	Dantardi	(5-10 km)	(10+ km)	1	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	-	-	-	-	-
515989	Samadhiyala No-1	(10+ km)	(5-10 km)	(5-10 km)	(5-10 km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	1	(10+ km)	-	-	-	-	-	-	-	-	-
515990	Patva	(10+ km)	(5-10 km)	(5-10 km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	-	-	-	-	-
515991	khera	(10+ km)	1	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	-	-	-	-	-
515993	Kathivadar	(10+ km)	(5-10 km)	(5-10 km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(5-10 km)	(10+ km)	1	(10+ km)	-	-	-	-	-	-	-	-	-
	District : Bhavnagar																				
	Sub distt.: Mahuva																				
516739	Bambhaniya	(10+ km)	(5-10 km)	1	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	-	-	-	-	-
516740	Dudhala No.2	(10+ km)	(5-10 km)	1	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	-	-	-	-	-
516762	Lakhupara	(10+ km)	(<5 km)	(<5 km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(<5 km)	(<5 km)	(<5 km)	(<5 km)	-	-	-	-	-	-	-	-	-
516763	Bhadra	(5-10 km)	(5-10 km)	1	(5-10 km)	(5-10 km)	(5-10 km)	(10+ km)	(5-10 km)	(5-10 km)	(5-10 km)	(5-10 km)	-	-	-	-	-	-	-	-	-
516764	Lusadi	(10+ km)	(5-10 km)	(5-10 km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(5-10 km)	(5-10 km)	-	-	-	-	-	-	-	-	-
516765	Gundarani	(5-10 km)	(5-10 km)	(<5 km)	(10+ km)	(10+ km)	(5-10 km)	(10+ km)	(5-10 km)	(5-10 km)	(5-10 km)	(5-10 km)	-	-	-	-	-	-	2	-	-
516766	Nana Jadra	(5-10 km)	(5-10 km)	1	(5-10 km)	(5-10 km)	(5-10 km)	(10+ km)	(5-10 km)	(5-10 km)	(5-10 km)	(5-10 km)	-	-	-	-	-	-	-	-	-
516767	Tavida	(5-10 km)	(5-10 km)	1	(5-10 km)	(5-10 km)	(5-10 km)	(10+ km)	(5-10 km)	(5-10 km)	(5-10 km)	(5-10 km)	-	-	-	-	-	-	-	-	-
516780	Nesvad	(<5 km)	(<5 km)	(<5 km)	(<5 km)	(<5 km)	(<5 km)	(10+ km)	(<5 km)	(<5 km)	(<5 km)	(<5 km)	-	-	-	-	-	-	-	-	-
516781	Haripara	(5-10 km)	(5-10 km)	(5-10 km)	(10+ km)	(10+ km)	(5-10 km)	(10+ km)	(5-10 km)	(5-10 km)	(5-10 km)	(5-10 km)	-	-	-	-	-	-	-	-	-
516782	Visavadar	(10+ km)	(5-10 km)	(5-10 km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	-	-	-	-	-
516783	Dundas	(10+ km)	(5-10 km)	1	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	1	-	-	-	-
516784	Mota Pipalva	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	-	-	2	-	-
516785	Kankot	(10+ km)	(5-10 km)	(5-10 km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	-	-	-	-	-
516786	Nana Pipalva	(10+ km)	(5-10 km)	(5-10 km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	-	-	-	-	-
516787	Bildi	(10+ km)	(5-10 km)	1	(10+ km)	(<5 km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	1	-	-	-	-	-	2	-	-
516788	Amrutvel	(5-10 km)	(<5 km)	1	(5-10 km)	(5-10 km)	(5-10 km)	(10+ km)	(<5 km)	(5-10 km)	(5-10 km)	(5-10 km)	-	-	-	-	-	-	-	-	-
516789	Bhanvad	(5-10 km)	(5-10 km)	(5-10 km)	(5-10 km)	(5-10 km)	(5-10 km)	(10+ km)	(5-10 km)	(5-10 km)	(5-10 km)	(5-10 km)	-	-	-	-	-	-	-	-	-
516790	Mota Jadra	(5-10 km)	(5-10 km)	1	(5-10 km)	(5-10 km)	(5-10 km)	(10+ km)	(5-10 km)	(5-10 km)	(5-10 km)	(5-10 km)	-	-	-	-	-	-	-	-	-
516791	Maliya	(<5 km)	(<5 km)	(<5 km)	(5-10 km)	(5-10 km)	(<5 km)	(10+ km)	(<5 km)	(<5 km)	(<5 km)	(<5 km)	-	-	-	-	-	-	-	-	-

AMENITIES AVAILABLE IN VILLAGES WITHIN THE STUDY AREA (CENSUS 2011)

VANGAR MINE OF NIRMA LIMITED

Town/ village code	Town/village name	MEDICAL FACILITIES																		
		CHC	PHC	PHSC	MCWC	TBC	HA	HAM	D	VH	MHC	FWC	NGMF-OP	NGMF-IOP	NGMF-C	NGMF-MBBS	NGMF-OD	NGMF-ND	NGMF-TPFH	NGMF-MS	NGMF-O
516794	Devaliya	(5-10 km)	(5-10 km)	(5-10 km)	(5-10 km)	(5-10 km)	(5-10 km)	(10+ km)	(5-10 km)	(5-10 km)	(5-10 km)	(5-10 km)	-	-	-	-	-	-	-	-	-
516795	Dudhala No.1	(5-10 km)	(<5 km)	(<5 km)	(5-10 km)	(<5 km)	(5-10 km)	(10+ km)	(5-10 km)	(5-10 km)	(5-10 km)	(5-10 km)	-	-	-	-	-	-	-	-	-
516796	Madhiya	(5-10 km)	1	1	(10+ km)	(10+ km)	(5-10 km)	(10+ km)	(5-10 km)	(5-10 km)	(5-10 km)	(5-10 km)	-	-	-	-	-	-	-	-	-
516797	Vangar	(10+ km)	(<5 km)	(<5 km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(<5 km)	(<5 km)	(<5 km)	(10+ km)	-	-	-	-	-	-	-	-	-
516798	Padhiyarka	(5-10 km)	(<5 km)	(<5 km)	(5-10 km)	(<5 km)	(5-10 km)	(10+ km)	(<5 km)	(<5 km)	(5-10 km)	(<5 km)	-	-	-	-	-	-	-	-	-
516799	Doliya	(10+ km)	(<5 km)	(<5 km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	-	-	-	-	-	-	-	-	-
516800	Dudheri	(10+ km)	(5-10 km)	(5-10 km)	(10+ km)	(5-10 km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(10+ km)	(5-10 km)	-	-	-	-	-	-	-	-	-
516801	Gujarda	(5-10 km)	(5-10 km)	1	(5-10 km)	(5-10 km)	(5-10 km)	(10+ km)	(5-10 km)	(5-10 km)	(5-10 km)	(5-10 km)	-	-	-	-	-	-	-	-	-
516802	Khared	(5-10 km)	(5-10 km)	1	(5-10 km)	(5-10 km)	(5-10 km)	(10+ km)	(5-10 km)	(5-10 km)	(5-10 km)	(5-10 km)	-	-	-	-	-	-	-	-	-
516803	Gadhada	(5-10 km)	(5-10 km)	(5-10 km)	(10+ km)	(10+ km)	(5-10 km)	(10+ km)	(5-10 km)	(5-10 km)	(5-10 km)	(5-10 km)	-	-	-	-	-	-	-	-	-

AMENITIES AVAILABLE IN VILLAGES WITHIN THE STUDY AREA (CENSUS 2011)

VANGAR MINE OF NIRMA LIMITED

Town/ village code	Town/village name	DRINKING WATER FACILITY										COMMUNICATION SYSTEM								
		TWT	TWUT	CW	UW	HP	TW/ BW	S	R/C	T/P	WO	PO	SPO	P&T	PIN	T	PCO	MPC	IC/CSC	PCF
	District : Amreli																			
	Sub distt.: Rajula																			
515953	Mandal	N	Y	N	N	Y	N	N	N	N	N	(10+ km)	1	N.A.	365555	1	1	1	1	(10+ km)
515954	Morangi	N	Y	N	Y	Y	Y	N	N	N	N	(10+ km)	1	N.A.	365555	1	(10+ km)	1	1	(10+ km)
515955	Mobhiyana Mota	N	N	N	N	Y	N	N	N	N	N	(<5 km)	(10+ km)	N.A.	364515	1	(10+ km)	1	1	(10+ km)
515956	Mobhiyana Nana	N	N	N	N	Y	N	N	N	N	N	(<5 km)	(10+ km)	N.A.	364525	1	1	1	1	(10+ km)
515957	Rampara No-1	N	Y	N	N	Y	N	N	N	N	N	(10+ km)	(10+ km)	N.A.	365550	1	(10+ km)	1	1	(10+ km)
515958	Zinzka	N	Y	N	Y	Y	Y	N	N	N	N	(10+ km)	(10+ km)	N.A.	365541	1	(10+ km)	1	1	(10+ km)
515959	Dungarparda	N	N	N	Y	Y	Y	N	N	N	N	(10+ km)	(10+ km)	N.A.	365601	1	(10+ km)	1	1	(10+ km)
515960	Dungar	N	Y	N	Y	Y	Y	N	N	Y	N	1	(10+ km)	N.A.	365555	1	1	1	1	(10+ km)
515974	Sajanavav	N	Y	N	Y	Y	N	N	Y	N	N	(<5 km)	1	N.A.	365555	1	(<5 km)	1	1	(10+ km)
515975	Rabhda	N	Y	N	Y	Y	N	N	N	N	N	(<5 km)	1	N.A.	365555	1	(<5 km)	1	1	(10+ km)
515976	Nesdi No -1	N	Y	N	Y	Y	N	N	N	N	N	(<5 km)	(<5 km)	N.A.	364522	1	1	1	1	(10+ km)
515977	Majadar	N	N	N	Y	N	N	N	N	N	N	(10+ km)	(10+ km)	N.A.	364521	1	(5-10 km)	1	1	(10+ km)
515987	Visaliya	N	Y	N	N	Y	N	N	Y	N	N	(10+ km)	(5-10 km)	N.A.	365560	1	1	1	1	(10+ km)
515988	Dantardi	N	Y	N	N	Y	N	N	Y	Y	N	(10+ km)	1	N.A.	365555	1	1	1	1	(10+ km)
515989	Samadhiyala No-1	N	N	N	Y	Y	N	N	N	N	N	(10+ km)	1	N.A.	365555	1	1	1	1	(10+ km)
515990	Patva	N	N	N	N	Y	N	N	N	N	N	(10+ km)	(10+ km)	N.A.	365635	1	1	1	1	(10+ km)
515991	khera	N	Y	N	Y	N	N	N	N	N	N	(10+ km)	(10+ km)	N.A.	365630	1	1	1	1	(10+ km)
515993	Kathivadar	N	Y	N	N	Y	N	N	N	N	N	(10+ km)	(5-10 km)	N.A.	365630	1	1	1	1	(10+ km)
	District : Bhavnagar																			
	Sub distt.: Mahuva																			
516739	Bambhaniya	N	Y	N	N	Y	Y	N	Y	Y	N	(10+ km)	1	N.A.	364280	1	(10+ km)	1	1	(10+ km)
516740	Dudhala No.2	N	Y	N	Y	Y	Y	N	Y	Y	N	(10+ km)	1	N.A.	364280	1	(10+ km)	1	1	(10+ km)
516762	Lakhupara	N	Y	Y	Y	Y	Y	N	Y	N	N	(10+ km)	(10+ km)	N.A.	364290	1	(10+ km)	1	1	(10+ km)
516763	Bhadra	N	Y	N	Y	Y	N	N	Y	N	N	(5-10 km)	1	N.A.	364290	1	1	1	1	(5-10 km)
516764	Lusadi	N	Y	N	Y	Y	N	N	N	N	N	(10+ km)	1	N.A.	364290	1	(10+ km)	1	1	(10+ km)
516765	Gundarani	N	Y	N	Y	Y	N	N	Y	N	N	(5-10 km)	1	N.A.	364290	(5-10 km)	(5-10 km)	1	1	(5-10 km)
516766	Nana Jadra	N	Y	N	Y	Y	Y	N	Y	N	N	(5-10 km)	1	N.A.	364290	1	1	1	1	(5-10 km)
516767	Tavida	N	N	N	N	N	N	N	Y	N	Y	(5-10 km)	(5-10 km)	N.A.	364290	(5-10 km)	(5-10 km)	1	1	(5-10 km)
516780	Nesvad	N	Y	N	N	Y	N	N	N	N	N	(<5 km)	1	N.A.	364290	1	1	1	1	(<5 km)
516781	Haripara	N	N	N	N	N	Y	N	Y	N	N	(5-10 km)	(5-10 km)	N.A.	364290	1	1	1	1	(5-10 km)
516782	Visavadar	N	N	N	Y	Y	N	N	N	N	N	(10+ km)	(10+ km)	N.A.	364290	1	(10+ km)	1	1	(10+ km)
516783	Dundas	N	Y	N	N	Y	N	N	N	N	N	(10+ km)	1	N.A.	364290	1	1	1	1	(10+ km)
516784	Mota Pipalva	N	Y	N	Y	Y	N	N	Y	N	N	(10+ km)	(10+ km)	N.A.	364290	(10+ km)	(10+ km)	1	1	(10+ km)
516785	Kankot	N	Y	N	Y	N	N	N	Y	N	N	(10+ km)	(10+ km)	N.A.	364290	1	(10+ km)	1	1	(10+ km)
516786	Nana Pipalva	N	N	N	Y	N	N	N	Y	N	N	(10+ km)	(10+ km)	N.A.	364290	1	1	1	1	(10+ km)
516787	Bildi	N	Y	Y	Y	Y	Y	N	N	N	N	(10+ km)	(10+ km)	N.A.	364290	(10+ km)	(10+ km)	1	1	(10+ km)
516788	Amrutvel	N	Y	N	Y	Y	Y	N	N	N	N	(5-10 km)	(5-10 km)	N.A.	364290	(5-10 km)	(5-10 km)	1	1	(5-10 km)
516789	Bhanvad	N	Y	Y	N	Y	N	N	Y	N	N	(5-10 km)	(5-10 km)	N.A.	364280	1	(5-10 km)	1	1	(5-10 km)
516790	Mota Jadra	N	Y	Y	Y	Y	N	N	Y	Y	N	(5-10 km)	1	N.A.	364290	1	1	1	1	(5-10 km)
516791	Maliya	N	Y	N	Y	Y	N	N	N	N	N	(<5 km)	(<5 km)	N.A.	364290	1	1	1	1	(<5 km)

AMENITIES AVAILABLE IN VILLAGES WITHIN THE STUDY AREA (CENSUS 2011)

VANGAR MINE OF NIRMA LIMITED

Town/ village code	Town/village name	DRINKING WATER FACILITY										COMMUNICATION SYSTEM								
		TWT	TWUT	CW	UW	HP	TW/ BW	S	R/C	T/P	WO	PO	SPO	P&T	PIN	T	PCO	MPC	IC/CSC	PCF
516794	Devaliya	N	Y	N	N	N	N	N	N	N	N	(5-10 km)	(5-10 km)	N.A.	364240	1	1	1	1	(5-10 km)
516795	Dudhala No.1	N	Y	N	N	Y	N	N	Y	Y	N	(5-10 km)	(5-10 km)	N.A.	364240	1	(5-10 km)	1	1	(5-10 km)
516796	Madhiya	N	Y	N	Y	Y	Y	N	N	Y	N	(5-10 km)	1	N.A.	364290	(5-10 km)	(5-10 km)	1	1	(5-10 km)
516797	Vangar	N	Y	N	Y	N	Y	N	N	N	N	(10+ km)	(10+ km)	N.A.	364210	(10+ km)	(10+ km)	1	1	(10+ km)
516798	Padhiyarka	N	Y	N	Y	Y	Y	N	N	N	N	(5-10 km)	(5-10 km)	N.A.	364290	(5-10 km)	(5-10 km)	1	1	(5-10 km)
516799	Doliya	N	Y	N	N	N	N	N	N	N	N	(10+ km)	(10+ km)	N.A.	364290	(10+ km)	(10+ km)	1	1	(10+ km)
516800	Dudheri	N	Y	N	N	Y	Y	N	N	N	N	(10+ km)	1	N.A.	364290	1	(10+ km)	1	1	(10+ km)
516801	Gujarda	N	Y	N	N	N	N	N	N	N	N	(5-10 km)	(5-10 km)	N.A.	364210	1	1	1	1	(5-10 km)
516802	Khared	N	Y	N	N	N	N	N	N	N	N	(5-10 km)	1	N.A.	364290	1	1	1	1	(5-10 km)
516803	Gadhada	N	Y	N	Y	Y	Y	N	N	Y	N	(5-10 km)	(5-10 km)	N.A.	364290	1	(5-10 km)	1	1	(5-10 km)

SUMMARY OF AMENITIES AVAILABLE (CENSUS 2011) IN VILLAGES WITHIN THE STUDY AREA OF VANGAR MINE OF NIRMA LIMITED

AMENITIES	NOS.	AMENITIES	NOS.	AMENITIES	NOS.
EDUCATION FACILITIES		**DRINKING WATER FACILITY**		**APPROACH TO VILLAGE**	
PPS (Pre-Primary School)	0	TWT (Tap Water-Treated)	0	NH (National Highway)	11
PS (Primary school)	63	TWUT (Tap Water Untreated)	38	SH (State Highway)	8
MS (Middle school)	0	CW (Covered Well)	4	MDR (Major District Road)	15
SS (Secondary school)	4	UW (Uncovered Well)	28	ODR (Other District Road)	38
SSS (Sr. Sec. School)	2	HP (Hand Pump)	37	BTPR (Black Topped (pucca) Road)	45
DCAS (Deg. College Arts & Science only)	0	TW/ BW (Tube Wells/Borehole)	16	GCR (Gravel (kuchha) Roads)	43
EC (Engg. College)	0	S (Spring)	0	WBM (Water Bounded Macadam)	12
MC (Medicine College)	0	R/C (River/Canal)	17	AWR (All Weather Road)	39
MI (Management Institute)	0	T/P (Tank/Pond/Lake)	8	NWR/C (Navigable Waterways (River/Canal))	0
P (Polytechnic)	0	WO (Others)	1	FP (Foot Path)	48
VTS/ITI (Vocational Trg School/ITI)	0				
NFTC (Non Formal Training Centre)	0	**COMMUNICATION SYSTEM**		**BANKS AND COMMERCIAL SOCIETIES**	
SFD (School For Disabled)	0	PO (Post Office)	1	ATM (ATM)	0
EO (Others)	0	SPO (Sub Post Office)	18	CB (Commercial bank)	3
		P&T (Post & Telegraph office)	0	COB (Co-operative bank)	2
MEDICAL FACILITIES		PIN (Village PIN code)	48	ACS (Agricultural Crredit Societies)	35
CHC (Community Health Centres)	0	T (Telephone (landline))	39	SHG (Self-Help Group (SHG))	46
PHC (Primary Health Centre)	3	PCO (Public Call Office/ Mobile PCO)	21	PDS (Public Distribution System (PDS))	35
PHSC (Primary Health Sub-Centre)	17	MPC (Mobile phone coverage)	48	M/RM (Mandis/Regular Market)	2
MCWC (Maternity And Child Welfare Centre)	0	IC/CSC (Internet Cafes/Common Service Centre)	48	WH (Weekly Haat)	1
TBC (TB Clinic)	0	PCF (Private Courier Facility)	0	AMS (Agricultural Marketing Society)	1
HA (Hospital Allopathic)	0			NCICDS (Nutritional Centres-ICDS)	0
HAM (Hospiltal Alternative Medicine)	0	**TRANSPORT SYSTEM**		NCAC (Nutritional Centres-Anganwadi Centre)	48
D (Dispensary)	0	PBS (Public Bus Service)	48	NCO (Nutritional Centres-Others)	48
VH (Veterinary Hospital)	1	PvtBS (Private Bus Service)	10	ASHA (ASHA)	40
MHC (Mobile Health Clinic)	2	RS (Railway station)	3	CC-TV (Community Centre with/without TV)	5
FWC (Family Welfare Centre)	0	MA (Auto/Modified Autos)	13		
NGMF-OP (Non Govt. Med. facilities Out Patient)	1	Taxi (Taxi)	0	**SPORTS AND ENTERTAINMENT**	
NGMF-IOP (Non Govt. Med. facilities In And Out Patient)	0	Van (Vans)	10	SF (Sports Field)	0
NGMF-C (Non Govt. Med. facilities Charitable)	0	T (Tractors)	28	SC/RC (Sports Club/Recreation Centre)	0
NGMF-MBBS (Non Govt. Med. facilities Medical Prctitioner with MBBS Degree)	0	CPR-Man (Cycle-pulled Rickshaws (manual driven))	0	C/VH (Cinema/Video Hall)	0
		CPR-Mec (Cycle-pulled Rickshaws (machine driven))	16	PL (Public Library)	0
NGMF-OD (Non Govt. Med. facilities Medical Prctitioner with other Degree)	2	CDA (Carts Drivens by Animals)	35	PRR (Public Reading Room)	2
		S/R/FS (Sea/River/Ferry Service)	0	DNS (Daily Newspaper Supply)	48
NGMF-ND (Non Govt. Med. facilities Medical Practitioner with no Degree)	0			APS (Assembly Polling Station)	48
		POWER SUPPLY		BDRO (Birth and Death Registration Office)	48
NGMF-TPFH (Non Govt. Med. facilities Traditional Practitioner and Faith Healer)	12	PSDU (Power Supply For Domestic Use)	48		
		PSIAU (Power Supply ForAgriculture Use)	48		
NGMF-MS (Non Govt. Med. facilities Medicine Shop)	3	PSCU (Power Supply For Commercial Use)	0		
NGMF-O (Non Govt. Med. facilities Others)	0	PSALL (Power Supply For All Users)	48		

SUMMARY OF AMENITIES AVAILABLE (CENSUS 2011) IN TOWNS WITHIN THE STUDY AREA OF VANGAR MINE OF NIRMA LIMITED

AMENITIES	NOS.	AMENITIES	NOS.	AMENITIES	NOS.
EDUCATION		Private-MS Office (Nos.)	0	**WATER SUPPLY AND SANITATION**	
Govt. Primary School (Nos.)	10	Govt.-Desk Top Publishing (Nos.))	0	Latrines-Pit (Nos.)	0
Private Primary School (Nos.)	11	Private-Desk Top Publishing (Nos.)	0	Latrines-Flush/Pour Flush (Nos.)	5765
Govt. Middle School (Nos.)	0	Govt.-Vocational(Others) (Nos.))	1	Latrines-Service (Nos.)	0
Private Middle School (Nos.)	0	Private-Vocational(Others) (Nos.)	0	Latrines-Others (Nos.)	5.33101
Govt. Secondary School (Nos.)	3	Govt.-Non Formal Education (Nos.))	1	Protected Water Supply Source-1	0
Private Secondary School (Nos.)	2	Private-Non Formal Education (Nos.)	0	Capacity Source-1 (KL)	2962
Govt. Senior Secondary School (Nos.)	2	Govt.-Special School for Disabled (Nos.))	0	Protected Water Supply Source-2	0
Private Senior Secondary School (Nos.)	2	Private-Special School for Disabled (Nos.)	0	Capacity Source-2 (KL)	0
Govt. Degree College-Art Only (Nos.)	0	Govt.-Others(Specify) (Nos.))	0	Protected Water Supply Source-3	0
Private Degree College-Art Only (Nos.)	0	Private-Others(Specify) (Nos.)	0	Capacity Source-3 (KL)	0
Govt. Degree College-Science Only (Nos.)	0	**MEDICAL**		Protected Water Supply Source-4	0
Private Degree College-Science Only (Nos.)	0	Hospital Allopathic (Nos.)	1	Capacity Source-4 (KL)	0
Govt. Degree College-Commerce Only (Nos.))	0	Hospital Alternative Medicine (Nos.)	1	Protected Water Supply Source-5	0
Private Degree College-Commerce Only (Nos.)	0	Dispensary/Health Centre (Nos.)	1	Capacity Source-5 (KL)	0
Govt. Degree College-Art and Science Only (Nos.))	0	Family Welfare Centre (Nos.)	1	**TRANSPORT**	
Private Degree College-Art and Science Only (Nos.)	0	Maternity and Child Welfare Centre (Nos.)	1	Bus Route Road Distance (in kms.)	0
Govt. Degree College-Art and Commerce Only (Nos.))	0	Maternity Home (Nos.)	1	Pucca Road Length (in kms.)	42.3
Private Degree College-Art and Commerce Only (Nos.)	0	Maternity Home Nearest facility Distance (in kms.)	0	Kutcha Road Length (in kms.)	18.62892
Govt. Degree College-Art,Science and Commerce (Nos.))	1	T.B. Hospital/ Clinic (Nos.)	0	**ENTERTAINMENT AND COMMODITY**	
Private Degree College-Art,Science and Commerce (Nos.)	0	Nursing Home (Nos.)	0	Govt.-Stadium (Nos.))	0
Govt. Degree College-Law (Nos.))	0	Veterinary Hospital (Nos.)	1	Private-Stadium (Nos.)	1
Private Degree College-Law (Nos.)	0	Mobile Health Clinic (Nos.)	0	Govt.-Cinema Theatre (Nos.))	0
Govt. Degree College-University (Nos.))	0	Others (Nos.)	0	Private-Cinema Theatre (Nos.)	1
Private Degree College-University (Nos.)	0	Non-Government Out-Patient (Nos.)	15	Govt.-Auditorium/Community Hall (Nos.))	0
Govt. Degree College-Others (Nos.))	0	Non-Government In and Out Patient (Nos.)	4	Private-Auditorium/Community Hall (Nos.)	2
Private Degree College-Others (Nos.)	0	Non-Government Charitable-Hospital/Nursing Home (Nos.)	10	Govt.-Public Library (Nos.))	0
Govt.-Medical College (Nos.))	0	Non-Government Medicine Shop (Nos.)	28	Private-Public Library (Nos.)	1
Private-Medical College (Nos.)	0	**ELECTRICITY**		Govt.-Public Reading Room (Nos.))	0
Govt.-Engineering College (Nos.))	0	Electricity-Domestic Connection (Nos.)	10283	Private-Public Reading Room (Nos.)	1
Private-Engineering College (Nos.)	0	Electricity-Industrial Connection (Nos.)	424	Manufactured Commodity (First)	0
Govt.-Management Institute (Nos.))	1	Electricity-Commercial Connection (Nos.)	3139	Manufactured Commodity (Second)	0
Private-Management Institute (Nos.)	0	Electricity-Road Lighting Connection (Nos.)	1931	Manufactured Commodity (Third)	0
Govt.-Polytechnic (Nos.))	0	Electricity-Others Connection (Nos.)	13	**HELP HOMES**	
Private-Polytechnic (Nos.)	0	**FINANCIAL**		Govt.-Orphanage Home (Nos.))	0
Govt.-Shorthand (Nos.))	0	Nationalised Bank (Nos.)	5	Private-Orphanage Home (Nos.)	0
Private-Shorthand (Nos.)	1	Private Commercial Bank (Nos.)	2	Govt.-Working Women's Hostel (Nos.))	0
Govt.-Typewriting (Nos.))	0	Co-operative Bank (Nos.)	2	Private-Working Women's Hostel (Nos.)	0
Private-Typewriting (Nos.)	1	Agricultural Credit Society (Nos.)	1	Govt.-Old Age Home (Nos.))	0
Govt.-Shorthand and Typewriting (Nos.))	0	Non-Agricultural Credit Society (Nos.)	5	Private-Old Age Home (Nos.)	1
Private-Shorthand and Typewriting (Nos.)	0	**FIRE FIGHTING**			
Govt.-MS Office (Nos.))	0	Fire Fighting Service (Status A(1)/NA(2))	0		

Ref.No.AU/IRS/CU/211-2019 Dt: 07.11.2019

DEMARCATION OF HIGH TIDE LINE, LOW TIDE LINE AND COASTAL REGULATION ZONE MAPPING FOR THE PROPOSED MINING LEASE AREA IN MAHUVA TALUKA, BHAVNAGAR DISTRICT, GUJARAT

SPONSORED BY

M/s. Nirma Limited.,
Village: Padhiarka, Taluka: Mahuva,
District: Bhavnagar,
Gujarat.

PREPARED BY

INSTITUTE OF REMOTE SENSING

ANNA UNIVERSITY, CHENNAI-600 025

NOVEMBER 2019

DEMARCATION OF HIGH TIDE LINE, LOW TIDE LINE AND COASTAL REGULATION ZONE MAPPING FOR THE PROPOSED MINING LEASE AREA IN MAHUVA TALUKA, BHAVNAGAR DISTRICT, GUJARAT

ABSTRACT

At the request of M/s. Nirma Limited., Village: Padhiarka, Taluka: Mahuva, District: Bhavnagar, Gujarat, a survey was carried out for Demarcation of High Tide Line, Low Tide Line and Coastal Regulation Zone Mapping for the Proposed Mining lease area In Mahuva Taluka, Bhavnagar District, Gujarat. Tide data collected from the various organizations were analysed. The Landsat ETM+, IRS 1D LISS III + PAN merged and Cartosat satellite images (1988-2017) of above site were interpreted for geomorphic features.

The demercation of High Tide Line and Low Tide line was carried out using differential GPS. The High Tide Line and Low Tide line thus decided was marked on the cadastral map of 1:4,000 scale. The Coastal Regulation Zones (CRZ) such as CRZ IA, CRZ 1B, CRZ III and CRZ IVA have been demarcated. Landuse map of 7 km radius was also prepared on 1:25,000 scale with intensive field work and satellite image. The ecologically sensitive areas like sand dunes and Turtle breeding sites are not in the vicinity of proposed site. However Mangrove areas have been identified and 50m buffer also have been drawn which are away from the proposed mining area. The proposed three mining area of M/s. Nirma Limited at Mahuva is away from the CRZ.

The spherical co-ordinates defining the High Tide Line are Presented in the Annexure II

DEMARCATION OF HIGH TIDE LINE, LOW TIDE LINE AND COASTAL REGULATION ZONE MAPPING FOR THE PROPOSED MINING LEASE AREA IN MAHUVA TALUKA, BHAVNAGAR DISTRICT, GUJARAT

1.0 INTRODUCTION

Anthropological pressures and natural calamities put pressure on the existing ecosystem. Growing industrial areas along the coastlines and discharge of domestic and industrial sewage are polluting these areas. Conservation efforts are being considered and taken up by various control mechanism. Coastal zone regulation act is one such mechanism where legislation to preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone is being attempted. The coastal eco systems is to be preserved for sustenance of the flora and fauna specific to that region and the local population that depend on it. Therefore, it is of national importance and economic value. The development of a nation and the sustenance of the eco system are to be balanced for general prosperity by appropriate scrutiny of the prevailing eco system and proposed development plans.

Gujarat state has about 1600 km, long coastline in the country. It supports a variety of habitats such as mangroves, coral reefs, sea grass beds, algae/ sea weeds, gulfs, estuaries, beaches etc. There are number of activities going on along the coast viz. salt industries, cement industries, import of oil & natural gas besides the pressure of growing population. This puts a tremendous pressure on the coastal zone and thus requires a proper Coastal Zone Management Plan.

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ANNEXURE : XIX Contd..

Gulf of Kachchh, the largest coastal habitat in the West coast of India in the state of Gujarat (20°15' to 23°35' N and 60°05' to 70°22' E) is encompassing over 1000 km long shoreline covering an area of 7350 km². It is a shallow water body with depth extending from 60 m at the mouth to less than 20 m at the head of the Gulf. While the average depth is 30 m, the minimum depth is upto 5 m, around Lushington island. The Gulf is delimited in the north by the Kachchh region and in the south by the Saurashtra region. The Marine National Park and Marine Sanctuary are situated along the southern shore of Gulf from Okha (22°30'N, 69°00'E) and extends eastwards to the vicinity of Khijadia (22°30'N, 70°40'E). This include 42 islands and a complex of fringing reefs backed by mudflats and sandflats, coastal salt marsh and mangrove forests, sand and rocky beaches which support a great diversity of fauna and flora.

Geographically Gulf of Khambhat located between 20° 35'- 22° 20'N and 72° 05'-72° 55'E. An extensive is of estuarine habitats around the periphery of the Gulf of Khambhat. The Tapi, Narmada, Mahi, Sabarmati, and several other rivers have deposited alluvium over large areas as the marince recession has united Saurashtra with mainland of Gujarat. There are extensive areas of intertidal mud and sand flats, coastal salt marshes, and degraded mangrove associations, particularly in the deltas of the Mahi and Sabarmati rivers.

Coastal stretches of bays, estuaries, backwaters, seas, creeks etc., which are influenced by tidal actions. The land between the Low Tide Line (LTL) and the HTL have been declared as Coastal Regulation Zone by the Govt. of India. The coastal zone is the area of interaction between land and sea

The Govt. of India has approved the Institute of Remote Sensing, Anna University as one of the authorized agencies for demarcating the HTL/LTL line as per Lr.No.J17011/8/92-1A III, dated 10.05.99 of Ministry of Environment & Forest, Govt. of India. Guidelines have been issued by the Govt. of India for demarcating the HTL/LTL line. The guidelines are taken into consideration by IRS while demarcating the HTL/LTL.

The Ministry of Environment and Forest and Climate change has issued another coastal regulation zone notification on 2011. After first notification 1991, 20 years later Government of India, a MoEF & CC has issued CRZ 2011 notification which is in effect from 2011 onwards. The areas that are defined as CRZ as per CRZ Notification, 2011 are

i. The land area from High Tide Line (HTL) to 500m on the landward side along the sea front.

ii. CRZ shall apply to the land area between HTL to 100 meters or width of the creek whichever is less on the landward side along the tidal influenced water bodies that are connected to the sea and the distance up to which development along such tidal influenced water bodies is to be regulated shall be governed by the distance up to which the tidal effects are experienced which shall be determined based on salinity concentration of 5 parts per thousand (ppt) measured during the driest period of the year and distance up to which tidal effects are experienced shall be clearly identified and demarcated accordingly in the Coastal Zone Management Plans.

iii. The land area falling between the hazard line and 500 m from HTL on the landward side, in case of seafront and between the hazard line and 100 m line in case of tidal influenced water body the word 'hazard line' denotes the line demarcated by Ministry of Environment and through the Survey of India taking into account tides, waves, sea level rise and shoreline changes.

iv. Land area between HTL and Low Tide Line (LTL) which will be termed as the intertidal zone.

v. The water and the bed area between the LTL to the territorial water limit (12 Nautical miles) in case of sea and the water and the bed area between LTL at the bank to the LTL on the opposite side of the bank, of tidal influenced water bodies.

1.1 Coastal regulation zone

The ministry of Environment and Forestry has notified the regulation rules along the nation's coastline and the gist is presented below.

Coastal regulation zone is the boundary from the high tide line up to 500m in the land -ward side. Area between the low tide line and high tide line. In the case of rivers, creeks and backwaters, the distance from the high tide level shall apply to both sides and this distance shall not be less than 100 meters or the width of the creek, river or backwater whichever is less.(Ministry of Environment and Forests Notification,Feb 1994 & MoEF

revised CRZ notification dated 06.01.11). There are four type of category in coastal regulation zone.

i. Category - I (CRZ I)

Areas that are ecologically sensitive and important such as national parks, marine parks, sanctuaries, reserve forests, wildlife habitats, mangroves, corals/coral reefs, areas close to breeding and spawning grounds of fish and other marine life, areas of outstanding natural beauty, historically important and heritage areas, area rich in genetic diversity, areas likely to be inundated due to rise in sea level consequent upon global warming and such other areas as notified by government from time to time .

ii. Category - II (CRZ II)

Area that have already been developed up to or close to the shoreline. For this purpose ,developed area is referred to as area within the municipal limits or other legally designated urban areas which is already substantially build up ad which has been provided with drainage and approach roads and other infrastructure facilities such as water supply and sewerage lines.

iii. Category - III (CRZ III)

Area that are relatively undisturbed ad those which do not belong to either I or II . These will include coastal zone in the rural areas developed or undeveloped and also areas within municipal limits or in other legally designated urban areas which are not substantially built up.

iv. Category - IV (CRZ IV)

The CRZ Iv consists of the water area from the Low Tide Line to twelve nautical miles on the seaward side and the water area of the tidal influenced water body from the mouth of the water body at the sea up to the influence of tide which is measured as five parts per thousand during the driest season of the year.

vi. Others

Areas requiring special consideration for the purpose of protecting the critical coastal environment and difficulties faced by local communities namely CRZ area falling within municipal limits of Greater Mumbai, the CRZ areas of Kerala including the backwaters and backwater islands and CRZ areas of Goa.

1.2 Definitions

The accepted definitions of the terminology used in the context of coastal zone regulation is necessary to aid the planners.

i. High tide line:

The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the

general height reached by a rising tide. The line encompasses spring high tides and other tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

ii. Mean High Water Line/Mark (MHWL)

The line on the shore in tidal areas established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding area.

iii. Tidal Wetland:

A tidal wetland is a wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line (i.e., spring high tide line) and are inundated by tidal waters two times per lunar month, during spring high tides.

iv. Spring tide

Burst of tide that happens two time during a lunar month due to the reinforced influences of Sun and moon when the sun , moon and earth are aligned. This tide happens around new moon and full moon days.

Govt. of India has issued a notification during January 2011 classifying the Coastal Regulation Zone in order to regulate the various activities in the coastal zone.

v. Mangroves

Mangroves are salt-tolerant plants of tropical and subtropical intertidal regions of the world. The specific regions where these plants occur are termed as 'mangrove ecosystem'. These are highly productive but extremely sensitive and fragile. Besides mangroves, the ecosystem also harbors other plant and animal species. Experiences have proved that the presence of mangrove ecosystems on coastline save lives and property during natural hazards such as cyclones, storm surges and erosion. These ecosystems are also well known for their economic importance. They are breeding, feeding and nursery grounds for many estuarine and marine organisms. Hence, these areas are used for captive and culture fisheries. The ecosystem has a very large unexplored potential for natural products useful for medicinal purposes and also for salt production, apiculture, fuel and fodder, etc.

1.3 Geoinformatics in CRZ

It is important to ascertain the geographical location of a land area to be developed for a specific purpose along the coastline by appropriate technology. Especially because of the escalated land values in recent times, a very accurate assessment of the spatial disposition of the land area in relation to the coastal eco system at a suitably larger scale is warranted. This involves two tasks namely

a. Demarcation of the high tide lines accurately; and

b. Referencing the land to be developed to the high tide line.

The mean high tide line can be delineated by the conjunctive use of modern mapping equipments like GPS capable of getting the accurate geographical locations, remote sensing images indicating the physical and associated tonal information on the stretches tidal influence along the coast and creek, field equipments like salt meters to assess the in-situ pH value as indicator of tidal influence and the closer field inspection. The strengths of these technologies are judiciously adopted by the expert survey team for a dependable demarcation of the coastal features. The strengths of tools used for HTL/LTL demarcation are explained below.

i. GPS : The Global Positioning System (GPS) system of satellites in space orbit and the ground based receivers used for finding out the position of a point anywhere on the unobstructed earth surface having sight of four or more GPS Satellites on continuous basis worldwide, day and night. Depending on the type of GPS

receiver, it is possible to position a point with even sub cm accuracy.

ii. Remote Sensing: This is space borne resource Satellite technology whereby it is possible to map the earth surface in various ranges of EMR spectrum thereby facilitating the picture reading of the earth surfaces in different ways at different intervals of time. The physical characteristics, natural impressions/ land cover footprints and tonal/textural indications can be interpreted with these images for land cover mapping on factual basis.

iii. GIS: This is spatial map environment where the information derived about the topography and thematic information about the tidal influence , land cover, etc. are organized and their spatial relationship features can be represented and analysed. The regulation zone such as 100m buffer from creek can be readily generated and presented to the user in an easily decipherable map form.

Institute of Remote sensing has vast and strong experience in the field modern mapping using the advanced data sources like remote sensing and the modern equipments like GPS. It has a very long experience in modern mapping in the form of field execution, training and the academics, as a result of which an expert team has been developed. IRS has so far executed more than 150 consultancy projects in coastal zone regulation mapping alone across the country.

2.0 DEMARCATION OF HTL LINE ON THE LOCAL LEVEL CZM MAP

Based on the request of M/s. Nirma Limited.,Village: Padhiarka, Taluka: Mahuva, District: Bhavnagar, Gujarat, the work of GPS survey for Demarcation of High Tide Line, Low Tide Line and Coastal Regulation Zone Mapping for the Proposed Mining lease area in Mahuva Taluka, Bhavnagar District, Gujarat was taken up by Institute of Remote Sensing.

2.1 Methodology

As indicated previously, the mean high tide line was delineated by the conjunctive use of modern mapping equipments like GPS capable of getting the accurate geographical locations, remote sensing images indicating the physical and associated tonal information on the tidal influence along the coast and creek, field equipments like salt meters to assess the ppt (part per thousands) value as indicator of tidal influence and the closer field inspection. If the PPT exceeds 5, then the influence of tide is positive.

2.1.1 Field data

In order to prepare the local level map on 1:4,000 scale, the site has been inspected by IRS personnel. The tide level observations for the last 19 years have been studied for port nearer to the site, from the Tide Tables.

2.1.2 Remote sensing analysis

The Landsat ETM+, IRS 1D LISS III + PAN merged and Cartosat satellite images (1988-2017) of above site were interpreted for geomorphic features. The project site is in the hereabouts of the creek and the other land ward vegetation are seen in the area. The exact boundaries of the vegetation are demarcated in consultation with the RS data.

2.1.3 GPS survey

The specification of the GPS instruments used for the survey are listed in annexure I.

The GPS survey was conducted for following tasks.

- For getting the Ground control points for georeferencing the Remote sensing images
- For collecting the position of the High Tide lines around the project site.
- For collecting points along the boundary of Mangroves and other vegetations

Uniformly distributed features in the vicinity of project site that can well distinguished on the RS images were identified around the project site and their position were found out using GPS instruments as control points. The type of GPS instruments their accuracy are found in the Annexure I.

The observed GPS data were downloaded and processed in the Trimble Geomatics Office software. The processed GPS co-ordinates for the coastal stretch and the creek stretch coming under the project site were feed in the ArcGIS software. The entire area has been georeferenced using the GPS control points and the corresponding Image also been rectified using the GPS points. The same were plotted using the same software at the scale of 1:4,000. The processed field GPS data are listed in Annexure II.

2.1.4 MAP Compilation

The project site boundary and the remote sensing image were was georeferenced with control points collected with the GPS. The RMS of the georeferencing was reported to be 1m in planimetry. In this map the HTL, CRZ IA, CRZ 1B, CRZ III and CRZ IVA and the proposed project site have been marked (Annexure IV). The calculated co-ordinates of HTL line in WGS-84 co-ordinate systems are enclosed for ready reference (Annexure II). The Features such as HTL and buffer lines in GIS environment with suitable color scheme and legends and is presented as maps.

3.0 Results and discussion

Based on the request of M/s. Nirma Limited.,Village: Padhiarka, Taluka: Mahuva, District: Bhavnagar, Gujarat, the work of GPS survey for Demarcation of High Tide Line, Low Tide Line and Coastal Regulation Zone Mapping for the Proposed Mining lease area in Mahuva Taluka, Bhavnagar

District, Gujarat was taken up by Institute of Remote Sensing. Tide data collected from the various organizations were analyzed. The mean high tide line was delineated by the conjunctive use of modern mapping equipments like GPS capable of getting the accurate geographical locations, remote sensing images indicating the physical and associated tonal information on the tidal influence along the coast and creek, Field equipments like salt meters to assess the pH value as indicator of tidal influence and the closer field inspection. The demarcation of High Tide Line and Low Tide line was carried out using differential GPS.

The Google image of the proposed site with boundary is shown in Annexure III.The High Tide Line and Low Tide line have also been marked on the cadastral map of 1:4,000 scale for reference. The Coastal Regulation Zones (CRZ) such as CRZ IA, CRZ 1B, CRZ III and CRZ IVA have been demarcated as shown in the maps (Annexure IV). The Landuse map of 7km radius is shown in Annexure V. The area of each landuse category around 7 km radius of the proposed site is shown in table 3.1.

Table 3.1 Area of Each Landuse Category around 7 Km Radius of the Proposed site

Sl.No.	Classification	Area in Hectares (ha.)
1	Aquaculture	122.94
2	Barren Rock	16.38
3	Built-up Land	358.04
4	Cropland	8595.21
5	Educational Institute	7.13
6	Industry	5.89
7	Land with Dense Scrub	348.33
8	Land with Medium Scrub	140.4
9	Land without Scrub	345.12
10	Mangroves	16
11	Plantation	82.87
12	Railway	3.17
13	Reservoir / Lake	350.42
14	River / Creek / Canal	94.82
15	Road	37.11
16	Sandy Area	13.97
17	Sea	4380.1
18	Tank / Pond	24.14
19	Waterlogged Area	399
20	Wetland	52.46
	Total	15393.5

4.0 Conclusion

It is concluded from the analysis that

i. The HTL and LTL were demarcated based on GPS observation carried out in the field and satellite images as per CRZ notification 2011. The Proposed Mining lease area in Mahuva Taluka, Bhavnagar District, Gujarat was superimposed on Approved CZMP As Per CRZ Notification 2011.

ii. The HTL/LTL map prepared as per the approved CZMP was superimposed on the cadastral map of 1:4,000 scale. Along with HTL, 200m and 500m buffer have also been drawn for HTL. The Coastal Regulation Zones (CRZ) such as CRZ IA, CRZ 1B, CRZ III and CRZ IVA have been demarcated.

iii. **The ecologically sensitive areas like sand dunes and Turtle breeding sites are not in the vicinity of proposed site. However Mangrove areas have been identified and 50m buffer also have been drawn which are away from the proposed mining area.**

iv. The Landuse map of 7 km radius was also prepared on 1:25,000 scale with intensive field work and satellite image.

v. **The proposed three mining areas of M/s. Nirma Limited at Mahuva are away from the CRZ.**

DIRECTOR/IRS

Director
Institute of Remote Sensing
Anna University,
Chennai - 600 025

ANNEXURE I

List of GPS Instruments used

GPS MODEL	Type	Accuracy
Trimble 5700	Dual frequency	± 0.5 mm ± 5mm ± 0.5 ppm

ANNA UNIVERSITY
PROGRESS THROUGH KNOWLEDGE

ANNEXURE II

GPS coordinates of GPS Survey carried out for

DEMARCATION OF HIGH TIDE LINE, LOW TIDE LINE AND COASTAL REGULATION ZONE MAPPING FOR THE PROPOSED MINING LEASE AREA IN MAHUVA TALUKA, BHAVNAGAR DISTRICT, GUJARAT

HTL POINTS	LATITUDE	LONGITUDE
1	21° 1' 14.160" N	71° 43' 53.292" E
2	21° 1' 17.616" N	71° 43' 39.288" E
3	21° 1' 18.120" N	71° 43' 16.140" E
4	21° 1' 15.420" N	71° 42' 59.724" E
5	21° 1' 8.184" N	71° 42' 42.480" E
6	21° 1' 1.812" N	71° 42' 31.248" E
7	21° 0' 50.148" N	71° 42' 12.744" E
8	21° 0' 35.604" N	71° 41' 50.568" E
9	21° 0' 30.132" N	71° 41' 22.992" E
10	21° 0' 23.328" N	71° 41' 7.080" E
11	21° 0' 13.140" N	71° 40' 52.500" E
12	20° 59' 59.820" N	71° 40' 42.852" E
13	20° 59' 48.552" N	71° 40' 33.996" E
14	20° 59' 55.248" N	71° 40' 19.128" E
15	20° 59' 57.840" N	71° 40' 1.236" E
16	20° 59' 56.832" N	71° 39' 43.380" E

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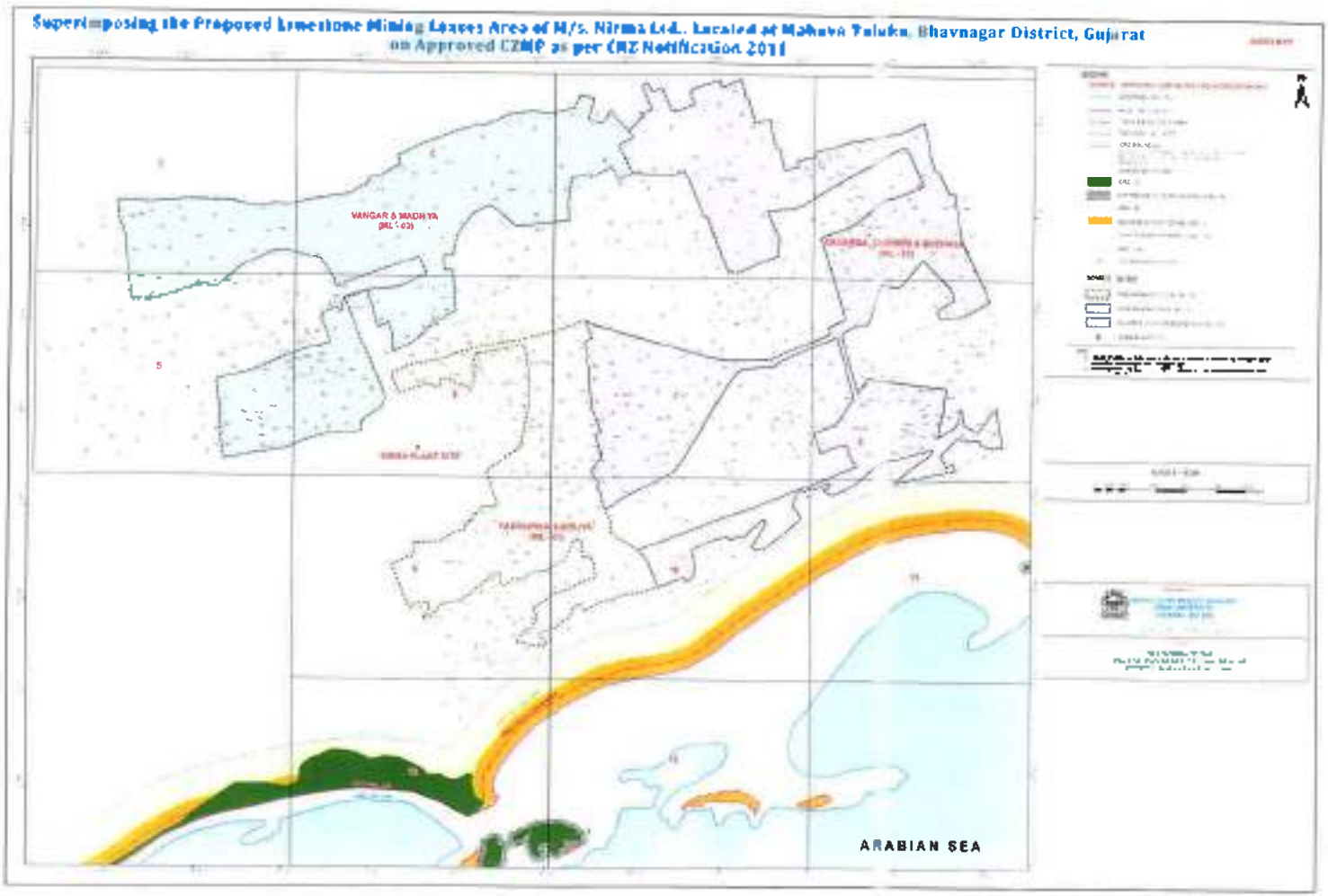
ANNEXURE III

Google image with proposed three mining area of M/s. Nirma Limited at Mahuva Taluka, District: Bhavnagar



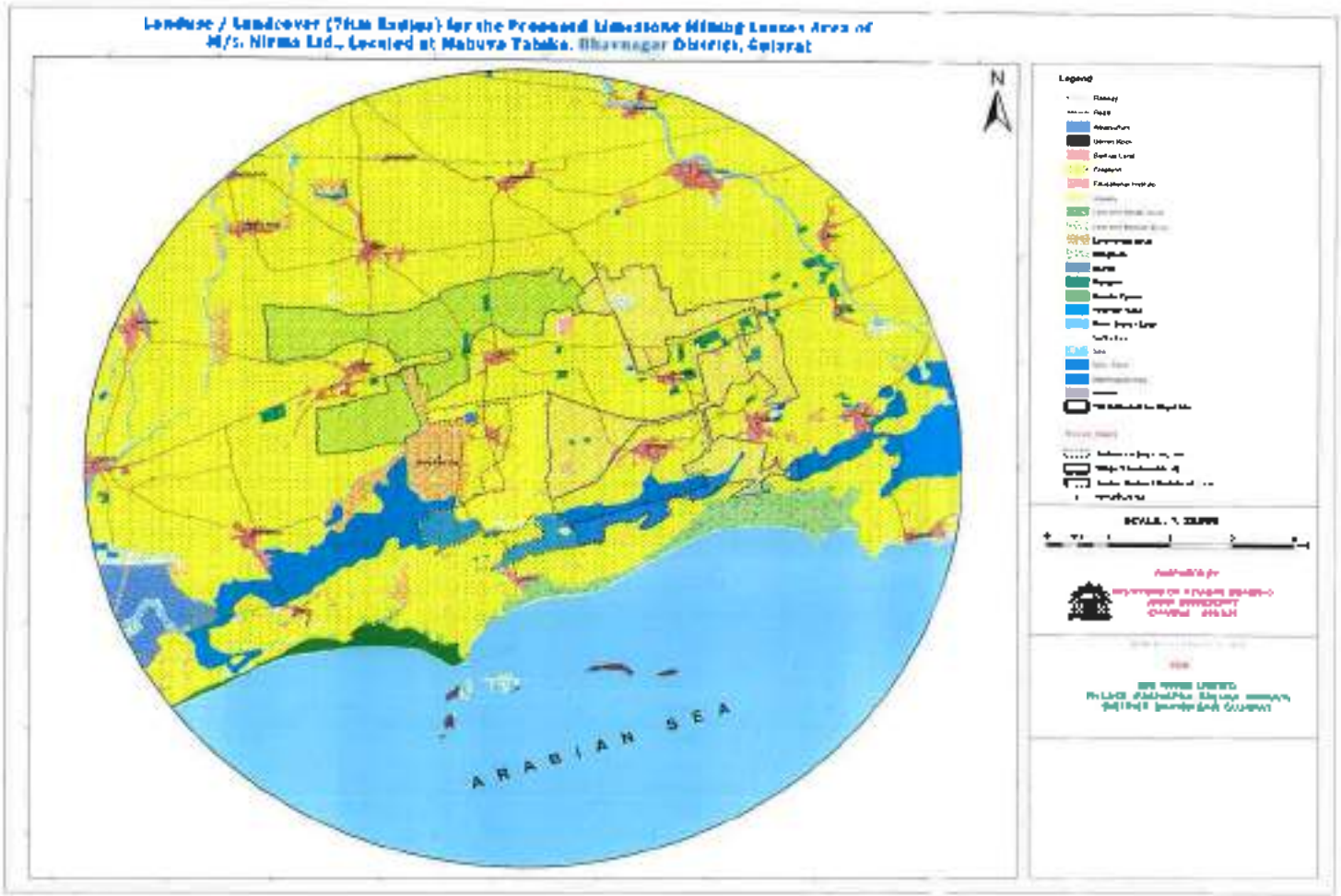
ANNEXURE IV

CRZ Map of the proposed three mining area of M/s. Nirma Limited at Mahuva Taluka, District: Bhavnagar



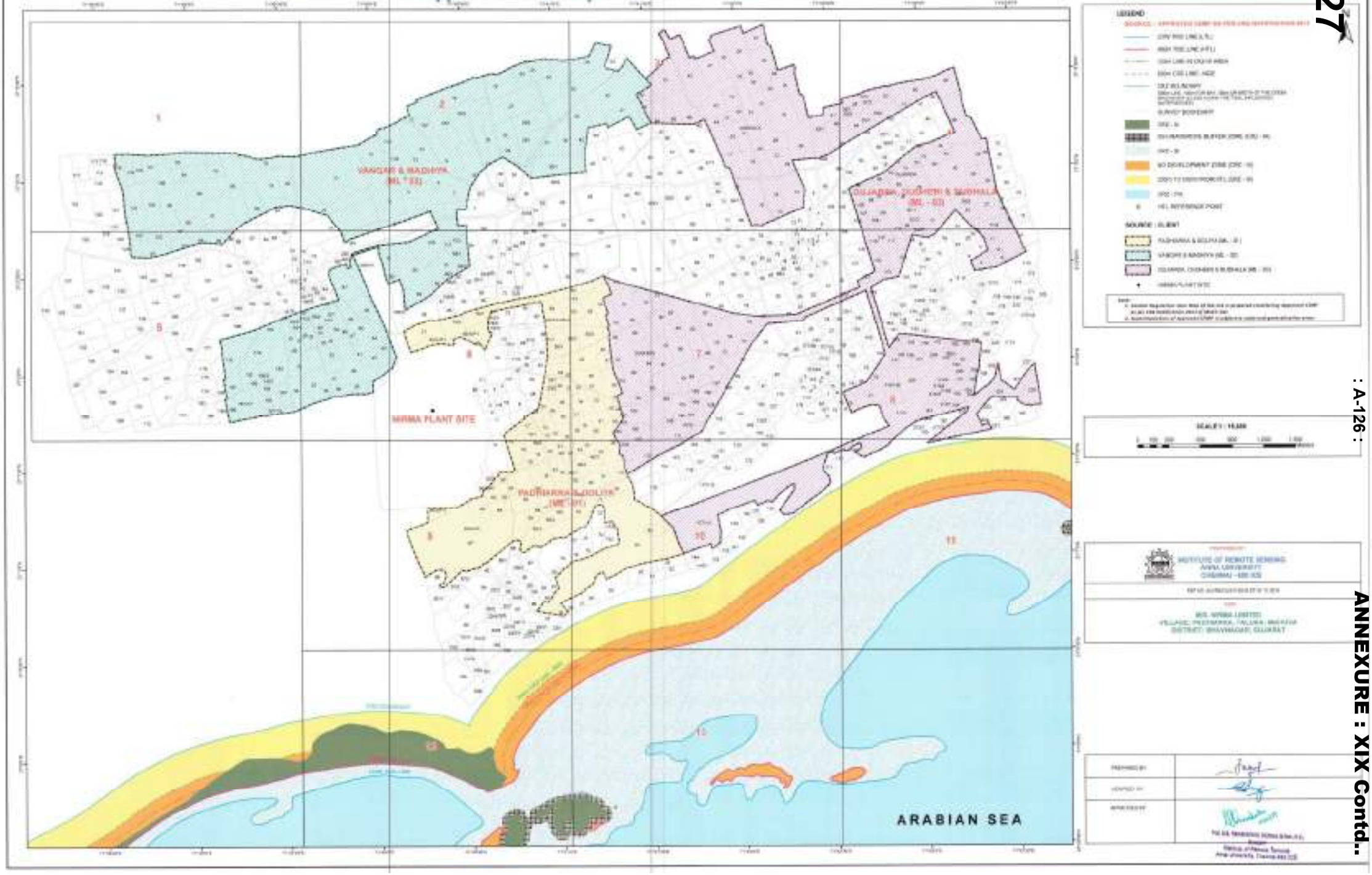
ANNEXURE V

Landuse map of 7km radius of proposed three mining area of M/s. Nirma Limited at Mahuva Taluka, District: Bhavnagar

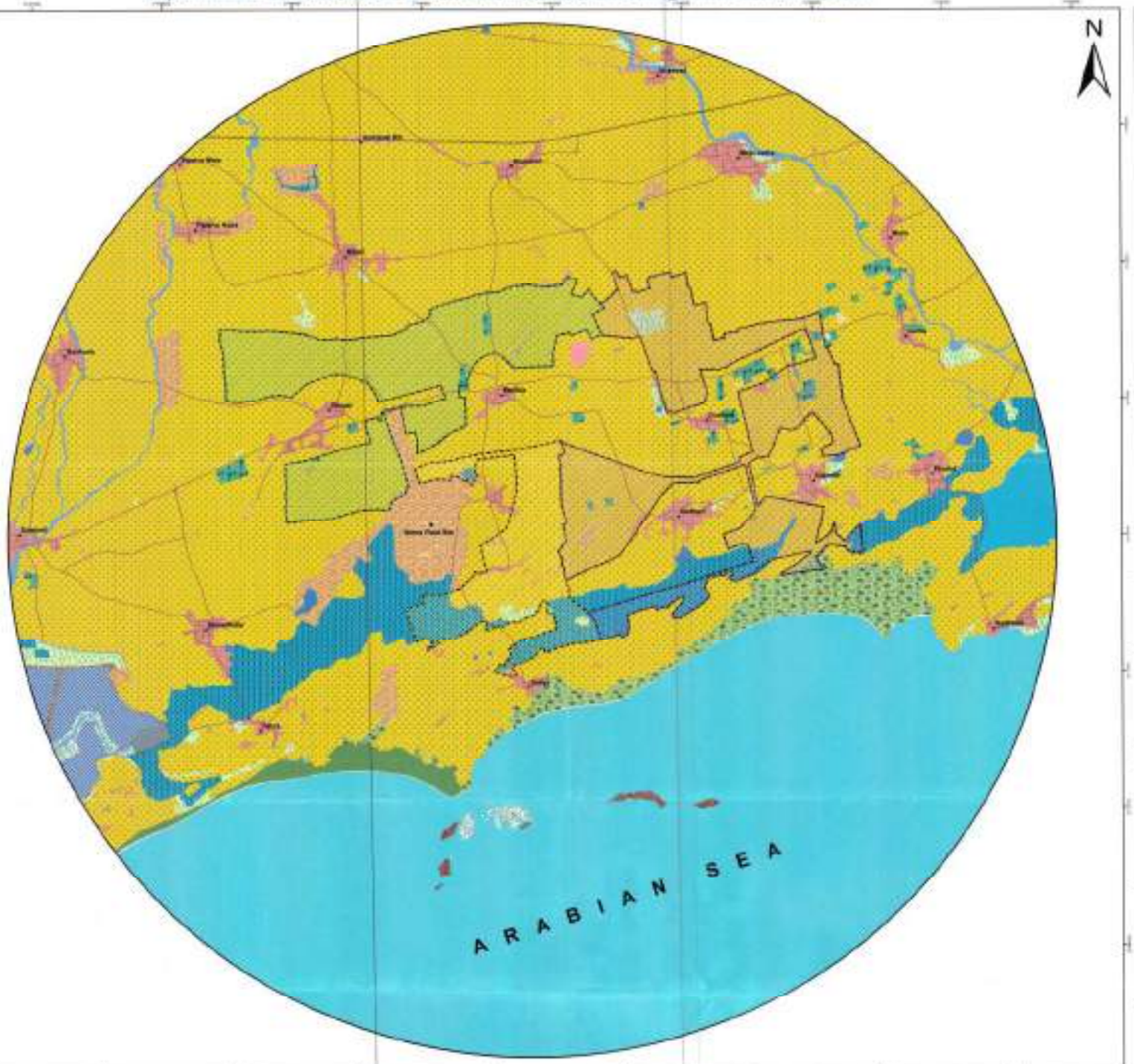


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Superimposing the Proposed Limestone Mining Leases Area of M/s. Nirma Ltd., Located at Mahuva Taluka, Bhavnagar District, Gujarat on Approved CZMP as per CRZ Notification 2011



Landuse / Landcover (7Km Radius) for the Proposed Limestone Mining Leases Area of M/s. Nirma Ltd., Located at Mahuva Taluka, Bhavnagar District, Gujarat



Legend

- Railway
- Road
- Aquaculture
- Barren Rock
- Built-up Land
- Cropland
- Educational Institute
- Industry
- Land with Dense Scrub
- Land with Medium Scrub
- Land without Scrub
- Mangroves
- Mudflat
- Plantation
- Reserve Forest
- Reservoir / Lake
- River / Creek / Canal
- Sandy Area
- Salt
- Tank / Pond
- Waterlogged Area
- Wetland
- 7Km Buffer from the Project Site

Source: Client

- Padhiarka & Sokya (RL - 11)
- Nangar & Madhiya (RL - 62)
- Gujarida, Dudheri & Sudhkai (RL - 33)
- Nirma Plant Site

SCALE : 1: 25,000

0 0.5 1 2 3 4 KM

PREPARED BY

INSTITUTE OF REMOTE SENSING
ANNA UNIVERSITY
CHENNAI - 600 025

FOR

M/S. NIRMA LIMITED
VILLAGE: PADHIARKA, TALUKA: MAHUVA
DISTRICT: BHAVNAGAR, GUJARAT

PREPARED BY	
VERIFIED BY	
APPROVED BY	

: A-127 :

ANNEXURE : XIX Contd..

5128

5129

ANNEXURE : XX

Dispersion Modelling with ISCST3 for Vangar & Madhiya Limestone Mine of Nirma Ltd.

```
CO STARTING
   TITLEONE VANGAR LIMESTONE MINE OF NIRMA
LTD. (with 20% over production)
   TITLETWO PM10 EMISSIONS FROM MINING
ACTIVITIES
   MODELOPT DFAULT CONC RURAL
   AVERTIME 24 PERIOD
   POLLUTID PM10
   RUNORNOT RUN
 CO FINISHED
:
:
:
:
:
:
:

ME STARTING
   INPUTFIL  Guj\Nirma\Nirma21S.met
   SURFDATA  99999  2021  XXX        SURFNAME
   UAIRDATA  99999  2021  XXX        UAIRNAME
   ANEMHGHT  10.0 METERS
   WDROTATE  180
 ME FINISHED

 OU STARTING
 OU RECTABLE ALLAVE FIRST
 OU MAXTABLE ALLAVE 50
 OU PLOTFILE 24 ALL FIRST Guj\Nirma\Van\VA-
PM10.PLT
 OU FINISHED

 **********************************
 *** SETUP Finishes Successfully ***
 **********************************
```

Dispersion Modelling with ISCST3 for Vangar & Madhiya Limestone Mine of Nirma Ltd.

```
                    *** ISCST3 - VERSION 95250 ***
*** VANGAR LIMESTONE MINE OF NIRMA LTD. (with 20% over production)       ***
*** PM10 EMISSIONS FROM MINING ACTIVITIES                                ***
    **MODELOPTs: CONC                      RURAL   FLAT          DFAULT

                    *** AREA SOURCE DATA ***
                    (for peak total excavation)
```

Source ID	Emission rate (g/s/m²)						Co-ordinates (SW corner) (m)		Base elev.	Rel. Height	Dim of area (m)		Orient, of area	Init. SZ
	PM_{10}		$PM_{2.5}$		SO_2	NO_2								
	Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)	X	Y	(m)	(m)	X	Y	(deg)	(m)
P1	2.53E-6	2.91E-6	1.45E-6	1.67E-6	1.54E-8	5.56E-7	779214.2	2331129	0	2.5	140.83	137.38	19	0
P2	2.53E-6	2.91E-6	1.45E-6	1.67E-6	1.54E-8	5.56E-7	779109.8	2331089	0	2.5	117.17	30.95	0	0
P3	2.53E-6	2.91E-6	1.45E-6	1.67E-6	1.54E-8	5.56E-7	778801.4	2330751	0	2.5	528.26	337.62	0	0
P4	2.53E-6	2.91E-6	1.45E-6	1.67E-6	1.54E-8	5.56E-7	779329.6	2330986	0	2.5	78.40	23.04	0	0
P5	2.53E-6	2.91E-6	1.45E-6	1.67E-6	1.54E-8	5.56E-7	779329.6	2330765	0	2.5	306.58	221.77	0	0
P6	2.53E-6	2.91E-6	1.45E-6	1.67E-6	1.54E-8	5.56E-7	779523.4	2330986	0	2.5	85.89	66.38	0	0
P7	2.53E-6	2.91E-6	1.45E-6	1.67E-6	1.54E-8	5.56E-7	779636.2	2330824	0	2.5	52.92	139.93	0	0
P8	2.53E-6	2.91E-6	1.45E-6	1.67E-6	1.54E-8	5.56E-7	779689.1	2330845	0	2.5	40.95	78.23	0	0
D1	6.42E-7	2.14E-6	3.69E-7	1.23E-6	7.98E-9	6.43E-8	779108.3	2330571	0	2.5	79.80	35.15	76	0
D2	6.42E-7	2.14E-6	3.69E-7	1.23E-6	7.98E-9	6.43E-8	779136.8	2330602	0	2.5	131.14	220.80	76	0
D3	6.42E-7	2.14E-6	3.69E-7	1.23E-6	7.98E-9	6.43E-8	779353.3	2330646	0	2.5	34.04	37.67	76	0
D4	6.42E-7	2.14E-6	3.69E-7	1.23E-6	7.98E-9	6.43E-8	779361.8	2330613	0	2.5	86.49	65.45	76	0
D5	6.42E-7	2.14E-6	3.69E-7	1.23E-6	7.98E-9	6.43E-8	779374.7	2330527	0	2.5	25.19	54.62	76	0
R1	1.55E-4	6.20E-4	8.92E-5	3.57E-4	1.2E-7	8.39E-7	779396.2	2330734	0	1.0	10.00	100.00	74	0
R2	1.55E-4	6.20E-4	8.92E-5	3.57E-4	1.2E-7	8.39E-7	779371.8	2330727	0	1.0	10.00	25.32	75	0
R3	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	779275.4	2330700	0	1.0	10.00	100.00	74	0
R4	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	779179.0	2330673	0	1.0	10.00	100.00	74	0
R5	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	779098.9	2330651	0	1.0	10.00	83.05	74	0
R6	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	779071.2	2330650	0	1.0	10.00	27.77	85	0
R7	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	779012.8	2330645	0	1.0	57.75	10.00	6	0
R8	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	778914.0	2330668	0	1.0	100.00	10.00	13	0
R9	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	778816.7	2330692	0	1.0	100.00	10.00	14	0
R10	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	778779.4	2330701	0	1.0	38.41	10.00	14	0
R11	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	778679.0	2330708	0	1.0	10.00	100.00	88	0
R12	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	778579.1	2330705	0	1.0	10.00	100.00	88	0
R13	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	778479.1	2330701	0	1.0	10.00	100.00	88	0
R14	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	778379.1	2330697	0	1.0	10.00	100.00	88	0
R15	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	778279.2	2330692	0	1.0	10.00	100.00	88	0
R16	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	778265.5	2330692	0	1.0	10.00	13.71	88	0
R17	1.62E-5	6.50E-5	9.34E-6	3.74E-5	1.2E-7	8.39E-7	779324.3	2330679	0	1.0	10.00	46.40	44	0
R18	1.62E-5	6.50E-5	9.34E-6	3.74E-5	1.2E-7	8.39E-7	779314.9	2330662	0	1.0	10.00	16.50	28	0

Note: Same emission rate (per unit time) shall be applicable for normative production since 20% less time and 20% less production shall take place compared to peak, but at the same rate

Dispersion Modelling with ISCST3 for Vangar & Madhiya Limestone Mine of Nirma Ltd.

*** THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

FILE: Guj\Nirma\Nirma21S.met FORMAT:
(4I2,2F9.4,F6.1,I2,2F7.1,f9.4,f10.1,f8.4,i4,f7.2)
SURFACE STATION NO.: 99999 UPPER AIR STATION NO.: 99999
NAME: XXX NAME: XXX
YEAR: 2021 YEAR: 2021

YEAR	MONTH	DAY	HOUR	FLOW VECTOR	SPEED (M/S)	TEMP (K)	STAB CLASS	MIXING HEIGHT (M) RURAL	MIXING HEIGHT (M) URBAN	USTAR (M/S)	M-O LENGTH (M)	Z-0 (M)	IPCODE	PRATE (mm/HR)
21	3	1	12	323.7	2.05	301.1	2	1375.0	1500.0	.0000	.0	.0000	0	.00
21	3	1	13	314.8	2.27	301.3	2	1550.0	1800.0	.0000	.0	.0000	0	.00
21	3	1	14	318.8	3.39	302.0	2	1750.0	2050.0	.0000	.0	.0000	0	.00
21	3	1	15	314.4	2.84	299.7	2	1850.0	2150.0	.0000	.0	.0000	0	.00
21	3	1	16	307.0	3.21	298.5	2	2000.0	2350.0	.0000	.0	.0000	0	.00
21	3	1	17	305.5	5.83	297.5	3	1825.0	2225.0	.0000	.0	.0000	0	.00
21	3	1	18	180.7	6.00	299.9	4	1800.0	2200.0	.0000	.0	.0000	0	.00
21	3	1	19	187.4	3.31	298.4	2	1350.0	1750.0	.0000	.0	.0000	0	.00
21	3	1	20	148.9	5.85	296.2	4	975.0	1525.0	.0000	.0	.0000	0	.00
21	3	1	21	146.5	6.54	293.0	4	300.0	480.0	.0000	.0	.0000	0	.00
21	3	1	22	179.1	4.28	294.1	4	255.0	405.0	.0000	.0	.0000	0	.00
21	3	1	23	149.8	6.16	293.9	4	210.0	400.0	.0000	.0	.0000	0	.00
21	3	1	24	92.3	6.81	294.0	4	200.0	395.0	.0000	.0	.0000	0	.00
21	3	2	1	129.1	.42	294.3	6	200.0	400.0	.0000	.0	.0000	0	.00
21	3	2	2	101.5	4.68	296.0	4	125.0	310.0	.0000	.0	.0000	0	.00
21	3	2	3	130.3	5.31	295.8	4	85.0	275.0	.0000	.0	.0000	0	.00
21	3	2	4	72.8	2.88	296.7	5	50.0	250.0	.0000	.0	.0000	0	.00
21	3	2	5	138.1	5.24	295.3	4	55.0	265.0	.0000	.0	.0000	0	.00
21	3	2	6	230.0	.00	295.1	1	90.0	110.0	.0000	.0	.0000	0	.00
21	3	2	7	311.7	.54	299.9	1	80.0	100.0	.0000	.0	.0000	0	.00
21	3	2	8	186.5	.93	300.9	1	175.0	225.0	.0000	.0	.0000	0	.00
21	3	2	9	234.5	.54	301.9	1	440.0	510.0	.0000	.0	.0000	0	.00
21	3	2	10	192.9	.00	300.1	1	740.0	800.0	.0000	.0	.0000	0	.00
21	3	2	11	180.4	.99	300.0	1	800.0	900.0	.0000	.0	.0000	0	.00

*** NOTES: STABILITY CLASS 1=A, 2=B, 3=C, 4=D, 5=E AND 6=F.
FLOW VECTOR IS DIRECTION TOWARD WHICH WIND IS BLOWING.

RECEPTOR WISE CALCULATED GROUND LEVEL CONCENTRATIONS (µg/m³)

X	Y	PM_{10}		$PM_{2.5}$		SO_2	NO_2
		Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)
778882.9	2331207	15.981	41.838	8.495	22.296	0.054	1.751
779670.9	2331144	5.197	12.533	2.975	7.132	0.027	0.935
780161.1	2331358	2.204	6.716	1.267	3.862	0.006	0.172
780887.4	2331533	1.213	3.879	0.697	2.230	0.003	0.082
781329.9	2330773	1.693	5.489	0.973	3.156	0.004	0.110
782229.9	2330996	1.293	4.049	0.743	2.328	0.003	0.093
782856.9	2330648	0.944	3.067	0.543	1.764	0.002	0.059
783216.6	2329753	0.706	2.279	0.406	1.311	0.002	0.046
783064.1	2329025	0.650	2.085	0.374	1.199	0.002	0.052
782650.5	2329499	0.703	2.139	0.404	1.230	0.002	0.055
781990.7	2328898	1.001	3.195	0.576	1.837	0.003	0.080
782724.2	2328525	0.819	2.572	0.471	1.479	0.002	0.060
783306.3	2328240	0.711	2.221	0.409	1.277	0.002	0.051
783320.6	2327706	0.723	2.220	0.416	1.276	0.002	0.055
782740.3	2327417	0.830	2.635	0.478	1.515	0.002	0.057
782138.9	2327407	0.803	2.650	0.462	1.524	0.002	0.048
781523.9	2326980	0.558	1.852	0.321	1.065	0.001	0.032
780713.1	2326787	0.234	0.836	0.135	0.481	0.000	0.009
779194.3	2325974	0.001	0.005	0.001	0.003	0.000	0.000
778650.7	2325983	0.000	0.001	0.000	0.000	0.000	0.000
779349.9	2326559	0.005	0.018	0.003	0.010	0.000	0.000
778496.6	2326322	0.001	0.003	0.001	0.001	0.000	0.000
777671.7	2326021	0.010	0.029	0.006	0.017	0.000	0.001

Dispersion Modelling with ISCST3 for Vangar & Madhiya Limestone Mine of Nirma Ltd.

X	Y	PM_{10}		$PM_{2.5}$		SO_2	NO_2
		Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)
777550.6	2326765	0.040	0.117	0.023	0.067	0.000	0.003
778286.2	2327271	0.008	0.022	0.005	0.013	0.000	0.001
778649	2328044	0.006	0.016	0.003	0.009	0.000	0.001
778331.8	2328600	0.094	0.277	0.054	0.159	0.000	0.008
777690.1	2328285	0.301	0.917	0.173	0.527	0.001	0.024
776928.4	2327825	0.476	1.482	0.273	0.852	0.001	0.035
775962.4	2327590	0.592	1.888	0.340	1.086	0.001	0.040
775605.2	2328291	0.738	2.362	0.424	1.358	0.002	0.049
776329.5	2328773	0.873	2.798	0.502	1.609	0.002	0.058
776775.1	2329339	1.087	3.499	0.625	2.012	0.003	0.071
775944.9	2329456	0.990	3.193	0.569	1.836	0.002	0.064
775044.4	2329133	0.780	2.503	0.448	1.439	0.002	0.051
774661.7	2329871	0.547	1.744	0.315	1.003	0.001	0.037
775180.3	2330314	0.679	2.297	0.391	1.321	0.001	0.039
776167.1	2330278	0.837	2.680	0.481	1.541	0.002	0.055
777107.6	2330508	1.323	4.669	0.761	2.685	0.003	0.081
777929.9	2330978	2.749	9.012	1.581	5.182	0.007	0.203
777809.9	2328852	0.563	1.731	0.324	0.996	0.002	0.043
778347.7	2328900	0.179	0.535	0.103	0.308	0.001	0.015
779550.4	2329074	0.507	1.938	0.292	1.115	0.001	0.010
780514.6	2328809	1.099	3.769	0.632	2.167	0.003	0.064
781479.3	2328927	1.263	3.862	0.726	2.221	0.003	0.098
781600.7	2329721	0.989	3.214	0.569	1.848	0.003	0.085
782220.1	2330346	0.994	3.248	0.571	1.868	0.002	0.070
782056.7	2330447	1.060	3.378	0.610	1.942	0.003	0.073
781307.2	2329963	1.105	3.415	0.636	1.964	0.003	0.093
780688	2329442	1.854	5.774	1.066	3.320	0.005	0.136
780274.1	2330336	2.244	6.758	1.290	3.886	0.007	0.217
779398.2	2330374	8.028	28.163	4.616	16.193	0.019	0.365
778798.2	2329899	0.742	2.494	0.427	1.434	0.002	0.041
778116.8	2329657	1.084	3.357	0.623	1.930	0.003	0.081
778432.5	2331244	7.641	30.105	4.077	16.043	0.008	0.216
779349.3	2331453	12.627	35.255	6.771	18.909	0.042	1.234
780056.4	2331549	2.653	8.018	1.525	4.610	0.007	0.212
780980.9	2331590	1.178	3.759	0.677	2.162	0.003	0.079
781474.1	2330894	1.661	5.231	0.955	3.008	0.004	0.117
782435.7	2331148	1.192	3.691	0.685	2.122	0.003	0.089
783009.6	2330611	0.891	2.905	0.512	1.670	0.002	0.056
783354.1	2329698	0.680	2.200	0.391	1.265	0.002	0.044
783151.9	2328951	0.647	2.022	0.372	1.163	0.002	0.051
782655.8	2329351	0.726	2.293	0.417	1.318	0.002	0.055
782169.7	2328689	0.918	2.973	0.528	1.710	0.003	0.076
783100.6	2328461	0.743	2.309	0.428	1.327	0.002	0.055
783656.3	2327952	0.657	2.064	0.378	1.187	0.002	0.047
783143.7	2327432	0.781	2.467	0.449	1.419	0.002	0.054
782213.8	2327340	0.791	2.605	0.455	1.498	0.002	0.047
781514.4	2326834	0.515	1.719	0.296	0.988	0.001	0.029
780641.1	2326657	0.185	0.666	0.106	0.383	0.000	0.007

Dispersion Modelling with ISCST3 for Vangar & Madhiya Limestone Mine of Nirma Ltd.

X	Y	PM_{10}		$PM_{2.5}$		SO_2	NO_2
		Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)
779221.6	2325866	0.001	0.005	0.001	0.003	0.000	0.000
778473.5	2325855	0.001	0.002	0.000	0.001	0.000	0.000
778195	2326071	0.002	0.006	0.001	0.003	0.000	0.000
777397.2	2326186	0.027	0.079	0.015	0.046	0.000	0.002
777560.2	2327011	0.056	0.166	0.032	0.095	0.000	0.005
778172.9	2327550	0.020	0.058	0.012	0.033	0.000	0.002
778588.7	2328387	0.018	0.050	0.010	0.029	0.000	0.002
778038.1	2328204	0.112	0.333	0.065	0.191	0.000	0.010
777245.8	2327779	0.316	0.970	0.182	0.558	0.001	0.024
776284.9	2327542	0.559	1.768	0.321	1.017	0.001	0.039
775537.2	2327815	0.579	1.845	0.333	1.061	0.001	0.039
775728.4	2328664	0.799	2.563	0.460	1.474	0.002	0.053
776510.1	2329078	0.984	3.162	0.566	1.818	0.002	0.064
776101.3	2329429	1.031	3.334	0.593	1.917	0.002	0.066
775214.9	2329068	0.816	2.624	0.469	1.509	0.002	0.053
774599.9	2329543	0.595	1.894	0.342	1.089	0.001	0.040
774694.9	2330414	0.730	2.441	0.420	1.404	0.002	0.041
775691.6	2330427	0.866	2.946	0.498	1.694	0.002	0.045
776673.6	2330448	1.045	3.640	0.601	2.093	0.002	0.065
777492.2	2330919	2.599	8.578	1.495	4.932	0.006	0.153
778238.9	2329060	0.351	1.066	0.202	0.613	0.001	0.028
778908.9	2329125	0.056	0.225	0.032	0.129	0.000	0.002
780185.6	2329003	1.091	3.731	0.627	2.146	0.002	0.055
781163.2	2328901	1.457	4.644	0.838	2.670	0.004	0.099
781539.8	2329579	1.129	3.369	0.649	1.937	0.003	0.094
781325.1	2329529	1.306	4.000	0.751	2.300	0.004	0.100
780501.1	2329578	2.061	6.483	1.185	3.727	0.005	0.146
779974.6	2330304	3.343	10.576	1.922	6.081	0.011	0.339
779331.4	2329929	1.915	7.457	1.101	4.288	0.002	0.035
778409.3	2329921	1.183	3.663	0.680	2.106	0.003	0.088
778889.2	2331407	11.285	30.838	6.012	16.448	0.036	1.139
779742.6	2331646	2.390	6.930	1.374	3.984	0.007	0.225
780692.9	2331724	1.599	4.909	0.919	2.823	0.004	0.122
781405.2	2331196	1.511	4.721	0.869	2.714	0.004	0.120
782213	2331195	1.232	3.783	0.708	2.175	0.003	0.094
782982.2	2330967	1.053	3.327	0.606	1.913	0.003	0.073
783325.9	2330056	0.739	2.320	0.425	1.334	0.002	0.052
783603.4	2329129	0.567	1.738	0.326	0.999	0.002	0.043
782705.8	2328828	0.806	2.478	0.463	1.425	0.002	0.061
782464.9	2328757	0.882	2.747	0.507	1.580	0.002	0.064
783336.2	2328497	0.689	2.131	0.396	1.225	0.002	0.051
783772.1	2327760	0.634	2.009	0.364	1.155	0.002	0.047
783004.9	2327269	0.786	2.490	0.452	1.432	0.002	0.054
782056.4	2327107	0.634	2.162	0.364	1.243	0.002	0.043
781291.3	2326532	0.366	1.255	0.210	0.721	0.001	0.018
780562.4	2326230	0.105	0.382	0.060	0.220	0.000	0.003
779270.2	2325759	0.001	0.005	0.001	0.003	0.000	0.000
778427.9	2325681	0.001	0.002	0.000	0.001	0.000	0.000

Dispersion Modelling with ISCST3 for Vangar & Madhiya Limestone Mine of Nirma Ltd.

X	Y	PM_{10}		$PM_{2.5}$		SO_2	NO_2
		Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)
778050.1	2325897	0.003	0.008	0.002	0.004	0.000	0.000
777282.8	2326197	0.036	0.106	0.020	0.061	0.000	0.003
777445.9	2327052	0.080	0.238	0.046	0.137	0.000	0.007
778078.7	2327596	0.031	0.089	0.018	0.051	0.000	0.003
778355.9	2328089	0.027	0.079	0.016	0.045	0.000	0.003
777449.9	2327899	0.268	0.816	0.154	0.469	0.001	0.021
776589.8	2327521	0.478	1.497	0.275	0.861	0.001	0.034
775617.6	2327397	0.556	1.779	0.320	1.023	0.001	0.037
775400.7	2328336	0.735	2.354	0.423	1.354	0.002	0.049
776077.6	2328886	0.876	2.813	0.504	1.617	0.002	0.058
776312.2	2329418	1.065	3.450	0.612	1.984	0.003	0.068
775435.3	2329034	0.847	2.729	0.487	1.569	0.002	0.055
774552.4	2329160	0.671	2.146	0.386	1.234	0.002	0.045
774387.9	2330140	0.498	1.675	0.286	0.963	0.001	0.032
775149.8	2330512	0.889	2.984	0.511	1.716	0.002	0.049
776139.1	2330480	1.020	3.492	0.586	2.008	0.002	0.051
777076.6	2330728	2.040	7.036	1.173	4.046	0.004	0.098
777928.1	2331192	2.156	7.175	1.194	3.944	0.005	0.170
778696.1	2329172	0.085	0.245	0.049	0.141	0.000	0.008
780140.8	2329119	1.189	4.063	0.684	2.336	0.002	0.060
781118.1	2328990	1.499	4.742	0.862	2.727	0.004	0.104
781282.9	2329401	1.318	4.196	0.758	2.413	0.004	0.107
780433.5	2329476	2.032	6.672	1.169	3.837	0.005	0.123
779909.4	2330206	3.647	10.903	2.097	6.269	0.011	0.303
779250.6	2329754	0.998	3.954	0.574	2.274	0.001	0.013
778340.8	2329751	1.007	3.116	0.579	1.792	0.003	0.075
778587.7	2331493	5.691	22.699	3.037	12.110	0.008	0.259
779526.4	2331622	3.584	9.361	1.932	5.019	0.020	0.705
780444.1	2331789	2.050	6.287	1.179	3.615	0.006	0.157
781249.3	2331482	1.059	3.148	0.609	1.810	0.003	0.095
782044.4	2331270	1.221	3.793	0.702	2.181	0.003	0.096
782971	2331272	1.022	3.164	0.588	1.819	0.003	0.076
783366.8	2330375	0.708	2.206	0.407	1.269	0.002	0.051
783701.4	2329442	0.579	1.894	0.333	1.089	0.001	0.038
783176.9	2328745	0.690	2.119	0.396	1.218	0.002	0.052
783812.8	2328231	0.624	1.937	0.359	1.114	0.002	0.046
783526.8	2327418	0.712	2.217	0.409	1.275	0.002	0.052
782625.7	2327085	0.762	2.465	0.438	1.417	0.002	0.049
781746.2	2326778	0.549	1.808	0.316	1.040	0.001	0.033
780883.3	2326391	0.206	0.733	0.119	0.421	0.000	0.008
779327.9	2325644	0.001	0.006	0.001	0.003	0.000	0.000
778435.9	2325532	0.000	0.001	0.000	0.001	0.000	0.000
777740.2	2325676	0.005	0.015	0.003	0.009	0.000	0.000
777107.9	2326370	0.066	0.198	0.038	0.114	0.000	0.005
777469.1	2327189	0.092	0.276	0.053	0.159	0.000	0.008
778058.2	2327783	0.046	0.135	0.027	0.078	0.000	0.004
777566.8	2327860	0.203	0.616	0.117	0.354	0.001	0.016
776713.4	2327463	0.415	1.293	0.239	0.743	0.001	0.030

Dispersion Modelling with ISCST3 for Vangar & Madhiya Limestone Mine of Nirma Ltd.

X	Y	PM_{10}		$PM_{2.5}$		SO_2	NO_2
		Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)
775741.5	2327255	0.547	1.741	0.314	1.001	0.001	0.037
775315.2	2328050	0.683	2.186	0.393	1.257	0.002	0.046
775655	2328852	0.794	2.562	0.457	1.473	0.002	0.051
776317.4	2329312	1.010	3.271	0.581	1.881	0.002	0.064
775439.3	2328929	0.824	2.656	0.474	1.527	0.002	0.053
774511.4	2329013	0.681	2.177	0.391	1.252	0.002	0.045
774307.8	2329983	0.487	1.555	0.280	0.894	0.001	0.033
774834.3	2330615	0.919	3.056	0.529	1.757	0.002	0.053
775831.4	2330621	1.157	3.899	0.665	2.242	0.002	0.062
776813.9	2330674	1.696	5.835	0.975	3.355	0.003	0.082
777639.1	2331193	1.789	6.086	1.029	3.499	0.005	0.156
778661.1	2329267	0.134	0.394	0.077	0.227	0.000	0.012
780095.9	2329235	1.304	4.508	0.750	2.592	0.003	0.066
781073	2329080	1.535	4.815	0.882	2.768	0.004	0.110
780938.4	2329148	1.629	5.162	0.937	2.968	0.004	0.112
780247.6	2329678	2.318	7.599	1.333	4.369	0.006	0.142
779566.1	2330019	3.148	11.373	1.810	6.540	0.006	0.122
778774.8	2329594	0.242	0.749	0.139	0.431	0.001	0.018
778442.6	2331570	5.287	21.105	2.823	11.267	0.007	0.191
779391.4	2331752	7.353	22.879	3.985	12.465	0.019	0.535
780327.1	2331858	2.231	6.739	1.283	3.875	0.006	0.178
781249.3	2331738	1.068	3.399	0.614	1.954	0.003	0.073
781969.3	2331354	1.184	3.647	0.681	2.097	0.003	0.093
782926.9	2331447	0.948	2.906	0.545	1.671	0.003	0.073
783401.4	2330596	0.812	2.645	0.467	1.521	0.002	0.051
783708.7	2329653	0.645	2.078	0.371	1.195	0.002	0.042
783528.4	2328807	0.590	1.866	0.339	1.073	0.002	0.046
783896.1	2328331	0.600	1.858	0.345	1.068	0.002	0.045
783765.7	2327407	0.656	2.013	0.377	1.157	0.002	0.050
782868.4	2327035	0.758	2.423	0.436	1.393	0.002	0.051
781912.1	2326829	0.583	1.895	0.335	1.090	0.001	0.037
781114.3	2326270	0.250	0.874	0.144	0.502	0.000	0.011
779623.5	2325738	0.005	0.019	0.003	0.011	0.000	0.000
778788.4	2325325	0.000	0.000	0.000	0.000	0.000	0.000
778022.2	2325631	0.002	0.006	0.001	0.004	0.000	0.000
777173.9	2325958	0.034	0.101	0.019	0.058	0.000	0.003
777033.5	2326897	0.149	0.454	0.086	0.261	0.000	0.012
777848.9	2327380	0.044	0.130	0.026	0.075	0.000	0.004
777612.6	2327770	0.161	0.484	0.092	0.278	0.000	0.013
776756.8	2327372	0.367	1.139	0.211	0.655	0.001	0.027
775786.1	2327154	0.529	1.679	0.304	0.965	0.001	0.036
775229.4	2327850	0.636	2.031	0.365	1.168	0.002	0.043
775290.9	2328778	0.775	2.499	0.446	1.437	0.002	0.050
774398.4	2329007	0.665	2.129	0.382	1.224	0.002	0.044
774204.3	2329982	0.475	1.517	0.273	0.872	0.001	0.032
774677.2	2330713	0.963	3.183	0.554	1.830	0.002	0.056
775674.4	2330727	1.227	4.097	0.706	2.356	0.003	0.069
776660.4	2330750	1.731	5.874	0.995	3.377	0.004	0.090

Dispersion Modelling with ISCST3 for Vangar & Madhiya Limestone Mine of Nirma Ltd.

X	Y	PM_{10}		$PM_{2.5}$		SO_2	NO_2
		Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)
777499.1	2331247	1.661	5.613	0.955	3.228	0.005	0.140
780257.6	2329377	1.767	6.132	1.016	3.526	0.004	0.094
779677.8	2329950	2.852	10.112	1.640	5.814	0.006	0.126
778529.3	2331690	4.836	19.332	2.584	10.330	0.006	0.180
779752.9	2331977	1.883	5.324	1.069	3.045	0.006	0.178
780725.6	2332030	1.754	5.390	1.009	3.099	0.005	0.134
781494.1	2331540	0.987	2.964	0.568	1.704	0.003	0.086
782397.1	2331570	0.934	2.818	0.537	1.620	0.003	0.075
783219	2331232	0.985	3.065	0.567	1.762	0.003	0.072
783579.9	2330318	0.676	2.126	0.389	1.223	0.002	0.050
783928.2	2329388	0.558	1.821	0.321	1.047	0.001	0.036
783862.4	2328603	0.563	1.725	0.324	0.992	0.002	0.043
784053.2	2327647	0.603	1.903	0.347	1.094	0.002	0.043
783308.4	2327059	0.735	2.328	0.423	1.339	0.002	0.051
782337.3	2326847	0.612	2.073	0.352	1.192	0.001	0.041
781525.1	2326335	0.385	1.306	0.221	0.751	0.001	0.020
780662.3	2325934	0.094	0.340	0.054	0.196	0.000	0.003
779706.7	2325669	0.006	0.023	0.003	0.013	0.000	0.000
778872.2	2325211	0.000	0.000	0.000	0.000	0.000	0.000
778016.1	2325520	0.002	0.006	0.001	0.003	0.000	0.000
777137	2325826	0.031	0.093	0.018	0.054	0.000	0.003
776864.8	2326765	0.168	0.513	0.097	0.295	0.000	0.013
777558.4	2327425	0.107	0.319	0.061	0.184	0.000	0.009
777539.1	2327503	0.126	0.377	0.072	0.217	0.000	0.010
776603.9	2327201	0.364	1.131	0.209	0.650	0.001	0.027
775620.1	2327074	0.524	1.668	0.301	0.959	0.001	0.036
775128.8	2327861	0.645	2.061	0.371	1.185	0.002	0.043
774899.4	2328632	0.726	2.338	0.418	1.344	0.002	0.047
774240.7	2329238	0.595	1.901	0.342	1.093	0.001	0.040
774091.6	2330220	0.544	1.818	0.313	1.046	0.001	0.030
774759.8	2330815	1.036	3.409	0.596	1.960	0.002	0.062
775757.2	2330826	1.340	4.442	0.770	2.554	0.003	0.078
776743.1	2330866	1.911	6.383	1.099	3.670	0.004	0.107
777580.4	2331385	1.517	4.751	0.872	2.732	0.004	0.109
779924.4	2329877	2.688	9.141	1.545	5.256	0.006	0.145
778837.3	2331950	7.128	20.473	3.814	10.955	0.021	0.645
779783.3	2332189	1.770	5.040	1.009	2.888	0.006	0.165
780761.9	2332238	1.785	5.448	1.026	3.133	0.005	0.138
781574.4	2331773	0.810	2.601	0.466	1.496	0.002	0.060
782465.2	2331804	0.768	2.342	0.441	1.347	0.002	0.060
783332.7	2331452	0.896	2.764	0.515	1.589	0.002	0.068
783739.8	2330552	0.732	2.382	0.421	1.370	0.002	0.046
784062.3	2329614	0.617	1.983	0.355	1.140	0.002	0.041
784046.7	2328693	0.531	1.701	0.305	0.978	0.001	0.040
784273.3	2327735	0.582	1.819	0.334	1.046	0.002	0.042
783652.2	2327035	0.699	2.210	0.402	1.271	0.002	0.048
782729.8	2326698	0.657	2.170	0.378	1.248	0.002	0.039
781850.6	2326335	0.464	1.543	0.267	0.887	0.001	0.027

Dispersion Modelling with ISCST3 for Vangar & Madhiya Limestone Mine of Nirma Ltd.

X	Y	PM_{10}		$PM_{2.5}$		SO_2	NO_2
		Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)
780972.2	2325924	0.154	0.548	0.089	0.315	0.000	0.006
780061.1	2325564	0.016	0.061	0.009	0.035	0.000	0.000
779228.7	2325061	0.001	0.002	0.000	0.001	0.000	0.000
778260.7	2325168	0.001	0.002	0.000	0.001	0.000	0.000
777345.6	2325388	0.011	0.033	0.006	0.019	0.000	0.001
776757.4	2326165	0.100	0.303	0.058	0.174	0.000	0.008
775805.6	2326855	0.465	1.468	0.267	0.844	0.001	0.032
775023.6	2327370	0.511	1.628	0.294	0.936	0.001	0.035
774888.1	2328356	0.647	2.084	0.372	1.198	0.002	0.043
774128.4	2328876	0.629	2.009	0.362	1.155	0.002	0.042
773928.4	2329850	0.454	1.451	0.261	0.834	0.001	0.030
774132.5	2330780	0.898	2.947	0.516	1.695	0.002	0.054
775070.5	2331007	1.183	3.846	0.680	2.212	0.003	0.074
776065.9	2330990	1.530	4.991	0.880	2.870	0.004	0.095
776968.9	2331298	1.320	4.489	0.759	2.581	0.004	0.118
777877.4	2331704	1.538	5.260	0.884	2.831	0.004	0.102
778429.4	2332080	3.904	15.615	2.087	8.347	0.005	0.141
780033.3	2332392	1.374	4.214	0.790	2.423	0.004	0.106
781016.8	2332428	1.589	4.876	0.914	2.804	0.004	0.122
781769.6	2331832	0.729	2.345	0.419	1.348	0.002	0.057
782739.9	2332023	0.631	1.915	0.363	1.101	0.002	0.050
783539.3	2331494	0.855	2.636	0.491	1.516	0.002	0.064
783936.9	2330588	0.728	2.360	0.418	1.357	0.002	0.046
784264.4	2329652	0.610	1.947	0.351	1.120	0.002	0.041
784281.4	2328700	0.511	1.612	0.294	0.927	0.001	0.037
784473.4	2327728	0.558	1.744	0.321	1.003	0.001	0.040
783942.2	2326930	0.662	2.087	0.381	1.200	0.002	0.046
783026.9	2326558	0.660	2.147	0.380	1.234	0.002	0.041
782099.3	2326286	0.497	1.629	0.286	0.937	0.001	0.030
781252.6	2325783	0.198	0.694	0.114	0.399	0.000	0.009
780342.8	2325432	0.029	0.107	0.017	0.062	0.000	0.001
779490.4	2324972	0.001	0.005	0.001	0.003	0.000	0.000
778526.4	2324861	0.000	0.000	0.000	0.000	0.000	0.000
777591.7	2325089	0.004	0.012	0.002	0.007	0.000	0.000
776783.2	2325635	0.051	0.154	0.029	0.088	0.000	0.004
776446.2	2326569	0.239	0.739	0.138	0.425	0.001	0.018
775656.4	2326661	0.445	1.406	0.256	0.808	0.001	0.031
774873.3	2327214	0.487	1.550	0.280	0.891	0.001	0.033
774710.4	2328193	0.624	1.994	0.359	1.147	0.002	0.042
773957.9	2328771	0.615	1.965	0.353	1.130	0.002	0.041
773748.9	2329742	0.444	1.416	0.255	0.814	0.001	0.030
773827.4	2330711	0.818	2.689	0.471	1.546	0.002	0.049
774647.1	2331212	1.077	3.449	0.619	1.983	0.003	0.071
775644.7	2331228	1.288	4.082	0.741	2.347	0.003	0.089
776626.9	2331272	1.400	4.235	0.805	2.435	0.004	0.111
777479.5	2331775	1.295	4.385	0.745	2.522	0.003	0.092
779113.6	2332459	6.131	17.179	3.274	9.181	0.021	0.595
780703.9	2332634	1.465	4.522	0.842	2.600	0.004	0.110

Dispersion Modelling with ISCST3 for Vangar & Madhiya Limestone Mine of Nirma Ltd.

X	Y	PM_{10}		$PM_{2.5}$		SO_2	NO_2
		Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)
782540.7	2332222	0.620	1.979	0.356	1.138	0.002	0.042
784059.7	2330843	0.802	2.557	0.461	1.470	0.002	0.054
784457.8	2328795	0.483	1.492	0.278	0.858	0.001	0.036
784038.4	2326755	0.648	2.050	0.373	1.179	0.002	0.045
781977.5	2325931	0.402	1.342	0.231	0.772	0.001	0.023
780574.9	2325267	0.041	0.151	0.024	0.087	0.000	0.001
779113.6	2324620	0.000	0.001	0.000	0.000	0.000	0.000
777501.4	2324902	0.004	0.013	0.002	0.007	0.000	0.000
776372.1	2326053	0.159	0.487	0.091	0.280	0.000	0.012
774768.7	2326995	0.453	1.453	0.261	0.835	0.001	0.030
773727	2328795	0.574	1.832	0.330	1.054	0.001	0.039
773789.9	2331000	0.910	2.954	0.523	1.699	0.002	0.058
776483.6	2331431	1.111	3.674	0.639	2.113	0.003	0.096
777751.1	2332084	1.315	4.360	0.756	2.507	0.003	0.096
779113.6	2332760	5.614	15.703	3.007	8.414	0.019	0.548
780831.7	2332942	1.197	3.719	0.688	2.139	0.003	0.089
782835.3	2332516	0.662	2.098	0.381	1.206	0.002	0.046
784336.9	2330958	0.785	2.487	0.451	1.430	0.002	0.054
784791.6	2328795	0.439	1.343	0.252	0.772	0.001	0.034
784376.4	2326615	0.611	1.926	0.351	1.108	0.002	0.043
782191.4	2325717	0.401	1.331	0.231	0.765	0.001	0.023
780691.7	2324985	0.040	0.146	0.023	0.084	0.000	0.001
779113.6	2324317	0.000	0.001	0.000	0.000	0.000	0.000
777385.2	2324622	0.004	0.013	0.002	0.007	0.000	0.000
776141.1	2325822	0.170	0.523	0.098	0.301	0.000	0.013
774487.5	2326878	0.448	1.427	0.258	0.821	0.001	0.030
773409.2	2328795	0.526	1.677	0.303	0.964	0.001	0.036
773500.5	2331120	0.882	2.846	0.507	1.636	0.002	0.057
776216.4	2331692	1.049	3.462	0.603	1.991	0.002	0.068
777636	2332362	1.247	3.974	0.717	2.285	0.003	0.084
779113.6	2333262	5.005	14.008	2.700	7.559	0.017	0.489
781035.1	2333433	0.988	3.052	0.568	1.755	0.003	0.074
783254.2	2332935	0.674	2.122	0.387	1.220	0.002	0.047
784799.1	2331150	0.744	2.346	0.428	1.349	0.002	0.052
785323.3	2328795	0.394	1.293	0.227	0.743	0.001	0.029
784891.6	2326401	0.556	1.737	0.320	0.999	0.001	0.040
782548.9	2325359	0.396	1.303	0.227	0.749	0.001	0.024
780884.9	2324518	0.038	0.138	0.022	0.079	0.000	0.001
779113.6	2323815	0.000	0.000	0.000	0.000	0.000	0.000
777192.4	2324156	0.004	0.013	0.002	0.007	0.000	0.000
775758.7	2325440	0.184	0.570	0.106	0.328	0.001	0.014
774021.6	2326685	0.458	1.459	0.263	0.839	0.001	0.031
772891.9	2328795	0.462	1.471	0.265	0.846	0.001	0.031
773026.6	2331316	0.823	2.631	0.473	1.513	0.002	0.055
775681.1	2332227	0.838	2.623	0.482	1.508	0.002	0.061
777447.7	2332826	1.082	3.489	0.622	2.006	0.003	0.084
779113.6	2333768	4.478	12.608	2.431	6.852	0.015	0.432
781233.4	2333912	0.878	2.732	0.505	1.571	0.002	0.064

Dispersion Modelling with ISCST3 for Vangar & Madhiya Limestone Mine of Nirma Ltd.

X	Y	PM_{10}		$PM_{2.5}$		SO_2	NO_2
		Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)
783642.7	2333324	0.651	2.044	0.375	1.175	0.002	0.046
785261.1	2331341	0.693	2.174	0.398	1.250	0.002	0.049
785841.6	2328795	0.401	1.307	0.231	0.751	0.001	0.025
785383.3	2326198	0.503	1.558	0.289	0.896	0.001	0.037
782910.4	2324998	0.387	1.266	0.223	0.728	0.001	0.024
781077.3	2324054	0.036	0.131	0.021	0.075	0.000	0.001
779113.6	2323313	0.000	0.000	0.000	0.000	0.000	0.000
777000.1	2323692	0.004	0.013	0.002	0.007	0.000	0.000
775384.2	2325065	0.194	0.604	0.112	0.347	0.001	0.014
773557.3	2326493	0.457	1.458	0.263	0.838	0.001	0.031
772381.8	2328795	0.401	1.273	0.231	0.732	0.001	0.027
772557.6	2331510	0.760	2.414	0.437	1.388	0.002	0.052
775181.3	2332727	0.687	2.168	0.395	1.246	0.002	0.050
777252.7	2333287	0.956	3.183	0.550	1.830	0.003	0.076
779113.6	2334291	3.993	11.329	2.180	6.194	0.013	0.379
781429.3	2334385	0.775	2.429	0.446	1.397	0.002	0.055
784018.4	2333699	0.614	1.923	0.353	1.106	0.002	0.044
785723	2331532	0.643	2.016	0.370	1.159	0.002	0.046
786353.5	2328795	0.402	1.301	0.231	0.748	0.001	0.026
785864.4	2325998	0.453	1.392	0.261	0.801	0.001	0.035
783330.9	2324577	0.375	1.220	0.216	0.701	0.001	0.024
781269.4	2323590	0.035	0.125	0.020	0.072	0.000	0.001
779113.6	2322812	0.000	0.000	0.000	0.000	0.000	0.000
776808.2	2323229	0.004	0.013	0.002	0.007	0.000	0.000
775014.7	2324696	0.202	0.629	0.116	0.362	0.001	0.015
773093.8	2326301	0.449	1.433	0.258	0.824	0.001	0.030
771875.1	2328795	0.357	1.132	0.205	0.651	0.001	0.024
772090.9	2331703	0.696	2.199	0.400	1.264	0.002	0.048
774693.9	2333214	0.565	1.745	0.325	1.003	0.002	0.042
777061	2333750	0.894	2.895	0.514	1.665	0.002	0.065
779113.6	2335318	3.119	8.841	1.714	4.866	0.010	0.296
781817.6	2335322	0.608	1.924	0.350	1.106	0.002	0.042
784752.2	2334433	0.526	1.648	0.303	0.948	0.001	0.038
786646.9	2331915	0.543	1.694	0.312	0.974	0.001	0.039
787368.5	2328795	0.392	1.257	0.226	0.723	0.001	0.026
786811.7	2325606	0.378	1.209	0.217	0.695	0.001	0.029
784161.1	2323747	0.349	1.123	0.200	0.646	0.001	0.023
781653	2322664	0.032	0.114	0.019	0.065	0.000	0.001
779113.6	2321811	0.000	0.000	0.000	0.000	0.000	0.000
776424.8	2322303	0.004	0.012	0.002	0.007	0.000	0.000
774266.9	2323948	0.209	0.656	0.120	0.377	0.001	0.015
772167.9	2325918	0.422	1.345	0.243	0.773	0.001	0.028
770866.8	2328795	0.293	0.933	0.168	0.536	0.001	0.020
771161.3	2332089	0.576	1.804	0.331	1.037	0.001	0.041
773798.8	2334109	0.494	1.622	0.284	0.933	0.001	0.031
776677.9	2334675	0.758	2.365	0.436	1.360	0.002	0.055
779113.6	2336335	2.413	6.726	1.330	3.711	0.008	0.237
782203.6	2336254	0.486	1.546	0.279	0.889	0.001	0.035

Dispersion Modelling with ISCST3 for Vangar & Madhiya Limestone Mine of Nirma Ltd.

X	Y	PM_{10}		$PM_{2.5}$		SO_2	NO_2
		Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)
785474.9	2335156	0.445	1.395	0.256	0.802	0.001	0.032
787570.9	2332298	0.461	1.439	0.265	0.827	0.001	0.033
788384	2328782	0.372	1.184	0.214	0.681	0.001	0.025
787749.4	2325217	0.349	1.110	0.201	0.638	0.001	0.024
784941.6	2322967	0.324	1.037	0.186	0.596	0.001	0.021
782036.3	2321739	0.030	0.104	0.017	0.060	0.000	0.001
779113.6	2320810	0.000	0.000	0.000	0.000	0.000	0.000
776041.7	2321378	0.004	0.012	0.002	0.007	0.000	0.000
773512.6	2323194	0.211	0.663	0.121	0.381	0.001	0.015
771242.9	2325534	0.387	1.234	0.223	0.709	0.001	0.026
769858.4	2328795	0.247	0.785	0.142	0.451	0.001	0.017
770233.9	2332473	0.477	1.486	0.275	0.855	0.001	0.035
772996.2	2334912	0.458	1.482	0.264	0.852	0.001	0.029
776294.9	2335599	0.638	2.054	0.365	1.166	0.002	0.048
779113.6	2338353	1.469	3.958	0.811	2.183	0.005	0.154
782972.8	2338111	0.401	1.250	0.231	0.719	0.001	0.029
786906.8	2336588	0.379	1.193	0.218	0.686	0.001	0.027
789418.7	2333063	0.349	1.096	0.201	0.630	0.001	0.025
790408.4	2328795	0.324	1.024	0.187	0.589	0.001	0.023
789612.9	2324446	0.300	0.949	0.172	0.546	0.001	0.021
786436.6	2321472	0.280	0.891	0.161	0.513	0.001	0.019
782802.3	2319889	0.025	0.088	0.015	0.051	0.000	0.001
779113.6	2318809	0.000	0.000	0.000	0.000	0.000	0.000
775275.8	2319529	0.004	0.011	0.002	0.006	0.000	0.000
772046.6	2321727	0.204	0.643	0.117	0.370	0.001	0.014
769393.8	2324768	0.319	1.016	0.184	0.584	0.001	0.022
767811.9	2328795	0.197	0.634	0.113	0.365	0.000	0.013
768382.2	2333240	0.339	1.084	0.195	0.624	0.001	0.025
771480.4	2336428	0.383	1.218	0.220	0.700	0.001	0.026
775528.4	2337450	0.501	1.577	0.283	0.883	0.001	0.036
779113.6	2341367	0.773	2.046	0.426	1.124	0.003	0.084
784134.9	2340917	0.323	1.015	0.186	0.583	0.001	0.023
789041.3	2338722	0.346	1.088	0.199	0.626	0.001	0.024
792190.3	2334211	0.265	0.831	0.152	0.478	0.001	0.019
793429.2	2328795	0.258	0.810	0.149	0.466	0.001	0.018
792396.2	2323293	0.248	0.784	0.143	0.451	0.001	0.017
788650.7	2319257	0.230	0.729	0.132	0.419	0.001	0.016
783950.8	2317117	0.021	0.070	0.012	0.040	0.000	0.001
779113.6	2315809	0.000	0.000	0.000	0.000	0.000	0.000
774127.4	2316757	0.003	0.010	0.002	0.006	0.000	0.000
769887.4	2319568	0.186	0.588	0.107	0.338	0.000	0.013
766580.7	2323603	0.253	0.809	0.146	0.465	0.001	0.017
764773.9	2328795	0.176	0.564	0.101	0.324	0.000	0.012
765607.6	2334389	0.278	0.881	0.160	0.507	0.001	0.019
769286.8	2338621	0.296	0.933	0.170	0.536	0.001	0.021
774379.2	2340225	0.363	1.148	0.206	0.660	0.001	0.026

Dispersion Modelling with ISCST3 for Vangar & Madhiya Limestone Mine of Nirma Ltd.

X	Y	PM_{10}		$PM_{2.5}$		SO_2	NO_2
		Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)
Air Quality	**Stations**						
778387.7	2327527	0.008	0.022	0.005	0.013	0.000	0.000
778390.9	2328386	0.045	0.129	0.026	0.074	0.000	0.001
775576.7	2329548	0.857	2.747	0.493	1.579	0.002	0.057
778500.3	2329444	0.401	1.223	0.230	0.703	0.001	0.023
780991.1	2329620	1.519	4.813	0.873	2.767	0.004	0.125
782557.9	2328933	0.835	2.559	0.480	1.472	0.002	0.064
776061.1	2325018	0.088	0.269	0.051	0.155	0.000	0.007
774373.4	2326273	0.432	1.380	0.248	0.793	0.001	0.029
779058.9	2325416	0.000	0.001	0.000	0.001	0.000	0.000
772538.4	2329094	0.384	1.221	0.221	0.702	0.001	0.026
774643.4	2330835	1.022	3.357	0.588	1.930	0.002	0.062
778248.4	2332665	2.789	11.155	1.496	5.983	0.004	0.126
780760.4	2332924	1.187	3.691	0.682	2.122	0.003	0.087
783870.1	2330755	0.804	2.578	0.463	1.482	0.002	0.053
785857.3	2331004	0.620	1.966	0.356	1.131	0.002	0.042
784233.4	2326954	0.616	1.914	0.354	1.101	0.002	0.045
Villages							
776330	2330951	1.659	5.444	0.954	3.131	0.004	0.100
776218	2329221	0.957	3.097	0.550	1.781	0.002	0.061
780840	2328142	0.802	2.665	0.461	1.532	0.002	0.046
Forest							
777024	2324722	0.011	0.033	0.007	0.019	0.000	0.001
780387	2325846	0.049	0.182	0.028	0.104	0.000	0.001
Maximum		**15.981**	**41.838**	**8.495**	**22.296**	**0.054**	**1.751**

Note: Same GLC shall be applicable for normative production since 20% less time and 20% less production shall take place compared to peak, but at the same rate

THE MAXIMUM 50 24-HR AVERAGE CONCENTRATION

	PM10	X	Y	PM2.5	X	Y
1	15.9814	778882.90	2331207	8.49455	778882.90	2331207
2	13.94622	778882.90	2331207	6.77126	779349.30	2331453
3	12.62738	779349.30	2331453	6.01157	778889.20	2331407
4	11.28457	778889.20	2331407	4.61598	779398.20	2330374
5	10.57599	779349.30	2331453	4.07674	778432.50	2331244
6	9.75083	778889.20	2331407	3.98527	779391.40	2331752
7	8.02779	779398.20	2330374	3.85224	779398.20	2330374
8	7.64081	778432.50	2331244	3.8141	778837.30	2331950
9	7.35283	779391.40	2331752	3.67221	779398.20	2330374
10	7.22975	778882.90	2331207	3.63068	778882.90	2331207

	SO2	X	Y	NO2	X	Y
1	0.05433	778882.90	2331207	1.75102	778882.90	2331207
2	0.04831	778882.90	2331207	1.56266	778882.90	2331207
3	0.0421	779349.30	2331453	1.23379	779349.30	2331453
4	0.03599	778889.20	2331407	1.13934	778889.20	2331407
5	0.03591	779349.30	2331453	1.05997	779349.30	2331453
6	0.03156	778889.20	2331407	1.00217	778889.20	2331407
7	0.02767	778882.90	2331207	0.93547	779670.90	2331144
8	0.02674	779670.90	2331144	0.90923	778882.90	2331207
9	0.02657	778882.90	2331207	0.85556	778882.90	2331207
10	0.02503	778882.90	2331207	0.80925	779670.90	2331144

Dispersion Modelling with ISCST3 for Vangar & Madhiya Limestone Mine of Nirma Ltd.

Note: Same GLC shall be applicable for normative production since 20% less time and 20% less production shall take place compared to peak, but at the same rate

THE MAXIMUM 10 24-HR AVERAGE CONCENTRATION IN WORST CASE (WITH NO CONTROL MEASURES)

	PM_{10}	X	Y	$PM_{2.5}$	X	Y
1	41.83843	778882.9	2331207	22.29636	778882.9	2331207
2	36.05166	778882.9	2331207	18.90892	779349.3	2331453
3	35.25485	779349.3	2331453	16.44826	778889.2	2331407
4	30.83833	778889.2	2331407	16.19346	779398.2	2330374
5	30.10474	778432.5	2331244	16.04333	778432.5	2331244
6	29.17066	779349.3	2331453	13.67192	779398.2	2330374
7	28.16254	779398.2	2330374	12.65506	779398.2	2330374
8	26.41291	778889.2	2331407	12.48629	779398.2	2330374
9	26.29948	778432.5	2331244	12.46462	779391.4	2331752
10	23.77726	779398.2	2330374	12.11003	778587.7	2331493

Note: Same GLC shall be applicable for normative production since 20% less time and 20% less production shall take place compared to peak, but at the same rate

Dust emission from various sources under consideration are summarised below:

Vangar & Madhiya Limestone Mine

Sl. No.	Source	Material	Amount of dust generation, kg/day	Control factor due to water sprays	Emission after Control measures (kg/day)	Model source
A.	**Topsoil dump**					
1	Unloading at TS dump	Top soil	0.623793333	70%	0.187138	Area
2	Wind erosion of top soil dump	Top Soil	10.7879	70%	3.23637	Area
B.	**Pit area Activities**					
1	Topsoil removal at working pit	Top Soil	18.09000667	70%	5.427002	Area
2	Dumper loading by power shovel at working pit	Top Soil	11.22828		11.22828	Area
3	**Limestone extraction**					
3.1	**Using conventional drilling blasting & Excavator dumper dumper**					
3.1.1	Drilling	Limestone	2.2	50%	1.1	Area
3.1.2	Blasting	Limestone	6.14861E-07		6.14861E-07	Area
3.1.3	Loading (to send to stock yard/cement plant)	Limestone	74.66666667		74.66666667	Area
C.	**Transportation**					
1	Transportation in haul road	Top soil	24.3652374	75%	6.09130935	Line
2	Transportation	Limestone	1204.7247	75%	301.181175	Line

CALINE 4 : CALIFORNIA LINE SOURCE DISPERSION MODEL - VERSION 2.1, DATED JUNE 1989

RUN: RURAL HIGHWAY

I. SITE VARIABLES

U= 3.63 M/S Z0= 10. CM ALT= 0. (M) BRG= 180.0 DEGREES
VD= 0.0 CM/S CLAS= 2 (B) VS= 0.0 CM/S
MIXH= 845. M AMB= 0.0 PPM SIGTH= 10. DEGREES TEMP= 30.25 DEGREE (C)

II. LINK VARIABLES

The modelling has been done for limestone transportation from mine to cement plant by dumpers having carrying capacity of 25 T. The section wise total number of dumpers has been calculated as given below:

Mine	Actual Production (TPD) (Normative)	*20% Over Production (TPD) (Assumed Peak)	Daily dumpers required (25T)	Hourly no. of trips (To & fro)
Vangar & Madhiya Mine	5333	6400	256	36

- ***20% over production have been considered to cover production losses which may incurred due to unwanted circumstances like lock down, natural hazardous, temporary shutdown due to legal issue etc. The mine operation time has also been considered 20% extra from 12 hours of actual operational hours.***

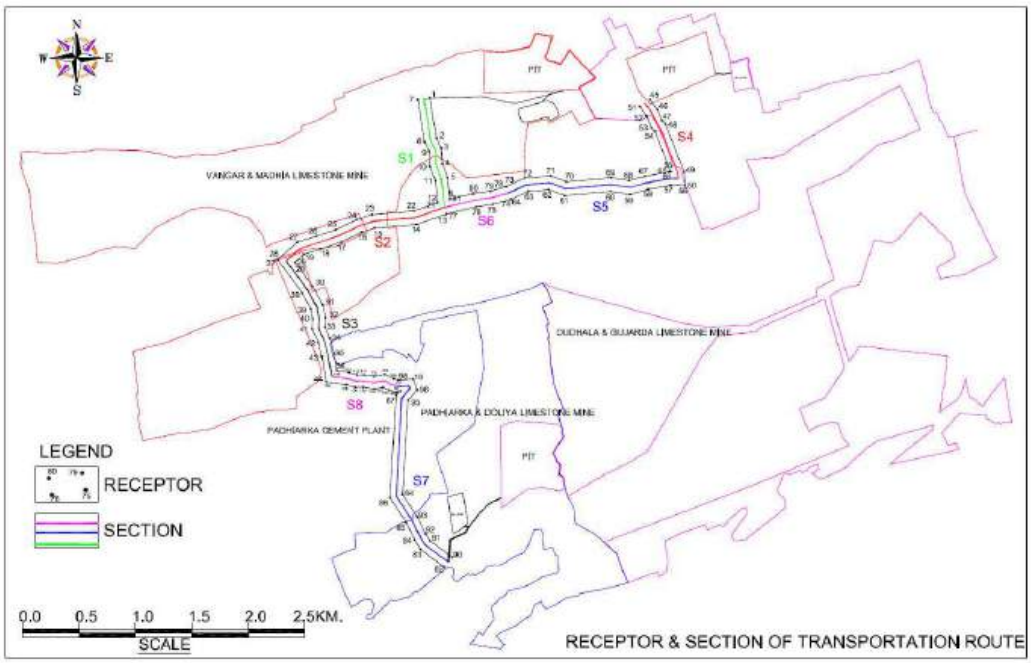
The emissions calculated for transportation activity have been given below:

- The emissions have been considered with 70-75% control measures for PM due to water sprinkling over fugitive emission sources
- PM_{10} & $PM_{2.5}$ includes wheel disturbed road silt
- The CO MODE has been used for calculating SO_2 concentrations.

	70% Controlled	Uncontrolled	
PM_{10}	5.0568	16.728	g/mile/truck
$PM_{2.5}$	1.2416	4.065	g/mile/truck
SO_2	0.0363		g/mile/truck
NO_X	2.1889		g/mile/truck

The road used for transportation of limestone from all the three mines to cement plant has been divided into 3 sections for modelling purpose.

The route map with assumed sections and receptors are shown in figure below:



The details of each section (S1 to S3) is given below:

Section	Link	LINK COORDINATES (M)				Type	VPH	Emission Factor (g/mile)						H	W
		X1	Y1	X2	Y2			PM_{10}		$PM_{2.5}$		SO_2	NO_X	(M)	(M)
								C	UC	C	UC				
S01	A.	778266	2330687	778324	2330319	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	0	10
	B.	778324	2330319	778365	2330234	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	0	10
	C.	778365	2330234	778374	2330095	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	0	10
	D.	778374	2330095	778422	2329971	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	0	10
	E.	778422	2329971	778447	2329721	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	0	10
S02	A.	778447	2329721	778188	2329631	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	0	10
	B.	778188	2329631	777817	2329599	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	0	10
	C.	777817	2329599	777692	2329558	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	0	10
	D.	777692	2329558	777509	2329470	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	0	10
	E.	777509	2329470	777330	2329408	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	0	10
	F.	777330	2329408	777173	2329361	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	0	10
	G.	777173	2329361	777045	2329247	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	0	10
S03	A.	777045	2329247	777232	2328994	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	0	10
	B.	777232	2328994	777316	2328839	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	0	10
	C.	777316	2328839	777337	2328740	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	0	10
	D.	777337	2328740	777332	2328654	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	0	10
	E.	777332	2328654	777381	2328542	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	0	10
	F.	777381	2328542	777415	2328412	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	0	10
	G.	777415	2328412	777447	2328224	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	0	10

Note : C = With control measures; UC = Without control measures; VPH = Vehicle per hour
Same emission rates shall be applicable for normative production since same hourly truck movement has been considered for normative production but for lesser hours.

RECEPTOR WISE RESULTS

The receptors have been assumed at a distance of 50 m from the road and receptor wise results are listed below:

Sec. No.	Receptor No	CO-Ordinates (m)			PM_{10} (µg/m³)		$PM_{2.5}$ (µg/m³)		SO_2 µg/m³	NO_2 µg/m³
		X	Y	Z	C	UC	C	UC		
S01	1	778320	2330695	1.5	0.61	2.02	0.15	0.15	0.00	0.22
	2	778377	2330336	1.5	1.02	3.36	0.25	0.25	0.01	0.44
	3	778419	2330249	1.5	0.49	1.62	0.12	0.12	0.00	0.22
	4	778429	2330107	1.5	0.87	2.89	0.21	0.21	0.01	0.44
	5	778476	2329984	1.5	0.15	0.49	0.04	0.04	0.00	0.00
	6	778495	2329794	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	7	778211	2330678	1.5	0.01	0.03	0.00	0.00	0.00	0.00
	8	778271	2330302	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	9	778311	2330220	1.5	0.00	0.01	0.00	0.00	0.00	0.00
	10	778320	2330083	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	11	778368	2329958	1.5	0.00	0.01	0.00	0.00	0.00	0.00
	12	778387	2329763	1.5	0.00	0.00	0.00	0.00	0.00	0.00
S02	13	778464	2329663	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	14	778200	2329572	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	15	777829	2329540	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	16	777714	2329502	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	17	777532	2329415	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	18	777348	2329351	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	19	777203	2329308	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	20	777122	2329235	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	21	778387	2329763	1.5	0.75	2.48	0.18	0.60	0.00	0.44
	22	778175	2329690	1.5	0.74	2.46	0.18	0.60	0.00	0.44
	23	777805	2329658	1.5	0.74	2.43	0.18	0.59	0.00	0.44
	24	777669	2329614	1.5	0.76	2.51	0.19	0.61	0.00	0.44
	25	777487	2329526	1.5	0.74	2.46	0.18	0.60	0.00	0.44

Sec. No.	Receptor No	CO-Ordinates (m)			PM_{10} (µg/m³)		$PM_{2.5}$ (µg/m³)		SO_2 µg/m³	NO_2 µg/m³
		X	Y	Z	C	UC	C	UC		
	26	777311	2329465	1.5	0.74	2.43	0.18	0.59	0.00	0.44
	27	777143	2329415	1.5	0.86	2.84	0.21	0.69	0.01	0.44
	28	776969	2329258	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	A4	778457	2329254	1.5	0.00	0.00	0.00	0.00	0.00	0.00
S03	29	777122	2329235	1.5	0.68	2.26	0.17	0.55	0.00	0.44
	30	777279	2329023	1.5	0.81	2.69	0.20	0.65	0.01	0.44
	31	777368	2328858	1.5	0.52	1.72	0.13	0.42	0.00	0.22
	32	777392	2328744	1.5	0.54	1.79	0.13	0.43	0.00	0.22
	33	777388	2328664	1.5	0.88	2.91	0.22	0.71	0.01	0.44
	34	777433	2328560	1.5	0.59	1.95	0.14	0.47	0.00	0.22
	35	777469	2328424	1.5	0.16	0.52	0.04	0.13	0.00	0.00
	36	777495	2328273	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	37	776969	2329258	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	38	777185	2328964	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	39	777263	2328820	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	40	777281	2328735	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	41	777277	2328644	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	42	777329	2328524	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	43	777361	2328401	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	44	777400	2328175	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	MAX				**1.02**	**3.36**	**0.25**	**0.71**	**0.01**	**0.44**

Note : C = With control measures; UC = Without control measures; VPH = Vehicle per hour
Same GLC shall be applicable for normative production since same hourly truck movement has been considered for normative production but for lesser hours. CALINE4 model gives the same GLC output for same hourly vehicle movement.

SUMMARY OF MAXIMUM RESULTS

Section	Incremental GLC (µg/m³)		Receptor No.	Section
	Controlled	Uncontrolled		
PM_{10}	1.02	3.36	2	S1
$PM_{2.5}$	0.25	0.71	2	S1
SO_2	0.01		2	S1
NO_X	0.44		2	S1

Note: Same GLC shall be applicable for normative production since same hourly truck movement has been considered for normative production but for lesser hours. CALINE4 model gives the same GLC output for same hourly vehicle movement.

BACKGROUND NOTES

Emissions from trucks as per norms

Emission standards for new heavy-duty engines—applicable as per Bharat Stage IV (applicable nation wide since April 2017).

EU Emission Standards for Heavy-Duty Diesel Engines: Steady-State Testing

Stage	Date	Test	CO	HC	NOx	PM	PN	Smoke
			g/kWh				1/kWh	1/m
Euro III	1999.10 EEV only	ESC & ELR	1.5	0.25	2	0.02		0.15
	2000.1		2.1	0.66	5	0.10a		0.8
Euro IV	**2005.1**		**1.5**	**0.46**	**3.5**	**0.02**		**0.5**
Euro V	2008.1		1.5	0.46	2	0.02		0.5
Euro VI	**2013.01**	**WHSC**	**1.5**	**0.13**	**0.4**	**0.01**	**8.0×1011**	

a- PM = 0.13 g/kWh for engines < 0.75 dm3 swept volume per cylinder and a rated power speed > 3000 min-1

Calculation for Emission from tipping trucks of 25T capacity which will be plying

Truck capacity	25 Te. of	14.4 Hours/day (operational)	
vehicle speed	40 Km/hr	180 HP/truck	

	Units	NOx	PM	SO_2
Capacity of Diesel Engine		g/kWh (Stage : Euro IV)		
Emission permitted		0.4	0.01	0.005%
Resultant KWH	KWH	136.8	136.8	136.8
Emission from one truck	g/truck/hour	54.72	1.368	0.4536
Emission from 1 truck/km	g/km	1.368	0.0342	0.025
Emission from 1 truck/mile	g/mile	2.1888	0.05472	0.04

As per AP-42, 5th Edition of US EPA, Section 13.2.1.3, the quantity of particulate emissions from re-suspension of loose material on the road surface due to vehicle travel on a dry paved road may be estimated using the following empirical expression:

$E = [k (sL)^{0.91} \times (W)^{1.02}] \times (1-P/4N)$

where: E = particulate emission factor (having units matching the units of k),
k = particle size multiplier for particle size range and units of interest, which will be 0.62 g/VKT for PM_{10} and 0.15 g/VKT for $PM_{2.5}$ as per Table 13.2.1-1 of AP-42, US EPA.
sL = road surface silt loading (grams per square meter) (g/m^2). The average silt content has been taken as 0.6 g/m^2 as per Table 13.2.1-2 of AP-42, US EPA..
W = average weight (tons) of the vehicles travelling the road, which is 24.5T (average of loaded and empty trucks) for the traffic.
P = Total wet days with at least 0.254 mm (0.01 in) of precipitation during the averaging period which is 1 days at IMD Bhavnagar (avg. from 1981-2010), and
N = Number of days in the averaging period which is 90 days

Average vehicle weight	25 T
Total number of days	90
Silt load (g/m^2)	0.6
Total number of wet days	1
Emission factor (PM_{10})	10.3562 g/VKT
Emission factor ($PM_{2.5}$)	2.50553 g/VKT

Standards for Ambient air quality (MoEF Notification G.S. R 826(E) dated 16/11/2009)

Pollutants	Concentration of ambient air (All concentrations are micro g/m^3) for 24 hours average	
	Industrial area, Residential, Rural and Other areas	Ecologically sensitive area (Notified by Central Govt.)
Sulphur Dioxide (SO_2)	80	80
Oxides of Nitrogen as NO_2	80	80
Particulate Matter (size $\leq$10µm)	100	100
Particulate Matter (size $\leq$2.5µm)	60	60

Dispersion Modelling with ISCST3 model for Vangar & Madhiya Mine, Gujarda, Dudheri & Dudhala Mine and Padhiarka & Doliya & Limestone Mine

```
CO STARTING                                   ME STARTING
  TITLEONE VANGAR, DUDHALA AND DOLIYA MINES     INPUTFIL  Guj\Nirma\Nirma21S.met
OF NIRMA LTD.  (with 20% over production)       SURFDATA  99999  2021  XXX      SURFNAME
  TITLETWO PM10 EMISSIONS FROM MINING           UAIRDATA  99999  2021  XXX      UAIRNAME
ACTIVITIES                                      ANEMHGHT  10.0 METERS
  MODELOPT DFAULT CONC RURAL                    WDROTATE  180
  AVERTIME 24 PERIOD                          ME FINISHED
  POLLUTID PM10
  RUNORNOT RUN                                OU STARTING
 CO FINISHED                                  OU RECTABLE ALLAVE FIRST
:                                             OU MAXTABLE ALLAVE 50
:                                             OU PLOTFILE 24 ALL FIRST Guj\Nirma\Cum\CU-
:                                            PM10.PLT
:                                             OU FINISHED
:                                             **********************************
:                                             *** SETUP Finishes Successfully ***
                                              **********************************

                        *** ISCST3 - VERSION 95250 ***
*** VANGAR, DUDHALA AND DOLIYA MINES OF NIRMA LTD. (20% over production-peak total excavation)
         *** PM10 EMISSIONS FROM MINING ACTIVITIES                                  ***
             **MODELOPTs: CONC                    RURAL   FLAT          DFAULT
```

*** AREA SOURCE DATA ***
(for peak total excavation)

Source ID	Emission rate (g/s/m2)						Co-ordinates (SW corner) (m)		Base elev.	Rel. Height	Dim of area (m)		Orient, of area	Init. SZ
	PM_{10}		$PM_{2.5}$		SO_2	NO_2								
	Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)	X	Y	(m)	(m)	X	Y	(deg)	(m)
P1	2.53E-6	2.91E-6	1.45E-6	1.67E-6	1.54E-8	5.56E-7	779214.2	2331129	0	2.5	140.83	137.38	19	0
P2	2.53E-6	2.91E-6	1.45E-6	1.67E-6	1.54E-8	5.56E-7	779109.8	2331089	0	2.5	117.17	30.95	0	0
P3	2.53E-6	2.91E-6	1.45E-6	1.67E-6	1.54E-8	5.56E-7	778801.4	2330751	0	2.5	528.26	337.62	0	0
P4	2.53E-6	2.91E-6	1.45E-6	1.67E-6	1.54E-8	5.56E-7	779329.6	2330986	0	2.5	78.40	23.04	0	0
P5	2.53E-6	2.91E-6	1.45E-6	1.67E-6	1.54E-8	5.56E-7	779329.6	2330765	0	2.5	306.58	221.77	0	0
P6	2.53E-6	2.91E-6	1.45E-6	1.67E-6	1.54E-8	5.56E-7	779523.4	2330986	0	2.5	85.89	66.38	0	0
P7	2.53E-6	2.91E-6	1.45E-6	1.67E-6	1.54E-8	5.56E-7	779636.2	2330824	0	2.5	52.92	139.93	0	0
P8	2.53E-6	2.91E-6	1.45E-6	1.67E-6	1.54E-8	5.56E-7	779689.1	2330845	0	2.5	40.95	78.23	0	0
P9	2.84E-6	3.15E-6	1.64E-6	1.81E-6	2.14E-8	5.89E-7	780057.8	2331035	0	2.5	61.41	209.43	66	0
P10	2.84E-6	3.15E-6	1.64E-6	1.81E-6	2.14E-8	5.89E-7	780260.7	2331094	0	2.5	33.55	95.28	66	0
P11	2.84E-6	3.15E-6	1.64E-6	1.81E-6	2.14E-8	5.89E-7	780082.9	2330979	0	2.5	156.17	34.12	66	0
P12	2.84E-6	3.15E-6	1.64E-6	1.81E-6	2.14E-8	5.89E-7	780146.2	2330836	0	2.5	130.06	34.22	66	0
P13	2.84E-6	3.15E-6	1.64E-6	1.81E-6	2.14E-8	5.89E-7	780114.0	2330992	0	2.5	386.91	634.88	66	0
P14	2.84E-6	3.15E-6	1.64E-6	1.81E-6	2.14E-8	5.89E-7	780694.3	2331250	0	2.5	161.83	46.22	66	0
P15	2.84E-6	3.15E-6	1.64E-6	1.81E-6	2.14E-8	5.89E-7	780759.9	2331102	0	2.5	77.99	30.17	66	0
P16	2.28E-6	2.59E-6	1.31E-6	1.49E-6	1.47E-8	5.49E-7	779041.3	2327783	0	2.5	163.92	38.18	0	0
P17	2.28E-6	2.59E-6	1.31E-6	1.49E-6	1.47E-8	5.49E-7	779205.3	2327783	0	2.5	140.61	26.34	0	0
P18	2.28E-6	2.59E-6	1.31E-6	1.49E-6	1.47E-8	5.49E-7	778951.4	2327236	0	2.5	454.12	546.81	0	0
P19	2.28E-6	2.59E-6	1.31E-6	1.49E-6	1.47E-8	5.49E-7	779405.5	2327663	0	2.5	74.36	119.55	0	0
P20	2.28E-6	2.59E-6	1.31E-6	1.49E-6	1.47E-8	5.49E-7	779405.5	2327604	0	2.5	36.74	58.87	0	0
P21	2.28E-6	2.59E-6	1.31E-6	1.49E-6	1.47E-8	5.49E-7	779405.5	2327331	0	2.5	54.03	118.08	0	0
P22	2.28E-6	2.59E-6	1.31E-6	1.49E-6	1.47E-8	5.49E-7	779405.5	2327221	0	2.5	86.80	109.95	0	0
P23	2.28E-6	2.59E-6	1.31E-6	1.49E-6	1.47E-8	5.49E-7	778951.4	2327117	0	2.5	82.54	119.13	0	0
P24	2.28E-6	2.59E-6	1.31E-6	1.49E-6	1.47E-8	5.49E-7	779033.9	2327168	0	2.5	70.54	67.88	0	0
P25	2.28E-6	2.59E-6	1.31E-6	1.49E-6	1.47E-8	5.49E-7	779104.4	2327200	0	2.5	45.56	35.57	0	0
D1	6.42E-7	2.14E-6	3.69E-7	1.23E-6	7.98E-9	6.43E-8	779108.3	2330571	0	2.5	79.80	35.15	76	0
D2	6.42E-7	2.14E-6	3.69E-7	1.23E-6	7.98E-9	6.43E-8	779136.8	2330602	0	2.5	131.14	220.80	76	0
D3	6.42E-7	2.14E-6	3.69E-7	1.23E-6	7.98E-9	6.43E-8	779353.3	2330646	0	2.5	34.04	37.67	76	0
D4	6.42E-7	2.14E-6	3.69E-7	1.23E-6	7.98E-9	6.43E-8	779361.8	2330613	0	2.5	86.49	65.45	76	0
D5	6.42E-7	2.14E-6	3.69E-7	1.23E-6	7.98E-9	6.43E-8	779374.7	2330527	0	2.5	25.19	54.62	76	0
D6	6.35E-7	2.12E-6	3.65E-7	1.22E-6	1.38E-8	6.82E-8	780980.2	2330998	0	2.5	245.57	151.17	80	0
D7	6.35E-7	2.12E-6	3.65E-7	1.22E-6	1.38E-8	6.82E-8	781079.4	2331025	0	2.5	10.26	60.20	80	0
D8	6.37E-7	2.12E-6	3.67E-7	1.22E-6	7.47E-9	6.53E-8	778476.1	2327156	0	2.5	256.77	137.43	81	0
D9	6.37E-7	2.12E-6	3.67E-7	1.22E-6	7.47E-9	6.53E-8	778516.2	2326902	0	2.5	30.68	96.97	81	0
D10	6.37E-7	2.12E-6	3.67E-7	1.22E-6	7.47E-9	6.53E-8	778520.9	2326872	0	2.5	20.54	56.96	81	0

Dispersion Modelling with ISCST3 model for Vangar & Madhiya Mine, Gujarda, Dudheri & Dudhala Mine and Padhiarka & Doliya & Limestone Mine

Source ID	Emission rate (g/s/m2)						Co-ordinates (SW corner) (m)		Base elev. (m)	Rel. Height (m)	Dim of area (m)		Orient, of area (deg)	Init. SZ (m)
	PM_{10}		$PM_{2.5}$		SO_2	NO_2								
	Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)	X	Y			X	Y		
R1	1.55E-4	6.20E-4	8.92E-5	3.57E-4	1.2E-7	8.39E-7	779396.2	2330734	0	1.0	10.00	100.00	74	0
R2	1.55E-4	6.20E-4	8.92E-5	3.57E-4	1.2E-7	8.39E-7	779371.8	2330727	0	1.0	10.00	25.32	75	0
R3	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	779275.4	2330700	0	1.0	10.00	100.00	74	0
R4	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	779179.0	2330673	0	1.0	10.00	100.00	74	0
R5	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	779098.9	2330651	0	1.0	10.00	83.05	74	0
R6	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	779071.2	2330650	0	1.0	10.00	27.77	85	0
R7	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	779012.8	2330645	0	1.0	57.75	10.00	6	0
R8	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	778914.0	2330668	0	1.0	100.00	10.00	13	0
R9	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	778816.7	2330692	0	1.0	100.00	10.00	14	0
R10	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	778779.4	2330701	0	1.0	38.41	10.00	14	0
R11	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	778679.0	2330708	0	1.0	10.00	100.00	88	0
R12	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	778579.1	2330705	0	1.0	10.00	100.00	88	0
R13	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	778479.1	2330701	0	1.0	10.00	100.00	88	0
R14	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	778379.1	2330697	0	1.0	10.00	100.00	88	0
R15	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	778279.2	2330692	0	1.0	10.00	100.00	88	0
R16	1.39E-4	5.56E-4	7.99E-5	3.19E-4	1.2E-7	8.39E-7	778265.5	2330692	0	1.0	10.00	13.71	88	0
R17	1.62E-5	6.50E-5	9.34E-6	3.74E-5	1.2E-7	8.39E-7	779324.3	2330679	0	1.0	10.00	46.40	44	0
R18	1.62E-5	6.50E-5	9.34E-6	3.74E-5	1.2E-7	8.39E-7	779314.9	2330662	0	1.0	10.00	16.50	28	0
R19	2.34E-4	9.38E-4	1.35E-4	5.39E-4	1.51E-6	6.43E-6	780226.9	2330655	0	1.0	10.00	31.51	80	0
R20	1.76E-5	7.03E-5	1.01E-5	4.04E-5	1.51E-6	6.43E-6	780847.7	2330910	0	1.0	10.00	20.05	79	0
R21	1.76E-5	7.03E-5	1.01E-5	4.04E-5	1.51E-6	6.43E-6	780870.1	2330904	0	1.0	59.54	10.00	5	0
R22	1.76E-5	7.03E-5	1.01E-5	4.04E-5	1.51E-6	6.43E-6	780930.1	2330910	0	1.0	10.00	59.54	78	0
R23	1.69E-4	6.75E-4	9.7E-5	3.88E-4	1.76E-7	1.34E-6	778855.8	2327109	0	1.0	10.00	100.00	65	0
R24	1.69E-4	6.75E-4	9.7E-5	3.88E-4	1.76E-7	1.34E-6	778779.7	2327040	0	1.0	10.00	100.00	47	0
R25	1.69E-4	6.75E-4	9.7E-5	3.88E-4	1.76E-7	1.34E-6	778714.7	2326962	0	1.0	10.00	100.00	40	0
R26	1.69E-4	6.75E-4	9.7E-5	3.88E-4	1.76E-7	1.34E-6	778663.1	2326898	0	1.0	10.00	81.36	39	0
R27	1.55E-4	6.20E-4	8.91E-5	3.57E-4	1.76E-7	1.34E-6	778626.3	2326842	0	1.0	10.00	53.62	33	0
R28	1.55E-4	6.20E-4	8.91E-5	3.57E-4	1.76E-7	1.34E-6	778536.0	2326799	0	1.0	10.00	100.00	65	0
R29	1.55E-4	6.20E-4	8.91E-5	3.57E-4	1.76E-7	1.34E-6	778491.4	2326778	0	1.0	10.00	48.99	65	0
R30	1.55E-4	6.20E-4	8.91E-5	3.57E-4	1.76E-7	1.34E-6	778486.4	2326670	0	1.0	10.00	100.00	2	0
R31	1.55E-4	6.20E-4	8.91E-5	3.57E-4	1.76E-7	1.34E-6	778477.4	2326578	0	1.0	10.00	91.81	6	0
R32	1.37E-5	5.47E-5	7.86E-6	3.14E-5	1.76E-7	1.34E-6	778620.0	2326888	0	1.0	10.72	10.00	14	0
R33	1.37E-5	5.47E-5	7.86E-6	3.14E-5	1.76E-7	1.34E-6	778632.8	2326895	0	1.0	10.00	31.20	85	0

Note: Same emission rate (per unit time) shall be applicable for normative production since 20% less time and 20% less production shall take place compared to peak, but at the same rate

***** THE FIRST 24 HOURS OF METEOROLOGICAL DATA *****

FILE: Guj\Nirma\Nirma21S.met FORMAT:
(4I2,2F9.4,F6.1,I2,2F7.1,f9.4,f10.1,f8.4,i4,f7.2)

SURFACE STATION NO.: 99999 UPPER AIR STATION NO.: 99999
NAME: XXX NAME: XXX
YEAR: 2021 YEAR: 2021

YEAR	MONTH	DAY	HOUR	FLOW VECTOR	SPEED (M/S)	TEMP (K)	STAB CLASS	MIXING HEIGHT (M) RURAL	MIXING HEIGHT (M) URBAN	USTAR (M/S)	M-O LENGTH (M)	Z-0 (M)	IPCODE	PRATE (mm/HR)
21	3	1	12	323.7	2.05	301.1	2	1375.0	1500.0	.0000	.0	.0000	0	.00
21	3	1	13	314.8	2.27	301.3	2	1550.0	1800.0	.0000	.0	.0000	0	.00
21	3	1	14	318.8	3.39	302.0	2	1750.0	2050.0	.0000	.0	.0000	0	.00
21	3	1	15	314.4	2.84	299.7	2	1850.0	2150.0	.0000	.0	.0000	0	.00
21	3	1	16	307.0	3.21	298.5	2	2000.0	2350.0	.0000	.0	.0000	0	.00
21	3	1	17	305.5	5.83	297.5	3	1825.0	2225.0	.0000	.0	.0000	0	.00
21	3	1	18	180.7	6.00	299.9	4	1800.0	2200.0	.0000	.0	.0000	0	.00
21	3	1	19	187.4	3.31	298.4	2	1350.0	1750.0	.0000	.0	.0000	0	.00
21	3	1	20	148.9	5.85	296.2	4	975.0	1525.0	.0000	.0	.0000	0	.00
21	3	1	21	146.5	6.54	293.0	4	300.0	480.0	.0000	.0	.0000	0	.00
21	3	1	22	179.1	4.28	294.1	4	255.0	405.0	.0000	.0	.0000	0	.00
21	3	1	23	149.8	6.16	293.9	4	210.0	400.0	.0000	.0	.0000	0	.00
21	3	1	24	92.3	6.81	294.0	4	200.0	395.0	.0000	.0	.0000	0	.00
21	3	2	1	129.1	.42	294.3	6	200.0	400.0	.0000	.0	.0000	0	.00
21	3	2	2	101.5	4.68	296.0	4	125.0	310.0	.0000	.0	.0000	0	.00
21	3	2	3	130.3	5.31	295.8	4	85.0	275.0	.0000	.0	.0000	0	.00
21	3	2	4	72.8	2.88	296.7	5	50.0	250.0	.0000	.0	.0000	0	.00
21	3	2	5	138.1	5.24	295.3	4	55.0	265.0	.0000	.0	.0000	0	.00
21	3	2	6	230.0	.00	295.1	1	90.0	110.0	.0000	.0	.0000	0	.00
21	3	2	7	311.7	.54	299.9	1	80.0	100.0	.0000	.0	.0000	0	.00
21	3	2	8	186.5	.93	300.9	1	175.0	225.0	.0000	.0	.0000	0	.00
21	3	2	9	234.5	.54	301.9	1	440.0	510.0	.0000	.0	.0000	0	.00
21	3	2	10	192.9	.00	300.1	1	740.0	800.0	.0000	.0	.0000	0	.00
21	3	2	11	180.4	.99	300.0	1	800.0	900.0	.0000	.0	.0000	0	.00

***** NOTES: STABILITY CLASS 1=A, 2=B, 3=C, 4=D, 5=E AND 6=F.**
FLOW VECTOR IS DIRECTION TOWARD WHICH WIND IS BLOWING.

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ANNEXURE : XXI Contd..

Dispersion Modelling with ISCST3 model for Vangar & Madhiya Mine, Gujarda, Dudheri & Dudhala Mine and Padhiarka & Doliya & Limestone Mine

RECEPTOR WISE CALCULATED GROUND LEVEL CONCENTRATIONS(μg/m³)FOR PEAK TOTAL EXCAVATION

X	Y	PM_{10}		$PM_{2.5}$		SO_2	NO_2
		Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)
778882.9	2331207	17.021	42.400	9.787	24.380	0.068	2.064
779670.9	2331144	5.402	12.657	3.106	7.278	0.029	0.950
780161.1	2331358	7.811	13.801	4.491	7.936	0.058	1.288
780887.4	2331533	2.263	5.472	1.301	3.147	0.075	0.410
781329.9	2330773	3.366	8.732	1.936	5.021	0.032	0.420
782229.9	2330996	2.119	5.285	1.219	3.039	0.012	0.256
782856.9	2330648	1.370	3.771	0.788	2.168	0.007	0.158
783216.6	2329753	1.013	2.909	0.582	1.673	0.005	0.110
783064.1	2329025	1.060	2.632	0.610	1.513	0.005	0.126
782650.5	2329499	1.136	2.802	0.653	1.611	0.007	0.155
781990.7	2328898	1.315	3.539	0.756	2.035	0.006	0.153
782724.2	2328525	1.077	2.887	0.619	1.660	0.006	0.143
783306.3	2328240	0.915	2.550	0.526	1.466	0.006	0.126
783320.6	2327706	1.046	2.716	0.601	1.562	0.005	0.116
782740.3	2327417	0.992	3.018	0.571	1.735	0.004	0.097
782138.9	2327407	1.029	3.059	0.592	1.759	0.003	0.095
781523.9	2326980	0.977	3.293	0.562	1.894	0.003	0.089
780713.1	2326787	1.037	3.531	0.596	2.030	0.004	0.129
779194.3	2325974	1.423	5.679	0.818	3.266	0.002	0.015
778650.7	2325983	0.084	0.261	0.048	0.150	0.000	0.014
779349.9	2326559	2.542	9.828	1.462	5.651	0.004	0.052
778496.6	2326322	0.432	0.971	0.248	0.559	0.002	0.065
777671.7	2326021	1.237	4.012	0.711	2.307	0.004	0.094
777550.6	2326765	1.405	4.910	0.808	2.823	0.004	0.120
778286.2	2327271	2.382	9.382	1.370	5.394	0.006	0.186
778649	2328044	7.412	29.212	4.262	16.797	0.011	0.211
778331.8	2328600	3.454	13.233	1.986	7.609	0.006	0.136
777690.1	2328285	0.898	3.526	0.517	2.027	0.004	0.106
776928.4	2327825	0.890	2.801	0.512	1.611	0.003	0.117
775962.4	2327590	0.921	2.648	0.529	1.523	0.003	0.092
775605.2	2328291	0.941	2.695	0.541	1.549	0.004	0.090
776329.5	2328773	1.175	3.453	0.676	1.985	0.004	0.101
776775.1	2329339	1.388	4.145	0.798	2.383	0.005	0.123
775944.9	2329456	1.251	3.618	0.719	2.081	0.005	0.111
775044.4	2329133	1.008	2.884	0.579	1.658	0.004	0.092
774661.7	2329871	0.719	2.041	0.413	1.174	0.003	0.067
775180.3	2330314	0.907	2.715	0.521	1.561	0.003	0.075
776167.1	2330278	1.044	2.994	0.601	1.721	0.004	0.095
777107.6	2330508	1.601	5.110	0.921	2.938	0.005	0.128
777929.9	2330978	3.348	9.439	1.925	5.428	0.013	0.316
777809.9	2328852	0.917	3.439	0.527	1.977	0.004	0.097
778347.7	2328900	4.466	17.180	2.568	9.879	0.008	0.149
779550.4	2329074	1.630	4.371	0.938	2.514	0.006	0.189
780514.6	2328809	1.818	5.330	1.045	3.065	0.006	0.173
781479.3	2328927	1.542	4.566	0.886	2.625	0.005	0.131
781600.7	2329721	1.627	4.448	0.935	2.557	0.009	0.228
782220.1	2330346	1.427	3.931	0.821	2.260	0.008	0.165
782056.7	2330447	1.555	4.195	0.894	2.412	0.009	0.183
781307.2	2329963	1.615	4.133	0.928	2.377	0.010	0.259
780688	2329442	2.251	6.904	1.294	3.970	0.006	0.176
780274.1	2330336	2.273	6.833	1.307	3.929	0.008	0.219

Dispersion Modelling with ISCST3 model for Vangar & Madhiya Mine, Gujarda, Dudheri & Dudhala Mine and Padhiarka & Doliya & Limestone Mine

X	Y	PM_{10}		$PM_{2.5}$		SO_2	NO_2
		Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)
779398.2	2330374	8.251	28.546	4.745	16.414	0.020	0.408
778798.2	2329899	3.365	9.862	1.935	5.671	0.011	0.314
778116.8	2329657	1.353	4.097	0.778	2.356	0.006	0.128
778432.5	2331244	10.257	40.332	5.898	23.191	0.013	0.307
779349.3	2331453	12.230	33.431	7.032	19.223	0.045	1.256
780056.4	2331549	3.055	8.636	1.756	4.966	0.014	0.313
780980.9	2331590	2.149	5.200	1.236	2.990	0.025	0.332
781474.1	2330894	3.107	7.645	1.787	4.396	0.034	0.461
782435.7	2331148	1.927	4.748	1.108	2.730	0.011	0.234
783009.6	2330611	1.287	3.572	0.740	2.054	0.007	0.150
783354.1	2329698	0.950	2.733	0.546	1.572	0.005	0.105
783151.9	2328951	1.040	2.602	0.598	1.496	0.005	0.122
782655.8	2329351	1.157	2.751	0.665	1.582	0.006	0.147
782169.7	2328689	1.260	3.262	0.724	1.876	0.005	0.141
783100.6	2328461	0.942	2.688	0.542	1.546	0.006	0.131
783656.3	2327952	0.873	2.349	0.502	1.351	0.005	0.116
783143.7	2327432	1.009	2.854	0.580	1.641	0.004	0.099
782213.8	2327340	1.007	3.047	0.579	1.752	0.003	0.089
781514.4	2326834	0.861	2.964	0.495	1.704	0.003	0.082
780641.1	2326657	1.104	3.345	0.635	1.923	0.004	0.147
779221.6	2325866	1.067	4.260	0.614	2.449	0.001	0.011
778473.5	2325855	0.110	0.183	0.063	0.105	0.001	0.022
778195	2326071	0.868	2.641	0.499	1.519	0.003	0.075
777397.2	2326186	1.279	4.381	0.735	2.519	0.004	0.094
777560.2	2327011	1.628	6.039	0.936	3.472	0.004	0.115
778172.9	2327550	1.339	5.309	0.770	3.052	0.006	0.197
778588.7	2328387	5.835	22.827	3.355	13.125	0.011	0.200
778038.1	2328204	1.160	4.589	0.667	2.639	0.004	0.112
777245.8	2327779	0.882	2.800	0.507	1.610	0.004	0.130
776284.9	2327542	0.978	2.810	0.563	1.616	0.003	0.099
775537.2	2327815	0.790	2.403	0.454	1.382	0.003	0.086
775728.4	2328664	1.000	2.953	0.575	1.698	0.004	0.098
776510.1	2329078	1.290	3.854	0.742	2.216	0.005	0.109
776101.3	2329429	1.306	3.776	0.751	2.171	0.005	0.116
775214.9	2329068	1.058	3.027	0.608	1.740	0.004	0.097
774599.9	2329543	0.775	2.201	0.445	1.265	0.003	0.072
774694.9	2330414	0.972	2.885	0.559	1.659	0.004	0.082
775691.6	2330427	1.118	3.378	0.643	1.942	0.004	0.090
776673.6	2330448	1.298	4.043	0.747	2.325	0.004	0.108
777492.2	2330919	3.094	9.325	1.779	5.362	0.011	0.248
778238.9	2329060	1.328	4.640	0.764	2.668	0.004	0.136
778908.9	2329125	3.604	6.172	2.072	3.549	0.021	0.694
780185.6	2329003	1.394	4.778	0.802	2.747	0.004	0.127
781163.2	2328901	1.727	5.423	0.993	3.118	0.005	0.133
781539.8	2329579	1.526	4.287	0.877	2.465	0.008	0.214
781325.1	2329529	1.617	4.454	0.930	2.561	0.007	0.199
780501.1	2329578	2.393	7.440	1.376	4.278	0.007	0.179
779974.6	2330304	3.378	10.622	1.942	6.108	0.014	0.355
779331.4	2329929	2.214	7.960	1.273	4.577	0.011	0.337
778409.3	2329921	4.592	17.449	2.641	10.033	0.009	0.133
778889.2	2331407	12.624	31.998	7.259	18.399	0.049	1.499
779742.6	2331646	2.779	7.757	1.598	4.460	0.012	0.297
780692.9	2331724	5.653	7.588	3.250	4.363	0.042	1.081
781405.2	2331196	2.805	6.430	1.613	3.697	0.018	0.372
782213	2331195	2.007	4.872	1.154	2.801	0.011	0.249

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ANNEXURE : XXI Contd..

Dispersion Modelling with ISCST3 model for Vangar & Madhiya Mine, Gujarda, Dudheri & Dudhala Mine and Padhiarka & Doliya & Limestone Mine

X	Y	PM_{10}		$PM_{2.5}$		SO_2	NO_2
		Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)
782982.2	2330967	1.645	4.232	0.946	2.434	0.009	0.188
783325.9	2330056	1.177	3.179	0.677	1.828	0.005	0.123
783603.4	2329129	0.866	2.048	0.498	1.178	0.005	0.115
782705.8	2328828	1.057	2.960	0.608	1.702	0.007	0.145
782464.9	2328757	1.120	3.112	0.644	1.790	0.006	0.152
783336.2	2328497	0.945	2.584	0.543	1.486	0.005	0.118
783772.1	2327760	0.895	2.251	0.514	1.294	0.005	0.114
783004.9	2327269	0.950	2.830	0.546	1.627	0.004	0.095
782056.4	2327107	0.949	3.053	0.546	1.756	0.003	0.080
781291.3	2326532	0.838	2.694	0.482	1.549	0.003	0.090
780562.4	2326230	0.939	2.816	0.540	1.619	0.004	0.159
779270.2	2325759	0.903	3.602	0.520	2.071	0.001	0.010
778427.9	2325681	0.085	0.143	0.049	0.082	0.001	0.017
778050.1	2325897	0.848	2.608	0.487	1.500	0.003	0.071
777282.8	2326197	1.283	4.328	0.738	2.489	0.003	0.092
777445.9	2327052	1.557	5.653	0.895	3.250	0.003	0.104
778078.7	2327596	1.199	4.741	0.689	2.726	0.005	0.190
778355.9	2328089	3.425	13.193	1.969	7.586	0.006	0.146
777449.9	2327899	0.858	3.187	0.493	1.832	0.003	0.120
776589.8	2327521	1.016	2.869	0.584	1.650	0.004	0.106
775617.6	2327397	0.960	3.002	0.552	1.726	0.003	0.077
775400.7	2328336	0.913	2.640	0.525	1.518	0.004	0.094
776077.6	2328886	1.121	3.353	0.645	1.928	0.004	0.103
776312.2	2329418	1.356	3.910	0.780	2.248	0.005	0.122
775435.3	2329034	1.106	3.160	0.636	1.817	0.004	0.102
774552.4	2329160	0.870	2.476	0.500	1.424	0.003	0.081
774387.9	2330140	0.696	2.057	0.400	1.183	0.003	0.060
775149.8	2330512	1.155	3.453	0.664	1.985	0.004	0.095
776139.1	2330480	1.285	3.926	0.739	2.257	0.005	0.100
777076.6	2330728	2.415	7.614	1.389	4.378	0.008	0.169
777928.1	2331192	2.305	7.245	1.325	4.166	0.011	0.290
778696.1	2329172	4.656	17.934	2.677	10.312	0.007	0.146
780140.8	2329119	1.461	5.074	0.840	2.917	0.004	0.116
781118.1	2328990	1.813	5.640	1.042	3.243	0.005	0.149
781282.9	2329401	1.680	4.629	0.966	2.662	0.007	0.179
780433.5	2329476	2.375	7.661	1.366	4.405	0.006	0.158
779909.4	2330206	3.686	11.028	2.119	6.341	0.013	0.323
779250.6	2329754	2.612	5.057	1.502	2.908	0.017	0.574
778340.8	2329751	4.322	16.428	2.485	9.446	0.008	0.123
778587.7	2331493	8.055	31.303	4.632	17.999	0.011	0.249
779526.4	2331622	3.850	10.820	2.214	6.221	0.020	0.677
780444.1	2331789	4.896	6.895	2.815	3.964	0.036	0.937
781249.3	2331482	1.858	3.907	1.068	2.246	0.014	0.296
782044.4	2331270	1.995	4.890	1.147	2.811	0.011	0.245
782971	2331272	1.596	3.991	0.918	2.295	0.009	0.189
783366.8	2330375	1.173	2.977	0.674	1.712	0.006	0.139
783701.4	2329442	0.760	2.228	0.437	1.281	0.004	0.095
783176.9	2328745	1.009	2.662	0.580	1.530	0.006	0.118
783812.8	2328231	0.873	2.362	0.502	1.358	0.005	0.103
783526.8	2327418	1.005	2.681	0.578	1.542	0.004	0.106
782625.7	2327085	0.887	2.714	0.510	1.560	0.003	0.086
781746.2	2326778	0.787	2.665	0.453	1.532	0.003	0.078
780883.3	2326391	0.964	2.963	0.554	1.704	0.004	0.124
779327.9	2325644	0.783	3.121	0.450	1.794	0.001	0.009
778435.9	2325532	0.055	0.091	0.032	0.053	0.000	0.011

ANNEXURE : XXI Contd..

Dispersion Modelling with ISCST3 model for Vangar & Madhiya Mine, Gujarda, Dudheri & Dudhala Mine and Padhiarka & Doliya & Limestone Mine

X	Y	PM_{10}		$PM_{2.5}$		SO_2	NO_2
		Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)
777740.2	2325676	0.961	3.026	0.553	1.740	0.003	0.075
777107.9	2326370	1.252	4.008	0.720	2.305	0.004	0.093
777469.1	2327189	1.453	4.907	0.835	2.822	0.004	0.097
778058.2	2327783	1.156	4.579	0.665	2.633	0.005	0.161
777566.8	2327860	0.921	3.436	0.529	1.975	0.004	0.129
776713.4	2327463	1.075	3.114	0.618	1.791	0.004	0.106
775741.5	2327255	0.997	3.242	0.573	1.864	0.003	0.070
775315.2	2328050	0.872	2.525	0.501	1.452	0.004	0.090
775655	2328852	1.078	3.036	0.620	1.745	0.004	0.103
776317.4	2329312	1.311	3.753	0.754	2.158	0.005	0.120
775439.3	2328929	1.090	3.097	0.627	1.781	0.004	0.102
774511.4	2329013	0.891	2.521	0.512	1.450	0.003	0.084
774307.8	2329983	0.645	1.831	0.371	1.053	0.003	0.060
774834.3	2330615	1.198	3.544	0.689	2.038	0.004	0.102
775831.4	2330621	1.455	4.385	0.837	2.522	0.005	0.117
776813.9	2330674	2.035	6.360	1.170	3.657	0.007	0.147
777639.1	2331193	2.067	6.392	1.189	3.675	0.011	0.267
778661.1	2329267	4.703	18.133	2.704	10.427	0.008	0.138
780095.9	2329235	1.555	5.458	0.894	3.138	0.004	0.107
781073	2329080	1.888	5.815	1.085	3.344	0.005	0.160
780938.4	2329148	2.020	6.273	1.161	3.607	0.006	0.167
780247.6	2329678	2.562	8.315	1.473	4.781	0.006	0.165
779566.1	2330019	3.292	11.626	1.893	6.685	0.010	0.206
778774.8	2329594	3.525	11.890	2.027	6.836	0.009	0.202
778442.6	2331570	7.921	31.395	4.555	18.052	0.010	0.212
779391.4	2331752	7.172	21.973	4.124	12.635	0.021	0.552
780327.1	2331858	4.715	7.316	2.711	4.207	0.035	0.892
781249.3	2331738	1.773	4.304	1.020	2.475	0.011	0.280
781969.3	2331354	1.926	4.628	1.107	2.661	0.010	0.239
782926.9	2331447	1.441	3.621	0.829	2.082	0.008	0.170
783401.4	2330596	1.186	3.285	0.682	1.889	0.006	0.133
783708.7	2329653	0.886	2.514	0.509	1.446	0.004	0.096
783528.4	2328807	0.967	2.399	0.556	1.380	0.005	0.116
783896.1	2328331	0.886	2.328	0.509	1.339	0.004	0.096
783765.7	2327407	0.968	2.499	0.557	1.437	0.005	0.109
782868.4	2327035	0.875	2.638	0.503	1.517	0.004	0.088
781912.1	2326829	0.813	2.699	0.468	1.552	0.003	0.079
781114.3	2326270	0.839	2.636	0.483	1.516	0.003	0.111
779623.5	2325738	1.148	4.550	0.660	2.616	0.002	0.023
778788.4	2325325	0.021	0.082	0.012	0.047	0.000	0.001
778022.2	2325631	0.462	1.302	0.266	0.749	0.002	0.048
777173.9	2325958	1.132	3.622	0.651	2.083	0.003	0.084
777033.5	2326897	1.246	4.630	0.716	2.662	0.003	0.089
777848.9	2327380	1.217	4.239	0.700	2.437	0.005	0.141
777612.6	2327770	0.928	3.531	0.534	2.030	0.004	0.145
776756.8	2327372	1.159	3.545	0.666	2.038	0.004	0.099
775786.1	2327154	0.991	3.308	0.570	1.902	0.003	0.066
775229.4	2327850	0.827	2.312	0.476	1.329	0.004	0.087
775290.9	2328778	1.045	2.942	0.601	1.692	0.004	0.100
774398.4	2329007	0.871	2.467	0.501	1.418	0.003	0.082
774204.3	2329982	0.630	1.787	0.362	1.028	0.002	0.059
774677.2	2330713	1.253	3.685	0.720	2.119	0.005	0.108
775674.4	2330727	1.546	4.610	0.889	2.651	0.006	0.128
776660.4	2330750	2.089	6.424	1.201	3.694	0.007	0.158
777499.1	2331247	1.874	5.919	1.077	3.404	0.010	0.246

ANNEXURE : XXI Contd..

Dispersion Modelling with ISCST3 model for Vangar & Madhiya Mine, Gujarda, Dudheri & Dudhala Mine and Padhiarka & Doliya & Limestone Mine

X	Y	PM_{10}		$PM_{2.5}$		SO_2	NO_2
		Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)
780257.6	2329377	2.097	7.087	1.206	4.075	0.005	0.115
779677.8	2329950	2.941	10.278	1.691	5.910	0.010	0.202
778529.3	2331690	7.312	28.728	4.205	16.518	0.009	0.194
779752.9	2331977	2.566	7.282	1.476	4.187	0.010	0.247
780725.6	2332030	3.205	5.795	1.843	3.332	0.026	0.601
781494.1	2331540	1.628	3.644	0.936	2.095	0.012	0.229
782397.1	2331570	1.386	3.427	0.797	1.970	0.007	0.165
783219	2331232	1.534	3.872	0.882	2.227	0.008	0.180
783579.9	2330318	1.127	2.884	0.648	1.658	0.006	0.130
783928.2	2329388	0.726	2.124	0.418	1.221	0.004	0.088
783862.4	2328603	0.908	2.276	0.522	1.309	0.005	0.107
784053.2	2327647	0.821	2.167	0.472	1.246	0.005	0.106
783308.4	2327059	0.913	2.645	0.525	1.521	0.004	0.091
782337.3	2326847	0.843	2.555	0.485	1.469	0.003	0.076
781525.1	2326335	0.759	2.506	0.436	1.441	0.003	0.086
780662.3	2325934	0.968	3.198	0.557	1.839	0.004	0.132
779706.7	2325669	1.100	4.349	0.633	2.500	0.002	0.025
778872.2	2325211	0.031	0.123	0.018	0.071	0.000	0.001
778016.1	2325520	0.356	0.963	0.205	0.554	0.001	0.040
777137	2325826	1.087	3.521	0.625	2.025	0.003	0.077
776864.8	2326765	0.966	3.635	0.555	2.090	0.003	0.086
777558.4	2327425	1.132	3.793	0.651	2.181	0.004	0.135
777539.1	2327503	1.031	3.514	0.593	2.021	0.004	0.144
776603.9	2327201	1.215	4.055	0.699	2.331	0.003	0.077
775620.1	2327074	0.925	3.130	0.532	1.800	0.003	0.066
775128.8	2327861	0.829	2.332	0.477	1.341	0.004	0.089
774899.4	2328632	0.992	2.773	0.571	1.594	0.004	0.096
774240.7	2329238	0.776	2.202	0.446	1.266	0.003	0.073
774091.6	2330220	0.752	2.209	0.432	1.270	0.003	0.065
774759.8	2330815	1.343	3.929	0.772	2.259	0.005	0.117
775757.2	2330826	1.680	4.982	0.966	2.864	0.006	0.141
776743.1	2330866	2.310	6.987	1.328	4.018	0.008	0.183
777580.4	2331385	1.753	5.271	1.008	3.031	0.009	0.210
779924.4	2329877	2.838	9.587	1.632	5.513	0.008	0.178
778837.3	2331950	8.657	22.656	4.978	13.027	0.032	0.982
779783.3	2332189	2.427	6.925	1.396	3.982	0.009	0.231
780761.9	2332238	2.054	5.740	1.181	3.301	0.025	0.316
781574.4	2331773	1.623	3.853	0.933	2.215	0.011	0.228
782465.2	2331804	1.073	2.773	0.617	1.595	0.006	0.120
783332.7	2331452	1.363	3.435	0.784	1.975	0.007	0.159
783739.8	2330552	1.076	2.987	0.619	1.718	0.005	0.120
784062.3	2329614	0.846	2.378	0.486	1.368	0.004	0.085
784046.7	2328693	0.854	2.092	0.491	1.203	0.005	0.105
784273.3	2327735	0.764	2.137	0.439	1.228	0.004	0.097
783652.2	2327035	0.932	2.594	0.536	1.492	0.004	0.090
782729.8	2326698	0.823	2.356	0.473	1.355	0.003	0.076
781850.6	2326335	0.729	2.385	0.419	1.371	0.002	0.069
780972.2	2325924	0.847	2.629	0.487	1.512	0.004	0.124
780061.1	2325564	1.165	4.479	0.670	2.575	0.002	0.050
779228.7	2325061	0.167	0.664	0.096	0.382	0.000	0.002
778260.7	2325168	0.052	0.099	0.030	0.057	0.000	0.010
777345.6	2325388	0.906	2.819	0.521	1.621	0.003	0.073
776757.4	2326165	1.069	3.402	0.615	1.956	0.003	0.081
775805.6	2326855	0.822	2.907	0.473	1.672	0.003	0.064
775023.6	2327370	0.864	2.732	0.497	1.571	0.003	0.079

ANNEXURE : XXI Contd..

Dispersion Modelling with ISCST3 model for Vangar & Madhiya Mine, Gujarda, Dudheri & Dudhala Mine and Padhiarka & Doliya & Limestone Mine

X	Y	PM_{10}		$PM_{2.5}$		SO_2	NO_2
		Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)
774888.1	2328356	0.947	2.590	0.544	1.489	0.004	0.097
774128.4	2328876	0.837	2.352	0.481	1.352	0.003	0.080
773928.4	2329850	0.604	1.709	0.347	0.982	0.002	0.057
774132.5	2330780	1.180	3.438	0.678	1.977	0.005	0.104
775070.5	2331007	1.523	4.396	0.876	2.528	0.006	0.137
776065.9	2330990	1.912	5.571	1.099	3.203	0.007	0.168
776968.9	2331298	1.793	4.765	1.031	2.740	0.009	0.211
777877.4	2331704	1.668	5.243	0.959	3.015	0.007	0.168
778429.4	2332080	6.407	25.405	3.684	14.608	0.008	0.160
780033.3	2332392	1.956	5.591	1.125	3.215	0.011	0.246
781016.8	2332428	1.723	5.125	0.991	2.947	0.013	0.249
781769.6	2331832	1.544	3.645	0.888	2.096	0.010	0.196
782739.9	2332023	0.942	2.287	0.542	1.315	0.006	0.120
783539.3	2331494	1.294	3.273	0.744	1.882	0.007	0.150
783936.9	2330588	1.078	2.971	0.620	1.708	0.005	0.113
784264.4	2329652	0.848	2.350	0.488	1.351	0.004	0.084
784281.4	2328700	0.785	1.907	0.452	1.097	0.004	0.098
784473.4	2327728	0.762	2.086	0.438	1.199	0.004	0.090
783942.2	2326930	0.914	2.489	0.526	1.431	0.004	0.093
783026.9	2326558	0.798	2.297	0.459	1.321	0.003	0.077
782099.3	2326286	0.703	2.285	0.404	1.314	0.002	0.065
781252.6	2325783	0.798	2.414	0.459	1.388	0.003	0.109
780342.8	2325432	1.100	4.073	0.633	2.342	0.003	0.065
779490.4	2324972	0.315	1.247	0.181	0.717	0.000	0.004
778526.4	2324861	0.009	0.013	0.005	0.008	0.000	0.002
777591.7	2325089	0.460	1.344	0.264	0.773	0.002	0.044
776783.2	2325635	0.949	3.010	0.546	1.731	0.003	0.072
776446.2	2326569	0.817	2.412	0.470	1.387	0.003	0.077
775656.4	2326661	0.626	2.232	0.360	1.283	0.003	0.063
774873.3	2327214	0.825	2.685	0.474	1.544	0.003	0.076
774710.4	2328193	0.923	2.507	0.531	1.442	0.004	0.096
773957.9	2328771	0.829	2.324	0.477	1.336	0.003	0.080
773748.9	2329742	0.590	1.665	0.339	0.957	0.002	0.056
773827.4	2330711	1.084	3.157	0.623	1.815	0.004	0.095
774647.1	2331212	1.417	3.998	0.815	2.299	0.006	0.134
775644.7	2331228	1.669	4.659	0.960	2.679	0.007	0.162
776626.9	2331272	1.844	4.880	1.060	2.806	0.008	0.198
777479.5	2331775	1.441	4.602	0.828	2.646	0.006	0.158
779113.6	2332459	6.900	17.458	3.968	10.039	0.029	0.833
780703.9	2332634	1.861	4.811	1.070	2.767	0.020	0.370
782540.7	2332222	1.250	3.066	0.719	1.763	0.007	0.153
784059.7	2330843	1.225	3.256	0.705	1.872	0.006	0.132
784457.8	2328795	0.703	1.739	0.404	1.000	0.004	0.090
784038.4	2326755	0.881	2.453	0.507	1.411	0.004	0.088
781977.5	2325931	0.619	1.937	0.356	1.114	0.002	0.077
780574.9	2325267	1.019	3.666	0.586	2.108	0.003	0.068
779113.6	2324620	0.034	0.136	0.020	0.078	0.000	0.000
777501.4	2324902	0.405	1.174	0.233	0.675	0.001	0.039
776372.1	2326053	0.923	2.876	0.531	1.654	0.003	0.075
774768.7	2326995	0.735	2.469	0.422	1.420	0.003	0.072
773727	2328795	0.779	2.178	0.448	1.252	0.003	0.076
773789.9	2331000	1.204	3.456	0.692	1.987	0.005	0.110
776483.6	2331431	1.519	4.016	0.873	2.309	0.007	0.178
777751.1	2332084	1.379	4.439	0.793	2.552	0.005	0.133
779113.6	2332760	6.328	16.001	3.638	9.201	0.026	0.765

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ANNEXURE : XXI Contd..

Dispersion Modelling with ISCST3 model for Vangar & Madhiya Mine, Gujarda, Dudheri & Dudhala Mine and Padhiarka & Doliya & Limestone Mine

X	Y	PM_{10}		$PM_{2.5}$		SO_2	NO_2
		Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)
780831.7	2332942	1.677	4.268	0.964	2.454	0.025	0.235
782835.3	2332516	1.197	3.019	0.688	1.736	0.006	0.140
784336.9	2330958	1.206	3.175	0.693	1.826	0.006	0.132
784791.6	2328795	0.618	1.616	0.355	0.929	0.004	0.080
784376.4	2326615	0.855	2.386	0.492	1.372	0.004	0.088
782191.4	2325717	0.622	1.840	0.358	1.058	0.002	0.073
780691.7	2324985	0.883	3.231	0.507	1.858	0.002	0.058
779113.6	2324317	0.018	0.072	0.010	0.041	0.000	0.000
777385.2	2324622	0.324	0.922	0.186	0.530	0.001	0.033
776141.1	2325822	0.853	2.685	0.491	1.544	0.003	0.067
774487.5	2326878	0.682	2.177	0.392	1.252	0.003	0.071
773409.2	2328795	0.723	2.014	0.416	1.158	0.003	0.071
773500.5	2331120	1.174	3.343	0.675	1.922	0.005	0.109
776216.4	2331692	1.288	3.859	0.741	2.219	0.006	0.139
777636	2332362	1.305	4.113	0.751	2.365	0.005	0.125
779113.6	2333262	5.636	14.336	3.241	8.243	0.023	0.675
781035.1	2333433	1.465	3.639	0.843	2.092	0.009	0.197
783254.2	2332935	1.097	2.852	0.631	1.640	0.006	0.121
784799.1	2331150	1.143	2.992	0.657	1.720	0.006	0.126
785323.3	2328795	0.572	1.473	0.329	0.847	0.003	0.067
784891.6	2326401	0.798	2.224	0.459	1.279	0.004	0.086
782548.9	2325359	0.628	1.817	0.361	1.045	0.002	0.066
780884.9	2324518	0.684	2.467	0.393	1.419	0.002	0.046
779113.6	2323815	0.007	0.028	0.004	0.016	0.000	0.000
777192.4	2324156	0.235	0.656	0.135	0.377	0.001	0.025
775758.7	2325440	0.728	2.310	0.419	1.328	0.003	0.064
774021.6	2326685	0.689	1.919	0.396	1.103	0.003	0.070
772891.9	2328795	0.647	1.800	0.372	1.035	0.003	0.064
773026.6	2331316	1.108	3.112	0.637	1.790	0.005	0.106
775681.1	2332227	1.125	3.155	0.647	1.814	0.005	0.110
777447.7	2332826	1.186	3.959	0.682	2.276	0.005	0.114
779113.6	2333768	5.037	12.955	2.896	7.449	0.020	0.593
781233.4	2333912	1.325	3.233	0.762	1.859	0.008	0.173
783642.7	2333324	0.995	2.639	0.572	1.518	0.006	0.120
785261.1	2331341	1.058	2.764	0.608	1.589	0.005	0.117
785841.6	2328795	0.528	1.513	0.304	0.870	0.003	0.062
785383.3	2326198	0.735	2.031	0.423	1.168	0.004	0.081
782910.4	2324998	0.630	1.793	0.362	1.031	0.002	0.065
781077.3	2324054	0.582	1.936	0.335	1.113	0.001	0.037
779113.6	2323313	0.003	0.013	0.002	0.007	0.000	0.000
777000.1	2323692	0.179	0.491	0.103	0.282	0.001	0.020
775384.2	2325065	0.643	1.936	0.370	1.113	0.003	0.061
773557.3	2326493	0.688	1.922	0.395	1.105	0.003	0.069
772381.8	2328795	0.578	1.598	0.332	0.919	0.002	0.058
772557.6	2331510	1.033	2.874	0.594	1.652	0.004	0.101
775181.3	2332727	0.926	2.615	0.533	1.504	0.004	0.100
777252.7	2333287	1.159	3.781	0.666	2.174	0.004	0.104
779113.6	2334291	4.486	11.680	2.580	6.716	0.018	0.516
781429.3	2334385	1.223	2.971	0.703	1.708	0.007	0.156
784018.4	2333699	0.971	2.453	0.559	1.411	0.005	0.117
785723	2331532	0.974	2.547	0.560	1.465	0.005	0.107
786353.5	2328795	0.541	1.525	0.311	0.877	0.003	0.055
785864.4	2325998	0.679	1.837	0.391	1.056	0.003	0.076
783330.9	2324577	0.629	1.763	0.362	1.014	0.002	0.064
781269.4	2323590	0.506	1.703	0.291	0.979	0.001	0.031

ANNEXURE : XXI Contd..

Dispersion Modelling with ISCST3 model for Vangar & Madhiya Mine, Gujarda, Dudheri & Dudhala Mine and Padhiarka & Doliya & Limestone Mine

X	Y	PM_{10}		$PM_{2.5}$		SO_2	NO_2
		Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)
779113.6	2322812	0.002	0.006	0.001	0.003	0.000	0.000
776808.2	2323229	0.140	0.382	0.081	0.220	0.001	0.016
775014.7	2324696	0.618	1.824	0.355	1.049	0.002	0.059
773093.8	2326301	0.679	1.902	0.391	1.094	0.003	0.068
771875.1	2328795	0.527	1.455	0.303	0.837	0.002	0.053
772090.9	2331703	0.956	2.634	0.550	1.514	0.004	0.095
774693.9	2333214	0.807	2.215	0.464	1.274	0.004	0.086
777061	2333750	1.129	3.612	0.649	2.077	0.004	0.102
779113.6	2335318	3.512	9.180	2.019	5.278	0.014	0.400
781817.6	2335322	1.070	2.677	0.615	1.539	0.006	0.132
784752.2	2334433	0.951	2.450	0.547	1.409	0.005	0.111
786646.9	2331915	0.812	2.128	0.467	1.224	0.004	0.089
787368.5	2328795	0.547	1.506	0.315	0.866	0.002	0.055
786811.7	2325606	0.574	1.496	0.330	0.860	0.003	0.066
784161.1	2323747	0.614	1.697	0.353	0.976	0.002	0.063
781653	2322664	0.387	1.313	0.222	0.755	0.001	0.022
779113.6	2321811	0.001	0.002	0.000	0.001	0.000	0.000
776424.8	2322303	0.093	0.249	0.053	0.143	0.000	0.011
774266.9	2323948	0.545	1.616	0.313	0.929	0.002	0.058
772167.9	2325918	0.658	1.844	0.378	1.060	0.003	0.066
770866.8	2328795	0.503	1.418	0.289	0.815	0.002	0.052
771161.3	2332089	0.807	2.187	0.464	1.258	0.004	0.083
773798.8	2334109	0.683	2.059	0.393	1.184	0.003	0.066
776677.9	2334675	1.042	3.239	0.599	1.862	0.004	0.093
779113.6	2336335	2.731	7.039	1.570	4.047	0.011	0.318
782203.6	2336254	0.951	2.503	0.547	1.439	0.005	0.114
785474.9	2335156	0.924	2.422	0.531	1.393	0.005	0.104
787570.9	2332298	0.682	1.796	0.392	1.032	0.003	0.074
788384	2328782	0.533	1.446	0.306	0.831	0.002	0.055
787749.4	2325217	0.510	1.404	0.293	0.808	0.003	0.057
784941.6	2322967	0.593	1.719	0.341	0.988	0.002	0.061
782036.3	2321739	0.301	1.022	0.173	0.588	0.001	0.017
779113.6	2320810	0.000	0.001	0.000	0.000	0.000	0.000
776041.7	2321378	0.066	0.176	0.038	0.101	0.000	0.008
773512.6	2323194	0.531	1.461	0.305	0.840	0.002	0.055
771242.9	2325534	0.632	1.773	0.363	1.020	0.003	0.063
769858.4	2328795	0.515	1.468	0.296	0.844	0.002	0.051
770233.9	2332473	0.680	1.823	0.391	1.048	0.003	0.072
772996.2	2334912	0.649	1.897	0.373	1.091	0.002	0.057
776294.9	2335599	0.948	2.893	0.545	1.664	0.003	0.080
779113.6	2338353	1.693	4.220	0.974	2.427	0.007	0.208
782972.8	2338111	0.794	2.179	0.457	1.253	0.004	0.090
786906.8	2336588	0.847	2.268	0.487	1.304	0.004	0.092
789418.7	2333063	0.522	1.388	0.300	0.798	0.002	0.056
790408.4	2328795	0.481	1.391	0.277	0.800	0.002	0.051
789612.9	2324446	0.474	1.276	0.273	0.733	0.002	0.050
786436.6	2321472	0.557	1.678	0.320	0.965	0.002	0.055
782802.3	2319889	0.196	0.662	0.112	0.380	0.000	0.011
779113.6	2318809	0.000	0.000	0.000	0.000	0.000	0.000
775275.8	2319529	0.040	0.107	0.023	0.061	0.000	0.005
772046.6	2321727	0.494	1.377	0.284	0.792	0.002	0.050
769393.8	2324768	0.578	1.620	0.332	0.932	0.002	0.057
767811.9	2328795	0.514	1.491	0.296	0.857	0.002	0.049
768382.2	2333240	0.490	1.348	0.282	0.775	0.002	0.053
771480.4	2336428	0.565	1.586	0.325	0.912	0.002	0.055

ANNEXURE : XXI Contd..

Dispersion Modelling with ISCST3 model for Vangar & Madhiya Mine, Gujarda, Dudheri & Dudhala Mine and Padhiarka & Doliya & Limestone Mine

X	Y	PM_{10}		$PM_{2.5}$		SO_2	NO_2
		Control case	Worst case (No control measures)	Control case	Worst case (No control measures)	Worst case (No control measures)	Worst case (No control measures)
775528.4	2337450	0.807	2.396	0.464	1.378	0.003	0.070
779113.6	2341367	0.992	2.366	0.571	1.360	0.005	0.129
784134.9	2340917	0.651	1.801	0.374	1.036	0.003	0.069
789041.3	2338722	0.733	1.989	0.421	1.144	0.003	0.077
792190.3	2334211	0.394	1.055	0.227	0.607	0.002	0.042
793429.2	2328795	0.438	1.266	0.252	0.728	0.002	0.043
792396.2	2323293	0.412	1.104	0.237	0.635	0.002	0.044
788650.7	2319257	0.488	1.471	0.281	0.846	0.002	0.047
783950.8	2317117	0.120	0.401	0.069	0.231	0.000	0.007
779113.6	2315809	0.000	0.000	0.000	0.000	0.000	0.000
774127.4	2316757	0.024	0.062	0.014	0.036	0.000	0.003
769887.4	2319568	0.433	1.215	0.249	0.699	0.002	0.043
766580.7	2323603	0.504	1.415	0.290	0.813	0.002	0.050
764773.9	2328795	0.484	1.412	0.278	0.812	0.002	0.045
765607.6	2334389	0.438	1.244	0.252	0.716	0.002	0.043
769286.8	2338621	0.460	1.254	0.265	0.721	0.002	0.048
774379.2	2340225	0.672	1.943	0.386	1.117	0.002	0.062
Air Quality	**Stations**						
778387.7	2327527	2.748	10.317	1.580	5.932	0.032	0.218
778390.9	2328386	6.435	25.172	3.700	14.474	0.012	0.146
775576.7	2329548	1.086	3.131	0.624	1.800	0.004	0.098
778500.3	2329444	4.560	17.456	2.622	10.037	0.010	0.107
780991.1	2329620	1.774	5.013	1.020	2.882	0.007	0.189
782557.9	2328933	1.096	3.068	0.630	1.764	0.007	0.152
776061.1	2325018	0.721	2.248	0.414	1.292	0.003	0.065
774373.4	2326273	0.585	1.640	0.336	0.943	0.003	0.060
779058.9	2325416	0.199	0.793	0.114	0.456	0.000	0.002
772538.4	2329094	0.537	1.517	0.309	0.873	0.002	0.053
774643.4	2330835	1.328	3.876	0.763	2.228	0.005	0.116
778248.4	2332665	4.930	19.647	2.835	11.297	0.007	0.143
780760.4	2332924	1.731	4.264	0.996	2.452	0.023	0.239
783870.1	2330755	1.218	3.270	0.700	1.881	0.006	0.129
785857.3	2331004	0.944	2.510	0.543	1.443	0.005	0.101
784233.4	2326954	0.892	2.345	0.513	1.348	0.004	0.097
Villages							
776330	2330951	2.050	6.036	1.179	3.470	0.008	0.175
776218	2329221	1.257	3.584	0.723	2.061	0.005	0.116
780840	2328142	1.182	3.671	0.679	2.111	0.003	0.095
Forest							
777024	2324722	0.607	1.830	0.349	1.052	0.002	0.054
780387	2325846	1.107	3.579	0.636	2.058	0.003	0.099
MAXIMUM		**17.021**	**42.400**	**9.787**	**24.380**	**0.070**	**2.064**

Note: Same GLC shall be applicable for normative production since 20% less time and 20% less production shall take place compared to peak, but at the same rate

Dispersion Modelling with ISCST3 model for Vangar & Madhiya Mine, Gujarda, Dudheri & Dudhala Mine and Padhiarka & Doliya & Limestone Mine

THE MAXIMUM 10 24-HR AVERAGE CONCENTRATION WITH CONTROL MEASURES (AT PEAK TOTAL EXCAVATION)

	PM_{10}	X	Y	$PM_{2.5}$	X	Y
1	17.02117	778882.90	2331207	9.78717	778882.90	2331207
2	12.62392	778889.20	2331407	7.25875	778889.20	2331407
3	12.22972	779349.30	2331453	7.03209	779349.30	2331453
4	10.25675	778432.50	2331244	5.89763	778432.50	2331244
5	8.65688	778837.30	2331950	4.9777	778837.30	2331950
6	8.25132	779398.20	2330374	4.74451	779398.20	2330374
7	8.05515	778587.70	2331493	4.63171	778587.70	2331493
8	7.92141	778442.60	2331570	4.55481	778442.60	2331570
9	7.81094	780161.10	2331358	4.49129	780161.10	2331358
10	7.41232	778649.00	2328044	4.26209	778649.00	2328044

	SO_2	X	Y	NO_2	X	Y
1	0.06996	780887.40	2331533	2.06424	778882.90	2331207
2	0.0628	778882.90	2331207	1.49885	778889.20	2331407
3	0.05293	780161.10	2331358	1.28843	780161.10	2331358
4	0.04577	778889.20	2331407	1.25589	779349.30	2331453
5	0.04238	779349.30	2331453	1.0811	780692.90	2331724
6	0.0394	780692.90	2331724	0.9818	778837.30	2331950
7	0.03394	780444.10	2331789	0.95006	779670.90	2331144
8	0.03391	781474.10	2330894	0.93739	780444.10	2331789
9	0.03244	780327.10	2331858	0.89194	780327.10	2331858
10	0.03205	781329.90	2330773	0.83308	779113.60	2332459

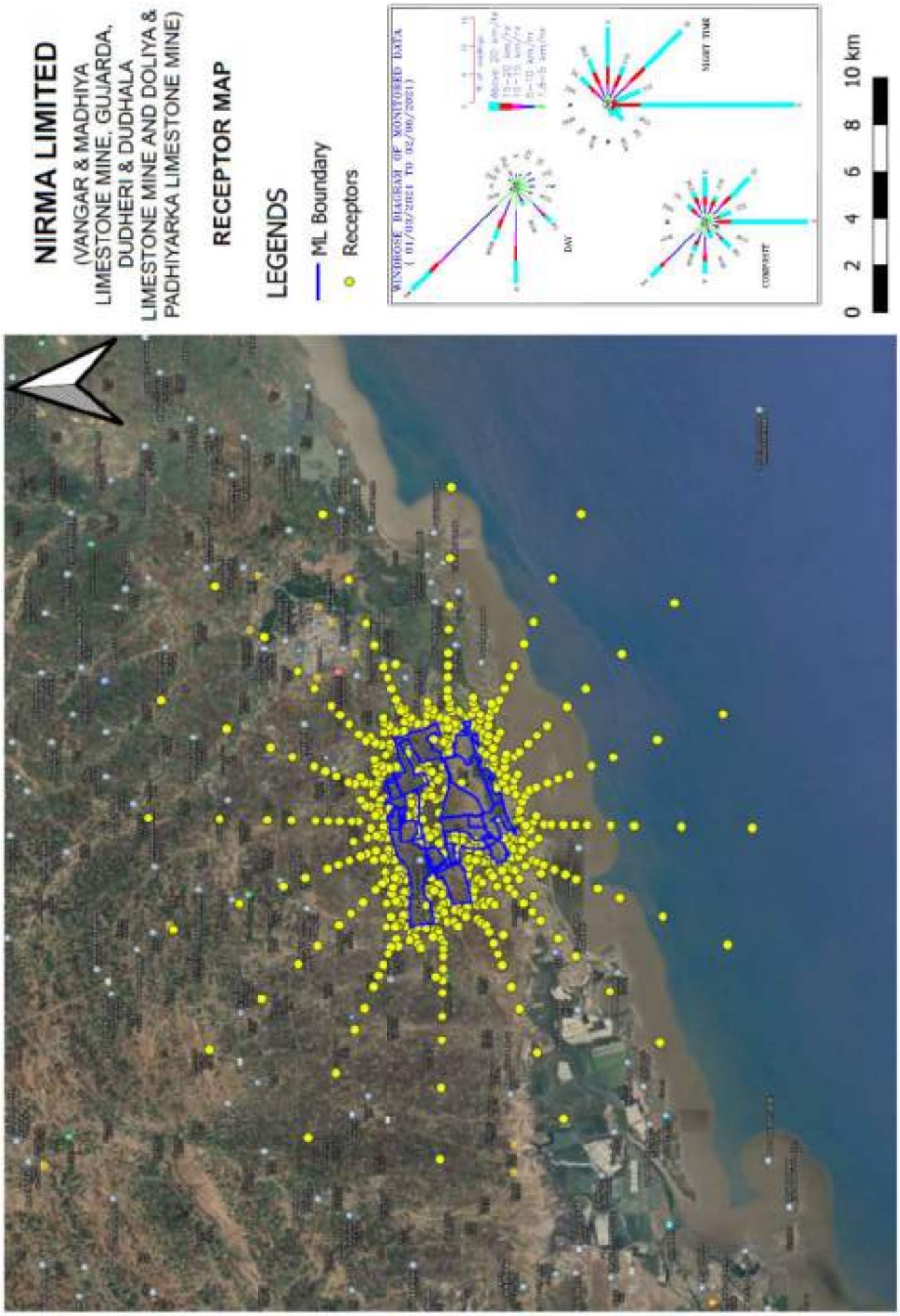
Note: Same GLC shall be applicable for normative production since 20% less time and 20% less production shall take place compared to peak, but at the same rate

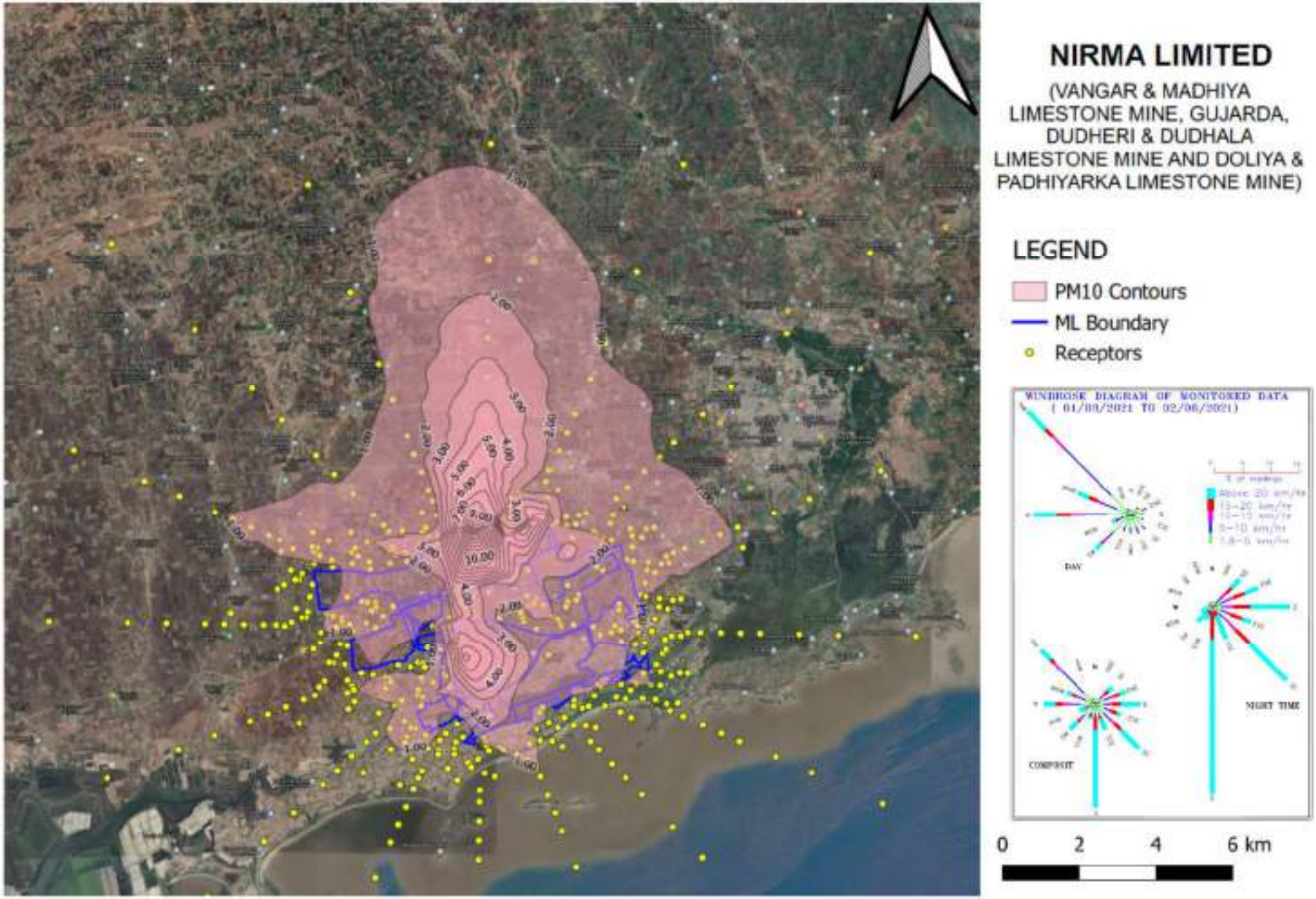
THE MAXIMUM 10 24-HR AVERAGE CONCENTRATION IN WORST CASE (WITH NO CONTROL MEASURES)

	PM_{10}	X	Y	$PM_{2.5}$	X	Y
1	42.39989	778882.90	2331207.0	24.37994	778882.90	2331207
2	40.33161	778432.50	2331244.0	23.19067	778432.50	2331244
3	33.43061	779349.30	2331453.0	19.2226	779349.30	2331453
4	31.99759	778889.20	2331407.0	18.39861	778889.20	2331407
5	31.39538	778442.60	2331570.0	18.05234	778442.60	2331570
6	31.30346	778587.70	2331493.0	17.99949	778587.70	2331493
7	29.21219	778649.00	2328044.0	16.79701	778649.00	2328044
8	28.72753	778529.30	2331690.0	16.51833	778529.30	2331690
9	28.54553	779398.20	2330374.0	16.41368	779398.20	2330374
10	25.40519	778429.40	2332080.0	14.60798	778429.40	2332080

Note: Same GLC shall be applicable for normative production since 20% less time and 20% less production shall take place compared to peak, but at the same rate

Dispersion Modelling with ISCST3 model for Vangar & Madhiya Mine, Gujarda, Dudheri & Dudhala Mine and Padhiarka & Doliya & Limestone Mine

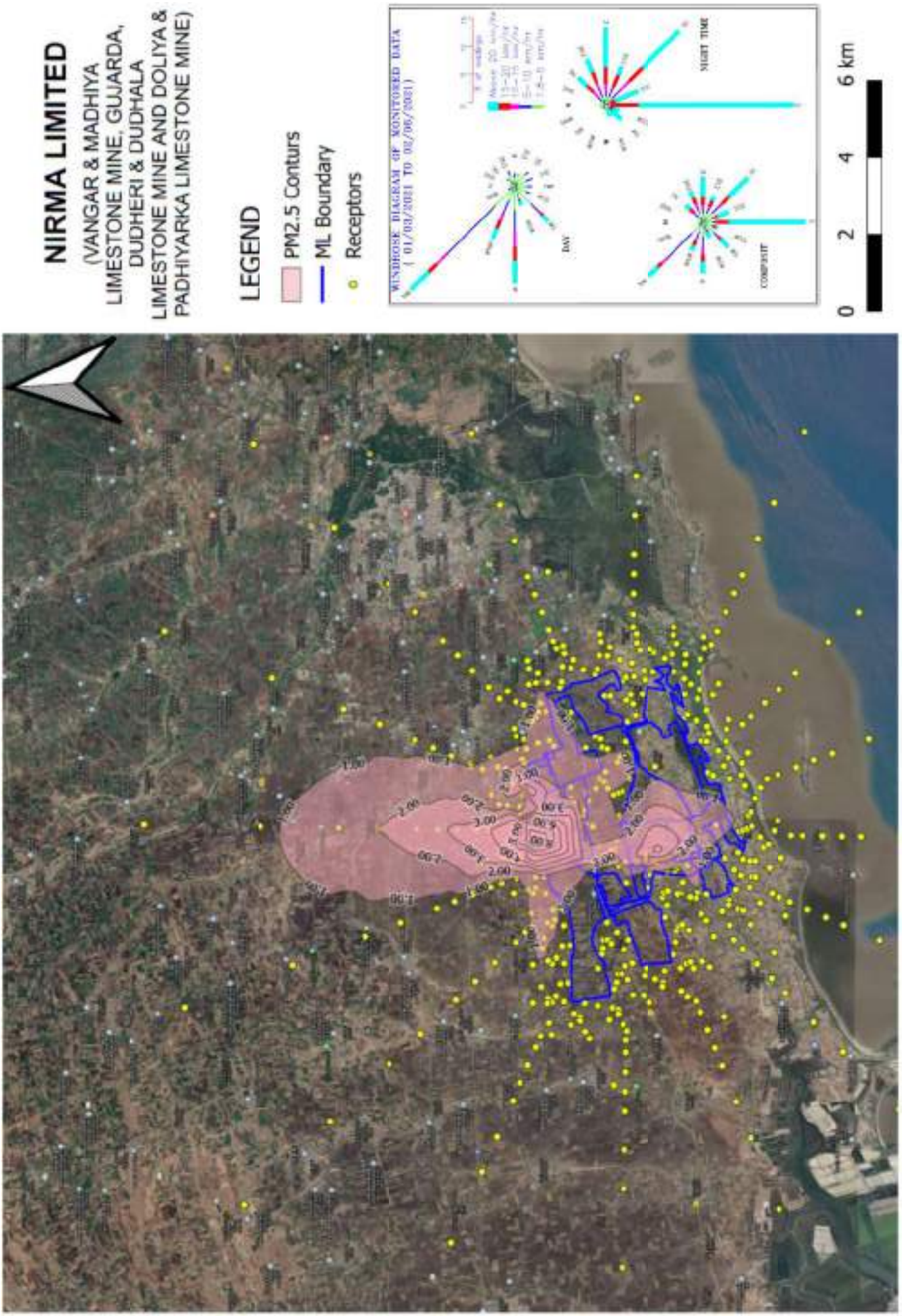



NIRMA LIMITED
(VANGAR & MADHIYA LIMESTONE MINE, GUJARDA, DUDHERI & DUDHALA LIMESTONE MINE AND DOLIYA & PADHIYARKA LIMESTONE MINE)
LEGEND
PM10 Contours
ML Boundary
Receptors
WINDROSE DIAGRAM OF MONITORED DATA
(01/03/2021 TO 02/06/2021)
DAY
NIGHT TIME
COMPOSIT
0
2
4
6 km

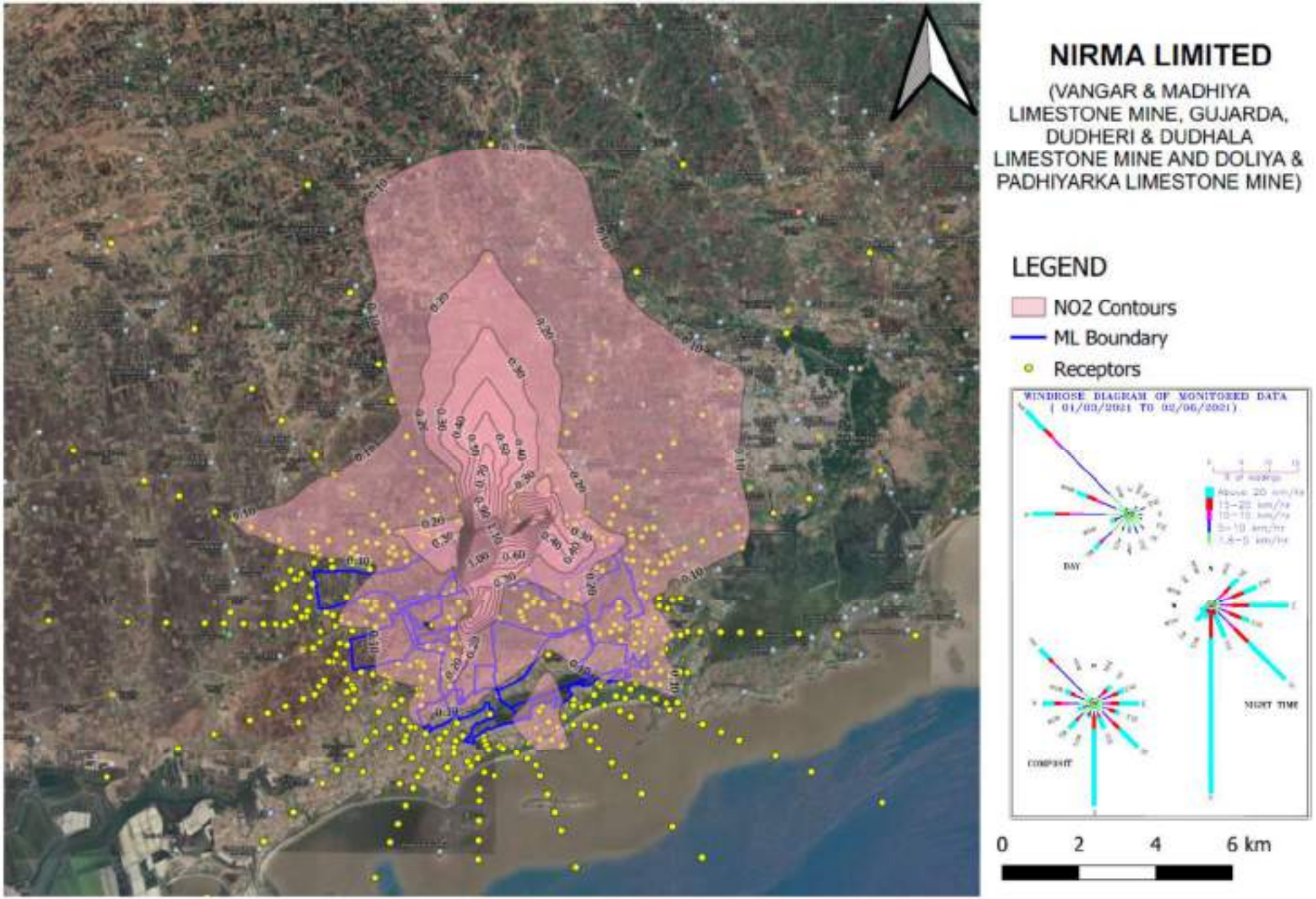
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ANNEXURE : XXI Contd..

Dispersion Modelling with ISCST3 model for Vangar & Madhiya Mine, Gujarda, Dudheri & Dudhala Mine and Padhiarka & Doliya & Limestone Mine



Dispersion Modelling with ISCST3 model for Vangar & Madhiya Mine, Gujarda, Dudheri & Dudhala Mine and Padhiarka & Doliya & Limestone Mine



Dispersion Modelling with ISCST3 model for Vangar & Madhiya Mine, Gujarda, Dudheri & Dudhala Mine and Padhiarka & Doliya & Limestone Mine

Dust emission from various sources considered while calculating emission rates are summarised below:

Vangar & Madhiya Limestone Mine

Sl. No.	Source	Material	Amount of dust generation, kg/day	Control factor due to water sprays	Emission after Control measures (kg/day)	Model source
A.	**Topsoil dump**					
1	Unloading at TS dump	Top soil	0.623793333	70%	0.187138	Area
2	Wind erosion of top soil dump	Top Soil	10.7879	70%	3.23637	Area
B.	**Pit area Activities**					
1	Topsoil removal at working pit	Top soil	18.09000667	70%	5.427002	Area
2	Dumper loading by power shovel at working pit	Top soil	11.22828		11.22828	Area
4	**Limestone extraction**					
4.1	**Using conventional drilling blasting & Excavator dumper dumper**					
4.1.1	Drilling	Limestone	2.2	50%	1.1	Area
4.1.2	Blasting	Limestone	6.14861E-07		6.14861E-07	Area
4.1.3	Loading (to send to stock yard/cement plant)	Limestone	74.66666667		74.66666667	Area

C.	**Transportation**					
1	Transportation in haul road	Top soil	24.3652374	75%	6.09130935	Line
3	Transportation	Limestone	1204.7247	75%	301.181175	Line

Doliya & Padhiyarka Limestone Mine

Sl. No.	Source	Material	Amount of dust generation, kg/day	Control factor due to water sprays	Emission after Control measures (kg/day)	Model source
A.	**Topsoil dump**					
1	Unloading at TS dump	Top soil	0.507281667	70%	0.1521845	Area
2	Wind erosion of top soil dump	Top Soil	10.0423	70%	3.01269	Area
B.	**Pit area Activities**					
1	Topsoil removal at working pit	Top soil	14.71116833	70%	4.4133505	Area
2	Dumper loading by power shovel at working pit	Top soil	9.13107		9.13107	Area
4	**Limestone extraction**					
4.1	**Using conventional drilling blasting & Excavator dumper dumper**					
4.1.1	Drilling	Limestone	2.2	50%	1.1	Area
4.1.2	Blasting	Limestone	5.58128E-07		5.58128E-07	Area
4.1.3	Loading (to send to stock yard/cement plant)	Limestone	70		70	Area

C.	**Transportation**					
1	Transportation in haul road	Top soil	41.0175	75%	10.254375	Line
3	Transportation	Limestone	860.355	75%	215.08875	Line

Gujarda, Dudheri & Dudhala Limestone Mine

Sl. No.	Source	Material	Amount of dust generation, kg/day	Control factor due to water sprays	Emission after Control measures (kg/day)	Model source
A.	**Topsoil dump**					
1	Unloading at TS dump	Top soil	0.67383	70%	0.202149	Area
2	Wind erosion of top soil dump	Top Soil	14.446	70%	4.3338	Area
B.	**Pit area Activities**					
1	Topsoil removal at working pit	Top soil	19.54107	70%	5.862321	Area
2	Dumper loading by power shovel at working pit	Top soil	12.12894		12.12894	Area
4	**Limestone extraction**					
4.1	**Using conventional drilling blasting & Excavator dumper dumper**					
4.1.1	Drilling	Limestone	3.9	50%	1.95	Area
4.1.2	Blasting	Limestone	1.34785E-06		1.34785E-06	Area
4.1.3	Loading (to send to stock yard/cement plant)	Limestone	126		126	Area
C.	**Transportation**					
1	Transportation in haul road	Top soil	17.73	75%	4.4325	Line
3	Transportation	Limestone	58.32	75%	14.58	Line

CALINE4 : CALIFORNIA LINE SOURCE DISPERSION MODEL - VERSION 2.1, DATED JUNE 1989

RUN: RURAL HIGHWAY

I. SITE VARIABLES

U= 3.63 M/S Z0= 10. CM ALT= 0. (M) BRG = 180.0 DEGREES
VD= 0.0 CM/S CLAS= 2 (B) VS= 0.0 CM/S
MIXH= 845. M AMB= 0.0 PPM SIGTH= 10. DEGREES TEMP= 30.25 DEGREE (C)

II. LINK VARIABLES

The modelling has been done for limestone transportation from mine to cement plant by dumpers having carrying capacity of 25 T. The section wise total number of dumpers has been calculated as given below:

Mine	Actual Production (TPD)	*20% Over Production (TPD)	Daily dumpers required (25T)	**Hourly No. of trips (To & fro)
Vangar Mine	5333	6400	256	36
Dudhala	9000	10800	432	60
Doliya	5000	6000	240	34

**** 20% over production have been considered to cover production losses which may incurred due to unwanted circumstances like lock down, natural hazardous, temporary shutdown due to legal issue etc. The mine operation time has also been considered 20% extra from 12 hours of actual operational hours.***

***** For normative production also, the number of trucks per hour have been considered same, only the number of hours of truck movement will reduce***

The emissions calculated for transportation activity have been given below::

Pollutant	70% Controlled	Without control measures	Unit
PM_{10}	5.0568	16.728	g/mile/truck
$PM_{2.5}$	1.2416	4.065	g/mile/truck
SO_2	0.0363		g/mile/truck
NO_X	2.1889		g/mile/truck

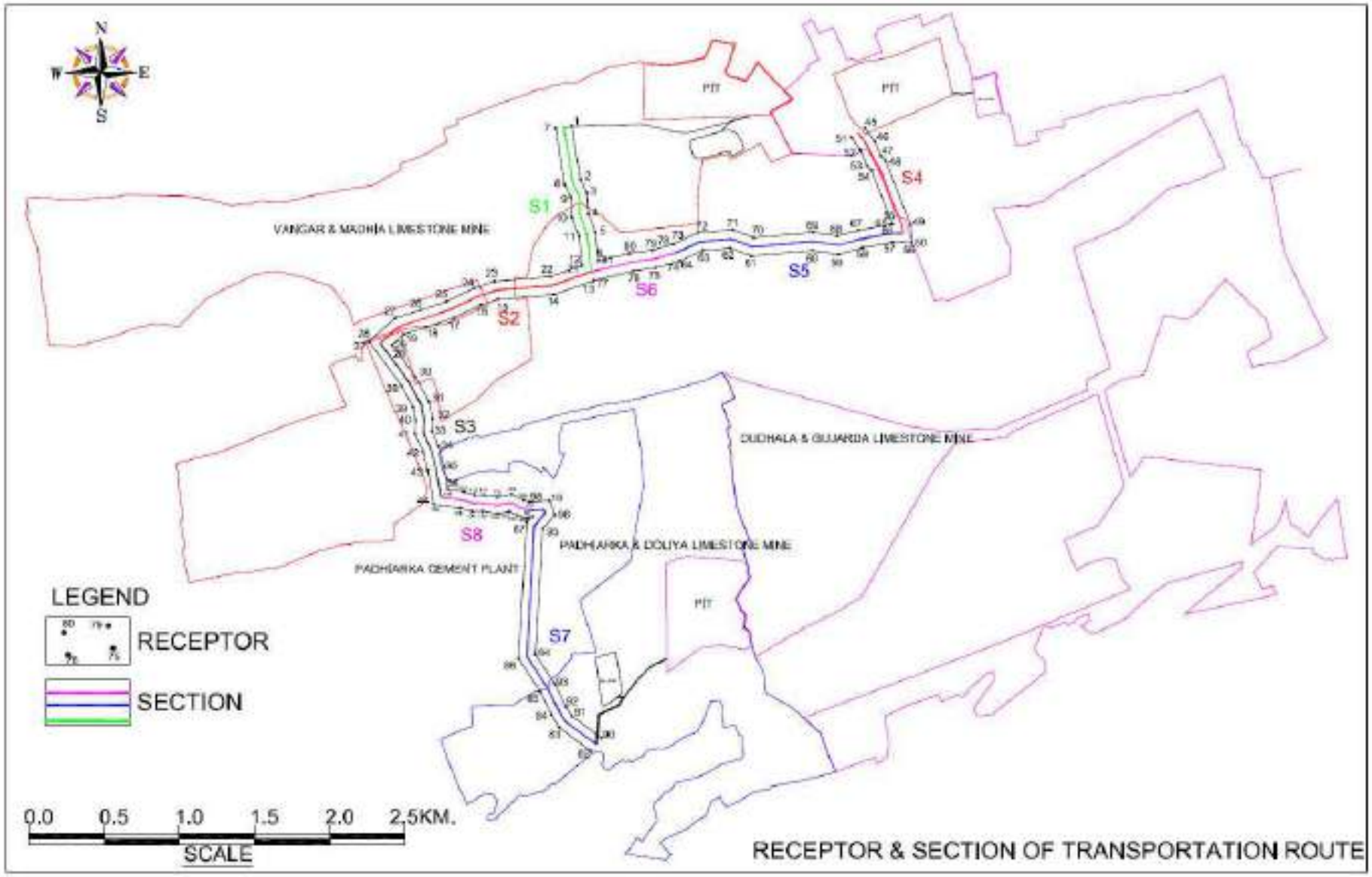
Assumptions:

- The emissions have been considered with 70-75% control measures for PM due to water sprinkling over fugitive emission sources
- PM_{10} & $PM_{2.5}$ includes wheel disturbed road silt
- The CO MODE has been used for calculating SO_2 concentrations.

The road used for transportation of limestone from all the three mines to cement plant has been divided into 8 sections for modelling purpose. Section S1 having traffic load of Vangar mine, sections S4 to S6 is having traffic load of Dudhala, Section S2 & S3 has traffic load of Vangar and Dudhala both mines and section S7 & S8 have the traffic load of Doliya mine.

The Route map and assumed receptors map is shown in Fig 1.

FIG 1 : ROUTE, SECTION AND RECEPTOR MAP



The input details of each section (S1 to S8) is given below:

Section	Link	LINK COORDINATES (M)				Type	VPH	Emission Factor (g/mile)						Width
		X1	Y1	X2	Y2			PM_{10}		$PM_{2.5}$		SO_2	NO_X	(M)
								C	UC	C	UC			
S01	A.	778266	2330687	778324	2330319	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	10
	B.	778324	2330319	778365	2330234	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	10
	C.	778365	2330234	778374	2330095	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	10
	D.	778374	2330095	778422	2329971	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	10
	E.	778422	2329971	778447	2329721	AG	36	5.06	16.73	1.24	4.07	0.036	2.189	10
S02	A.	778447	2329721	778188	2329631	AG	96	5.06	16.73	1.24	4.07	0.036	2.189	10
	B.	778188	2329631	777817	2329599	AG	96	5.06	16.73	1.24	4.07	0.036	2.189	10
	C.	777817	2329599	777692	2329558	AG	96	5.06	16.73	1.24	4.07	0.036	2.189	10
	D.	777692	2329558	777509	2329470	AG	96	5.06	16.73	1.24	4.07	0.036	2.189	10
	E.	777509	2329470	777330	2329408	AG	96	5.06	16.73	1.24	4.07	0.036	2.189	10
	F.	777330	2329408	777173	2329361	AG	96	5.06	16.73	1.24	4.07	0.036	2.189	10
	G.	777173	2329361	777045	2329247	AG	96	5.06	16.73	1.24	4.07	0.036	2.189	10
S03	A.	777045	2329247	777232	2328994	AG	96	5.06	16.73	1.24	4.07	0.036	2.189	10
	B.	777232	2328994	777316	2328839	AG	96	5.06	16.73	1.24	4.07	0.036	2.189	10
	C.	777316	2328839	777337	2328740	AG	96	5.06	16.73	1.24	4.07	0.036	2.189	10
	D.	777337	2328740	777332	2328654	AG	96	5.06	16.73	1.24	4.07	0.036	2.189	10
	E.	777332	2328654	777381	2328542	AG	96	5.06	16.73	1.24	4.07	0.036	2.189	10
	F.	777381	2328542	777415	2328412	AG	96	5.06	16.73	1.24	4.07	0.036	2.189	10
	G.	777415	2328412	777447	2328224	AG	96	5.06	16.73	1.24	4.07	0.036	2.189	10
S04	A.	780224	2330648	780286	2330561	AG	60	5.06	16.73	1.24	4.07	0.036	2.189	10
	B.	780286	2330561	780330	2330460	AG	60	5.06	16.73	1.24	4.07	0.036	2.189	10
	C.	780330	2330460	780359	2330430	AG	60	5.06	16.73	1.24	4.07	0.036	2.189	10
	D.	780359	2330430	780519	2330021	AG	60	5.06	16.73	1.24	4.07	0.036	2.189	10
	E.	780519	2330021	780522	2329976	AG	60	5.06	16.73	1.24	4.07	0.036	2.189	10
S05	A.	780522	2329976	780449	2329979	AG	60	5.06	16.73	1.24	4.07	0.036	2.189	10
	B.	780449	2329979	780241	2329940	AG	60	5.06	16.73	1.24	4.07	0.036	2.189	10
	C.	780241	2329940	780089	2329899	AG	60	5.06	16.73	1.24	4.07	0.036	2.189	10
	D.	780089	2329899	779921	2329925	AG	60	5.06	16.73	1.24	4.07	0.036	2.189	10
	E.	779921	2329925	779521	2329887	AG	60	5.06	16.73	1.24	4.07	0.036	2.189	10
	F.	779521	2329887	779382	2329941	AG	60	5.06	16.73	1.24	4.07	0.036	2.189	10
	G.	779382	2329941	779173	2329922	AG	60	5.06	16.73	1.24	4.07	0.036	2.189	10
	H.	779173	2329922	779016	2329850	AG	60	5.06	16.73	1.24	4.07	0.036	2.189	10
S06	A.	779016	2329850	778865	2329807	AG	60	5.06	16.73	1.24	4.07	0.036	2.189	10
	B.	778865	2329807	778716	2329785	AG	60	5.06	16.73	1.24	4.07	0.036	2.189	10
	C.	778716	2329785	778447	2329721	AG	60	5.06	16.73	1.24	4.07	0.036	2.189	10
S07	A.	778482	2326578	778277	2326729	AG	34	5.06	16.73	1.24	4.07	0.036	2.189	10
	B.	778277	2326729	778231	2326802	AG	34	5.06	16.73	1.24	4.07	0.036	2.189	10
	C.	778231	2326802	778157	2326955	AG	34	5.06	16.73	1.24	4.07	0.036	2.189	10
	D.	778157	2326955	778021	2327162	AG	34	5.06	16.73	1.24	4.07	0.036	2.189	10
	E.	778021	2327162	778071	2328034	AG	34	5.06	16.73	1.24	4.07	0.036	2.189	10
	F.	778071	2328034	778144	2328116	AG	34	5.06	16.73	1.24	4.07	0.036	2.189	10
	G.	778144	2328116	778134	2328140	AG	34	5.06	16.73	1.24	4.07	0.036	2.189	10
	H.	778134	2328140	778030	2328135	AG	34	5.06	16.73	1.24	4.07	0.036	2.189	10
S08	A.	778030	2328135	777977	2328153	AG	34	5.06	16.73	1.24	4.07	0.036	2.189	10
	B.	777977	2328153	777912	2328184	AG	34	5.06	16.73	1.24	4.07	0.036	2.189	10
	C.	777912	2328184	777826	2328169	AG	34	5.06	16.73	1.24	4.07	0.036	2.189	10
	D.	777826	2328169	777728	2328183	AG	34	5.06	16.73	1.24	4.07	0.036	2.189	10
	E.	777728	2328183	777664	2328182	AG	34	5.06	16.73	1.24	4.07	0.036	2.189	10
	F.	777664	2328182	777590	2328204	AG	34	5.06	16.73	1.24	4.07	0.036	2.189	10
	G.	777590	2328204	777447	2328224	AG	34	5.06	16.73	1.24	4.07	0.036	2.189	10

Note : C = With control measures; UC = Without control measures; VPH = Vehicle per hour
Same emission rates shall be applicable for normative production since same hourly truck movement has been considered for normative production but for lesser hours.

RECEPTOR WISE RESULTS

The receptors have been assumed at a distance of 50 m from the road and receptor wise results are listed below:

Sec. No.	Receptor No	CO-Ordinates (m)			PM_{10} (µg/m³)		$PM_{2.5}$ (µg/m³)		SO_2 µg/m³	NO_2 µg/m³
		X	Y	Z	C	UC	C	UC		
S01	1	778320	2330695	1.5	0.61	2.02	0.15	0.15	0.00	0.22
	2	778377	2330336	1.5	1.02	3.36	0.25	0.25	0.10	0.44
	3	778419	2330249	1.5	0.49	1.62	0.12	0.12	0.00	0.22
	4	778429	2330107	1.5	0.87	2.89	0.21	0.21	0.10	0.44
	5	778476	2329984	1.5	0.15	0.49	0.04	0.04	0.00	0.00
	6	778495	2329794	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	7	778211	2330678	1.5	0.01	0.03	0.00	0.00	0.00	0.00
	8	778271	2330302	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	9	778311	2330220	1.5	0.00	0.01	0.00	0.00	0.00	0.00
	10	778320	2330083	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	11	778368	2329958	1.5	0.00	0.01	0.00	0.00	0.00	0.00
	12	778387	2329763	1.5	0.00	0.00	0.00	0.00	0.00	0.00
S02	13	778464	2329663	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	14	778200	2329572	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	15	777829	2329540	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	16	777714	2329502	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	17	777532	2329415	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	18	777348	2329351	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	19	777203	2329308	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	20	777122	2329235	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	21	778387	2329763	1.5	2.00	6.60	0.49	0.49	0.10	1.11
	22	778175	2329690	1.5	1.99	6.57	0.49	0.49	0.10	1.11
	23	777805	2329658	1.5	1.96	6.49	0.48	0.48	0.10	1.11
	24	777669	2329614	1.5	2.03	6.70	0.50	0.50	0.10	1.11
	25	777487	2329526	1.5	1.98	6.56	0.49	0.49	0.10	1.11
	26	777311	2329465	1.5	1.96	6.49	0.48	0.48	0.10	1.11
	27	777143	2329415	1.5	2.29	7.58	0.56	0.56	0.10	1.11
	28	776969	2329258	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	A4	778457	2329254	1.5	0.00	0.00	0.00	0.00	0.00	0.00
S03	29	777122	2329235	1.5	1.82	6.04	0.45	1.47	0.10	0.89
	30	777279	2329023	1.5	2.17	7.16	0.53	1.74	0.10	1.11
	31	777368	2328858	1.5	1.39	4.58	0.34	1.11	0.10	0.67
	32	777392	2328744	1.5	1.44	4.77	0.35	1.16	0.10	0.67
	33	777388	2328664	1.5	2.34	7.75	0.58	1.88	0.10	1.11
	34	777433	2328560	1.5	1.57	5.19	0.39	1.26	0.10	0.89
	35	777469	2328424	1.5	0.42	1.38	0.10	0.33	0.00	0.22
	36	777495	2328273	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	37	776969	2329258	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	38	777185	2328964	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	39	777263	2328820	1.5	0.00	0.01	0.00	0.00	0.00	0.00
	40	777281	2328735	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	41	777277	2328644	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	42	777329	2328524	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	43	777361	2328401	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	44	777400	2328175	1.5	0.00	0.00	0.00	0.00	0.00	0.00
S04	45	780269	2330680	1.5	1.23	4.06	0.30	0.99	0.00	0.44
	46	780334	2330589	1.5	1.03	3.42	0.25	0.83	0.00	0.22
	47	780377	2330491	1.5	1.60	5.28	0.39	1.28	0.10	0.44
	48	780407	2330459	1.5	1.18	3.90	0.29	0.95	0.00	0.44
	49	780573	2330033	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	50	780580	2329914	1.5	0.00	0.00	0.00	0.00	0.00	0.00

Sec. No.	Receptor No	CO-Ordinates (m)			PM_{10} (µg/m^3)		$PM_{2.5}$ (µg/m^3)		SO_2 µg/m^3	NO_2 µg/m^3
		X	Y	Z	C	UC	C	UC		
	51	780179	2330616	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	52	780238	2330534	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	53	780284	2330430	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	54	780312	2330400	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	55	780453	2330039	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	A5	780991	2329620	1.5	0.00	0.00	0.00	0.00	0.00	0.00
S05	56	780580	2329914	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	57	780454	2329919	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	58	780255	2329882	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	59	780093	2329838	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	60	779920	2329865	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	61	779513	2329826	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	62	779374	2329880	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	63	779189	2329863	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	64	779037	2329794	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	65	780453	2330039	1.5	1.24	4.10	0.30	1.00	0.00	0.44
	66	780445	2330039	1.5	1.22	4.02	0.30	0.98	0.00	0.44
	67	780228	2329999	1.5	1.21	4.01	0.30	0.98	0.00	0.44
	68	780086	2329960	1.5	1.25	4.13	0.31	1.00	0.00	0.44
	69	779923	2329985	1.5	1.24	4.10	0.30	1.00	0.00	0.44
	70	779530	2329948	1.5	1.23	4.07	0.30	0.99	0.00	0.44
	71	779391	2330002	1.5	1.23	4.07	0.30	0.99	0.00	0.44
	72	779158	2329981	1.5	1.24	4.09	0.30	0.99	0.00	0.44
	73	778995	2329907	1.5	0.01	0.04	0.00	0.01	0.00	0.00
S06	74	779037	2329794	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	75	778878	2329749	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	76	778727	2329726	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	77	778464	2329663	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	78	778995	2329907	1.5	1.24	4.11	0.30	1.00	0.00	0.44
	79	778853	2329866	1.5	1.25	4.13	0.31	1.00	0.00	0.44
	80	778705	2329844	1.5	1.23	4.06	0.30	0.99	0.00	0.44
	81	778495	2329794	1.5	1.24	4.10	0.30	1.00	0.00	0.44
S07	82	778449	2326533	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	83	778235	2326691	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	84	778183	2326776	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	85	778109	2326928	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	86	777965	2327147	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	87	778018	2328056	1.5	0.45	1.49	0.11	0.36	0.00	0.22
	88	778039	2328080	1.5	0.76	2.52	0.19	0.61	0.10	0.44
	89	778022	2328079	1.5	0.49	1.62	0.12	0.39	0.00	0.22
	90	778514	2326622	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	91	778318	2326767	1.5	0.59	1.94	0.14	0.47	0.00	0.22
	92	778280	2326829	1.5	0.52	1.71	0.13	0.42	0.00	0.22
	93	778205	2326982	1.5	0.65	2.14	0.16	0.52	0.00	0.44
	94	778077	2327177	1.5	0.65	2.14	0.16	0.52	0.00	0.44
	95	778125	2328012	1.5	0.19	0.62	0.05	0.15	0.00	0.00
	96	778207	2328106	1.5	0.07	0.24	0.02	0.06	0.00	0.00
	97	778171	2328197	1.5	0.12	0.41	0.03	0.10	0.00	0.00
	98	778037	2328190	1.5	1.02	3.37	0.25	0.82	0.10	0.67
	A1	778388	2327527	1.5	0.06	0.18	0.01	0.04	0.00	0.00
	A2	778391	2328386	1.5	0.03	0.10	0.01	0.02	0.00	0.00
S08	99	778022	2328079	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	100	777956	2328102	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	101	777904	2328127	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	102	777826	2328113	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	103	777724	2328128	1.5	0.00	0.00	0.00	0.00	0.00	0.00

Sec. No.	Receptor No	CO-Ordinates (m)			PM_{10} (µg/m³)		$PM_{2.5}$ (µg/m³)		SO_2 µg/m³	NO_2 µg/m³
		X	Y	Z	C	UC	C	UC		
	104	777657	2328127	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	105	777578	2328150	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	106	777400	2328175	1.5	0.00	0.00	0.00	0.00	0.00	0.00
	107	778037	2328190	1.5	0.08	0.28	0.02	0.07	0.00	0.00
	108	777998	2328204	1.5	0.51	1.69	0.13	0.41	0.00	0.22
	109	777919	2328242	1.5	0.53	1.76	0.13	0.43	0.00	0.22
	110	777825	2328225	1.5	0.50	1.65	0.12	0.40	0.00	0.22
	111	777731	2328238	1.5	0.50	1.66	0.12	0.40	0.00	0.22
	112	777671	2328238	1.5	0.50	1.66	0.12	0.40	0.00	0.22
	113	777601	2328257	1.5	0.51	1.67	0.12	0.41	0.00	0.22
	114	777495	2328273	1.5	0.50	1.65	0.12	0.40	0.00	0.22
	MAX				**2.34**	**7.75**	**0.58**	**1.88**	**0.01**	**1.11**

Note : C = With control measures; UC = Without control measures; VPH = Vehicle per hour
Same GLC shall be applicable for normative production since same hourly truck movement has been considered for normative production but for lesser hours. CALINE4 model gives the same GLC output for same hourly vehicle movement.

SUMMARY OF MAXIMUM RESULTS (AT PEAK TOTAL EXCAVATION)

Section	Incremental GLC (µg/m³)		Receptor No.	Section
	With Control Measures	Without Control Measures		
PM_{10}	2.34	7.75	33	S3
$PM_{2.5}$	0.58	1.88	33	S3
SO_2	0.01		33	S3
NO_X	1.11		33	S3

Note: Same GLC shall be applicable for normative production since same hourly truck movement has been considered for normative production but for lesser hours. CALINE4 model gives the same GLC output for same hourly vehicle movement.

INCREMENTAL GLC ON AMBIENT AIR QUALITY STATIONS

Receptor No	CO-Ordinates (m)			PM_{10} (µg/m³)		$PM_{2.5}$ (µg/m³)		SO_2 µg/m³	NO_2 µg/m³
	X	Y	Z	With Control Measures	Without Control Measures	With Control Measures	Without Control Measures		
A1	778388	2327527	1.5	0.06	0.18	0.01	0.04	0.00	0.00
A2	778391	2328386	1.5	0.03	0.10	0.01	0.02	0.00	0.00
A4	778457	2329254	1.5	0.00	0.00	0.00	0.00	0.00	0.00
A5	780991	2329620	1.5	0.00	0.00	0.00	0.00	0.00	0.00

BACKGROUND NOTES

Emissions from trucks as per norms

Emission standards for new heavy-duty engines—applicable as per Bharat Stage IV (applicable nation wide since April 2017).

EU Emission Standards for Heavy-Duty Diesel Engines: Steady-State Testing

Stage	Date	Test	CO	HC	NOx	PM	PN	Smoke
			g/kWh				1/kWh	1/m
Euro III	1999.10 EEV only	ESC & ELR	1.5	0.25	2	0.02		0.15
	2000.1		2.1	0.66	5	0.10a		0.8
Euro IV	**2005.1**		**1.5**	**0.46**	**3.5**	**0.02**		**0.5**
Euro V	2008.1		1.5	0.46	2	0.02		0.5
Euro VI	**2013.01**	**WHSC**	**1.5**	**0.13**	**0.4**	**0.01**	**8.0×1011**	

a- PM = 0.13 g/kWh for engines < 0.75 dm^3 swept volume per cylinder and a rated power speed > 3000 min-1

Calculation for Emission from tipping trucks of 25T capacity which will be plying

Truck capacity 25 Te. of 14.4 Hours/day (operational)
vehicle speed 40 Km/hr 180 HP/truck

	Units	NOx	PM	SO_2
Capacity of Diesel Engine		g/kWh (Stage : Euro IV)		
Emission permitted		0.4	0.01	0.005%
Resultant KWH	KWH	136.8	136.8	136.8
Emission from one truck	g/truck/hour	54.72	1.368	0.4536
Emission from 1 truck/km	g/km	1.368	0.0342	0.025
Emission from 1 truck/mile	g/mile	2.1888	0.05472	0.04

As per AP-42, 5th Edition of US EPA, Section 13.2.1.3, the quantity of particulate emissions from re-suspension of loose material on the road surface due to vehicle travel on a dry paved road may be estimated using the following empirical expression:

$E = [k (sL)^{0.91} \times (W)^{1.02}] \times (1-P/4N)$

where: E = particulate emission factor (having units matching the units of k),
k = particle size multiplier for particle size range and units of interest, which will be 0.62 g/VKT for PM_{10} and 0.15 g/VKT for $PM_{2.5}$ as per Table 13.2.1-1 of AP-42, US EPA.
sL = road surface silt loading (grams per square meter) (g/m^2). The average silt content has been taken as 0.6 g/m^2 as per Table 13.2.1-2 of AP-42, US EPA..
W = average weight (tons) of the vehicles travelling the road, which is 24.5T (average of loaded and empty trucks) for the traffic.
P = Total wet days with at least 0.254 mm (0.01 in) of precipitation during the averaging period which is 1 days at IMD Bhavnagar (avg. from 1981-2010), and
N = Number of days in the averaging period which is 90 days

Average vehicle weight	25 T
Total number of days	90
Silt load (g/m^2)	0.6
Total number of wet days	1
Emission factor (PM_{10})	10.3562 g/VKT
Emission factor ($PM_{2.5}$)	2.50553 g/VKT

Standards for Ambient air quality (MoEF Notification G.S. R 826(E) dated 16/11/2009)

Pollutants	Concentration of ambient air (All concentrations are micro g/m^3) for 24 hours average	
	Industrial area, Residential, Rural and Other areas	Ecologically sensitive area (Notified by Central Govt.)
Sulphur Dioxide (SO_2)	80	80
Oxides of Nitrogen as NO_2	80	80
Particulate Matter (size $\leq$10µm)	100	100
Particulate Matter (size $\leq$2.5µm)	60	60

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ANNEXURE : XXII

Email/Regd Post

भारत सरकार
खान मंत्रालय
भारतीय खान ब्यूरो
क्षेत्रीय खान नियंत्रक का कार्यलय
कर्मयोगी भवन, चतुर्थ माला, ब्लॉक-2 , सी विंग, सेक्टर-10A
गांधीनगर, गुजरात, 382010

Government of India
Ministry of Mines
Indian Bureau of Mines
Office of Regional Controller of Mines
Karmayogi Bhavan, 4th Floor, Block-2, Sector 10A,
Gandhinagar, Gujarat-382010

Tel- 079 29750358 /29750359; ई –मेल/ E-mail: ro.gandhinagar@ibm.gov.in

फाईल संख्या File No: 684(4)(1)/MP-347(196)/2021-22 GNR /1125 दिनाक 5 /08/ 2021

सेवा में To, नोमिनेटेड ओनर
मै. निरमा लिमिटेड,
निरमा हाउस, आश्रम रोड,
अहमदाबाद, गुजरात 380009
E-mail : mines@nirma.co.in

Nominated Owner
M/s Nirma Limited.
Nirma House, Ashram Road,
Ahmedabad - 380009

विषय Sub: Approval of Review and updation of Mining Plan along-with Progressive Mine Closure Plan (PMCP) including supporting documents in respect of Vangar & Madhiya Limestone Mine of M/s Nirma Ltd. over an area of 612.1336 hectare in Village- Vangar & Madhiya, Tehsil-Mahuva, District –Bhavnagar, submitted under Rule 17(2) of Minerals (Other than Atomic & Hydro Carbons Energy Minerals) Concession Rules, 2016 & 23 of MCDR 2017.

संदर्भ /Ref:
1. Your letter no. NL/HBS/NL-30/1639/2020-21 received in the office on dated 24.05.2021
2. Our office letter of even number dated 12.07.2021
3. Your QP letter no. Nil dated 24.07.2021 received in this office on dated 26.07.2021

महोदय/Sir,

With reference to above and in exercise of the power conferred by Clause (b) of Sub-Section (2) of section 5 of Mines & Minerals (Development & Regulation) Act, 1957 read with Government of India order no. S.O. 445 (E) dated 28.04.1987 & Government of India Order No- S.O. 1857 (E) dated 18.05.2016; I hereby approve the aforesaid Review & Updation of Mining Plan (Including Progressive Mine Closure Plan). This approval is subject to the following conditions:

1. The Review & Updation of Mining Plan along with Progressive Mine Closure Plan is approved without prejudice to any other law 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 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 lessee and is applicable from the date of approval. Proposed scale of production is subjected to environmental clearance by competent authority.
3. It is clarified that the approval of aforesaid Review and Updation of Mining Plan along with Progressive Mine Closure Plan does not in any way imply the approval of the Government in terms of any other provision of Mines & Minerals (Development & Regulation) Act, 1957, or the Minerals (Other than Atomic & Hydro Carbon Energy Minerals) Concession Rules, 2016 and any other laws including Forest (Conservation) Act, 1980, Environment (Protection) Act, 1986 or the rules made there under, The Occupational Safety, Health and Working Conditions Code, 2020/The Mines Act 1952 and Rule & Regulations made there under.
4. 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 precise area as furnished by the lessee.
5. At any stage, if it is observed that the information/details/drawing furnished, data incorporated, geo-referenced special configuration of lease/proposal in the document, are incorrect or misrepresent facts, the approval of the document shall be revoked with immediate effect.
6. This approval is restricted in respect of the prospective proposals contained therein within the valid mining lease area of this Review and Updation of Mining Plan for the period commencing from the date of issue of this letter for the financial year 2021-22 upto financial year 2025-26 with validity up to 31 March 2026 and subject to submission of appropriate and requisite amount of Bank Guarantee etc. to the appropriate competent authority, against performance security as stipulated in Mine Development and Production Agreement (MDPA), in prescribed format covering the plan period and all other statutory compliances and clearances for the mining activities to be carried out within the mining leasehold area.
7. The performance security shall be updated time to time as per the MDPA and the copy of same shall be provided to this office immediately.
8. Adequate measures shall be taken to prevent any inadvertent access to the mined out area/water logged pits, if any. Adequate fencing/check dams/retaining walls shall be made and maintained in good condition to check any detrimental impact on water regime.
9. Wherever side/benches have finalized or reached to its ultimate limit, immediate steps shall be taken for stabilization/ restoration of sides/benches/terraces appropriately like plantations suitable species/vegetation.

10. Sufficient safety Berm shall be maintained with respect to public road/village roads/river bed/nallah etc.
11. In addition to the PMCP proposals mining lease holder shall comply the Order of Hon'ble Supreme Court dated 08.01.2020 in the matter of Writ petition(C) No.114/2014(common Cause vs Union of India & Ors.) to undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. **Compliance status of the same shall be furnished every year under rule 26(2) of MCDR 2017.**
12. This approval is restricted to the proposals only for the ensuing mining plan period and this approval shall not be interpreted as a compliance of any of the violations made to the statutory provisions.
13. Mining operations shall be carried out strictly as per provisions of MCDR 2017 and other rules made under MM(D&R) Act 1957.
14. The inventory of mineral/ore stock above the limit prescribed in the threshold values of minerals and below the cut-off grade shall be maintained in a bound register indicating the quantity and quality of material stacked. The month wise inventory of such materials shall be updated, and the annual summary shall be submitted to Regional Controller of Mine, IBM, Gandhinagar before 30th June of every year.

भवदीय

5/8/21

(पुष्पेन्द्र गौड़/ Pushpender Gaur)
क्षेत्रीय खान नियंत्रक /Regional Controller of Mines

प्रतिलिपि सूचनार्थ प्रेषित / **Copy for kind information to:-**

1. The Commissioner, Department of Geology & Mining, Govt. of Gujarat, Gandhinagar, Gujarat, Email-commissioner-cgm@gujarat.gov.in . Along-with copy of approved review of mining plan along with PMCP. Kindly refer our letter no 684(4)(1)/MP-347/2021-22 GNR dated 29.06.2021 in this matter.
2. Sh. Rakesh Purohit, (Mining Engineer), (Qualified Person) (E-mail-rkconsultabtsjodhpur@gmail.com & Sh. S K Soni, (Geologist), (Qualified Person) E-mail soni.sarnar.shailendra@gmail.com

क्षेत्रीय खान नियंत्रक /Regional Controller of Mines

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ANNEXURE : XXIII

No. WLP/32/C/ 670-672 /2021-22
Office of the
Principal Chief Conservator of forests
Block No. B/1, Aranya Bhavan,
Cb-3 Circle, Sector - 10A,
Gujarat State, Gandhinagar.
Dated:- 20 .12.2021

To.
M/s. Nirma Limited.
Nirma House. Ashram road,
Ahmedabad- 380 009

Sub:- Authentication of conservation plan for proposed Limestone Mines of M/s Nirma limited located at Villages- Vangar, Madhiya, Padhiarka, Doliya, Gujarda, Dudheri and Dudhala, Taluka- Mahuva, Dist Bhavnagar, Gujarat.

Ref :- 1. M/s Nirma Ltd. letter No. NL/BH/MIN/Forest/1445, Dt. 08/06/2020
2 Chief Conservatoe Of Forest, Junagadh Circle letter No. A/JMN/T.12/1674-75/2021-22, Dt 30/11/2021

With reference to the subject and letter quoted above, the Wildlife Conservation plan proposed Limestone Mines of M/s Nirma limited located at Villages- Vangar, Madhiya, Padhiarka, Doliya, Gujarada, Dudheri and Dudhala, Taluka- Mahuva, Dist. Bhavnagar, Gujarat.

The Wildlife Conservation Plan of Rs 19.9 Lacs has been approved. All works of the plan will have to be done by User Agency. The Forest department will not have to take any fund. A copy of the Wildlife Conservation Plan is enclosed herewith.

Encl As above

(Shyamal Tikadar)
Chief Wildlife Warden
Gujarat State, Gandhinagar

Copy to: Chief Conservator of Forests, Junagadh Circle, Junagadh for information and necessary action.

Copy to: Deputy Conservator of Forests, Bhavnagar Forest Division, Bhavnagar for information and necessary action.

Forest Division and the user agency (Nirma) shall make payment directly towards wages, materials, transportation & vehicle & equipment hiring costs etc. as per approved budget and unit cost.

6. Six-monthly monitoring report prepared by third-party shall be submitted by the user agency to the DCF Bhavnagar, which would be forwarded to the Chief Wildlife Warden, Gujarat State after verification of the quantities and qualities of the work carried out.

7. The present Wildlife Conservation/Mitigation Plan is prepared for 3 years. After completion of 100% works recommended in the plan, DCF Bhavnagar, Bhavnagar Division shall verify the quality and quantity of the works carried out and a completion certificate would be submitted by him to the Chief Wildlife Warden, Gujarat after 3 years.

4.10 MONITORING OF MITIGATION & COMPLIANCES

Since the proposed project area falls under the jurisdiction of Bhavnagar Forest Division, the overall monitoring of the implementation of activities recommended in the mitigation plan would be carried out by the Bhavnagar Division, Bhavnagar. Therefore, as per guidelines issued by the Chief Wildlife Warden, Gujarat State vide letter no: WLP/T-32/B/1014-33/2020-21. Dated 24th June, 2020, user agency shall submit a six-monthly monitoring report prepared by third-party or prepared by the DCF Bhavnagar to the Chief Wildlife Warden, Gujarat State after verification of the quantities and qualities of the works carried out. The present Wildlife Conservation/Mitigation Plan is prepared for 3 years. After completion of 100% works recommended in the plan i.e. after 3 years, DCF Bhavnagar will verify total quantity and quality of the works carried out and submit a completion certificate to the Chief Wildlife Warden, Gujarat.

4.11 FINANCIAL LAYOUT FOR CONSERVATION ACTIVITIES

Following is the proposed financial layout for conservation activities in the project site and surrounding area (Table-4.2).

Table- 4.2: Proposed financial layout for wildlife conservation plan after discussion with DCF Bhavnagar.

No	Activity	Rate/ unit (Lakh)	Phy-sical	Year-21-22	Year-22-23	Year-23-24	Total for 3 years (Lakh)
A	Lion Population survey of GIR NP, GIR Sanctuary, Mitiyala WLS						
1	Hiring services of NGO/experts for carrying out annual survey at GIR NP, GIR Sanctuary, Mitiyala WLS	0.5	3 years	0.5	0.5	0.5	1.5

B	**Plantation Activities at Locations Suggested by DCF, Bhavnagar**						
1	Assisting Plantation activities to be carried out by Forest Department, Bhavnagar	0.5	3 years	0.5	0.5	0.5	1.5
C	**Promoting eco-tourism at GIR NP, GIR Sanctuary, Mitiyala WLS**						
	Nature guide & hospitality training 20 persons	2.5	1	2.5	-	-	2.5
D	**Engagement of Van Sahayak round the year**						
1	Van Sahayak 1 nos. on contract basis	1.2	3 years	1.2	1.2	1.2	3.6
E	**Vaccination of cattles**						
1	Assisting vaccination programme by Forest Department	1.2	3 Year	1.2	1.2	1.2	3.6
F	**Miscellaneous**						
1	Maintenance of shallow ponds/rainwater harvesting structures	1.0	3 Year	1.0	1.0	1.0	3.0
2	Public education and awareness programmes for the following - Avoiding plastic, Recycle and reuse, Reduce usage of pesticide and weedicide, Conservation of Wildlife, Garbage control	1.0	3 Year	1.0	1.0	1.0	3.0
F	**Monitoring of mitigation plan**						
1	Six-monthly third-party monitoring report preparation	0.25	06	0.2	0.5	0.5	1.2
	Grand Total (in lakh Rs.)			8.1	5.9	5.9	19.9

FOR NIRMA LTD.

AUTHORISED SIGNATORY

(Dr. Sandeep Kumar)
Deputy Conservator of Forests
Bhavnagar Forest Division
Bhavnagar

Chief Wildlife Warden
Gujarat State
Gandhinagar

Chief Conservator of Forests
Junagadh Circle, Junagadh

GWIL

Gujarat Water Infrastructure Limited

(A Govt. of Gujarat Undertaking)

Dr Jivraj Mehta Bhavan, Block No. 1, 1st Floor, Gandhinagar - 382 010.
Phone : (079) 23224176 / 23239537 Fax - 23222395
e-mail : gwilcompany@rediffmail.com

GWIL/Bhavnagar/Ind.conn./19-57 Date : 4th June 2008

Nirma Limited.
Nirma House,
Ashram Road,
Ahmedabad – 380 009

Sub: Request for supply of Raw Water
Ref: Your letter dated 7th April 2008

Sir,

As requested by you vide your above letter for requirement of raw water 1.00 MLD is here by granted for your unit situated in Bhavnagar district, raw water available from of NC-4 (Bhatbhet - Borda section) project with the following terms and conditions:

1. You have to enter into an agreement with GWIL within 45 days from the date of this letter.
2. Please note that connection will be release after 1st July 2008
3. GWIL will supply raw water. Necessary all treatment before use of water shall have to be given by you at your cost.
4. The rate of water will be Rs. 15/- (Rupees Fifteen only) per 1000 ltrs which is tentative. The final rate as decided by the Govt. will make applicable and binding to pay by your Company.
5. You have to make your own arrangement for drawing water to your unit from the connection point.
6. You have to make your own arrangement to install flow meter and valves near the connection point with locking arrangements and GWIL will be in charge of the same.
7. All the costs for flow meter, valves, laying pipeline, storage required etc from the connection point to your sump shall have to be borne by your Company.
8. It will be your responsibility to ensure that the Flow meter remains in working condition & duly calibrated time to time.
9. Six months water charges i.e. **Rs.27,00,000/-** (Rupees twenty seven lacs only) shall have to be paid by you in advance as security deposit at the time of agreement.
10. You have to bring documents likes Stamp Paper of Rs. 100/- (Blank) - 1 No, Authority letter to sign & Seal the Agreement, Common Seal, Round Seal and Copy of Memorandum of Association & Articles of Association at the time of agreement.

You are requested to contact this office for execution of water sale agreement, within stipulated time limit as stated above.

Further GWIL shall be free to change draft agreement when required.

Thanking you,

Yours truely,

(V G Papaiyawala)
General Manager - II

Copy submitted to: 1) MD, GWIL
2) Chief General Manager(C),GWIL-for information please.
Copy to: Sr. Manager(C), GWIL,Barwala.

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ANNEXURE : XXV

Office of The Deputy Chief Conservator of Forest, Bhavnagar
Bahumali Bhavan Annexe Building,Bhavnagar
Tel No:0278-2428644
Email:forestnormalbvnd@gmail.com

SR. No. 2946 Dt. 29-7-2023
SHILPA P. SHAH, NOTARY
GOVT. OF INDIA
29-7-23

Letter No: K/JMN/T-11/2075/2022-23

Date:27/01/2023

NOTARY SHILPA P. SHAH AHMEDABAD CITY GUJARAT STATE REGD. NO. 4269 GOVT. OF INDIA

To,
Authorized Signatory,
M/s. Nirma Limited,
Nirma House, Ashram Road,
Ahmedabad-380009

Subject: Request to provide distance of nearby Turtle breeding sites from our limestone mining located at ,Villages' Padhiyarka, Doliya, Vangar, Madhiya, Gujarada, Dudheri & Dudhala, Ta. Mahuva, Dist.: Bhavnagar, Gujarat

Reference: Your Letter No: NL/BH/MIN/Forest/1940A/202, dated 12.12.2022

This is to inform with Jai Bharat for the above subject and reference letter that application for Environment Clearance was submitted for the villages Padhiyarka, Doliya, Vangar, Madhiya, Gujarada, Dudheri & Dudhala. Accordingly, Terms of Reference(ToR) had been issued vide letter dated 28/12/2022 by Government of India. As per ToR condition no. A(v), provision has to be made in conservation plan for turtle breeding site. Pursuant to which the details of the distance from the mining site to the nearest turtle breeding site have been sought.

In the said matter, it is to state that there is a turtle rearing/breeding center at Moje Hathab in Bhavnagar taluka at a distance of approximately 70 km from your said leases. Which is requested to be informed.

NOTARIAL

Deputy Chief Conservator of Forest
Bhavnagar Forest Department
Bhavnagar

This is the true & correct English Translation of the Original Document in Gujarati
SHILPA P. SHAH
NOTARY
GOVT. OF INDIA
29-7-23

નાયબ વન સંરક્ષકશ્રીની કચેરી, ભાવનગર વન વિભાગ, ભાવનગર

બહુમાળી ભવન એનેક્ષી બિલ્ડીંગ, એફ-૯/૧૦, ભાવનગર

ફોન નં. ૦૨૭૮-૨૪૨૯૬૪

Email :- forestnomalbvnd@gmail.com

ક્રમાંક:- ૬/જમન/ટે-૧૧/૨૦૭૫ /૨૦૨૨-૨૩ તા:- ૨૭/૨/૨૦૨૩

પ્રતિ,

અધિકૃત સહીકર્તાશ્રી,

એમ/એસ નિરમા લી.,

નિરમા હાઉસ, આશ્રમ રોડ,

અમદાવાદ-૩૮૦૦૦૯

વિષય:- **Request to Provide distance of nearby Turtle breeding sites from our Limestone Mining located at Villages: Padhiarka, Doliyam Vangar, Madhiya, Gujarda, Dudheri & Dudhala, Taluka Mahuva, Dist.Bhavnagar, Guj.**

સંદર્ભ:- **આપના પત્રાંક:- NL/BH/MIN/Forest/1940A/202, Dt.12/12/2022**

જય ભારત સાથ, ઉપરોક્ત વિષય અને સંદર્ભપત્ર અન્વયે જણાવવાનું કે, આપની કંપની હસ્તકની વાંગર & માઢીયા માઈન્સ, ગુજરડા, દુધેરી & દુધાળા માઈન્સ અને પઢીયારકા & ડોળીયા માઈન્સ માટે ઈન્વાયરમેન્ટ ક્લીયરન્સ મેળવવા માટે આપના દ્વારા અરજી કરવામાં આવેલ હતી. જેમાં ભારત સરકારશ્રી દ્વારા તા.૨૮/૧૧/૨૦૨૨ ના પત્રથી ટર્મ ઓફ રેફરન્સ (ToR) આપવામાં આવેલ છે. જેની શરત નં.A(v) અન્વયે કાચબા ઉછેર/સંવર્ધન સ્થળ માટે કન્ઝર્વેશન પ્લાનમાં જોગવાઇ કરવાની થાય છે. જેના અનુસંધાને માઈનીંગ સ્થળથી નજીકના કાચબા ઉછેર/સંવર્ધન સ્થળના અંતરની વિગતો માંગવામાં આવેલ છે.

ઉક્ત બાબતે જણાવવાનુ કે, આપની ઉક્ત લીઝોથી અંદાજે ૭૦ કિ.મી. ના અંતરે ભાવનગર તાલુકાના મોજે.હાદબ ખાતે કાચબા ઉછેર/સંવર્ધન કેન્દ્ર આવેલ છે. જેની જાણ થવા વિનંતી છે.

નાયબ વન સંરક્ષક

ભાવનગર વન વિભાગ

ભાવનગર

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ANNEXURE : XXVI

NIRMA LIMITED

DETAILS OF LAND

Limestone Mining Lease, In Village: Vangar & Madhya, Taluka: Mahuva, District: Bhavnagar

DETAILS OF SURVEY NOS FALLING IN ML AREA - 612.1336 HA
OF VILLAGE:VANGAR TALUKA: MAHUVA, DIST.BHAVNAGAR

Sr.No.	Survey No.	Total Area in Ha			Land status - Govt. land (G,P) / Pvt. Land (P)	Full / Part	Area fall in ML Area (In Ha.)	Remarks
1	16	0	44	52	P	Part	0.3127	
2	17	0	46	54	P	Full	0.4654	
3	18	1	16	35	P	Part	0.4238	
4	19/P1	0	76	89	P	Part	0 6769	
5	19/P2	0	66	77	P	Part		
6	19/P3	0	71	84	P	Part		
7	20	0	52	60	P	Full	0 5260	
8	21	0	21	25	P	Full	0.2125	
9	22	0	19	22	P	Full	0.1979	
10	23	0	21	25	P	Full	0.2125	
11	24/1	0	93	8	P	Full	0.9308	
12	24/2	0	2	2	P	Full	0.0202	
13	25	2	53	94	P	Full	2.5394	
14	26	0	48	56	P	Full	0.4856	
15	27	1	10	28	P	Full	1.1028	
16	28/P1	0	55	64	P	Full	0.5564	
17	28/P2	0	56	65	P	Full	0.5665	
18	29/P1	0	97	13	P	Full	0.9713	
19	29/P2	0	66	77	P	Full	0.6677	
20	30	0	45	52	P	Full	0.4552	
21	31	0	50	59	P	Full	0.5059	
22	32/P1	2	35	74	P	Full	2.3574	
23	32/P2	1	2	17	P	Full	1.0217	
24	32/P2/P1	0	97	13	P	Full	0.9713	
25	33	3	81	42	P	Full	3.8142	
26	34	5	9	91	P	Full	5.0991	
27	35/P1	1	94	25	P	Full	1.9425	
28	35/P2	0	98	14	P	Full	0.9814	
29	35/P3	0	98	13	P	Full	0.9813	
30	35/P5	1	53	78	P	Full	1.5378	
31	35/P6	0	97	13	P	Full	0.9713	
32	35/P7	0	47	55	P	Full	0.4755	
33	36	1	26	47	P	Full	1.2647	
34	37/P1	0	80	94	P	Full	0 8094	
35	37/P2	0	97	13	P	Full	0.9713	
36	38/P1	1	2	19	P	Full	1.0219	
37	38/P2	0	40	47	P	Full	0.4047	
38	38/P3	0	49	57	P	Full	0.4957	
39	39/P1	0	80	94	P	Full	0 8094	
40	39/P2	1	13	31	P	Full	1 1331	
41	40/P1	1	58	84	P	Full	1.5884	
42	40/P2	1	58	84	P	Full	1 5884	
43	40/P3	1	58	84	P	Full	1.5884	
44	40/P4	1	62	89	P	Full	1.6289	



45	40/P5	1	58	84	P	Full	1.5884	
46	40/P6	1	58	84	P	Full	1.5884	
47	41	1	55	80	P	Full	1.5580	
48	42	2	81	26	P	Full	2.8126	
49	43	1	43	66	P	Full	1.4366	
50	44	1	80	16	P	Full	1.8616	
51	45	2	40	79	P	Full	2.4079	
52	46	0	57	67	P	Full	0.5767	
53	47	0	54	63	P	Full	0.5463	
54	48/P1	1	35	37	P	Full	1.3537	
55	48/P2	1	35	57	P	Full	1.3557	
56	48/P3	1	37	59	P	Full	1.3759	
57	49	0	51	60	P	Full	0.5160	
58	50	1	73	0	P	Full	1.7300	
59	51	0	59	69	P	Full	0.5969	
60	52	0	50	59	P	Full	0.5059	
61	53/1/P1	1	33	54	P	Part	5.0954	
62	53/1/P2	1	61	88	P	Part		
63	53/1/P3	2	32	70	P	Part		
64	53/2	0	3	4	P	Full	0.0304	
65	53/3	0	3	4	P	Full	0.0304	
66	54	1	11	29	P	Part	0.8643	
67	65	3	66	24	P	Part	1.9747	
68	66/P1	2	22	58	P	Full	2.2258	
69	66/P2	2	24	60	P	Full	2.2460	
70	67	7	26	41	P	Part	6.2665	
71	69P1	10	29	41	P	Part	3.0293	
72	69/P1/P1	0	7	61	ROAD	Part		
73	69P2	0	8	9	P	Part		
74	75	15	77	26	P	Part	9.3213	
75	75/P1	1	61	88	P	Part		
76	75/P2	1	61	88	P	Part		
77	76	13	42	55	P	Part	10.5684	
78	77/P1	3	59	16	P	Full	3.5916	
79	77/P2	3	59	16	P	Full	3.5916	
80	77/P3	3	59	16	P	Full	3.5916	
81	77/P4	11	97	88	P	Full	11.9788	
82	77/P5	3	59	16	P	Full	3.5916	
83	78/P1	1	61	88	P	Full	1.6188	
84	78/P2	3	12	62	P	Full	3.1262	
85	79	5	71	62	P	Full	5.7162	
86	79/P1	0	80	94	P	Full	0.8094	
87	79/P2	0	80	94	P	Full	0.8094	
88	80	3	75	35	P	Full	3.7535	
89	81/P1	1	66	94	P	Part	2.6559	
90	81/P2	1	66	94	P	Part		
91	81/P3	3	46	1	P	Part		
92	85/P1	1	53	79	P	Part	4.9617	
93	85/P2	1	54	79	P	Part		
94	85/P3	1	54	79	P	Part		
95	85/P4	1	54	79	P	Part		
96	86/P1	1	47	71	P	Full	1.4771	
97	86/P2	0	80	94	P	Full	0.8094	

ANNEXURE : XXVI Contd..

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98	86/P3	3	.23	75	P	Full	3.2375		
99	86/P4	3	23	75	P	Full	3.2375		
100	86/P5	1	.22	42	P	Full	1.2242		
101	87	2	13	47	P	Part	1.4619		
102	87/P1	2	11	45	P	Part			
103	87/P2	2	11	45	P	Part			
104	87/P3	0	47	55	P	Part			
105	88	2	28	65	P	Part	0.1050		
106	89	2	28	65	P	Part	0.5256		
107	90/P1	1	63	90	P	Part	2.0579		
108	90/P2	1	61	88	P	Part			
109	91/P1	2	41	80	P	Full	2.418		
110	91/P2	2	73	16	P	Full	2.7316		
111	91/P3	2	21	57	P	Full	2.2157		
112	91/P4	2	62	4	P	Full	2.6204		
113	91/P5	2	41	80	P	Full	2.4180		
114	92	3	7	56	P	Full	3.0756		
115	93/P1	1	30	51	P	Full	1.3051		
116	93/P2	0	49	57	P	Full	0.4957		
117	93/P3	0	80	94	P	Full	0.8094		
118	93/P4	2	60	2	P	Full	2.6002		
119	94/P1	1	61	88	P	Full	1.6188		
120	94/P2	3	17	68	P	Full	3.1768		
121	95/P1	3	64	22	P	Full	3.6422		
122	95/P2	2	60	1	P	Full	2.6001		
123	96	7	29	45	P	Full	7.2945		
124	97/P1	1	17	36	P	Full	1.1736		
125	97/P2	1	17	36	P	Full	1.1736		
126	97/P3	1	17	36	P	Full	1.1736		
127	97/P4	1	17	36	P	Full	1.1736		
128	98	0	55	64	P	Full	0.5564		
129	98/P1	1	11	29	P	Full	1.1129		
130	99	3	46	1	P	Part	2.8440		
131	100/P1	0	64	75	P	Part	1.9839		
132	100/P2	0	64	75	P	Part			
133	100/P3	0	64	75	P	Part			
134	100/P4	0	63	75	P	Part			
135	100/P5	0	64	75	P	Part			
136	101/P1	1	61	88	P	Part	3.3902		
137	101/P2	1	61	88	P	Part			
138	101/P3	0	96	11	P	Part			
139	101/P4	0	95	10	P	Part			
140	102	1	70	98	P	Full	1.7098		
141	103	0	70	82	P	Full	0.7082		
142	104	8	24	55	P	Full	8.2455		
143	105//P1	2	42	81	P	Full	2.4281		
144	105//P2	3	41	96	P	Full	3.4196		
145	106/P1	2	42	81	P	Full	2.4281		
146	106/P2	0	48	56	P	Full	0.4856		
147	106/P3	1	15	34	P	Full	1.1534		
148	107/P1	0	80	94	P	Full	0.8094		
149	107/P2	1	43	66	P	Full	1.4366		
150	107/P3	1	42	65	P	Full	1.4265		

151	108	2	11	45	P	Full	2.1145	
152	109	2	20	55	P	Full	2.2055	
153	110	1	71	99	P	Full	1.7199	
154	118/P1	2	15	50	P	Part	0.7416	
155	118/P2	1	78	6	P	Part		
156	118/P3	2	15	50	P	Part		
157	124	5	70	61	P	Part	1.9445	
158	178	9	15	61	P	Part	7.0013	
159	179/P1	2	68	11	P	Full	2.6811	
160	179/P2	1	61	88	P	Full	1.6188	
161	180	3	40	95	P	Full	3.4095	
162	181/P1	1	13	31	P	Full	1.1331	
163	181/P2	1	19	38	P	Full	1 1938	
164	181/P3	1	14	32	P	Full	1 1432	
165	186/P1	0	52	10	P	Full	0.5210	
166	186/P2	0	52	10	P	Full	0.5210	
167	186/P3	0	52	10	P	Full	0.5210	
168	186/P4	0	52	11	P	Full	0.5211	
169	187	9	0	43	P	Full	9.0043	
170	188	2	81	26	P	Full	2.8126	
171	189	1	78	6	P	Full	1.7806	
172	190	0	59	69	P	Full	0.5969	
173	191	0	55	64	P	Full	0.5564	
174	192/1	0	63	74	P	Full	0.6374	
175	192/2	0	2	2	P	Full	0.0202	
176	193/P1	0	48	56	P	Full	0.4856	
177	193/P1/P1	1	94	25	P	Full	1.9425	
178	193/P2	2	86	32	P	Full	2.8632	
179	193/P3	2	60	1	P	Full	2.6001	
180	194/P1	1	37	59	P	Part	2.9513	
181	194/P2	1	51	75	P	Part		
182	194/P3	1	37	59	P	Part		
183	196/P1	2	3	35	P	Part	1.6238	
184	196/P2	1	94	25	P	Part		
185	196/P3	1	94	25	P	Part		
186	196/P4	0	80	94	P	Part		
187	196/P5	1	93	24	P	Part		
188	196/P6	1	11	29	P	Part		
189	200B	7	88	5	S.P.	Full	7.8805	
190	200/P	8	42	66	S.P.	Part	5 3868	
TOTAL							320.6647	

FOR NIRMA LTD.

AUTHORISED SIGNATORY

NIRMA LIMITED

DETAILS OF LAND

Limestone Mining Lease, in Village: Vangar & Madhiya, Taluka: Mahuva, District: Bhavnagar

DETAILS OF SURVEY NOS FALLING IN REVISED AREA - 612.1336 HA
OF VILLAGE: MADHIYA TALUKA: MAHUVA, DIST.BHAVNAGAR

Sr.No.	Survey No.	Area in Ha			Land status - Govt. land (S.P) / Pvt. Land (P)	Full / Part	Area fall in Revise ML Area (in Ha.)	Remarks
1	1	8	96	38	P	Part	3.0262	
2	3	8	11	40	P	Part	6.1540	
3	4/P1	0	80	94	P	Full	0.8094	
4	4/P2	0	62	73	P	Full	0.6273	
5	4/P3	0	80	94	P	Full	0.8094	
6	4/P4	1	5	21	P	Full	1.0521	
7	5/P1	3	32	85	P	Full	3.3285	
8	5/P2	2	34	72	P	Full	2.3472	
9	5/P3	1	29	50	P	Full	1.2950	
10	6/P1	1	9	26	P	Full	1.0926	
11	6/P2	0	80	94	P	Full	0.8094	
12	7	10	88	61	P	Part	8.7273	
13	8	5	23	6	P	Part	2.0841	
14	9	12	39	36	P	Full	12.3936	
15	10/P1	1	85	14	P	Full	1.8514	
16	10/P2	1	87	17	P	Full	1.8717	
17	10/P3	1	87	17	P	Full	1.8717	
18	11/1	5	31	15	P	Full	5.3115	
19	11/2	5	21	99	P	Full	5.2199	
20	12/P1	1	76	3	P	Full	1.7603	
21	12/P2	0	97	13	P	Full	0.9713	
22	13/P1	3	43	98	P	Full	3.4398	
23	13/P2	3	64	22	P	Full	3.6422	
24	14/1	1	80	9	P	Full	1.8009	
25	14/1/P4	1	69	97	P	Full	1.6997	
26	14/2/P1	1	7	24	P	Full	1.0724	
27	14/2P2	1	7	24	P	Full.	1.0724	
28	15	9	39	89	P	Part	7.7458	
29	16/1	7	84	29	P	Full	7.8429	
30	16/2/P1	2	2	34	P	Full	2.0234	
31	16/2/P2	3	50	17	P	Full	3.6017	
32	16/2/P3	1	57	83	P	Full	1.5783	
33	16/2/P4	4	5	70	P	Full	4.0570	
34	16/3/P1	1	53	78	P	Full	1.5378	
35	16/3/P2	4	99	80	P	Full	4.9980	
36	16/3/P3	2	2	34	P	Full	2.0234	
37	17	0	10	12	P	Full	0.1012	
38	18/1P1	2	26	63	P	Full	2.2663	
39	18/1P2	2	25	61	P	Full	2.2561	
40	18/2	2	2	34	P	Full	2.0234	
41	18/3P1	0	99	16	P	Full	0.9916	
42	18/3P2	0	96	11	P	Full	0.9611	
43	18/3P3	0	96	11	P	Full	0.9611	
44	19	6	79	88	P	Full	6.7988	
45	20	3	20	72	P	Full	3.2072	

46	21	2	99	47	P	Full	2.9947	
47	22/P1	6	21	20	P	Full	6.2120	
48	22/P2	3	21	73	P	Full	3.2173	
49	23/P1	2	67	9	P	Full	2.6709	
50	23/P2	3	23	76	P	Full	3.2376	
51	25/P1	2	10	44	P	Full	2.1044	
52	25/P2	1	94	25	P	Full	1.9425	
53	25/P3	2	24	60	P	Full	2.246	
54	25/P4	2	10	44	P	Full	2.1044	
55	25/P5	1	94	25	P	Full	1.9425	
56	25/P6	1	94	25	P	Full	1.9425	
57	26/1/P1	4	20	88	P	Full	4.2088	
58	26/1/P2	0	80	94	P	Full	0.8094	
59	26/1/P3	0	32	37	P	Full	0.3237	
60	26/2/P1	1	29	50	P	Full	1.2950	
61	26/2/P2	1	78	6	P	Full	1.7806	
62	26/2/P3	1	13	31	P	Full	1.1331	
63	26/2/P4	1	61	88	P	Full	1.6188	
64	27	11	1	76	P	Full	11.0176	
65	28/P1	1	13	31	P	Full	1.1331	
66	28/P2	1	38	37	P	Full	1.1837	
67	28/P3	1	45	69	P	Full	1.4569	
68	28/P4	0	80	94	P	Full	0.8094	
69	29/P1	0	96	12	P	Part	1.7967	
70	29/P2	0	96	11	P	Part		
71	30/P1	1	63	90	P	Part	5.2557	
72	30/P2	1	91	52	P	Part		
73	30/P3	0	97	13	P	Part		
74	30/P4	1	98	29	P	Part		
75	31/P1	2	16	51	P	Part	5.2946	
76	31/P2P1	0	80	94	P	Part		
77	31/P2P1/P1	1	66	93	P	Part		
78	31/2P2	1	13	31	P	Part		
79	31/2P3	0	97	13	P	Part		
80	34/P1	0	80	94	P	Part	0.7347	
81	34/P2	2	2	34	P	Part		
82	34/P3	2	30	67	P	Part		
83	35	4	70	45	P	Part	1.2366	
84	36/1/P1	3	4	14	P	Full	3.0414	
85	36/1/P1/P1	0	51	99	ROAD	Full	0.5199	
86	36/1/P2	3	72	31	P	Full	3.7231	
87	36/1/P3	1	93	23	P	Full	1.9323	
88	37/P1	0	84	98	P	Full	0.8498	
89	37/P2	0	80	94	P	Full	0.8094	
90	37/P3	0	80	94	P	Full	0.8094	
91	37/P4	0	80	94	P	Full	0.8094	
92	38	5	56	45	S.P.	Full	5.5645	
93	39	6	47	50	P	Part	6.0238	
94	40/1/P1	2	77	21	P	Part	18.0057	
95	40/1/P2	1	61	88	P	Part		
96	40/2/P1	1	61	87	P	Part		
97	40/2/P2	0	80	94	P	Part		
98	40/2/P3	1	61	87	P	Part		
99	40/2/P3/P1	0	80	94		Part		

100	40/2/P4	1	61	87	P	Part		
101	40/2/P5	1	34	56	P	Part		
102	40/2/P6	0	80	94	P	Part		
103	40/2/P7	0	80	94	P	Part		
104	40/3/P1	1	25	45	P	Part		
105	40/3/P2	1	26	47	P	Part		
106	40/3/P3	2	51	92	P	Part		
107	41	5	25	8	S.P.	Full	5.2508	
108	42/P1	0	64	75	P	Part		
109	42/P2	2	26	62	P	Part		
110	42/P3	0	80	94	P	Part	1.0895	
111	42/P4	2	50	90	P	Part		
112	42/P4/P1	1	61	88	P	Part		
113	45	0	72	84	P	Part	0.5656	
114	46	4	87	65	P	Part	0.2790	
115	89/1/P1	0	82	96	P	Part		
116	89/1/P2	0	82	96	P	Part	4.1678	
117	89/1/P3	0	83	97	P	Part		
118	89/2	2	48	88	P	Part		
119	90	0	75	88	P	Full	0.7588	
120	91	4	83	60	P	Part	4.2187	
121	92	10	49	15	P	Part	10.0940	
122	93/P1	1	5	22	P	Full	1.0522	
123	93/P2	1	13	31	P	Full	1.1331	
124	93/P3	1	9	27	P	Full	1.0927	
125	93/P4	1	9	27	P	Full	1.0927	
126	94	1	78	6	P	Part	1.0306	
127	95	0	55	65	P	Part	0.1634	
128	96/1/P1	0	6	7	P	Part		
129	96/1/P2	0	6	7	P	Part	0.2991	
130	96/1/P3	0	30	35	P	Part		
131	97	0	80	94	P	Part	0.2512	
132	98/1	1	34	32	P	Full	1.1432	
133	98/2	1	5	22	P	Part	0.6674	
134	99/P1	1	14	32	P	Part	1.9431	
135	99/P2	2	59	0	P	Part		
136	100	1	31	52	P	Full	1.3152	
137	101	0	95	10	P	Full	0.9510	
138	102	12	86	91	P	Part	11.2844	
139	103	7	62	84	P	Part	0.6649	
140	104p	1	5	22	S.P.	Full	1.0522	
TOTAL							291.4689	

FOR NIRMA LTD.

AUTHORISED SIGNATORY

ANNEXURE : XXVII 5188

MONITORING STATIONS PHOTOGRAPHS-AIR & MICRO METEOROLOGY



Location: Padhiarka near Cement Plant
Longitude: 71˚40'05.3"E, Date: 01.03.2021
Latitude: 21˚01'46.9"N Time: 8:10 AM



Location: Padhiarka
Longitude: 71˚40'55.3"E, Date: 02.03.2021
Latitude: 21˚01'56.2"N Time: 9:15 AM



Location: Vangar
Longitude: 71˚39'12.6"E, Date: 01.03.2021
Latitude: 21˚02'25.1"N Time: 9:05 AM



Location: Madhiya
Longitude: 71˚40'48.3"E, Date: 03.03.2021
Latitude:21˚02'49.01"N Time: 10:50 AM



Location: Dudhala No. 1
Longitude: 71˚42'16.2"E, Date: 01.03.2021
Latitude: 21˚02'44.9"N Time: 10:00 AM



Location: Gujarda
Longitude: 71˚42'34.7"E, Date: 01.03.2021
Latitude: 21˚03'01.6"N Time: 11:05 AM

ANNEXURE : XXVII Contd..



Location: Patva
Latitude: 21˚00'12.6"N **Date: 02.03.2021**
Longitude: 71˚39'14.6"E, **Time: 1:30 PM**



Location: Samdhiala No. 1
Longitude: 71˚38'38.4"E, **Date: 01.03.2021,**
Latitude: 21˚01'04.6"N **Time: 12: 05 PM**



Location: Doliya
Longitude: 71˚40'52.0"E, **Date: 01.03.2021**
Latitude: 21˚01'30.1"N **Time: 1:15 PM**



Location: Rabhada
Longitude: 71˚40'52.4"E, **Date: 02.03.2021**
Latitude: 21˚01'31.6"N **Time: 10:20 AM**



Location: Pipalva Nana
Longitude:71˚40'52.4" E, **Date: 03.03.2021**
Latitude: 21˚01'31.6" N **Time: 12:02 PM**



Location: Amratvel
Longitude: 71˚40'43.50"E, **Date: 02.03.2021**
Latitude: 21˚0425.71"N **Time: 11:20 AM**



Location: Mota jadra
Longitude: 71˚42'38.6"E, Date: 03.03.2021
Latitude: 21˚04'35.9"N Time: 1:00 PM



Location: Devlia
Longitude: 71˚43'53.3"E, Date: 02.03.2021
Latitude: 21˚03'25.2"N Time: 12:18 PM



Location: Khared
Longitude: 71˚44'58.9"E, Date: 03.03.2021
Latitude: 21˚03'28.6"N Time: 3:00 PM



Location: Gadhada
Longitude: 71˚44'03.4"E, Date: 02.03.2021
Latitude: 21˚01'20.6"N Time: 2:32 PM

MONITORING STATIONS PHOTOGRAPHS- MICRO METEOROLOGY



Location: Near all three mines (Admin Block, Cement Plant area)
Longitude: 71˚40'05.3"E, Date: 01.03.2021
Latitude: 21˚01'46.9"N Time: 11:06 AM

5191

ANNEXURE : XXVII Contd..

MONITORING STATIONS PHOTOGRAPHS-GROUND WATER



Location: Near Cement Plant, Padhiarka
Longitude: 71˚40'14.9"E, Date: 30.05.2021
Latitude: 21˚02'07.5"N Time: 8:00 AM



Location: Padhiarka village
Longitude: 71˚40'54.5"E, Date: 30.05.2021
Latitude: 21˚01'56.4"N Time: 8:42 AM



Location: Vangar
Longitude: 71˚39'12.0"E, Date: 30.05.2021
Latitude: 21˚02'25.11" N Time: 3:20 PM



Location: Madhiya
Longitude: 71˚40'23.1"E, Date: 30.05.2021
Latitude: 21˚02'47.6"N Time: 2:47 PM



Location: Dudhala No. 1
Longitude: 71˚42'16.2"E, Date: 30.05.2021
Latitude: 21˚02'44.9" N Time: 10:40 AM



Location: Dudheri
Longitude: 71˚42'25.8" E, Date: 30.05.2021
Latitude: 21˚02'24.9" N Time: 9:20 AM



Location: Dudhala near NH-8E
Longitude: 71˚42'34.7"E, Date: 30.05.2021
Latitude: 21˚03'01.6"N Time: 11:22 AM



Location: Gujarda
Longitude: 71˚42'49.8" E, Date: 30.05.2021
Latitude: 21˚02'20.02"N Time:10:05 AM



Location: Doliya
Longitude: 71˚40'52.4"E, Date: 30.05.2021
Latitude: 21˚01'31.6" N Time: 5:32 PM



Location: Rabhada
Longitude: 71˚37'26.3"E, Date: 30.05.2021
Latitude: 21˚02'51.4" N Time: 4:27 PM



Location: Amrutvel
Longitude: 71˚40'35.1"E, Date: 30.05.2021
Latitude: 21˚04'37.0"N Time: 1:40 PM



Location: Near Devlia village
Longitude: 71˚44'58.9"E, Date: 30.05.2021
Latitude: 21˚03'28.6"N Time: 12:05 PM

ANNEXURE : XXVII Contd..

MONITORING STATIONS PHOTOGRAPHS-SURFACE WATER



Location: Malan Bandhara near Khared
Longitude: 71˚44'31.4"E, Date: 31.05.2021
Latitude: 21˚02'13.9"N Time: 10:17 AM



Location: Malan River near Barpara, Mahuva
Longitude: 71˚46'15.9" E, Date: 31.05.2021
Latitude: 21˚04'07.2" N Time: 9:10 AM



Location: Arabian Sea near Doliya
Longitude: 71˚40'58.8"E, Date: 31.05.2021
Latitude: 21˚00'16.1"N Time: 11:35 AM

MONITORING STATIONS PHOTOGRAPHS-SOIL & TRAFFIC



Location: Near Cement Plant, Padhiarka
Longitude: 71˚40'14.9"E, Date: 30.05.2021
Latitude: 21˚02'07.5"N Time: 8:10 AM



Location: Padhiarka
Longitude: 71˚40'59.2"E, Date: 30.05.2021
Latitude: 21˚01'56.3"N Time: 8:50 AM



Location: Vangar
Longitude: 71˚39'12.0"E, Date: 30.05.2021
Latitude: 21˚02'25.11"N Time: 3:25 PM



Location: Madhiya
Longitude: 71˚40'23.1"E, Date: 30.05.2021
Latitude: 21˚02'47.6"N Time: 2:55 PM



Location: Dudhala No. 1
Longitude: 71˚42'15.5"E, Date: 30.05.2021
Latitude: 21˚02'45.3"N Time: 10:51 AM



Location: Dudheri
Longitude: 71˚42'25.8"E, Date: 30.05.2021
Latitude: 21˚02'24.9"N Time: 9:30 AM



Location: Dudhala near NH-8E
Longitude: 71˚42'34.7"E, Date: 30.05.2021
Latitude: 21˚03'01.6"N Time: 11:34 AM



Location: Dudhala near NH-8E
Longitude: 71˚42'34.7"E, Date: 30.05.2021
Latitude: 21˚03'01.6"N Time: 11:34 AM



Location: Doliya
Longitude: 71˚40'52.4"E, Date: 30.05.2021
Latitude: 21˚01'31.6"N Time: 5:45 PM



Location: Rabhada
Longitude: 71˚37'40.5"E, Date: 30.05.2021
Latitude: 21˚02'42.6"N Time: 4:40 PM



Location: Amratvel
Longitude: 71˚40'33.8"E, Date: 30.05.2021
Latitude: 21˚04'36.5"N Time: 1:55 PM



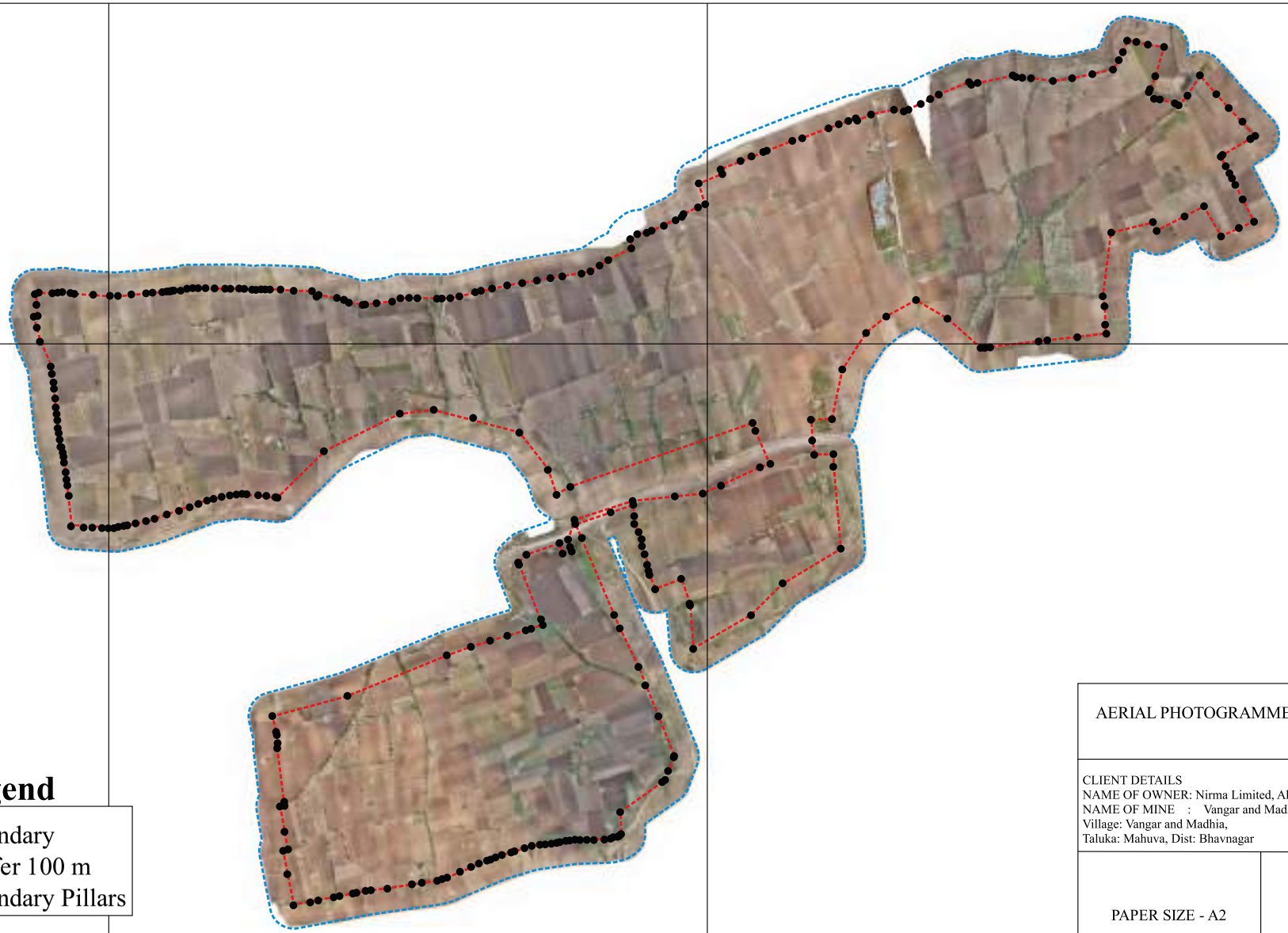
Location: Near Devlia village
Longitude: 71˚44'58.9"E, Date: 30.05.2021
Latitude: 21˚03'28.6"N Time: 12:20 PM

MONITORING STATIONS PHOTOGRAPHS- TRAFFIC



Location: Near Vangar Village, NH-8E
Longitude: 71˚39'56.19"E, Date: 27.05.2021
Latitude: 21˚02'35.21"N Time:7:00 AM

ORTHO IMAGE FOR VANGAR AND MADHIA LIMESTONE



AERIAL PHOTOGRAMMETRY SURVEY FOR MAHUA MINES

CLIENT DETAILS
NAME OF OWNER: Nirma Limited, Ahamedabad
NAME OF MINE : Vangar and Madhia Limestone Mine,
Village: Vangar and Madhia,
Taluka: Mahuva, Dist: Bhavnagar

PAPER SIZE - A2	SCALE : 1:12500
MAP PROJECTION WGS 84 UTM 42 N	SURVEY DATE : 16-5-23 TO 24-05-23

: A-195 :

ANNEXURE : XXVIII

5196

5197

ANNEXURE : XXVIII Contd..

PHOTOGRAPHS OF PROPOSED TRANSPORT ROUTE



NH51 passing through Dudhala village



NH51 passing through Dudhala village



Vangar & Madhia village road-1



Vangar & Madhia village road-2

ANNEXURE : XXVIII Contd..

 NH51 passing through Dudhala village	 Towards plant from NH 51
 NH 51 passing through Vangar & Madhia village	

ANNEXURE : XXIX

5199

भारतीय गैर न्यायिक

पचास रुपये रु.50

भारत INDIA

FIFTY RUPEES Rs.50

INDIA NON JUDICIAL

SR.No. 7 Dt. 17.1.2019 AE 825524

ગુજરાત GUJARAT

SHILPA P. SHAH, NOTARY
GOVT. OF INDIA





Consent Letter

We, Gordhanbhai S/o Narshibhai Padsala, Aged: 52 Years and Mukundbhai S/o Narshibhai Padsala, Aged: 49 Years, residing at 401, Morya Atriya Opp. Atithi Dining Hall lane Pakwan Char Rasta, Bodakdev, Ahmedabad, Taluka & District: Ahmedabad, agriculture land owners give this consent letter in favor of M/s Nirma Limited, company registered under company act having its registered office at Nirma House, Ashram Road, Ahmedabad-380009 that,

We are the sole owner and having surface rights of agriculture land of Survey Numbers and area in Village –Madhia as under.

Sr. No.	Survey No.	Village	Taluka	District	Area (In Ha.)
1	21	Madhia	Mahuva	Bhavnagar	2.9947
2	22p1	Madhia	Mahuva	Bhavnagar	6.212
3	22p2	Madhia	Mahuva	Bhavnagar	3.2173
4	27p4	Madhia	Mahuva	Bhavnagar	1.4569
5	27p5	Madhia	Mahuva	Bhavnagar	1.2950
Total					15.1759

भारतीय गैर न्यायिक

पचास रुपये

रु.50

भारत

INDIA

FIFTY RUPEES

Rs.50

INDIA NON JUDICIAL

ગુજરાત गुजरात GUJARAT

AE 825523

નંબર [illegible] રૂ. ૫૦

તારીખ: ૧૨ માર્ચ ૨ સને ૨૦૧૬

નામ [illegible]

ઠેકાણું [illegible]

દિનેશ એચ. પરમાર

લા.નં.એસ.વી. / ૩૬૮ / ૩૬૯ / ૧૬૬૮

સબ રજીસ્ટ્રાર ઓફિસના આંતરી, ભાવનગર.

લેનારની સહી [illegible]

GOVT. OF INDIA

REGD. NO. 4259

EXPIRY DATE 03/07/2022

2. Our said land is rich in limestone mineral.
3. That M/s Nirma Limited has been granted the Mining Lease of Limestone mineral in an area of 612.1336 Ha. in village: Vangar & Madhia, Taluka: Mahuva, Dist: Bhavnagar, vide Govt. of Gujarat, Industries and Mines Department order no. MCR-102004-1827-CHH dated 08.01.2017 and executed by District Collector, Bhavnagar on 11.01.2017 for the Cement plant under establishment in village: Padhiarka, Taluka: Mahuva, Dist: Bhavnagar (hereinafter referred as the Mining Lease).
4. Our said agriculture land as mentioned above falls under the granted Mining Lease area of M/s Nirma Limited and the Lessee is required to obtain surface right for mining operation as per MCR 2016.
5. We hereby give surface rights for the mining operation of Limestone mineral to M/s Nirma Limited in our ownership land and we do not have any objection for mining operation by M/s Nirma Limited.

Gr. N. Pradhan

5201

ANNEXURE : XXIX Contd..

6. We and our family members and heirs hereby abide by this consent for carrying out mining operation in our said land.
7. We have not given consent / sale agreement / gift to anybody for this land here before and we will not give consent / sale agreement / gift to any other person / party in future.
8. This consent for mining is given with our full pleasure and without any undue pressure or fear for the consent.

Place: Ahmedabad

Date:

G.N. Padsala

Gordhanbhai Narshibhai Padsala and Mukundbhai Narshibhai Padsala

Name of Land Owners

NOTARY SHILPA P. SHAH AHMEDABAD CITY GUJARAT STATE REGD. No. 4269 EXPIRY DATE 09/07/2022 GOVT. OF INDIA

BEFORE ME

SHILPA P. SHAH
NOTARY
GOVT. OF INDIA
17-1-19

NOTARY SHILPA P. SHAH AHMEDABAD CITY GUJARAT STATE REGD. NO. 4269 GOVT. OF INDIA

GUJARAT POLLUTION CONTROL BOARD
Paryavaran Bhavan, Sector 10 A, Gandhinagar 382 010
Phone 079 – 23232152, 23241584 Fax: 079 – 23222784 Website: www.gpcb.gujarat.nic.in.

No. GPCB/PH/2023-24/BHV-42/3425 62

19 MAY 2023
Time Limit
By RPAD/H.D.

To,
The Director,
I.A. Division,
Ministry of Environment, Forest and Climate Change
Indira Paryavaran Bhavan,
Aliganj, Jorbagh Road.
New Delhi-110003.

Sub: To furnish a copy of the Public Hearing proceeding.

Ref: [1] Notification no. S.O. 1533 (E) dated September 14, 2006 published by the Ministry of Environment, Forest & Climate Change, Government of India, New Delhi.
[2] MoEF&CC's Notification no. S.O.948 dated 12.6.2007 and the Forest and Environment Department, Government of Gujarat's GR no. ENV/10.2006/176/P, dated 25.7.2007
[3] Request Application of from **M/s Nirma Limited (Mine lease Area: 612.1336 Ha)** to organize Public Hearing.

Sir,

Based on request received for public hearing **M/s Nirma Limited (Mine lease Area: 612.1336 Ha) for Proposed Vangar-Madhiya Limestone Mining – Rate Of Mining 1.6 MTPA, at Villages: Vangar & Madhiya, Taluka. Mahuva, Dist: Bhavnagar,** Public hearing was organized **28/04/2023 at 09:30 Hrs, Venue: Nirma Cement Plant Area, NH 8 E/51, Survey No. 80, Village: Padhiarka, Ta. Mahuva, Dist: Bhavnagar.**

The Public Hearing proceeding along with CD and VCD is enclosed herewith for your information and further necessary action please.

This order is issued after approval of competent authority.

For and on behalf of
Gujarat Pollution Control Board,

(Smt. D. P. Shah)
Senior Environmental Engineer

Encl: As above.(Original copy)

Copy to:

1. District Collector, Collector Office.
   District: **Bhavnagar**... for information Please.
2. The Unit Head, **Bhavnagar.**
   ...along with the original case file of aforesaid applicant for further suitable action.
3. The Regional Officer, **Bhavnagar**..... For further suitable action, if any.
4. **M/s Nirma Limited (Mine lease Area: 612.1336 Ha).**
   At Villages: Vangar & Madhiya, Taluka. Mahuva, Dist: Bhavnagar... Along with a copy of Public Hearing proceeding.
5. File copy.

REGIONAL OFFICE

GUJARAT POLLUTION CONTROL BOARD

PLOT NO: 1616/1617, SWASTIK COMPLEX, NR- VIR MOKHADAJI CIRCLE,
GHOGHA ROAD, BHAVNAGAR-364 001
PHONE: 2566108

PUBLIC HEARING PROCEEDINGS

It is informed that as per the Ministry of Environment, Forests and Climate Change, Government of India, New Delhi vide its notification no. S.O. 1533(E) dated 14/09/2006 and its subsequent amendment S.O. 3067(E) dated 01/12/2009, Public hearing is arranged for M/s. Nirma Ltd. for proposed Lime Stone Mining (Mine Lease Area: 612.1336 Ha. 1.6 MTPA R.O.M) at Village: Vangar & Madhiya, Taluka: Mahuva, Dist.: Bhavnagar which is covered under category A. The public Hearing is held on 28.04.2023 at 09:30 hrs. at the premises of Nirma Cement Plant Area, NH 8 E/51, Survey No. 80, Village: Padhiyarka, Taluka: Mahuva, Dist.: Bhavnagar.

A copy of the draft Environment Impact Assessment report and the Summary of Environment Impact Assessment Report was sent to the following authorities or offices to make available the draft EIA report for inspection to the public during normal office hours, till the Public Hearing is over.

1. The District Collector Office, Bhavnagar
2. District Development Office, Bhavnagar
3. District Industry Centre, Bhavnagar
4. Taluka Development Office, Tal: Mahuva, Dist.: Bhavnagar.
5. Regional Officer,
   Integrated Regional Office, Ministry of Environment, Forests and Climate Change, Room No. 407, Aranya Bhawan, Near CH-3 Circle, Sector – 10A, Gandhinagar, Gujarat – 382010.
6. Regional Office, Gujarat Pollution Control Board, Swastik Complex, Vir Mokhadaji Circle, Bhavnagar-364002.

Other concerned persons having plausible stake in the environmental aspects were requested to send their responses in writing to the concerned regulatory authorities.

The Public Hearing was scheduled on 28.04.2023 at 09:30 hrs. in the premises Nirma Cement Plant Area, NH 8 E/51, Survey No. 80, Village: Padhiyarka, Taluka: Mahuva, Dist: Bhavnagar.

An advertisement in English was published in "The Indian Express" on 26/03/2023 and that in Gujarati in "Sandesh" dated 26/03/2023.

Shri R.K.Mehta (IAS), District Collector and District Magistrate, Bhavnagar presided over and supervised the entire public hearing process.

All arrangements for the public hearing were made in strict compliance of Covid-19 prevention guideline.

A statement showing participants present during the public hearing is enclosed as **Annexure-A.**

REGIONAL OFFICE

GUJARAT POLLUTION CONTROL BOARD

PLOT NO: 1616/1617, SWASTIK COMPLEX, NR- VIR MOKHADAJI CIRCLE,
GHOGHA ROAD, BHAVNAGAR-364 001
PHONE: 2566108

A statement highlighting issues raised by the participants and responded by the representative of the applicant during the public hearing in English and Gujarati Language is enclosed as **Annexure B & B-1** respectively.

Copies of responses received in written from persons having plausible and written representation received before and during Public Hearing in environmental aspects are enclosed herewith collectively as **Annexure C-1 to C-71** and the replies by applicant to the same are enclosed herewith collectively as **Annexure D-1 to D-71.**

Venue: Nirma Cement Plant Area, NH 8 E/51, Survey No. 80, Village: Padhiarka, Ta. Mahuva, Dist: Bhavnagar
Date: 28/04/2023

A.J. Rathod
Regional Officer,
GPCB, Bhavnagar

R. K. Mehta (IAS)
District Collector &
District Magistrate,
Bhavnagar

Encl:

1. **Annexure A, B, B1, C-1 to C-71 & D-1 to D-71 (Hard copy & Soft Copy)**
2. **Video CD of Public Hearing**

REGIONAL OFFICE
GUJARAT POLLUTION CONTROL BOARD
PLOT NO: 1616/1617, SWASTIK COMPLEX, NR- VIR MOKHADAJI CIRCLE,
GHOGHA ROAD, BHAVNAGAR-364 002
PHONE: 2566108

Annexure-A

A Statement showing participants present during the Public Hearing

As per the Ministry of Environment, Forest and Climate Change Government of India, New Delhi vide its Notification no. S.O. 1533 dated Sept.14, 2006; and its subsequent amendment S.O. 3067(E) dated 01/12/2009, Environment Public Hearing is arranged for M/s Nirma Limited (Mine Lease Area 612.1336 Ha) for proposed of Vangar & madhiya Limestone Mining- Rate of Mining 1.6 MTPA at Village: Vanger & Madhiya, Taluka: Mahuva, Dist: Bhavnagar covered under Category "A" as mentioned in their application.

The Environment Public Hearing is being held on 28.04.2023 at 09:30 hours onwards at Nirma Cement Plant Area. NH 8 E/51, Survey No. 80, Village: Vangar, Taluka: Mahuva, Dist. : Bhavnagar.

The statement showing participants present during the Public Hearing is as under:

ભારત સરકાર ના પર્યાવરણ વન અને જળવાયુ પરિવર્તન મંત્રાલય, નવી દિલ્હી ના જાહેરનામા ક્રમાંક : S.O. 1533 તા: 14/09/2006 અને તેના પછીના સુધારા ક્રમાંક એસ.ઓ.૩૦૬૭ (ઈ), તા.૦૧/૧૨/૨૦૦૯ના તેમજ વખતો વખત થયેલ સુધારા તથા જાહેરનામા અંતર્ગત કેટેગરી "એ" માં સમાવિષ્ટ મેસર્સ નિરમા લિમિટેડ (ખાણ લીઝ એરિયા ૬૧૨.૧૩૩૬ હેક્ટર)ની ગામ: વાંગર અને માઢિયા, તા.મહુવા, જી.ભાવનગર ખાતે પ્રસ્તાવિત ગામ: વાંગર અને માઢિયા, લાઈમસ્ટોન માઈનિંગ – રેટ ઓફ માઈનીંગ – ૧.૬ એમ.ટી.પી.એ. માઈનિંગ માટેની અરજી અન્વયે પર્યાવરણીય લોકસુનાવણીનું આયોજન કરવામાં આવેલ.

પર્યાવરણીય લોકસુનાવણી નિરમા સિમેન્ટ પ્લાન્ટ વિસ્તાર, નેશનલ હાઈવે ૮ ઈ/૫૧, સર્વે નં. ૮૦, ગામ: વાંગરકા, તા. મહુવા, જીલ્લો.ભાવનગર ખાતે તા. ૨૮/૦૪/૨૦૨૩ના રોજ ૦૯:૩૦ કલાકે રાખવામાં આવેલ.

જાહેર લોક સુનાવણી દરમ્યાન હાજર રહેલ લોકોની યાદી નીચે મુજબ છે.

Sr. No. ક્રમાંક.	Name & Address નામ અને સરનામું	Signature સહી
૧	[illegible]	
2	[illegible]	

ANNEXURE : XXX Contd.

5206

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
3.	[illegible]	
4.	[illegible]	S.A.M
5.	Shuma Vanakai	SVM
6.	[illegible]	
7.	[illegible]	
8.	[illegible]	
9.	[illegible]	
10.	[illegible]	
11.	[illegible]	
12	[illegible]	
13.	[illegible]	
14.	[illegible]	
15.	[illegible]	
16.	[illegible]	
17.	[illegible]	

5207

ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
18.	શિવાભાઈ પરાભાઈ	
19	ઓલા હિમેશા ભાઈ. પી	હિમેશા. પી. ઓલા
20.	ભરૈયા અંબા - 57	ભરૈયા અંબા - 57
21.	વાઁકાળા ભરત. 21	
22.	સોલંકી દશરથ B	સોલંકી દશરથ
23	રબારી મુકેશ ભગવાનભાઈ	રબારી મુકેશ ભગવાનભાઈ
24.	કેડલા રમેશ. એમ.	કેડલા રમેશ. એમ.
25.	Sankhla bhavesh. b	Vasugar
26.	mAruwAnA VIPUL R	મારવાડી વિપુલ ર.
27.	રામાભાઈ વાંકાળા	વાગર
28.	VVM તેરૈયા	ખંભાળા
29.	Rajiv. makwana	
30.	શાંતિલાલ. જે. ગોલીયા	
31.	વેલજી ભાઈ. પી. સોંદરવા	
32.	મકવાણા જોષના	વાગર

ANNEXURE : XXX Contd.

5208

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ વિરોધીઓ	Signature સહી
33.	અશોકભાઈ જયંતીભાઈ	
34.	[illegible]	
35.	[illegible]	
36.	[illegible]	
37.	[illegible]	
38.	[illegible]	
39.	[illegible]	
40.	[illegible]	
41.	[illegible]	M.C. Bhaliya
42	[illegible]	
43.	[illegible]	
44.	[illegible]	
45.	[illegible]	
46.	[illegible]	
1		

5209

ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
47.	માધવાણા વિષ્ણુ બારૈયા વિક્રમ સવજીભાઈ	
48.	ભીકીયા મનુ. મુળાભાઈ	Bhikiya Manu
49.	બારૈયા કાળુ ડાયા	
50.	કાંજર ડા ખાંભ.	
51	ભીલ ડિતી.	
52	મકવા. રિપોર્ટ	
53.	બારૈયા કનુભા. બી	K.B. Barayta
54.	ભીલ મધુ. બા	મોમ. બા. ભીલ
55.	મકવાણા રઘુલ બી	મકવાણા R.B
56.	ભીલ પરેશ. કે.	ભીલ. પરેશ. કે.
57.	મકવાણારાજુ	મકવાણારાજુ
58.	ચૌહાણ મધુ.	M.D. Chauhan.
59.	જીવરાજ. ભગુ ભાઈ	જે. ભુમાયાણા
60.	હિનેશભાઈ શીવાભાઈ ભીંગરા	ગામ-ડીંગરા
61.	કાળાભાઈ કરસુરભાઈ	ગામ-માંડવા

ANNEXURE : XXX Contd.

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Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
62.	ગોવીંદભાઈ ઉકાભાઈ	
63.	વિઠ્ઠલભાઈ નરશીભાઈ	
64.	મકવાણા વિપુલ S	
65.	મકવાણા વિપુલ બાબુભાઈ	
66.	ધનજી માધુ ગજેરા	
67	કોશીયા ગણપત. એમ.	
68.	ભોળા ભગા મકવાણા	M B J
69	ગગાદા વિક્રમભાઈ આલાભાઈ	
70	[illegible]	
71	દિનેશભાઈ પોપટભાઈ	
72	લક્ષ્મણ ભવાનભાઈ મકવાણા	
73	રમેશ ભાઈ ચોલેરાવાળ ધંધલવા	[illegible] L.U.C
74	રમેશ. ડોબ. રાઠોડ	R-N-D
75	મકવાણા ભાવેશ કુમાર	Bhavesh.K.M
76.	લક્ષ્મણ ભાણજી	

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ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ પુરુષોનાં	Signature સહી
77	[illegible]	[illegible]
78	[illegible]	[illegible]
79	[illegible]	[illegible]
80	[illegible]	[illegible]
81	[illegible]	[illegible]
82	[illegible]	[illegible]
83	[illegible]	[illegible]
84	[illegible]	[illegible]
85	[illegible]	[illegible]
86	[illegible]	
87	[illegible]	
88	[illegible]	[illegible]
89	[illegible]	[illegible]
90	[illegible]	
91	[illegible]	[illegible]

ANNEXURE : XXX Contd 5212

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામું (મોબાઈલ નં.)	Signature સહી
92	બારૈયા ઝવેરાંત ભુવાભાઈ	ઝવેરાંત. ભ. બારૈયા
93	બારૈયા બાલુભા વેલાભાઈ	બેલ.વી.બારૈયા
94	ગોહીલ દાજીભાઈ ચતુરભાઈ	દાજી
95	સોલંકી રમણભાઈ ભીખાભાઈ	R.S. કુદેરી
96	સોલંકી ધુળાભાઈ/ ઘેલાભાઈ	GG કુદેરી
97	બારૈયા મહેશ ભાઈ ભીમા ભાઈ	M.B.BARAIYA
98	બારૈયા ભાવેશ ગોરધન	B.R BARAIYA
99	Barayya Vikram R.	Barayya Vikram R.
100	Makwana Vimlesh. I.	Makwana
101	બારૈયા ધ્યાનેશ બી.	ધ્યાને. બી. બારૈયા.
102	ગામ = પીઠવાડા મકવાણા અશોક દેવજી ભાઈ	એ.ડી. મકવાણા
103	બારૈયા ભાવેશ એમ.	L.M.Barvaliya
104	Pinakbhai Kalubhai Bhil	પંકિલ ક.ભ.
105	બારૈયા હિતેશ માવજી ભાઈ	એચ. એમ. બારૈયા
106.	Barayya GOPAL V.	G.V.Barayya

5213

ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ (માયક્રોંગ)	Signature સહી
107	બારૈયા મનીષ માધવજીભાઈ	M. M Barayiya
108	Bhumati Jayesh Jerambhai	J.J Bhayani
109	મેર માધા ચી.	MDMer
110	મેર મેહુલ કે.	mer
111	મેર કિરીટ . બટા	mer
112	ડોબારિયા બાવેશ્રા રમેશ.	રમેશગોપુ Bhuvesh
113	ડોપાળ P. G.	
114	કોયાસિયા વિજય બાબુભાઈ	
115	JOZIYA V.R	
116	Zalee Mehul Mar	
117	ગોહેલ, રામજી ભાઈ	ડોહેલ,
118	રાઠ રોહેલ ગોહિલ	ડોહીલ
119	[ુમલભાઈ ધુંધળ	ધાર
120	ભરતકુમાર જુ. રોલાસા	ભરતકુમાર
121	Shelanu mehul N.	

ANNEXURE : XXX Contd. 5214

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
	ભાવસિંહ પિરોજીરાવ	
122	પિયુષ પી રોમાડિયા	
123	હિમત સાંગાણી	હિમત
124	રામજીભાઈ રામભાઈ કોળાદ	રામજી કોળ
125	વિજયભાઈ બચુભાઈકોટડીયા	
126	પરમાર પંચુ અર્જુ.	પંચુ અર્જુ
127	વાઢી ભાઈ રાઠોડ ભાઈ	
128	નોરૂભાઈ રેમુભાઈ રોમડીયા	નોરૂભાઈ રમેશ
129	ભરતભાઈ મોકુભાઈ ઈંદિયા	B.B.S

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ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
130	ડાંગોરા નરેશ કરશનભાઈ વાંગાર	નરેશ
131	ગાંડેચા લાલજી જીવરાજ ભાઈ પટેલ પરિવારમાંથી	લાલજી ડી ગાંડેચા
132	ભેંજોયા કુલદીપ ભરતભાઈ વાંગાર	કુલદીપ. જી ભેંજોયા
133	કોટકાશીયા અંજલી લીમા કુંવરજી	અંજલી-
134	જોશી માયાબેન કિશન	જોશી માયાબેન
135	ડાંગર પુંજાભાઈ	ડાંગર
136	ભાલોડિયા ભાવિક ભગવાનજી	પટેલ
137	ગાંડેચા વિપુલ લવજીભાઈ	વિપુલ જી
138	ગાંડેચા પ્રકાશ જી ભાવેશ જી ગાંધી ગાંધી	
139	ભરતભાઈ રણછોડભાઈ ગાંધી	ભરતભાઈ
140	રામાણી જુમાભાઈ સોમ	રામાણી જા.સોમ
141	ચુડેશા ભાવેશ ગોરધનભાઈ	ચુડેશા સોમ
142	વાળા કિંજલ ડી.	Vala Kinjal D
143	વાળા પાયલ ડી	Vala Payal D.
144	પાલીબેન પરસોત્તમભાઈ ઈ	પાલીબેન

ANNEXURE : XXX Contd. 5216

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
145	ચૌહાણ લાવુબેન લુખતભાઇ	ચૌહાણ લાવુ લુખત ભા
146	સાંબડ મંજુબેન લીમાભાઇ	
147	જોળીયા ડાયબેન આતુભાઇ	
148	ઝાપા ફોલીબેન દાનાભાઇ	
149	ચૌહાણ કાજલબેન બાધાભાઇ	ચૌહાણ કાજલ બી
150	બાલીયા કાળીબેન કરશનભાઇ	
151	ભાંગરા રાજીબેન ચમનાભાઇ	
152	મકવાણા ગંગાબેન જીવાભાઇ	
153	મકવાણા વસીબાબેન ખોડાભાઇ	
154	કોડીયા સમીતાબેન બાબુભાઇ	
155	મકવાણા વસનબેન ભેમજીભાઇ	
156	મકવાણા ચંદ્રીકાબેન હંસાભાઇ	
157	મકવાણા કિંજલબેન શામજીભાઇ	
158	મકવાણા કૈલાબેન લીમજીભાઇ	
159	કોડીયા ચમુતાબેન હંસાભાઇ	

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ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
160	ડોડીયા રાઘવજી હંમતભાઇ	
161	મારવૈયા હળદીબેન ઘનાભાઇ	
162	સાંચર સોમીબેન રામાંદભાઇ	
163	મકવાણા હર્ષાબેન નાગજીભાઇ	
164	મકવાણા મંજુલાબેન હંમતભાઇ	
165	મકવાણા સુમીતાબેન ખીમજીભાઇ	
166	મકવાણા બેબીબેન હંમતભાઇ	
167	મકવાણા પાયલબેન લીમજીભાઇ	
168	ભરવ લતાબેન દેવાનભાઇ	
169	મકવાણા હંમાબેન રામજીભાઇ	
170	ભરવ બાલુબેન ભુખાભાઇ	
171	રઝિયાબેન દમારભાઇ	
172	દમજુબેન લીલાભાઇ	
173	મનસુખભાઇ કુભાભાઇ જોગીયા કુંઘેરી	મનસુખભાઇ
174	વશરામભાઇ સોમાભાઇ મેણીયા	

ANNEXURE : XXX Contd. 5218

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામું	Signature સહી
175	રામજીભાઈ માધાભાઈ ગોજીયા	
176	ધીરુભાઈ પાંચાભાઈ અમલાણી	ધીરુભાઈ પાંચાભાઈ અમલાણી
177	રાઘુભાભાઈ સામતભાઈ ભાળીયા	રાઘુભાભાઈ સામતભાઈ ભાળીયા
178	[illegible]	[illegible]
179	ભાણજીભા રામજીભાઈ [illegible]	[illegible]
180	[illegible]	K.B.S
181	[illegible]	[illegible]
182	રમેશભાઈ [illegible]	[illegible]
183	લક્ષ્મણભાઈ ખોડાભાઈ વાંકર	
184	નાનજીભાઈ દેવશી	નાનજીભાઈ
185	અમરા રતા વાંકર	અમરા રતા
186	મુળાભાઈ લાખાભાઈ [illegible]	
187	કાળાભાઈ વાંકર	
188	[illegible] વાંકર	
189	[illegible] વાંકર	

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ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામું	Signature સહી
190	નંદલાલ હીરાલાલ ડોબરિયા	
191	લીલાબેન હરજીવન ડોબરિયા	
192	કાળાભાઈ મુળાભાઈ ડોબરિયા	
193	મહારૂકભાઈ પીંગાર	
194	કુલ્લા નાઝ અકબરઅલ્લ પીંગાર	
195	રબ્બલાલ બાબાલાલ કુંદેરી	
196	મગાલાલ સોમાભાલાલ કુંદેરી	
197	ચાંદાળા ઉમેશા કે.	ચાંદાળા ઉમેશા કે.
198	H.N. Gohil.	H.N. Gohil.
199	ગુજરીયા કાંતિ. જી.	ગુજરીયા કાંતિ. જી
200	ભોળાભાઈ દેવકરણ ઉગાભાઈ	ભોળાભાઈ દેવકરણ ઉગાભાઈ
201	કેશાભાઈ કાશીક કેશવાંગર	કેશાભાઈ કાશીક કેશવાંગર

ANNEXURE : XXX Contd. 5220

Sr. No. અનુક્રમાંક નં.	આપનિ) Name & Address નામ અને સરનામુ પરોઠી	Signature સહી
202	[illegible] પાંગર.	
203	[illegible] પાંગર	
204	[illegible]	
205	[illegible] પાંગર	
206	[illegible]	
207	[illegible]	
208	[illegible]	
209	[illegible]	
210	[illegible]	પાંગર
211	આર.કે ઇંગળપા	પાંગર
212	[illegible]	પાંગર [illegible]
213	Pwr. M. Surveyor.	Kunjar.
214	[illegible]	
215	[illegible] પાંગર	[illegible]
216	[illegible] પાંગર	[illegible]

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામું	Signature સહી
217	અપક્ષ) પ્રતિનિધિ જામજી ભાઈ નાનજીભાઈ દેપાણીયા	જીમજી નાનજી
218	શાંતિ ચંદુના કુંપાવા પોગાર	શાંતિ ચંદુ
219	અકબારના કીમાભાઈ દાનાભાઈ પોંગાર	અકબારના
220	અકબારના નાગજુભાઈ નારણભાઈ પોંગાર	નાગજી ભાઈ
221	~~અપક્ષ~~ પ્રાથમિક શિક્ષક સંઘ	DLS
222	ઘુંઘણા કિરણ કરશન પોગાર	[illegible]
223	વશરામભા ના પોગાર	ઘુઘાણા
224	અકબારના પિતા નારણભાઈ પોંગર	અકબારના પિતાશ્રીનો
225	અકબારના ભરતસુત ચતુરભાઈ પોંગર	અકબારના ભરતસુત
226	ઓંડાણા નાથુ ચતુર ભાઈ	ગામ પોંગાર
227	ઘુંઘણા દિલિપ રમેશ લાઈ પોંગર	આ D.P.
228	કિંજારીયા દેવાભાઈ કરશનભાઈ	ગામ પોંગર કે.કે. કિંજારીયા
229	ઘુંઘળવા જટાશંકર હિંમતભાઈ	Dhrumdhalvala
230	ચોરવા ભાઈ ખીમા ભાઈ	ચોરવા ભાઈ ખીમા ભાઈ
231	મકવાણા ગોવાભાઈ નારણભાઈ	

Sr. No. અનુક્રમાંક નં.	માયનિંગ) Name & Address નામ અને સરનામુ (પરચી)	Signature સહી
232	બાબુભાઈ. વાંગાર	
233	બાબુભાઈ બાબુભાઈ. વાંગાર	
234	ભરતભાઈ ભીમાભાઈ. વાંગાર	
235	કિશોરભાઈ માધાભાઈ કટારા વાંગાર	K. M. KAVAD
236	મજુરભાઈ કરમાભાઈ વાંગાર	મજુરકરમા
237	હીમતભાઈ બાબુભાઈ કીડિયા. વાંગાર	
238	રણછોડભાઈ પોપટભાઈ ભાંભળિયા વાંગાર	
239	કરણભાઈ બાબુભાઈ મકવાણા વાંગાર	કરણભાઈબાબુભાઈ વાંગાર
240	હીમતભાઈ નટવરભાઈ રાજગુરૂ વાંગાર	હીમતનાટવરા
241	માયાભાઈ નાનાભાઈ. વાંગાર	
242	પ્રેમજી કાળા વાંગાર	પ્રેમજી કાળા
243	રમેશ નારણ વાંગાર	રમેશ નારણ
244	ગોવિંદભાઈ મનજીભાઈ. કુંવરી	
245	દિનેશભાઈ રામ મનાર	વાંગાર
246	બાબુભાઈ. રામાભાઈ. વાંગાર	

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ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	આપનાર Name & Address નામ અને સરનામુ પરોણી	Signature સહી
247	વાંગાર ઘનશ્યામ બુધાભાઈ સરપંચ.	
248	મરતભાઈ રણછોડભાઈ વાંગાર	
249	વાંગાર	A.b. Jadav
250	હરીભાઈ, વાંગાર	વાંગાર હરીભાઈ
251	મધુભાઈ/ભગવા પરિવારજી	મધુભાઈ
252	લીંબાભાઈ. લીંબાભાઈ	
253	પરેશા મધુભાઈ વાંચા (વાંગાર)	
254	મકુરેશા ભગવાનભાઈ વાંચા (વાંગાર)	
255	વીરા ભાઈ રણછોડ ભાઈ કુછડી	વીરાભાઈ
256	લાલજીભાઈ કુબેરભાઈ ઘુંઘાયા. ગામ. વાંગાર.	
257	ચાંદીયા વલ્લભ ભાનુ વાંગાર	વ. ભેવ ચાંદીયા
258	ભગવાનભાઈ રણછોડભાઈ ગઢવાણ વાંગાર	
259	રેશમાગા રણછોડ કુછડી	રેશમાગારણછોડ
260	રામજી કુરજી વીંજા	
261	ગોવિંદભાઈ શામા	

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
262	આલાભાઈ, વાંગ૨	
263	[illegible]	
264	[illegible]	
265	ગોવા૨ માઈ ૨વા છોડવા ડાંગીયા	ગોવા૨
266	ઓખાભાઈ, ભચુભાઈ કુંઘેરી	
267	કુંઘેરી (નિવૃત્ત શિક્ષક) આયર્વેદ Bambhaniya Khimji B. પિરોધી	Khimji Bambhaniya->B
268	ગંગાબાઈ, ડાંગીયા	
269	ઈશ્વ૨ભાઈ, ડાંગીયા	
270	૨વુભાઈ વાલાભાઈ બાવળ, Padhiyarka Tal. Mahuva	
271	પોપટભાઈ ગોવિંદભાઈ ભ૨વાડ	
272	આણંદ પ્રમોદભાઈ ડાંગીયા,	
273	મકવાણા ક૨શન ૨ામજી નીરમાં માઈનિંગ પ્રમોશન	J. P. Makwana
274	વાંગ૨. શિવાભા ભોજાભાઈ	
275	મોહનભાઈ કુંઘેરી	
276	૨ામાભાઈ સોમાભાઈ	કુંઘેરી

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ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	આપનિંગ Name & Address નામ અને સરનામુ વિરોધી	Signature સહી
277 76	[illegible]	[illegible]
278 77	[illegible]	[illegible]
279 78	[illegible]	[illegible]
280 79	[illegible]	[illegible]
281 80	[illegible]	[illegible]
282 81	[illegible]	[illegible]
283 82	[illegible]	
284 83	[illegible]	
285 84	[illegible]	[illegible]
286 85	[illegible]	[illegible]
287 86	[illegible]	[illegible]
288 87	[illegible]	[illegible]
289 88	[illegible]	[illegible]
290 89	[illegible]	[illegible]
291 90	[illegible]	

ANNEXURE : XXX Contd. 5226

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
292	માયનિંગ વિરોધી	
293	ભાલીયા મગન કું કુંવરજી	ભાલીયા મગન કું
294	ભાલીયા ભાવજી એમ. કુંવરજી	L.M.Bhalgara
295	રમેશ જી. મકવાણા કુંવરજી	રમેશ જી. મકવાણા
296	એ. રમેન ભોળીયા કુંવરજી	એ રમેન ભોળીયા માઇનિંગ વિરોધી
297	એ. જી. ભાલિયા કુંવરજી	એ. જી. ભાલિયા માઇનિંગ વિરોધી
298	એમ જી. ભાંભળીયા વાંગધ્રા	એમ જી. ભાંભળીયા માઇનિંગ વિરોધી.
299	એસ એમ સિસંગી વાંગધ્રા	એસ એમ સિસંગી
300	પરશોતમ ખીમા ભોળીયા ડોળીયા	પરશોતમ ખીમા
301	અરજણ જાદુ ચોહાણ ડોળીયા	A.B. Chauhan માયનિંગ વિરોધી
302	ભગત ગોવિંદ બારૈયા ડોળીયા	ભગત ગોવિંદ બારૈયા
303	રાજુ સામજી મકવાણા	M. Rajput માયનિંગ વિરોધી
304	ધાડા ભાઇ ચુના ભાઇ અકબરિયા	
305	રાજુ ભાઇ. રૂડા ભાઇ. સોસંકી	માયનીંગ. વિરોધી
306	ભીમ જોડા ભાઇ. ભગવાન ભાઇ	માયનીંગ. વિરોધી
307	રૂડા ભાઇ, માતા ભાઇ. માધુ ગોમા.	માયનીંગ વિરોધી

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ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
307 ~~106~~		
308 ~~107~~		
309 ~~108~~		
310 ~~109~~		
311 ~~110~~		
312 ~~111~~		
313 ~~112~~		
314 ~~113~~		
315 ~~114~~		
316 ~~115~~		
317 ~~116~~		
318 ~~117~~		
319 ~~118~~		
320 ~~119~~		
321 ~~120~~		

Sr. No. અનુક્રમાંક નં.	માત્રપોલો Name & Address નામ અને સરનામુ પરોપીસો	Signature સહી
322 ~~321~~	વાંગર મફાભુગા મફાભુગાભાઈ વાકાભાઈ	
323 ~~322~~	કુંઢાળાનાં. વાળા મહાવીરસિંહ દીરૂભા	
324 ~~323~~	કુંઢરી ભંતીબા સિધ્ધરાજ વાકુભા	ભંતીબા સિધ્ધરાજ
325 ~~324~~	કુંઢરી મયૂરભાઈ કરશનભાઈ.	
326 ~~325~~	વાંગર દેવેશભાઈ વનરાજભાઈ ગોગા	ગોગાભાઈ દેવેશ.બી.
327 ~~326~~	માધવ ભાઈ કાંધલ માલીક	કુંઢરી
328 ~~327~~	માધા ભાઈ કુંઢા ભાઈ	કુંઢરી
329 ~~328~~	ભરત ભીખા ચુડાસમા કલાર્ક	ભરતભાઈ
330 ~~329~~	મયાભાઈ ગુજરડા	મયાભાઈ
331 ~~330~~	ગુજરડા ચીંદાભા ભીખુભા ના	ગુજરડા
332 ~~331~~	ભુપત ભાઈ ભગા ભાઈ	ગુજરડા
333 ~~332~~	ફિરોઝ. રફીક કુંઢાળા	ફિરોઝ. રફીક કુંઢાળા
334 ~~333~~	મનુભાઈ કુંઢાળા-૧ B	મનુભાઈ કુંઢાળા-૧ B
335 ~~334~~	ભરતભાઈ કાનુભાઈ કોળીયા	
336 ~~335~~	માધાભાઈ મેરામભાઈ સમઢીયાળા	

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ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
337 ~~136~~	ગોલકીયા જયકુમારભાઈ કેશુભાઈ ગામ:- માલિયા	
338 ~~137~~	શિયાળ પ્રતિભા કે ગામ દુધરેજ	પ્રતિભા ગોહિ. શિયાળ
339 ~~138~~	શિયાળ અરવિંદ વી ગામ દુધરેજ	અ-વી. શિયાળ
340 ~~139~~	શિયાળ રાજા માર્કંડભાઈ	દુધરેજ
341 ~~140~~	આંબરડા પ્રતિભા વજીરાજ માલા	પાંગળા
342 ~~141~~	પાંગળા વિક્રમસિંહ મયુરધ્વજસિંહ પાંગળા	~~Delt~~
343 ~~142~~	દેવળીયા વિક્રમસિંહ ઉત્તરસિંહ. મહિલા	વિજયા
344 ~~143~~	માનસુખભાઈ કાંજીયા	
345 ~~144~~	પોરબંદર bhanubhanushali.k.p	~~Shl~~
346 ~~145~~	પોરબંદર S.K. PARMAR	S.K
347 ~~146~~	પોરબંદર કેવડા મયુરભાઈ સોલંકી	KR
348 ~~147~~	પોરબંદર GOHIL AJAY	AR
349 ~~148~~	પોરબંદર નાથાણી	
350 ~~149~~	અરવાડ કરશનભાઈ જી ડોબરીયા	
351 ~~150~~	Gamara Vikrambhai S Doliya	GVS

ANNEXURE : XXX Contd... 5230

Sr. No. અનુક્રમાંક નં.	આપનિંગ Name & Address નામ અને સરનામુ પિરોપીસનો	Signature સહી
352 154	ગભાભા મેપા ભેસ ડોળિયા	
353 155	દેવેન્દ્ર પાગલ	દેવેન્દ્ર
354 153	રાજ્યમાલ દુધરેજ	રાજ્યમાલ
355 154	બચુંભા કાળુભા વાંગર	
356 155	રઘુવાડા ભરતભાઈ વાંગર	
357 156	મકવાણા જે. લાંગડોળિયા	જં. સંત
358 154	મકવાણા રમેશ. ડોળિયા	રમેશ, રમેશ.
359 156	જેપાભા સવજી સુખા ડોળીયા	સવજી સુખા
360 159	ધીભાભાઈ. ડોળીયા	
361 160	રાકુભા રાજ, દુધરેજ.	રાકુભા
362 161	રમેશભાઈ. દુધરેજ	
363 162	રામજુભાઈ . ડોળીયા.	
364 163	ભાભાભાઈ. સુખાભાઈ . ડોળીયા	
365 164	ગોવિંદભાઈ મકવાણા, ડોળીયા	
366 165	બરડા તાલુકા ભગવાનજી ડુંગરાણી કરશ	

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ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
367 ~~166~~	લાલજી માઈ કુંદેરી	લાલજી માઈ
368 ~~167~~	મરતભાઈ કોળી	મરતભાઈ
369 ~~168~~	A. U. B. કુંદેરી	A U B
370 ~~169~~	શકરા માઈ કુંદેરી	R.V. Bhalire
371 ~~170~~	લાલજી માઈ કુંદેરી	લાલજી માઈ
372 ~~171~~	મરત માલીયા કુંદેરી	મરત માઈ

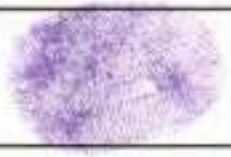
Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ આરોપીનો	Signature સહી
373	મંજુબાબેન કાળુભાઈ	
374	મધુબેન રવજીભાઈ	
375	રામકુંવરબેન ઉકાભાઈ	
376	દેવુબેન મકુભાઈ	
377	કુંવરીબેન વેલાભાઈ	
378	નરશી વેલજી ચૌહાણ	
379		
380	[illegible]	
381	મોહન ભાઈ ઉકા ભાઈ	
382	ઉકા ભાઈ/ [illegible]	
383	[illegible]	
384	[illegible]	
385	[illegible]	
386	[illegible]	
387	[illegible]	

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ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ પિરોધીયો	Signature સહી
388	ગઠેલાલ માકુમાર પરેડ	ગઠેલાલ માકુમાર
389	કુંધાભાઇ હિંમત, ભાવ પાંગાર	Dhk. C.
390	રાયસર ગોલ્ડા. ટ્રસ્ટ પાંગાર	
391	રબારી વિવેક વિ પાંગાર	
392	મકવાણા રૌકાભે. વેલા ભાવ પાંગાર	
393	કમલેશભાઇ કેશુભાઇ ચૌહાણ પાંગાર	
394	વેકરિયા મનિષકુમારભાઇ મોરિયા	
395	જોલિયા મયુર છગનભાઇ મોલિયા	Joliya
396	આર. કે. મા પંકી ગુજરાત	Rmc કાર્યાલય.
397	કેતનભાઇ ભારૈયા પાંગાર	S. V. ભારૈયા
398	Shreyas Bhanabhai Bhatt કુંધણી	J.P. Bhatt
399	પાટણી માર માવજી ભાઇ કુંધણી	
400	વાઘાભાઇ ખાડાભાઇ ચોમડા	
401	ગોરૂ ભાઇ ભગવાન ભાવા	ગોરૂ ભાઇ ભગવાન
402	કિશોર ભાઇ ધીરૂભાઇ ભરવાડ પરમા	

ANNEXURE : XXX Contd. 5234

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
403 ~~37~~	કુમારભાઈ ગુલાબભાઈ કુંદેરી	
404 ~~32~~	જીણાભાઈ નાથાભાઈ વાંક	
405 ~~33~~	કુંદેરી અમરાપરા	માધાભાઈ વિરોજા
406 ~~38~~	કુંદેરી વિક્રમભાઈ રાજાભાઈ	માધાભાઈ વિરોજા
407 ~~34~~	પરશોત્તમભાઈ જસા ગોટ	ગોંદરીયા
408 ~~35~~	રાજેશ ભીખા કોંદરીયા	
409 ~~39~~	VIPUL Hasubhai Chhelana MAPHIYA	
410 ~~36~~	ગોવિંદસિંહ કે. રાણા કુંદેરી-2	ગોવિંદસિંહ
411 ~~36~~	લખમણ કુંદેરી	લખમણ
412 ~~40~~	ભાનુબેન કુંદેરી	Bhanuben. K.
413 ~~42~~	ભાણજીભાઈ પ્રેમજીભાઈ ખાટરા	કુંદેરી મધ્યમવાડ
414 ~~42~~	મહેન્દ્રભાઈ ગોવિંદભાઈ કુંદેરી	કુંદેરી
415 ~~43~~	કુંવરબેન ભગવાન કુંદેરી	

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ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
416	[illegible] પટેલ	
417	[illegible]	
418	[illegible]	
419	[illegible]	
420	[illegible]	
421	[illegible]	
422	[illegible]	
423	[illegible]	
424	[illegible]	
425	[illegible]	
426	[illegible]	
427	[illegible]	
428	[illegible]	
429	[illegible]	
430	[illegible]	

ANNEXURE : XXX Contd.

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Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
431	[illegible]	
432	[illegible]	
433	[illegible]	
434	[illegible]	
435	[illegible]	
436		
437	[illegible]	
438	[illegible]	
439	[illegible]	
440	[illegible]	
441	[illegible]	
442	[illegible]	
443	[illegible]	
444	[illegible]	
445	[illegible]	

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ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
446	[illegible]	[illegible]
447	[illegible]	[illegible]
448	[illegible]	[illegible]
449	[illegible]	[illegible]
450	[illegible]	[illegible]
451	[illegible]	[illegible]
452	[illegible]	[illegible]
453	[illegible]	[illegible]
454	[illegible]	[illegible]
455	[illegible]	[illegible]
456	[illegible]	[illegible]
457	[illegible]	[illegible]
458	[illegible]	[illegible]
459	R G. Bhadiyadra	[illegible]
460	MUKESH. M	[illegible]

ANNEXURE : XXX Contd. 5238

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
461	ચીમા ભાઇ કુરા ભાઇ	કુંઘેરી
462	માવજી ભારદા	કુંઘેરી
463	હંસાબહેન/રમેશભાઈ	કુંઘેરી
464	પટેલ મા કાળા	કુંઘેરી
465	અરવિંદ પાબા	કુંઘેરી
466	ભારુબા રાયધ	પટેલમા
467	SVA	વાંઝર
468	ઝવેરી	વાંઝર
469	મામા માધ માટલ	કુંઘેરી
470	ભરમા રબારીકા	કુંઘેરી
471	VG Bhaliya	કુંઘેરી
472	N.M. Jokhiya.	કુંઘેરી
473	રામાણ સહીત. ગી.	કુંઘેરી
474	લાંગરા ભાવેશ. ક	Bhavesh કુંઘેરી.
475	ગુજરીયા ખુમાણ કાળાભાઈ	કુંઘેરી

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ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
476	બારૈયા મહિન નીમજુભાઇ દુધરેજ	M.B. બારૈયા
477	બારૈયા ચોગોશા મુળાભાઇ દુધરેજ	
478	બારૈયા કેતન માયાભાઇ દુધરેજ	Kan. Baraiya
479	બાંભણિયા બટુક કાળાભાઇ	
480	બાંભણિયા પ્રવિણ કાળાભાઇ	પ્રવિણ. બ
481	મુળીપરાની ચી પંચ	પી.પી.પંચ
482	ભિખાભાઇ ભગાભાઇ બારૈયા	ભીખા ભ બારૈયા
483	મહેશ ભરતભાઇ નીમાભાઇ	
484	ગોહેલ કમાભાઇ ભોળાભાઇ	કુમારભાઇ
485	દુધરેજ પંચ ભાઇ રૂપાભાઇ	પ્રેમાભાઇ
486	Barajiya VIPUL Punambhai દુધરેજ	V.P. Barajiya
487	Barajiya Bharat - D.	Barajiya
488	મહેશ વિપુલ. બી	Vipul.S
489	ધાંધલ નાનજીભાઇ	નાનજીભાઇ
490	ધાંધલ ચંદુભાઇ	

ANNEXURE : XXX Contd. 5240

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
491	[illegible]	[illegible]
492	[illegible]	[illegible]
493	[illegible]	[illegible]
494	[illegible]	[illegible]
495	[illegible]	[illegible]
496	[illegible]	[illegible]
497	[illegible]	[illegible]
498	[illegible]	[illegible]
499	[illegible]	[illegible]
500	[illegible]	[illegible]
501	Nitish Bombhaniji	Malwa
502	Jaydip Thesia	Malwa
503	Joiiya Ashok S.	[illegible]
504	Joiiya Bhavesh m.	[illegible]
505	[illegible]	[illegible]

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ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
506	Jotiya. A. B.	
507	Shyam Gopal Q.	
508	chauhan Vikram	
509	[illegible]	
510	[illegible]	
511	[illegible]	
512	[illegible]	
513	[illegible]	
514	[illegible]	
515	Jotiya Bridhas	
516	[illegible]	
517	[illegible]	
518	Jotiya [illegible]	
519	[illegible]	
520	[illegible]	

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
ખો ગયો 521	[illegible]	[illegible]
ઓફાસ્ત 522	[illegible]	[illegible]
523	[illegible]	[illegible]
524	[illegible]	[illegible]
526	ASHISH DESAI Nirma Ltd	[illegible]
527	Tejal Patel Nirma Ltd	[illegible]
528	AJAY KHUSHU NIRMA LTD	[illegible]
529	G. J. ADROJA Nirma - Sankem	[illegible]
530	D.G. Jakhade Nirma - Khanpur	[illegible]
531	K. N. Patel consultant mines Nirma Ltd.	[illegible]
532	Mehul Sharma, Nirma Ltd. Geologist	M. S. Sharma.
533	Shailendra Kumar Soni Geologist, Mining Consultant Jodhpur	[illegible]
534	Gaurav Gadani, Nirma Ltd Ahmedabad	Gaurav
535	Harsh J. Bhansur, Nirma Ltd. Porbundar	[illegible]
536	Kalpesh. V. Trivedi Nirma Ltd. Dharnagar	[illegible]

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ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામું	Signature સહી
537	Dr K.C. PATHAK NIRMA-BHAVNAGAR	
538	Govind G. Khalas Nirma Ltd. Ahmedabad	
539	Khushali Oza Nirma Ltd. Ahmedabad	K.D.029
540	Dr. S.K. Jain GWMICC (P) Ltd.	
541	UMESH BHAVSAR NIRMA LTD A'BAD	
542	Prabhat kumar Nirma Ltd R & D Laboratory	
543	Sudharsu Kumar Dash CEMC Pvt. Ltd.	
544	[illegible] PATEL NIRMA LTD AHMD	
545	Bhereli Tanmu Nirma Ltd. Ahmedabad	
546	Dr. G. Megha shyam GWMICC P.Ltd	
547	[illegible]	
548	Nilesh K. Pandya	
549	Paresh Rathod	
550	[illegible]	
551	[illegible]	

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામું	Signature સહી
552	કે.બી. શેલાણા,	K.B. Shelana
553	પોલવાડ ઘાંચણ	
554	B.N. Shelana	
555	ભગવતી ભાઈ ભાંગરા	A.A. Bhangra
556	માઈનીંગ ફિઝિયા ચાપડેનોબોર્ડ	
557	ઉર્વેશ ગાંધી	U.S
558	Rohan Shah	
559	[illegible]	
560	Chetan	
561	શેલાણા રવિ બી.	Ravi
562	[illegible]	
563	[illegible]	
564	[illegible]	
565	[illegible]	
566	ભગત. R. ચૌહાણ	

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ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામું પુરુષ/સ્ત્રી	Signature સહી
567 16	[illegible]	[illegible]
568 17	[illegible]	
569 18	[illegible]	
570 19	[illegible]	
571 20	[illegible]	
572 21	[illegible]	
573 22	[illegible]	
574 23	[illegible]	
575 24	[illegible]	
576 25	[illegible]	
577 26	[illegible]	
578 27	[illegible]	
579 28	[illegible]	
580 29	[illegible]	
581 30	J.S. Jolly	

ANNEXURE : XXX Contd.

5246

Sr. No. અનુક્રમાંક નં.	Name & Address (માત્ર જોડણી) નામ અને સરનામું	Signature સહી
582 34	[illegible]	
583 35	[illegible]	
584 36	[illegible]	
585 37	[illegible]	[illegible]
586 38	[illegible]	
587 39	[illegible]	
588 40	[illegible]	[illegible]
589 41	[illegible]	
590 42	[illegible]	
591 43	[illegible]	
592 44	[illegible]	[illegible]
593 45	[illegible]	[illegible]
594 46	[illegible]	[illegible]
595 47	[illegible]	[illegible]
596 48	[illegible]	[illegible]

5247

ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address (Capital) નામ અને સરનામું (Capital)	Signature સહી
597 46		
598 47		
599		
500		
601		
602		
603		
604		
605		
606		
607		
608		
609		
610		
611		

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામું	Signature સહી
612	[illegible]	
613	[illegible]	
614	[illegible]	
615	[illegible]	
616	[illegible]	
617	[illegible]	
618	[illegible]	
619	[illegible]	
620	[illegible]	
621	[illegible]	
622	[illegible]	
623	[illegible]	
624	[illegible]	
625	[illegible]	
626	[illegible]	

5249

ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામું	Signature સહી
627 76		
628 77		
629 78		
630 79		
631 80		
632 81		

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામું (મોટા અક્ષરે)	Signature સહી
633	Bhimdeb Vasi Gujarat Samachar Patrakar Sangh Press Reporter	
634	[illegible]	
635	[illegible]	
636	[illegible]	
637	[illegible]	
638	R.K. Chauhan [illegible]	R.K.C
639	[illegible]	[illegible]
640	[illegible]	
641	SANKHAT GHANSHYAM.	G.N. Sankhat
642	[illegible]	B.K.S
643	[illegible]	
644	[illegible]	J.K. Sankhat
645	[illegible]	A.L. Sankhat
646	[illegible]	[illegible]
647	[illegible]	[illegible]

5251

ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ મીટીંગ	Signature સહી
648	M.B Chauhan	M.Chauhan
649	Sankhat Nitesh. B	N.B.Sankhat
650	[illegible]	[illegible]
651	[illegible]	BM
652	[illegible]	[illegible]
653	[illegible]	Shital B.S
654	વિપુલ કે ચૌહાણ પાણાર	VIPAL
655	Chauhan Vishal B.	Vishal Chauhan
656	Makwana Vipul M.	
657	Jariya Jagdish. S	
658	[illegible]	
659	[illegible]	
660	[illegible]	
661	[illegible]	
662	[illegible]	

ANNEXURE : XXX Contd. 5252

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ પરિચિતની	Signature સહી
663 ~~37~~	શૈલેષભાઈ ત્રિવેદી, રાજકોટ	H.R.S.
664 ~~38~~	ડુંગરીયા નિરવાન રાજકોટ.	D.R.R
665 ~~39~~	ભાલોદરા રાજકોટ	ભાલોદરા રાજકોટ
666 ~~34~~	Khambhala Kuran H	KuRan
667 ~~35~~	Thakiya Vijay S.	VSThakiya
668 ~~36~~	M.D. Bhanvadra	M.D.B
669 ~~37~~	Joshi bhupat D.	J.B.
670 ~~38~~	Bhalodia DineshB	D.B.
671 ~~39~~	Jadav Jayesh	Jj
672 ~~40~~	રાજકોટ ભાલોદરા B.A.M	B.A.M
673 ~~41~~	જાદવ રાજકોટ	S.L. Jadav
674 ~~42~~	Vasoya Jadav	V.H. Jadav.
675 ~~43~~	ભલાણી ભરવાડ	ભલાણી ભરવાડ
676 ~~44~~	ઉંધાડ Dr. રાજકોટ.	
677 ~~45~~	રાજકોટ જાદવ રાજકોટ.	

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ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામું	Signature સહી
678		
679		P.K. Mahuliya.
680		
681		
682		M.H. મકવાણા
683		
684		H.G. JADAV
685	PATadvar	
686	Khetana Chamadiya	
687		
688		
689		
690		
691		
692		

ANNEXURE : XXX Contd. 5254

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
693 64	[illegible]	[illegible]
694 62	[illegible]	[illegible]
695 63	[illegible]	[illegible]
696 44	[illegible]	[illegible]
697 65	[illegible]	[illegible]
698 66	[illegible]	[illegible]
699 67	[illegible]	[illegible]
700 68	[illegible]	[illegible]
701 69	[illegible]	[illegible]
702 70	[illegible]	[illegible]
703 71	[illegible]	[illegible]
704 82	[illegible]	[illegible]
705 73	[illegible]	[illegible]
706 74	[illegible]	[illegible]
707 75	[illegible]	[illegible]

5255

ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામું	Signature સહી
708		
709		
710		
711		
712		
713		
714		
715		
716		
717	CS Samrat	
718	Chetan	
719	Joyoiy Reddy.	
720	Gopal J Bhagwan	
721	V M	
722		

ANNEXURE : XXX Contd. 5256

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામું	Signature સહી
723		
724		
725		
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737		

5257

ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામું	Signature સહી
738 ~~106~~		
739 ~~107~~	S K Sankhat	S.K. Sankhat
740 ~~108~~	Sankhat @ io mail	
741 ~~109~~	R. K	
742 ~~110~~	Darshat ~~Dharmik~~	
743 ~~111~~	Kaushal	
744 ~~112~~	R. K	R. K
745 ~~113~~	UMPSH	US
746 ~~114~~	[illegible]	S.K.M
747 ~~115~~	Hareshi	~~Hareshi~~
748 ~~116~~	Mr. Badshah.	Mr. Badshah
749 ~~117~~	Piyush	P. H
750 ~~118~~	[illegible] Bhavesh	
751 ~~119~~	[illegible]	
752 ~~120~~	Heena	

ANNEXURE : XXX Contd. 5258

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ પુરુષ/સ્ત્રી	Signature સહી
753	Sandeep Kumar	
754	L.K. વ્યાસ	L.K. વ્યાસ
755	એમ એ [illegible]	એમ એ [illegible]
756	એસ કે સક્સેના	એસ કે સક્સેના
757	રાજુભાઈ ભુવાભાઈ સવાણા. વાંગ	રાજુ. ભા. સવાણા
758	ખરેખા ગરેજાભાઇ કેશુભાઈ વાંગ.	
759	કરશનભાઈ નાનભાઈ મકવાણા	ક. એન. મકવાણા
760	ધર્મેશભાઈ	
761	Vallabhi V. Makwana	
762	બાબુ ભર ગજ્જાભાઈ	[illegible]
763	રમેશભાઈ પીપા ભાવે	મેર
764	ગાયત્રી ભાવિક રાજગુ	
765	મયુર ભુ ભાઇ કુદાભાઇ [illegible]	[illegible]
766	વેજાભાઈ	
767	કિરણભાઈ રાણાભાઈ ચિખાળ ~~કેશુ કુરશાલ, લાદુ~~	પાંગળ

5259

ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામું	Signature સહી
768	[illegible]	[illegible]
769	[illegible]	[illegible]
770	[illegible]	V
771	[illegible]	[illegible]
772	[illegible]	[illegible]
773	[illegible]	[illegible]
774	[illegible]	[illegible]
775	[illegible]	
776	[illegible]	
777	[illegible]	[illegible]
778	[illegible]	[illegible]
779	[illegible]	[illegible]
780	[illegible]	[illegible]
781	[illegible]	[illegible]
782	[illegible]	[illegible]

ANNEXURE : XXX Contd.

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
783	જયનારાયણ જસુભાઈ ઘુઘવા	જયન જસુભાઈ
784	પોપટલાલ છગનભાઈ ઘુઘવા	પોપટભાઈ
785	ઘુઘવા કલ્પેશભાઈ લાલજીભાઈ	ઘુઘવા કલ્પેશ. લાલ
786	ઘુઘવા કાર્તિક ભગ	Kartik
787	ઘુઘવા મુનેશ કે.	M.D
788	ઘુઘવા રાજેશ લાલજીભાઈ	ઘુઘવા રાજેશ લાલ
789	ઘુઘવા અનિલ કે.	Anylip
790	ઘુઘવા મુકેશ ભગ	Mukesh
791	રાજ્ય કર્મ. ય.	રાજ્ય.કર્મ
792	સંજય પાર્થ ભગ	S. M
793	[illegible]	[illegible]
794	ગગાભાઈ ભગાભાઈ	ગગાભાઈ
795	ભારૈયા ઉમેશ મધુભાઈ	UMB
796	પ્રમુખ પુનેશ ભોળાભાઈ	P.P.B.
797	[illegible]	[illegible]

5261

ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામું	Signature સહી
798 ~~166~~	મનુભા નાદ/રાજલાદ	[illegible]
799 ~~167~~	જે.પી. મકવાણા	[illegible]
800 ~~168~~	Askaran રાજગુ. વિ	[illegible]
801 ~~169~~	[illegible]	[illegible]
802 ~~170~~	[illegible]	[illegible]
803 ~~171~~	Chuhan Jignesh	[illegible]
804 ~~172~~	[illegible]	[illegible]
805 ~~173~~	[illegible]	[illegible]
806 ~~174~~	[illegible]	[illegible]
807 ~~175~~	[illegible]	[illegible]
808 ~~176~~	[illegible]	[illegible]
809 ~~177~~	[illegible]	[illegible]
810 ~~178~~	[illegible]	[illegible]
811 ~~179~~	[illegible]	[illegible]
812 ~~180~~	[illegible]	[illegible]

ANNEXURE : XXX Contd. 5262

Sr. No. અનુક્રમાંક નં.	આપનું નામ અને સરનામું Name & Address	Signature સહી
813 187	[illegible]	
814 188	[illegible]	[illegible]
815 189	[illegible]	[illegible]
816 190	[illegible]	[illegible]
817 191	[illegible]	[illegible]
818 192	[illegible]	[illegible]
819 193	[illegible]	AB Bhalu'ya
820 194	[illegible]	[illegible]
821 195	[illegible]	P. B
822 196	[illegible]	[illegible]
823 197	[illegible]	[illegible]
824 198	[illegible]	[illegible]
825 199	[illegible]	[illegible]
826 200	[illegible]	[illegible]
827 201	[illegible]	[illegible]

5263

ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
828 ~~148~~	પરાજીભાઈ ઠા. ઠાકોર	
829 ~~147~~	પરબતભાઈ કાળાભાઈ	
830 ~~146~~	કરશન માધુ ગણા માધ કોળાપ	K.G.S
831 ~~149~~	ભાવેશભાઈ બેચર ભાઈ જોગીયા	જી.બી. જોગીયા
832 ~~200~~	પ્રેમજીભાઈ ગીગાભાઈ ડાભાણ	ડોબીયા
833 ~~201~~	મુકેશભાઈ બચુભાઈ સુડાસમા	ભાલડી
834 ~~202~~	રામજી ભાઈ. બી	ભીમડી,
835 ~~203~~	ગણપતભાઈ અંબારામ પટેલ	ભીમડી
836 ~~204~~	ગોવિંદ ભગવા. બી	પટેલીયા
837 ~~205~~	મુંજાભાઈ કરમણભાઈ	કટોશી.
838 ~~206~~	ઠાકોર ભોજક	ડોબીયા
839 ~~207~~	ડાભાણ ગોગર	ડોબીયા
840 ~~208~~	ભાવેશભાઈ લાખાભાઈ	
841 ~~209~~	ગોવિંદ ભાઈ ભગાભાઈ	
842 ~~210~~	ખોડાભાઈ ગોપાભાઈ ગામોલ	

ANNEXURE : XXX Contd. 5264

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
843 ~~711~~	આપનિંગ પિરોઝીરાવો કાલિદાસભાઈ દુકાનવાળા કોકીલાબા	[illegible]
844 ~~712~~	[illegible]	
845 ~~713~~	[illegible]	
846 ~~714~~	[illegible]	
847 ~~715~~	[illegible]	
848 ~~716~~	[illegible]	
849 ~~717~~	[illegible]	
850 ~~718~~	[illegible]	
851 ~~719~~	[illegible]	
852 ~~720~~	[illegible]	
853 ~~721~~	Shanti Lalubhai Mabbani	[illegible]
854 ~~722~~	[illegible]	
855 ~~723~~	[illegible]	
856 ~~724~~	[illegible]	
857 ~~725~~	C.D.B Hall	

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ANNEXURE : XXX Contd...

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
858 ~~226~~	[illegible] પરોણીયો	
859 ~~227~~	[illegible]	
860 ~~228~~	[illegible]	
861 ~~224~~	[illegible]	[illegible]
862 ~~230~~	[illegible]	[illegible]
863 ~~231~~	[illegible]	[illegible]
864 ~~232~~	[illegible]	[illegible]
865 ~~233~~	[illegible]	[illegible]
866 ~~234~~	[illegible]	
867 ~~235~~	[illegible]	[illegible]
868 ~~236~~	[illegible]	
869 ~~237~~	[illegible]	
870 ~~238~~	[illegible]	
871 ~~239~~	[illegible]	
872 ~~240~~	[illegible]	[illegible] પરોણીયો

ANNEXURE : XXX Contd. 5266

Sr. No. અનુક્રમાંક નં.	Name & Address નામ અને સરનામુ	Signature સહી
873 ~~241~~	પરેશગીરી	
874 ~~242~~	[illegible]	[illegible]
875 ~~243~~	[illegible]	[illegible]
876 ~~244~~	[illegible]	
877 ~~245~~	[illegible]	
878 ~~246~~	[illegible]	[illegible]
879 ~~247~~	[illegible]	[illegible]
880 ~~248~~	[illegible]	
881 ~~249~~	[illegible]	
882 ~~250~~	[illegible]	
883 ~~251~~	[illegible]	[illegible]
884 ~~252~~	[illegible]	[illegible]
885 ~~253~~	[illegible]	[illegible]
886 ~~254~~	[illegible]	[illegible]
887 ~~255~~	[illegible]	

Annexure-B (ENGLISH)

A statement showing issues raised by the participants and responses by the representative of the applicant during the public hearing

It is hereby informed that as per the Ministry of Environment, Forest & Climate Change, Government of India, New Delhi vide its notification no. S.O. 1533 dated 14th September 2006 and its subsequent amendment S.O. 3067 (E) dated 1st December 2009, Public Hearing is Fixed for M/s Nirma Limited (Mine lease Area: 612.1336 Ha) for Proposed Vangar & Madhiya Limestone Mining – Rate of Mining 1.6 MTPA, at Villages: Vangar & Madhiya, Taluka. Mahuva, Dist: Bhavnagar, covered under Project Category "A" at Nirma Cement Plant Area, NH 8 E/51, Survey No. 80, Village: Padhiarka, Ta. Mahuva, Dist: Bhavnagar on 28/04/2023 at 09:30 hrs under the chairmanship of Shri R.K. Mehta, IAS, District Collector and District Magistrate, Bhavnagar.

Shri A. J. Rathod, Regional officer, Gujarat Pollution Control Board, Bhavnagar and representative of the Member Secretary, Gujarat Pollution Control Board, Gandhinagar welcomed all people present during the Public Hearing. He outlined various provisions of the EIA Notification and briefed the procedural details for conducting this Public Hearing. He informed that for establishment of new industries and for expansion or change in production or modernization of existing industries/projects, it is mandatory to obtain environmental clearance as per notifications published by Ministry of Environment Forests & Climate Change, New Delhi. He also informed that as per provisions of notifications published by Ministry of Environment Forests & Climate Change, New Delhi, locally affected people would be able to make oral representations at this public hearing whereas other individuals having plausible stake, have to submit their representation in writing which would be included in the proceedings. He also clarified that all the representations made during the public hearing would be included in the proceedings of the hearing.

He mentioned the advertisement for this public hearing was published in Gujarati Daily News Paper "Sandesh" and in English News Paper "Times of India" dated 26/03/2023. He also stated that the copies of executive summary of this proposed project was distributed in the villages within 10 km radius of the proposed limestone mining project.

He further stated that following persons/organizations have submitted objections and suggestions related to the proposed project prior to the public hearing. He said that these objections and suggestions along with reply made by the project proponent will be included in the minutes of the proceedings.

- Shri Mahuva Bandhara Khetiwadi Paryavaran Bachav Samiti, Po:Vangar, Ta: Mahuva, Dist: Bhavnagar
- Vangar Gram Panchayat Office, Ta: Mahuva, Dist: Bhavnagar
- Madhiya Gram Panchayat Office , Ta: Mahuva, Dist: Bhavnagar
- Padiyaraka Gram Panchayat Office, Ta: Mahuva, Dist: Bhavnagar
- Doliya Gram Panchayat Office, Ta: Mahuva, Dist: Bhavnagar
- Dudhala No-1 Gram Panchayat Office, Ta: Mahuva, Dist: Bhavnagar
- Dudheri Gram Panchayat Office, Ta: Mahuva, Dist: Bhavnagar
- Gujarda Gram Panchayat Office, Ta: Mahuva, Dist: Bhavnagar
- Devaliya Gram Panchayat Office, Ta: Mahuva, Dist: Bhavnagar
- Khared Gram Panchayat Office, Ta: Mahuva, Dist: Bhavnagar
- Katpar Gram Panchayat Office, Ta: Mahuva, Dist: Bhavnagar
- Samdhiyala-1 Gram Panchayat Office, Ta: Rajula, Dist: Amreli
- Patwa Gram Panchayat Office, Ta: Rajula, Dist: Amreli
- Gadhda Gram Panchayat Office, Ta: Mahuva, Dist: Bhavnagar
- Sushri Shantuben Narshibhai Chauhan, Member, District Panchayat Electoral Board, Dist: Bhavnagar
- Shri Mohanbhai Hamirbhai Makwana, President, Shri Mahuva Taluka (Rural), BJP, Dist: Bhavnagar
- Sushri Anjuben Ghelabhai Makwana, President, Taluka Panchayat, Ta: Mahuva, Dist: Bhavnagar
- Shri Vitthalbhai Madhubhai Vadhela, Chairman, Executive Committee, Ta: Mahuva, Dist: Bhavnagar
- Shri Bharatbhai Naranbhai Shiyal, Member, 9-Dudheri Taluka Panchayat Constituency, Ta: Mahuva, Dist: Bhavnagar
- Shri Chhaganbhai Nanbhai Bhalia, Member, 8-Doliya Taluka Panchayat Constituency, Ta: Mahuva, Dist: Bhavnagar
- Shri Ramjibhai Chitharbhai Dolashiya, 14- Katpar, Taluka Panchayat Constituency, Ta: Mahuva, Dist: Bhavnagar
- Shri Mahesh Pandya, Pariyavarn Mitra, Dist: Ahmedabad
- Shri Vitthalbhai B Solanki, President (Mahuva), Kisan Ekta Samiti, Dist: Bhavnagar
- Shri Sagar Rabari, Trustee, Gujarat Farmers Ekta Manch, Dist: Bhavnagar
- Shri Nitish Bambhaniya, President, Jatayu Nature Club, Mahuva, Dist: Bhavnagar

Then Shri A. J. Rathod, Regional Officer, GPCB, Bhavnagar & Representative of the Member Secretary, GPCB, Gandhinagar has asked representative of project proponent to make the presentation of their proposed project in local language (i.e. Gujarati) after due permission from Shri R. K. Mehta, I.A.S. District Collector & District Magistrate and Chairman of this public hearing.

On behalf of the project proponent, Shri G. J Adroja, Vice President, M/s. Nirma Ltd welcomed all present in public hearing. Thereafter, Ms. Tejalben Patel, Sr. Manager, (Environment), Nirma Ltd, has given an outline of the proposed project through a power point presentation in Gujarati language. In this presentation, she briefed all present about details of project introduction, background, project details, product information, environmental management system, its impacts and proposed controls, project benefits, socio-economic development plan.

After completion of above mentioned presentation, Shri A. J. Rathod, Regional Officer, GPCB, Bhavnagar & Representative of the Member Secretary, GPCB, Gandhinagar has declared the forum open for local public for submissions/objections/suggestions after due permission from Shri R. K. Mehta, I.A.S. District Collector & District Magistrate and Chairman of this public hearing. During the public hearing, public remained present raised questions/suggestions/objections/opinions. The statement showing these representations during public hearing and responses given by Shri Ashish Desai, President (Project), Representative of project proponent, are as under.

Sr No	Name & Village of the person	Issue raised	Response made by Representative of Project
1	**Name:**Hamirbhai Rudabhai Shiyal (Mantri-Shri Mahuva Bandhara Khetivadi Paryavaran Bachav Samiti) **Village:** Vangar	His written submission dated 28/04/2023 was read out literally. The written submission is enclosed herewith as Annexure-C24.	A written response was read out by the project proponent. A written copy of the reply is enclosed as Annexure-D24.
Additionally, Project proponent also informed that as per representations received from GPCB and Collector Office, following four points are common and are the questions of the people of this area.			

(1) About Private Land- Privately owned agricultural land can be purchased and mined by the company with farmer's/land owner's consent only. No land is to be acquired by the Government. If the land once sanctioned on lease by the Government, it doesn't mean that the villagers will lose the land and thus there is no question to migrate.

(2) Salinity Ingress – Mining will only be done by leaving 500 meters from the High Tide Level (HTL) of the sea i.e. in half a km from the HTL,there will be no excavation in that area. There will be no change in the condition of the stone belt preventing salinity. Ground water will not be intersected at any place resulting in no change in groundwater salinity due to mining. Mining will be done with eco-friendly surface miner only. Drilling-blasting will be required only in case of hard rock. Mining will be done as per mining plan approved by Indian Bureau of Mines (IBM).

(3) Regarding Schedule-1 species & wetland- Government of India notify any places as Wetland/Ramsar Convention Site through study. No such site has been notified in or around the mining lease area as per notification of 2022. A conservation plan for wild life has been prepared in consultation with the Forest Department, Government of Gujarat which has been approved by the Principal Conservator of Forests, Government of Gujarat which will be implemented. According to the last 2016 declaration of Important Bird Area (IBA) for migratory birds, this mining lease area is not included in it. Even as per the judgment of the High Court, there is no wetland in this area and the Honorable NGT has also approved the same.

(4) Regarding Environment protection-As you all are concerned about environment, the company is more concerned about the environment and it is our responsibility also. We assure that we are going to fulfil this responsibility sincerely. You can see that the company has invited experts of different subject matter from all over the country for the EIA study. The company has a separate environment department to follow up all matters related to the environment. We are also responsibly improving the environment with the development of industries. Recently the Honourable NGT and Supreme Court have given important reforms to work in Eco Sensitive Zones (ESZ). From my side as well as from the company, we give an assurance that we will not cause any kind of damage to the environment and mining will be done in accordance with environmental regulations. First of all, mining will be started only in approved government waste land; no private land will be grabbed by the company or acquired by the government. With the above guarantee, we are present here to answer any other questions.

2	**Name:**Mohanbhai Makwana (President-Mahuva Taluka Rural-Bhartiya Janata Party) **Village:**Gujarda	His written submission dated 28/04/2023 was read out literally by him. The written submission is enclosed herewith as per Annexure-C29.	Representative of project proponent replied. A detailed written reply is enclosed as per Annexure-D29.
3	**Name**:Bharatbhai Naranbhai Shiyal (Member- Dudheri Taluka Panchayat	The presenter informed that he is a member of Khedoot Ekta Manch & he read out literally the letter dtd.	The Project Proponent informed that all submissions given by the presenter are included in EIA as per EPA Act.

	Constituency) **Village**:Dudheri	28/04/2023 of Khedoot Ekta Manch. The written submission is enclosed as Annexure-C37 of Khedoot Ekta Manch.	In addition, it was also informed to people present that the Ministry of Environment & Forest which gives us the Terms of Reference, for which we have to give proper compliance which covers everything that said by Bharatbhai. He added that Committee of Expert people are verifying application. Then after only they decide for granting environment clearance. A written copy of the reply is enclosed as per Annexure-D37.
4	**Name:**Manishbhai Jitubhai **Village:**Dudheri	He opposed the proposed mining project and told not to destroy Saurashtra's Kashmir.	The benefits of the project were explained by the representative of the project proponent and the guarantee was given to contribute in the development of Mahuva with coordination with villagers.
5	**Name:**Chhaganbhai Nanbhai Bhaliya (Member- Doliya Taluka Panchayat) **Village:** Doliya	The mining lease area granted to the company consists of privately owned agricultural land. Millets, sorghum, vegetables are cultivated in this agricultural land, so such land should not be given.	Representative of the project proponent informed that the land owner who wants to give the land by sale/consent will only be taken by the company for mining.
6	**Name:**Babhmniya Khimjibhai Bhanabhai **Village:**Dudheri	Information sought for species included in Schedule-1. The main occupation of the people here is agriculture and animal husbandry. With the coming of the mining project, both these businesses will be destroyed.	Representative of the project proponent has informed that mining will be done according to the rules of Environment and Mining , hence will cause negligible loss to the both businesses.
7	**Name:** Rameshbhai Bhagabhai Gohil Up-Pramukh, Kisan Morcho **Village:**Vaghnagar	As a representative of Mahuva Municipality, he asked that is it legal to conduct the environmental public hearing of three different mining leases of these seven villages on the same date and at the same place at different times? This point needs to be included in the minutes.	In response, the representative of the project proponent informed that three mining leases have been approved by the Government through separate lease deeds. According to the rules under the Environment Protection Act and its amendments the three environmental hearings of the three mining leases are to be held on the same day and at the same place. The villages included in 10 km of

			all three mining leases are almost the same. According to the Terms of Reference of three mining leases, cumulative impact to be presented when they operate together. So the environmental public hearing of these three has been held on the same date and place.
8	**Name:**Mavjibhai Chauhan on behalf of Shantuben Narsinh Chauhan, Member of Jilla Panchayat Matdar Mandal (Katpar Jilla Panchayat) **Village:** Gujarda	My name is Mavjibhai Dudhabhai Chauhan, resident of village Gujarda & I am representing on behalf of Shantuben Narshibhai Chauhan resident of Katpar district Member of Jilla Panchayat Matdar Mandal & I don't have to say anything in particular but submitting written representation. His written submission is included in Annexure-C32.	The Project Proponent will reply to the letter submitted by the presenter which is enclosed as Annexure-D32.
9	**Name:** Bhaliya Rameshbhai Bhimabhai **Village:** Dudheri	Earlier the leaders here discussed all kinds of issues but why the canal work has not been started in our area which was approved for the cost of 40 crores.	Regional Officer informed that this matter is not related to this project so represent only for environmental impact due to this project.
10	**Name:** Bhikhabhai Valabhai Bhil **Village:** Padhiyarka	Collector Bhavnagar and GPCB officers have come to hear us today. Collector is the King here and we all are here so please take a proper decision in this matter.	Regional Officer informed that represent only for environmental impact due to proposed project.
11	**Name:** Kishangiri Hiragiri Goswami **Village**:Dudheri	There are 7 villages in core zone in which population is around 50 thousand. Only 84 people will get employment opportunity due to this project. Excavation only increases the pollution of the environment, it cannot decrease, the Gujarat Pollution Control Board should take a decision keeping in mind our 50	The project proponent stated that the mining will be done after receiving EC in accordance with environmental laws and regulations. This project will create thousands of indirect employment opportunities.

		thousand people.	
12	**Name:**Rajubhai Chhelana **Village:**Vangar	He presented verbally that there is movement of wild life in the proposed mining area. There are wild animals' corridors which fall under Schedule-1. Lion in this area is taking care of his cubs. This location has 17 km long sweet water bund which is important area for birds as notified by IBA. Large no. of migratory birds spends their time during winter. And efforts are being put to declare this location as Ramsar Site.	A detailed response is already given earlier by the representative of Project Proponent. Even though, it is ensured that the mining work will be done as per Environmental Laws & Regulations.
13	**Name:** Baraiya Bhupatbhai Sukhabhai, on behalf of Rekhaben Baraiya. Sarpanch-Padhiyarka **Village:** Padhiyarka	I am submitting on behalf of Padhiarka Gram Panchayat. It does not make any sense of the Panchayat if all permit of the revenue kasbas are given for mining except of village area. Panchayat is the foundation of the constitution. If the Collector/Government approves all waste land, then what should the Panchayat do? In this area, there was gauchar of Vangar and Padhiarka, which was also converted into waste land by the Government & was given to Nirma. With this project, major farmers of our village will become homeless. Due to this project, the Samdhiyala Bund will get depleted, natural water flow will be diverted, employment will be lost and migratory birds will also not come to the nearby Samdhiyala and Malan Bunds.	The project proponent stated that the Department of Industries and Mines of the State Government takes prior approval of the Central Government before granting mining leases in Lime Stone Bearing Areas. Mineral rights in all types of land are held by the Government. This mining lease area has been approved by Govt. Samdhiyala Salinity Ingress Control Bund is not a part of the mining area and will not be affected by the proposed scheme. Project will generate direct and indirect employment opportunities. This mining lease area is not included as per last 2016 notification of Important Bird Area (IBA) for birds. A conservation plan for wild life has been prepared in consultation with the Forest Department, Government of Gujarat, which has been approved by the Principal Conservator of Forests, Government of Gujarat & the same will be followed.

		Constitutional institutions like Gram Panchayat will also get destroyed due to this project.	
14	**Name:** Shiyal Trikambhai Rasikbhai, on behalf of Manjulaben Ranchhodbhai Dhundhalva, Sarpanch Vangar **Village**:Vangar	His written submission was read out literally. The written submission is enclosed herewith as per Annexure-C54.	The project proponent informed that the written reply will be given for the written representation. Copy of the reply is enclosed as per Annexure-D54.
The Regional Officer said that if there is a similar written representation, it should be submitted to the present officers instead of being read so that new submissions can be heard.			
15	**Name:** Narsinhbhai Mohanbhai Joliya, on behalf of Sonaben Mohanbhai Joliya, Doliya Gram Panchayat **Village:** Doliya	Written submission dated 28/04/2023 of Doliya Gram Panchayat was read out literally. The written submission is enclosed herewith as per Annexure-C61.	Verbal response was given by representative of Project Proponent that written reply will be given to the written submission. A written copy of the reply is enclosed as per Annexure-D61.
16	**Name:** Himmatbhai Danabhai Makwana **Village:**Vangar	When the presenter was reading his written representation dated 28/04/2023 literally, the Regional Officer-GPCB asked to submit written submission instead of reading if representations are identical. The written submission is enclosed herewith as per Annexure-C42.	A representative of the project proponent said that a conservation plan for wildlife has been prepared in consultation with the Forest Department, which has been approved by the Chief Conservator of Forests, Government of Gujarat and will be implemented. The written reply is enclosed as Annexure-D42.
17	**Name:** Devbhati, Gir Nature Club, Mahuva	His written submission of Gir Nature Club dated 28/04/2023 was read out literally. The written submission is enclosed herewith as per Annexure-C25.	Verbal answer was given by representative of Project Proponent that written reply will be given to the written submission. A written copy of the reply is enclosed as per Annexure-D25.
18	**Name:** Purshottam Maganbhai Baraiya (On behalf of Anjuben Ghelabhai Makwana, President Mahuva Taluka Panchayat) **Village:** Dudheri	The written submission of President Mahuva Taluka Panchayat dated 28/04/2023 was read out literally by the presenter. The written submission is enclosed herewith as per Annexure-C41.	Verbal answer was given by representative of Project Proponent that written reply will be given to the written submission. A written copy of the reply is enclosed as per Annexure-D41

During the public hearing, Shri Bharatbhai Naranbhai Shiyal publically asked opinion of the present villagers that whether the land is to be given for mining project of M/s Nirma Ltd & the permission is to be granted to the mining project or not ? In response of that majority of people present in Public Hearing expressed their opposition by raising their hands and voice to give the land to M/s Nirma Ltd and to grant permission.

Shri A.J. Rathod, Regional Officer, repeatedly asked the people present from villages to do representations, if any. However, no further representations were made. He added that during public hearing too some written representations are received which all written representations and replied by project proponent will be included in the proceedings of the hearing. He summarized the entire Public Hearing proceedings.

Then after he thanked all present villagers and with due permission of District Collector and District Magistrate, Bhavnagar, he declared Public Hearing process as completed.

Venue: Nirma Cement Plant Area, NH 8 E/51, Survey No. 80, Village: Padhiarka, Ta. Mahuva, Dist: Bhavnagar
Date: 28/04/2023

A.J. Rathod
Regional Officer,
GPCB, Bhavnagar

R. K. Mehta (IAS)
District Collector &
District Magistrate,
Bhavnagar

એનેક્ષર – બી- ૧ (ગુજરાતી)

લોક સુનાવણીમાં ભાગ લેનાર અસરગ્રસ્ત લોકો દ્વારા ઉઠાવાયેલ મુદ્દા અને પ્રોજેક્ટના પ્રતિનિધિ દ્વારા આપવામાં આવેલ પ્રત્યુતર.

ભારત સરકારના પર્યાવરણ, વન અને જળવાયુ પરીવર્તન મંત્રાલય, નવી દિલ્હીના જાહેરનામા ક્રમાંક: એસ.ઓ. ૧૫૩૩ તા.૧૪/૦૯/૨૦૦૬ અને તેના પછીના સુધારા ક્રમાંક એસ. ઓ. ૩૦૬૭ (ઈ), તા. ૦૧/૧૨/૨૦૦૯ ના તેમજ વખતોવખત થયેલ સુધારાના અનુસંધાને મેસર્સ નિરમા લિમીટેડ (માઈનીંગ લીઝ એરીયા- ૬૧૨.૧૩૩૬ હેક્ટર) ની પ્રોજેક્ટ કેટેગરી 'એ' અંતર્ગતની પ્રસ્તાવિત વાંગર અને માઢિયા લાઈમસ્ટોન માઈનિંગ (પ્રસ્તાવિત રેટ ઓફ માઈનીંગ- ૧.૬ એમ. ટી. પી. એ.) પ્રોજેક્ટની લોક સુનાવણી તા.૨૮/૦૪/૨૦૨૩ ના રોજ ૦૯:૩૦ કલાકે, સ્થળ: નિરમા સિમેન્ટ પ્લાન્ટ વિસ્તાર, નેશનલ હાઈવે- ૮ ઈ/૫૧, સર્વે નં. ૮૦, ગામ: પઢિયારકા, તા: મહુવા, જિલ્લો: ભાવનગર ખાતે માન. જીલ્લા કલેકટર અને જીલ્લા મેજિસ્ટ્રેટશ્રી આર. કે. મહેતા (આઈ.એ.એસ.), ભાવનગરની અધ્યક્ષતા હેઠળ યોજવામાં આવેલ.

શ્રી એ.જે.રાઠોડ, પ્રાદેશિક અધિકારી, જી.પી.સી.બી., ભાવનગર અને સભ્ય સચિવશ્રી, ગુજરાત પ્રદૂષણ નિયંત્રણ બોર્ડ, ગાંધીનગરના પ્રતિનિધિએ લોક સુનાવણી દરમ્યાન હાજર રહેલ સૌને આવકાર્યા અને ઈ.આઈ.એ. નોટીફિકેશન અંતર્ગત વિવિધ જોગવાઈઓ અને લોક સુનાવણી પ્રક્રિયા અંગે માહિતી આપી. તેઓએ ભારત સરકારના પર્યાવરણ, વન અને જળવાયુ પરીવર્તન મંત્રાલય, નવી દિલ્હીના જાહેરનામાઓ અંતર્ગત સમાવિષ્ટ ઉદ્યોગો/ પ્રવૃત્તિઓ માટે, નવા ઉદ્યોગો માટે તથા તેમાં વિસ્તૃતીકરણ કે ઉત્પાદનમાં ફેરફાર કે આધુનીકરણ માટે પર્યાવરણીય મંજુરી મેળવવી જરૂરી છે તે માહિતી આપેલ. તેઓએ જાહેરાત કરેલ કે ભારત સરકારના પર્યાવરણ, વન અને જળવાયુ પરીવર્તન મંત્રાલય, નવી દિલ્હીના જાહેરનામાઓની જોગવાઈઓ અનુસાર સ્થાનિક અસરગ્રસ્ત લોકો સૌપ્રથમ આ સુનાવણીમાં મૌખિક રજૂઆત કરી શકશે, જ્યારે બાજુની લીંક ધરાવતા અન્ય વ્યક્તિઓ તેઓની રજૂઆત લેખિતમાં કરી શકશે જેનો કાર્યવાહી નોંધમાં સમાવેશ કરવામાં આવશે. તેઓએ સ્પષ્ટતા કરી કે સુનાવણી દરમ્યાન રજુ થયેલ બાબતોને આવરી લઈને કાર્યનોંધમાં સમાવેશ કરવામાં આવશે.

તેમણે આજની લોક સુનાવણીની જાહેરાત ગુજરાતી દૈનિક સમાચાર પત્ર "સંદેશ" તેમજ અંગ્રેજી દૈનિક સમાચાર પત્ર "ઈન્ડિયન એક્સપ્રેસ"માં તા. ૨૬/૦૩/૨૦૨૩ના રોજ આપવામાં આવેલ તે બાબતે માહિતી આપેલ. વધુમાં તેઓએ જણાવેલ કે, સદર પરીયોજનાની કાર્યકારી સારાંશની નકલ પ્રસ્તાવિત લાઈમસ્ટોન માઈનિંગ પ્રોજેક્ટની ૧૦ કિલોમીટર ત્રિજ્યામાં આવતા ગામોમાં આપવામાં આવેલ.

તેમણે વધુમાં જણાવેલ કે, આ લોકસુનાવણી પહેલા પ્રસ્તાવિત પ્રોજેક્ટને સંબંધિત નીચે મુજબના વ્યક્તિઓ/સંસ્થાઓ દ્વારા લાંધા-સુચનો રજૂ કરવામાં આવેલ છે જેનો તથા તેના પ્રોજેક્ટ પ્રોપોનેન્ટ દ્વારા કરવામાં આવેલ પ્રત્યુત્તરને આવરી લઈને કાર્યનોંધમાં સમાવેશ કરવામાં આવશે.

- શ્રી મહુવા ખંધારા ખેતીવાડી પર્યાવરણ બચાવ સમિતિ, મુ. વાંગર, તા. મહુવા, જી.ભાવનગર
- વાંગર ગ્રામ પંચાયત કચેરી, તા. મહુવા, જી.ભાવનગર
- માઢીયા ગ્રામ પંચાયત કચેરી, તા. મહુવા, જી.ભાવનગર
- પઢીયારકા ગ્રામ પંચાયત કચેરી, તા. મહુવા, જી.ભાવનગર
- ડોળીયા ગ્રામ પંચાયત કચેરી, તા. મહુવા, જી.ભાવનગર

- દુધાળા નંબર-૧ ગ્રામ પંચાયત કચેરી, તા. મહુવા, જી.ભાવનગર
- દુધેરી ગ્રામ પંચાયત કચેરી, તા. મહુવા, જી.ભાવનગર
- ગુજરડા ગ્રામ પંચાયત કચેરી, તા. મહુવા, જી.ભાવનગર
- દેવળીયા ગ્રામ પંચાયત કચેરી, તા. મહુવા, જી.ભાવનગર
- ખરેડ ગ્રામ પંચાયત કચેરી, તા. મહુવા, જી.ભાવનગર
- કતપર ગ્રામ પંચાયત કચેરી, તા. મહુવા, જી.ભાવનગર
- સમઢીયાળા-૧ ગ્રામ પંચાયત કચેરી, તા. રાજુલા, જી.અમરેલી
- પટવા ગ્રામ પંચાયત કચેરી, તા. રાજુલા, જી.અમરેલી
- ગઢડા ગ્રામ પંચાયત કચેરી, તા. મહુવા, જી.ભાવનગર
- સુશ્રી શાંતુબેન નરશીભાઈ ચૌહાણ,સભ્ય, જીલ્લા પંચાયત મતદાર મંડળ, ભાવનગર,
- શ્રી મોહનભાઈ હમીરભાઈ મકવાણા, પ્રમુખ શ્રી મહુવા તાલુકા ગ્રામ્ય, ભાજપ, જી. ભાવનગર
- સુશ્રી અંજુબેન ધેલાભાઈ મકવાણા, પ્રમુખ શ્રી તાલુકા પંચાયત, મહુવા, જી. ભાવનગર
- શ્રી વિઠ્ઠલભાઈ માધુભાઈ વાઘેલા, ચેરમને શ્રી કારોબારી સમિતિ, મહુવા, જી. ભાવનગર
- શ્રી ભરતભાઈ નાથાભાઈ શિયાળ, સદસ્ય શ્રી, ૯-દુધેરી તાલુકા પંચાયત મતવિસ્તાર, જી. ભાવનગર
- શ્રી છગનભાઈ નાનભાઈ ભાલીયા, સદસ્ય, ૮-ડોળીયા તાલુકા પંચાયત મતવિસ્તાર, જી. ભાવનગર
- શ્રી રામજીભાઈ ચીથરભાઈ ડોળાશીયા, ૧૪- કતપર, તાલુકા પંચાયત મતવિસ્તાર, જી. ભાવનગર
- શ્રી મહેશ પંડ્યા, પર્યાવરણ મિત્ર, જી. અમદાવાદ.
- શ્રી વિઠ્ઠલભાઈ બી. સોલંકી, પ્રમુખશ્રી (મહુવા), કિસાન એકતા સમિતિ, જી. ભાવનગર
- શ્રી સાગર રબારી, ટ્રસ્ટીશ્રી, ગુજરાત ખેડૂત એકતા મંચ, જી. ભાવનગર
- શ્રી નીતીશ ભાંભાણીયા, પ્રમુખશ્રી, જટાયુ નેચર ક્લબ, મહુવા, જી. ભાવનગર

ત્યારબાદ માન. જીલ્લા કલેકટર અને જીલ્લા મેજીસ્ટ્રેટશ્રી તેમજ આ લોક સુનાવણીના અધ્યક્ષશ્રી આર.કે.મહેતા (IAS)ની મંજુરીથી શ્રી એ. જે. રાઠોડ, પ્રાદેશિક અધિકારી, જી.પી.સી.બી., ભાવનગર અને સભ્ય સચિવશ્રી, ગુજરાત પ્રદૂષણ નિયંત્રણ બોર્ડ, ગાંધી-નગરના પ્રતિનિધિ એ પ્રોજેક્ટ પ્રોપોનન્ટને તેમની સૂચિત પરીયોજના વિશે સ્થાનિક ભાષા એટલે કે ગુજરાતીમાં રૂપરેખા રજુ કરવા જણાવેલ.

પ્રોજેક્ટ પ્રોપોનન્ટ વતી શ્રી જી.જે.અટ્રોજા, વાઈસ પ્રેસીડન્ટ, મે. નિરમા લિમિટેડ દ્વારા લોક સુનાવણીમાં હાજર સૌનુ સ્વાગત કરવામાં આવેલ. ત્યારબાદ પ્રોજેક્ટ પ્રોપોનન્ટ મે. નિરમા લીમીટેડમાં સિનિયર મેનેજર (એન્વાયરમેન્ટ) તરીકે ફરજ બજાવતા સુશ્રી તેજલબેન પટેલ દ્વારા ગુજરાતી ભાષામાં પાવર પોઈન્ટ પ્રેઝન્ટેશન દ્વારા પરીયોજનાની રૂપરેખા આપવામાં આવેલ. જેમાં પ્રોજેક્ટનો પરીચય, પૂર્વભૂમિકા, પ્રોજેક્ટની વિગતો, ઉત્પાદન અંગેની માહિતી, પર્યાવરણ વ્યવસ્થાપન પધ્ધતિ, તેની અસરો અને સૂચિત નિયંત્રણો, પ્રોજેક્ટના લાભ, સામાજીક-આર્થિક વિકાસ યોજના અંગે હાજર રહેલ સર્વેને માહિતગાર કર્યા.

પરીયોજના વિશે ઉપરોકત પ્રેઝન્ટેશન પુર્ણ થયા બાદ, માન. જીલ્લા કલેકટર અને જીલ્લા મેજીસ્ટ્રેટશ્રી તેમજ આ લોક સુનાવણીના અધ્યક્ષશ્રી આર. કે. મહેતા (IAS)ની મંજુરીથી શ્રી એ. જે. રાઠોડ, પ્રાદેશિક અધિકારી, જી.પી.સી.બી., ભાવનગર અને સભ્ય સચિવશ્રી, ગુજરાત પ્રદૂષણ નિયંત્રણ બોર્ડ, ગાંધીનગરના પ્રતિનિધિ દ્વારા આ લોક સુનાવણીમાં હાજર સ્થાનિક લોકોને રજુઆતો/વાંધાઓ/સૂચનો માટે મંચ ખુલ્લો મૂક્યો. લોક સુનાવણી દરમ્યાન હાજર લોકો તરફથી પુછવામાં આવેલ પ્રશ્નો/સુચનો/ રજુઆતો/વાંધાઓ/ અભિપ્રાયો રજુ કરવામાં આવેલ. આ રજુઆતો તથા પ્રોજેક્ટ પ્રોપોનેન્ટના પ્રતિનિધિ શ્રી આશિષ દેસાઈ, પ્રેસીડેન્ટ (પ્રોજેક્ટ) ના પ્રત્યુત્તરની વિગતો નીચે પ્રમાણે છે.

ક્રમ	રજુઆત કરનારનું નામ અને ગામ	રજુ કરવામાં આવેલ મુદ્દાઓ	પ્રોજેક્ટ પ્રોપોનેન્ટના પ્રતિનિધિશ્રી દ્વારા આપવામાં આવેલ પ્રત્યુતર
(૧)	શ્રી લમીરભાઈ રૂડાભાઈ શિયાળ, ગામ-વાંગર મંત્રી- શ્રી મધુવા બંધારા ખેતીવાડી પર્યાવરણ બચાવ સમિતિ	રજુઆત કર્તા દ્વારા તેઓની તા.૨૮/૦૪/૨૦૨૩ ની લેખિત રજુઆતને અક્ષરશઃ વાંચી સંભળાવવામાં આવેલ. જે લેખિત રજુઆત આ સાથે એનેક્ષર-C-24 મુજબ સામેલ છે.	પ્રોજેક્ટ પ્રોપોનેન્ટના પ્રતિનિધિશ્રી દ્વારા લેખિત જવાબને વાંચી સંભળાવવામાં આવેલ. જેની વિગતો નીચે મુજબ છે. વિસ્તૃત પ્રત્યુતરની લેખિત નકલ એનેક્ષર-D-24 મુજબ સામેલ છે.

વધુમાં, પ્રોજેક્ટ પ્રોપોનેન્ટના પ્રતિનિધિશ્રી દ્વારા જણાવવામા આવેલ છે કે, જી.પી.સી.બી. અને માન. કલેક્ટર સાહેબ તરફથી જે રજુઆતોની નકલો તેમને મળેલ તે રજુઆતો પૈકી નીચેના ચાર મુદ્દા કોમન છે અને અહીંના વિસ્તારના લોકોના પ્રશ્નો છે.

(૧) <u>ખાનગી જમીન બાબત</u>-ખાનગી માલીકીની ખેતીની જમીન એ જમીન માલીક/ ખેડુતની સંમતિ હશે તો જ કંપની તેને ખરીદી શકશે અને તેમાં માઈનીંગ કરી શકશે અથવા તો સંમતિ હશે તો જ માઈનીંગ કરી શકશે. કોઈપણ જમીનનું સંપાદન સરકારશ્રી દ્વારા કરવામાં આવવાનું નથી. આથી સરકારે લીઝમાં જમીન મંજુર કરી દીધી એટલે ગ્રામજનોની જમીન જતી રહેશે અને ગ્રામજનો એ સ્થળાંતર કરવાનું થશે તેવી અત્રે બાબત નથી.

(૨) <u>સેસેનીટી ઈન્ગ્રેસ એટલે કે ભુગર્ભમાં ખારાશ વધવી</u> – આ બાબત અન્વયે પ્રોજેક્ટ પ્રોપોનેન્ટના પ્રતિનિધિશ્રી દ્વારા જણાવવામા આવેલ કે, દરીયાના હાઈ ટાઈડ લેવલ (HTL) થી ૫૦૦ મીટર છોડીને જ ખાણકામ કરવામાં આવશે એટલે કે HTL થી અડધો કી.મી. વિસ્તારમાં કોઈ જ ખોદકામ આવશે નહીં અને તે માઈનીંગની બહાર છે. તેમજ ઉમેરેલ કે ખારાશને અટકાવતા પથ્થરના બેલ્ટની સ્થિતિમાં કોઈ જ ફેરફાર થશે નહીં, ભુગર્ભ જળને કોઈપણ જગ્યાએ છેદવામાં આવશે નહીં જેના પરિણામે ભુગર્ભ ખારાશમાં માઈનીંગને લીધે કોઈ ફેર પડશે નહીં. વધુમાં ખાણકામ એ ઈકોફ્રેન્ડલી સરફેસ માઈનરથી જ કરવામાં આવશે તથા કોઈ હાર્ડ સ્ટ્રેટા આવે તેવા સંજોગોમાં જ ડ્રીલીંગ-બ્લાસ્ટીંગની જરૂરિયાત રહેશે તથા ઈન્ડીયન બ્યુરો ઓફ માઈન્સ (IBM) દ્વારા મંજુર કરવામાં આવેલ માઈનીંગ પ્લાન મુજબ જ ખાણકામ કરવામાં આવશે.

(૩) <u>શેડ્યુલ-૧ માં સમાવિષ્ટ વન્ય જીવો અને વેટ લેન્ડ બાબત</u>-અભ્યાસ દ્વારા જે પણ જગ્યાઓને વેટ લેન્ડ/રામસર કન્વેનશન સાઈટ તરીકે નોટીફાઈ કરવાની કામગીરી ભારત સરકાર કરે છે તે બાબતે પ્રોજેક્ટ પ્રોપોનેન્ટના પ્રતિનિધિશ્રી દ્વારા જણાવવામા આવેલ કે, ૨૦૨૨ ના જાહેરનામાં મુજબ માઈનીંગ લીઝ વિસ્તાર કે તેની આજુબાજુ આવી કોઈ જ સાઈટ નોટીફાઈડ કરવામાં આવેલ નથી. ગુજરાત સરકારના વન વિભાગ સાથે પરામર્શ કરીને વન્ય જીવો માટેનું સંરક્ષણ યોજના(કન્ઝરવેશન પ્લાન) બનાવવામાં આવેલ છે જેને અગ્રમુખ્ય વન સંરક્ષક, ગુજરાત સરકાર દ્વારા મંજુર કરવામાં આવેલ છે અને તેનો અમલ તેમના દ્વારા કરવામાં આવશે. તેમણે ઉમેરેલ કે યાયાવર પક્ષીઓ વિશે ઈમ્પોર્ટેન્ટ બર્ડ એરીયા (IBA) ના છેલ્લા ૨૦૧૬ ના જાહેરનામાં મુજબ આ માઈનીંગ લીઝ વિસ્તારનો તેમાં સમાવેશ થતો નથી. તથા નામદાર હાઈકોર્ટના ચુકાદા મુજબ પણ આ વિસ્તારમાં

	કોઈ વેટ લેન્ડ આવેલ નથી અને નામદાર NGT એ પણ તે વાતની મંજુરી આપેલ છે. (૪) <u>પર્યાવરણ સંરક્ષણ બાબત-</u> પ્રોજેકટ પ્રોપોનેન્ટના પ્રતિનિધિશ્રી દ્વારા જણાવવામા આવેલ કે, પર્યાવરણની જેટલી ગ્રામજનોને ચિંતા છે તેનાથી વધારે કંપનીને ચિંતા છે જ સાથે તે તેમની જવાબદારી પણ છે તેમ તેમણે ઉમેરેલ. તેઓએ ત્યારાબાદ જણાવેલ કે તેઓ ખાત્રી આપે છે કે આ જવાબદારી તેઓ નિષ્ઠાપૂર્વક નિભાવશે. તેમણે જણાવેલ કે તેમની કંપનીએ દેશભરમાંથી વિષય નિષ્ણાંતો EIA સ્ટડીના અભ્યાસ માટે બોલાવેલ અને તેઓએ અભ્યાસ કરેલ છે, તથા કંપની પાસે એક અલગ પર્યાવરણ વિભાગ છે જે પર્યાવરણને લગતી બધીજ બાબતોનું પાલન કરવામાં આવે છે. તેમને જણાવેલ કે ઉદ્યોગોનો સાથે પર્યાવરણ વધારે સારૂ થાય તે બાબત પણ તેઓ જવાબદારીપૂર્વક નિભાવી રહ્યા છે. વધુમાં તાજેતરમાં નામદાર NGT અને નામદાર સુપ્રીમ કોર્ટ દ્વારા ઈકો સેન્સેટીવ ઝોન (ESZ) માં કામ કરવા માટે મહત્વના સુધારા કરીને ચુકાદો આપેલ છે. પ્રોજેકટ પ્રોપોનેન્ટ તરફથી તેમણે ખાત્રી આપતા જણાવેલ કે, તેમના દ્વારા પર્યાવરણને કોઈપણ પ્રકારનું નુકશાન નહીં થાય અને પર્યાવરણ નિયમોનુસાર જ ખાણકામ તેમના દ્વારા હાથ ધરવામાં આવશે તથા સૌ પ્રથમ મંજુર થયેલ સરકારી પડતર જમીનમાં જ ખાણકામ શરૂ કરવામાં આવશે, કોઈની પણ ખાનગી જમીન કંપની દ્વારા આંચકી લેવામાં આવશે નહીં કે સરકાર દ્વારા સંપાદન કરવામાં આવશે નહીં. ઉપરોક્ત ખાત્રી સાથે અન્ય કોઈ પ્રશ્નનોના જવાબ માટે તેઓ હાજર છે તેમ તેમણે જણાવેલ.		
(૨)	શ્રી મોહનભાઈ હમીરભાઈ મકવાણા, પ્રમુખ મહુવા તાલુકા ગ્રામ્ય-ભારતીય જનતા પાર્ટી, ગામ-ગુજરડા	રજુઆત કર્તા દ્વારા તેઓની તા.૨૮/૦૪/૨૦૨૩ ની લેખિત રજુઆતને અક્ષરશઃ વાંચી સંભળાવવામાં આવેલ. જેની લેખિત રજુઆત આ સાથે એનેક્ષર-C-29 મુજબ સામેલ છે.	પ્રોજેકટ પ્રોપોનેન્ટના પ્રતિનિધિશ્રી દ્વારા પ્રત્યુત્તર આપવામાં આવેલ. વિસ્તૃત પ્રત્યુત્તરની લેખિત નકલ એનેક્ષર-D-29 મુજબ સામેલ છે.
(૩)	શ્રી ભરતભાઈ નારણભાઈ શિયાળ સદસ્ય ભાજપ- દુધેરી તાલુકા પંચાયત મત વિસ્તાર	રજુઆત કર્તા પોતે ખેડૂત એકતા મંચના સદસ્ય હોવાનું જણાવેલ તથા તેમના દ્વારા તા.૨૮/૦૪/૨૦૨૩ ની ખેડૂત એકતા મંચ ની રજુઆતને અક્ષરશઃ વાંચી સંભળાવવામાં આવેલ. જે લેખિત રજુઆત આ સાથે એનેક્ષર-C-37 મુજબ સામેલ છે.	પ્રોજેકટ પ્રોપોનેન્ટના પ્રતિનિધિશ્રી દ્વારા જણાવેલ કે રજુઆતકર્તાશ્રીની જેટલી રજુઆતો છે એટલી રજુઆતોમાં ઈ. આઈ. એ. ની અંદર ઈ. પી. એ. એકટ પ્રમાણે દરેક વસ્તુઓ તેમના દ્વારા રજુ કરવામાં આવેલ છે. વધુમાં તેમને ગ્રામજનોને જણાવેલ કે મિનીસ્ટ્રી ઓફ એન્વાયરમેન્ટ ફોરેસ્ટ મંત્રાલય જેમણે કંપનીને ટર્મસ ઓફ રેફરન્સ (ટી.ઓ.આર.) આપેલ છે, જે મેળવવા માટે રજુઆતકર્તાશ્રી ભરતભાઈએ કહ્યું એ બધી જ વિગતો તેમના દ્વારા અરજી સાથે આપવામાં આવતી હોય છે. તેમણે ઉમેરેલ કે અરજી નજરોનીની બનેલી કમિટી દ્વારા ચકાસવામાં આવતી હોય છે અને ત્યારબાદ જ પર્યાવરણ મંજૂરી આપવા બાબતે તેમના દ્વારા નિર્ણય

			લેવામાં આવતો હોય છે. આમ છતાં રજૂઆતકર્તાશ્રીના પ્રશ્નો નો તેમનાં દ્વારા પ્રત્યુત્તર પાઠવવામાં આવશે તેમ તેમણે જણાવેલ. વિસ્તૃત પ્રત્યુતરની લેખિત નકલ એનેક્ષર-D-37 મુજબ સામેલ છે.
(૪)	શ્રી મનીષભાઈ જીતુભાઈ ગામ: દુધરી	રજૂઆતકર્તા દ્વારા સુચીત માઈનીંગ પ્રોજેકટનો વિરોધ કરવામાં આવેલ અને સૌરાષ્ટ્રના કાશ્મીર મહુવાનો વિનાશ ન કરવા જણાવેલ.	પ્રોજેક્ટ પ્રોપોનેન્ટના પ્રતિનિધિશ્રી દ્વારા પ્રસ્તાવિત યોજનાના આવવાથી થનાર ફાયદાઓ જણાવવામાં આવેલ તથા ગ્રામજનો સાથે મળીને મહુવાના વિકાસમાં યોગદાન આપવા માટે ખાતરી આપેલ.
(૫)	શ્રી છગનભાઈ નાનભાઈ ભાલીયા, ગામ:ડોળીયા સદસ્ય, ભાજપ ડોળીયા તાલુકા પંચાયત મત વિસ્તાર	કંપનીને મંજુર કરવામાં આવેલ માઈનીંગ લીઝ વિસ્તારમાં ખાનગી માલીકીની ખેતીની જમીન આવેલ છે. આ ખેતીની જમીનમાં બાજરો, જુવાર, શાકભાજીની ખેતી થાય છે તેથી આવી જમીન ન લેવી જોઈએ.	પ્રોજેક્ટ પ્રોપોનેન્ટના પ્રતિનિધિશ્રી દ્વારા જણાવવામાં આવેલ કે, જે જમીનમાલીક જમીન વેચાણ/સંમતિથી આપવા માંગતો હશે તેજ જમીન કંપની દ્વારા ખાણકામ માટે લેવામાં આવશે.
(૬)	શ્રી બાંભણીયા ખીમજીભાઈ ભાણાભાઈ, ગામ: દુધેરી	રજૂઆતકર્તા દ્વારા શીડયુલ-૧ માં સમાવિષ્ટ થતા જીવોની માહિતી માંગવામાં આવેલી. તથા તેમને જણાવેલ કે અહીંના લોકોનો મુખ્ય વ્યવસાય ખેતી અને પશુપાલન છે. માઈનીંગ પ્રોજેકટ આવવાથી આ બન્ને ધંધા નાશ પામશે.	પ્રોજેક્ટ પ્રોપોનેન્ટના પ્રતિનિધિશ્રી દ્વારા પર્યાવરણના તથા માઈનીંગના નિયમોનુસાર ખાણકામ કરવામાં આવશે તથા તેથી સદર વ્યવસાયોને નહિવત નુકશાન થશે તેમ રજૂઆત કરેલ.
(૭)	શ્રી રમેશભાઈ ભાગાભાઈ ગોહિલ, ઉપપ્રમુખશ્રી, કિસાન મોરચો, ગામ: વાધનગર	મહુવા નગરપાલિકાના પ્રતિનિધિ તરીકે રજૂઆતકર્તા દ્વારા જણાવેલ કે, આ સાત ગામની જુદી-જુદી ત્રણ માઈનીંગ લીઝની પર્યાવરણીય લોક સુનાવણી એકજ તારીખે અને એકજ સ્થળે જુદા-જુદા સમયે કરવી એ કાયદાનુસાર છે? આ મુદ્દાને મીનીટસમાં સમાવિષ્ટ કરવી જરૂરી છે.	પ્રોજેક્ટ પ્રોપોનેન્ટના પ્રતિનિધિશ્રી દ્વારા જણાવવામાં આવેલ કે,ઉપયુક્ત ત્રણ માઈનીંગ લીઝો સરકારશ્રીએ અલગ-અલગ લીઝ ડીડથી મંજુર કરેલ છે. તેમણે જણાવેલ કે એન્વાર્યમેન્ટ પ્રોટેકશન એકટ હેઠળના નિયમો અને તેના સમયાંતરના બદલાવ મુજબ ત્રણ માઈનીંગ લીઝની ત્રણ પર્યાવરણીય સુનાવણી એકજ દિવસે અને એકજ સ્થળે કરી શકાય. તેમણે ઉમેરેલ કે ત્રણેય માઈનીંગ લીઝના ૧૦ કીલો મીટરમાં સમાવિષ્ટ થતા ગામો લગભગ સરખા છે આથી ત્રણેય માઈનીંગ લીઝના ત્રણ

			ઈ.આઈ.એ. માં ટર્મ્સ ઓફ રેફરન્સ (ટી.ઓ.આર.) મુજબ ત્રણેય માઈનીંગ લીઝો જ્યારે એકી સાથે ચાલે તેની સંયુક્તઅસર રજુ કરવાની રહેતી હોય છે. જે કારણોસર આ ત્રણેયની પર્યાવરણીય સુનાવણી એકજ તારીખે અને સ્થળે રાખવામાં આવેલી છે.
(૮)	ભાજપ કતપર જિલ્લા પંચાયત મતદારમંડળ સદસ્ય સુશ્રી શાંતુબેન નરશીભાઈ ચોલાણ રહે. કતપર વતી શ્રી માવજીભાઈ દુધાભાઈ ચોલાણ ગામ ગુજરડા	માડ઼ નામ માવજીભાઈ દુધાભાઈ ચૌલાણ઼ રહેવાસી ગામ ગુજરડા હુ પોતે શાંતુબેન નરશીભાઈ ચૌલાણ઼ રહેવાસી કતપર જિલ્લા પંચાયત સદસ્ય વતી રજુઆત કરવા આવ્યો છું. અમારા આગેવાનો દ્વારા અહીં રજુઆત કરેલ છે તથા તેમને રજુઆતની નકલ આપેલ. વિશેષમાં મારે કાંઈ કહેવાનું રહેતું નથી. જેને એનેક્ષર C- 32મા સામેલ કરેલ છે.	પ્રોજેક્ટ પ્રોપોનેન્ટના પ્રતિનિધિશ્રી દ્વારા લેખિત જવાબ આપવામાં આવશે. લેખિત પ્રત્યુત્તરની નકલ એનેક્ષર-D-32 મુજબ સામેલ છે.
(૯)	શ્રી ભાલીયા રમેશભાઈ ભીમાભાઈ, ગામ: દુધેરી	અગાઉ અહીં આગેવાનોએ દરેક પ્રકારની ચર્ચા કરેલી પરંતુ અમારા વિસ્તારમાં ૪૦ કરોડના ખર્ચે મંજુર થયેલ કેનાલનું કામ કેમ શરૂ થતું નથી.	પ્રાદેશિક અધિકારી, જીપીસીબી દ્વારા જણાવવામાં આવેલ કે આ રજૂઆત સદર પ્રોજેક્ટને સંલગ્ન ન હોઈ, સદર પ્રોજેક્ટનાં આવવાથી થઈ શકતી પર્યાવરણીય અસરો બાબતે રજૂઆત કરવા માટે જાહેરમાં જણાવેલ.
(૧૦)	શ્રી ભીખાભાઈ વાલાભાઈ ભીલ, ગામ પઢિયારકા	કલેકટર સાહેબ ભાવનગર અને જી.પી.સી.બી.ના સાહેબ આજરોજ અમોને સાંભળવા આવેલ છે. કલેકટર સાહેબ તે અહીંના રાજા છે અને અમે સૌ તેમની પ્રજા છીએ તો આ બાબતે યોગ્ય નિર્ણય લેવા વિનંતી છે.	પ્રાદેશિક અધિકારી, જીપીસીબી દ્વારા જણાવવામાં આવેલ કે સદર પ્રોજેક્ટનાં આવવાથી થઈ શકતી પર્યાવરણીય અસરો બાબતે રજૂઆત કરવા માટે જાહેરમાં જણાવેલ.
(૧૧)	શ્રી કિશનગીરી હીરાગીરી ગોસ્વામી, ગામ: દુધેરી	કોરઝોનમા ૩ ગામ આવેલ છે જેની વસતી આશરે ૫૦ હજારની છે. આ પ્રોજેક્ટના લીધે માત્ર ૮૪ લોકોને રોજગારીની તક ઉભી થશે. ખોદકામ કરવાથી પર્યાવરણના પ્રદુષણમા વધારો જ થાય છે ઘટાડો ન થઈ શકે માટે ગુજરાત પ્રદુષણ નિયંત્રણ બોર્ડ અમારા ૫૦ હજાર લોકોને ધ્યાનમા રાખીને	પ્રોજેક્ટ પ્રોપોનેન્ટના પ્રતિનિધિશ્રી દ્વારા જણાવેલ કે પર્યાવરણીય મંજૂરી મળ્યે, પર્યાવરણ નિયમો અનુસાર જ ખાણકામ કરવામાં આવશે. તથા આ પ્રોજેક્ટ આવવાથી હજારોની સંખ્યામાં પરોક્ષ રોજગારીની તકો ખુલશે.

		નિર્ણય લે.	
(૧૨)	શ્રી રાજુભાઇ જસુભાઇ છેલાણા, ગામ: વાંગર	રજુઆતકર્તા દ્વારા મૌખિક રજુઆત કરેલ છે જેમાં માઇનિંગ માટે ઉપયોગ થનાર વિસ્તાર માં વન્યજીવોનો અવરજવરનો વિસ્તાર છે. આ વિસ્તારમાં અનુસૂચિ-૧ના વન્ય પ્રાણીઓનો કોરિડોર છે. સિંહ આ વિસ્તારમાં મુખ્યત્વે ઉપયોગ પોતાના બચ્ચાના ઉછેર માટે કરે છે. આ વિસ્તારમાં ૧૭ કિમી લાંબો મીઠા પાણીનો બંધારો આવેલો છે. જેને IBA દ્વારા પક્ષીઓ માટે મહત્વનો વિસ્તાર જાહેર કરેલ છે.આ વિસ્તારમાં મોટી સંખ્યામાં યાયાવર પક્ષીઓ શિયાળો વિતાવવા આવે છે. આ વિસ્તારને રામસર સાઈટ જાહેર કરવા માટે પણ પ્રયાસો થઈ રહ્યા છે.	રજુઆતકર્તા દ્વારા પુછવામાં આવેલ તમામ પ્રશ્નોના પરિયોજનના પ્રતિનિધિ દ્વારા અગાઉ વિસ્તૃત જવાબ આપવામાં આવેલ છે આમ છતાં પર્યાવરણના કાયદા અને નિયમ અનુસાર બાધકામ કરવામાં આવશે.
(૧૩)	સુશ્રી રેખાબેન ભુપતભાઈ બારૈયા, સરપંચ – પઢિયારકા વતી શ્રી બારૈયા ભુપતભાઈ સુખાભાઈ, ગામ: પઢિયારકા	હું પઢિયારકા ગ્રામ પંચાયત વતી રજુઆત કરૂ છું. અમારા ગામના ગામતળ સિવાયના તમામ રેવન્યુ કસબા માટે માઈનીંગની પરવાનગી આપવાથી પંચાયતનો કોઈ અર્થ રહેતો નથી.પંચાયત એ બંધારણનો પાયો છે. પડતર જમીનને કલેકટર/સરકાર બારોબાર મંજુર કરી દે તો પંચાયતને શું કરવાનું?આ વિસ્તારમા વાંગર અને પઢિયારકાનુ ગૌચર હતુ જેને પણ સરકારી પડતરમા ફેરવી સરકાર દ્વારા મે. નિરમાને આપવામા આવ્યુ. આ યોજનાથી અમારા ગામના મોટાભાગના ખેડુતો ખાતેદાર મટી જશે. આ યોજનાને લીધે સમઢીયાળા બંધારો પુરાઈ જશે, પાણીના વહેણ બદલાઈ જશે, રોજગાર રહેશે નહીં, તથા નજીકના સમઢિયાળા અને માલણ બંધારામાં પ્રવાસી પક્ષીઓ આવે છે તે આવશે નહીં. આ યોજનાના લીધે ગ્રામ પંચાયત જેવી બંધારણીય સંસ્થા નાશ પામશે.	પ્રોજેક્ટ પ્રોપોનેન્ટના પ્રતિનિધિશ્રી દ્વારા જણાવેલ કે રાજય સરકારના ઉદ્યોગ અને ખાણ વિભાગે લાઈમ સ્ટોન બેરીંગ એરીયામાં માઈનીંગ લીઝ આપતા પહેલા કેન્દ્ર સરકારની પૂર્વ મંજુરી મેળવવાની હોય છે. તમામ પ્રકારની જમીનોમાં ખનીજના અધિકારો સરકાર પાસે હોય છે. આ માઈનીંગ લિઝ વિસ્તાર સરકારશ્રી દ્વારા મંજુર કરવામા આવેલ છે. સમઢીયાળા સાર પ્રસાર અટકાવ બંધ એ માઈનીંગ વિસ્તારનો ભાગ નથી, સુચિત યોજનાથી તેને કોઈ અસર થશે નહિ. આ યોજનાને લીધે પ્રત્યક્ષ અને પરોક્ષ રીતે રોજગારીની વિપુલ તકો ઉભી થશે. પક્ષીઓ વિશે ઈમ્પોર્ટન્ટ બર્ડ એરીયા (IBA) ના છેલ્લા ૨૦૧૬ ના જાહેરનામાં મુજબ આ માઈનીંગ લીઝ વિસ્તારનો તેમાં સમાવેશ થતો નથી. ગુજરાત સરકારના વન વિભાગ સાથે પરામર્શ કરીને વન્ય જીવો માટેની સંરક્ષણ યોજના (કન્ઝર્વેશન પ્લાન) બનાવવામાં આવેલ છે જેને અગ્રમુખ્ય વન સંરક્ષક, ગુજરાત સરકાર દ્વારા મંજુર કરવામાં આવેલ છે અને

			તેનો અમલ કરવામાં આવશે.
(૧૪)	શ્રીમતિ મંજુલાબેન રણછોડભાઈ ધુંધવા – સરપંચ, વાંગર વતી શ્રી શિયાળ ત્રીકમભાઈ રશીકભાઈ ગામ વાંગર	રજુઆત કર્તા દ્વારા તેઓની વાંગર ગ્રામ પંચાયત વતી તા.૨૮/૦૪/૨૦૨૩ ની લેખિત રજુઆતને અક્ષરશઃ વાંચી સંભળાવવામાં આવેલ. જેની લેખિત રજુઆત આ સાથે એનેક્ષર-C-54 મુજબ સામેલ છે.	પ્રોજેક્ટ પ્રોપોનેન્ટના પ્રતિનિધિશ્રી દ્વારા જણાવવામાં આવેલ કે લેખિત રજુઆતનો લેખિત જવાબ આપવામાં આવશે. જેનાં પ્રત્યુતરની લેખિત નકલ એનેક્ષર-D-54 મુજબ સામેલ છે.
પ્રાદેશિક અધિકારીશ્રી, જીપીસીબી એ જનસમુદાયને જણાવેલ કે એક સરખી જ જો રજુઆત હોય તો વાંચવાનાં સ્થાને તેમની કચેરીનાં હાજર અધિકારીઓને જમા કરાવી શકશો. આમ કરવાથી કોઈ લોકોને ઉક્ત મુજબ સમાન રજુઆત સિવાયની કોઈ રજૂઆત કરવાની રહેતી હોય તો તે ધ્યાને લઈ શકાય.			
(૧૫)	ડોળીયા ગ્રામ પંચાયત – સુશ્રી સોનાબેન મોહનભાઈ જોળીયા વતી શ્રી નરશીભાઈ મોહનભાઈ જોળીયા ગામ ડોળીયા	રજુઆત કર્તા દ્વારા તેઓની ડોળીયા ગ્રામ પંચાયત વતી તા.૨૮/૦૪/૨૦૨૩ ની લેખિત રજુઆતને અક્ષરશઃ વાંચી સંભળાવવામાં આવેલ. જેની લેખિત રજુઆત આ સાથે એનેક્ષર-C-61 મુજબ સામેલ છે.	પ્રોજેક્ટ પ્રોપોનેન્ટના પ્રતિનિધિશ્રી દ્વારા જણાવવામાં આવેલ કે લેખિત રજુઆતનો લેખિત જવાબ આપવામાં આવશે. જેની પ્રત્યુતરની લેખિત નકલ એનેક્ષર-D-61 મુજબ સામેલ છે.
(૧૬)	શ્રી હિંમતભાઈ દાનાભાઈ મકવાણા ગામ વાંગર	રજુઆત કર્તા દ્વારા તેઓની તા.૨૮/૦૪/૨૦૨૩ ની લેખિત રજુઆતને અક્ષરશઃ વાંચી રહેલ હતા. આ દરમિયાન આ રજુઆતની નકલ તેમના પાસે હોઈ પ્રાદેશીક અધીકારીશ્રી, જીપીસીબી દ્વારા અગાઉ કરવામાં આવેલ રજુઆત મુજબની જ રજુઆત હોઈ તો અક્ષરશઃ વાંચવાને બદલે લેખીત રજુઆત જમા કરાવવા સુચન કરેલ. રજુઆતકર્તા દ્વારા આ લેખિત રજુઆત જી.પી.સી.બી.નાં હાજર અન્ય અધિકારીઓને આપવામાં આવેલ. જે રજુઆત આ સાથે એનેક્ષર- C-42 મુજબ સામેલ છે.	પ્રોજેક્ટ પ્રોપોનેન્ટના પ્રતિનિધિશ્રી દ્વારા જણાવેલ કે, ફોરેસ્ટ વિભાગ સાથે પરામર્શ કરીને વન્ય જીવો માટેનું કન્ઝરવેશન પ્લાન બનાવવામાં આવેલ છે જેને અગ્રમુખ્ય વન સંરક્ષક, ગુજરાત સરકાર દ્વારા મંજુર કરવામાં આવેલ છે અને તેનો તેમના દ્વારા અમલ કરવામાં આવશે. પ્રત્યુતરની લેખિત નકલ એનેક્ષર-D-42 મુજબ સામેલ છે.
(૧૭)	શ્રી દેવભાટી, ગીર નેચર ક્લબ, મહુવા	રજુઆત કર્તા દ્વારા તેઓના ગીર નેચર ક્લબ વતી તા.૨૮/૦૪/૨૦૨૩ ની લેખિત રજુઆતને અક્ષરશઃ વાંચી સંભળાવવામાં આવેલ. જે લેખિત રજુઆત આ સાથે એનેક્ષર- C-25	પ્રોજેક્ટ પ્રોપોનેન્ટના પ્રતિનિધિશ્રી દ્વારા જણાવવામાં આવેલ કે લેખિત રજુઆતનો લેખિત જવાબ આપવામાં આવશે. જે પ્રત્યુતરની લેખિત નકલ એનેક્ષર- D-25 સામેલ છે.

		મુજબ સામેલ છે.	
(૧૮)	સુશ્રી અંજુબેન ઘેલભાઈ મકવાણા - પ્રમુખશ્રી મહુવા તાલુકા પંચાયત વતી શ્રી પુરૂષોત્તમભાઈ મગનભાઈ બારૈયા ગામ: દુધેરી	રજુઆત કર્તા દ્વારા પ્રમુખશ્રી મહુવા તાલુકા પંચાયત વતી તા.૨૮/૦૪/૨૦૨૩ ની લેખિત રજુઆતને અક્ષરશઃ વાંચી સંભળાવવામાં આવેલ. જે લેખિત રજુઆત આ સાથે એનેક્ષર- C-41 મુજબ સામેલ છે.	પ્રોજેક્ટ પ્રોપોનેન્ટના પ્રતિનિધિશ્રી દ્વારા જણાવવામાં આવેલ કે લેખિત રજુઆતનો લેખિત જવાબ આપવામાં આવશે. જે પ્રત્યુત્તરની લેખિત નકલ એનેક્ષર- D-41 સામેલ છે.

લોકસુનાવણી દરમિયાન શ્રી ભરતભાઈ નારણભાઈ શિયાળે મે. નિરમા લિ. ના માઈનીંગ પ્રોજેક્ટ માટે જમીન આપવી જોઈએ કે કેમ તથા આ માઈનીંગ પ્રોજેક્ટને મંજૂરી મળવી જોઈએ કે કેમ તે બાબતે ભેગા થયેલ જનસમુદાયનો જાહેરમાં લોકમત માંગેલ. જે અન્વયે હાજર રહેલ મોટાભાગના જનસમુદાય દ્વારા હાથ ઊંચા કરીને, મોટા અવાજે મે. નિરમા લિ. ને જમીન આપવા તથા મંજૂરી આપવા સામે વિરોધ દર્શાવેલ હતો.

શ્રી એ.જે.રાઠોડ, પ્રાદેશિક અધિકારીશ્રી, ગુજરાત પ્રદુષણ નિયંત્રણ બોર્ડ, ભાવનગર દ્વારા હાજર ગામ લોકોને વારંવાર કોઈ રજુઆત હોય તો, તે કરવા જણાવેલ. પરંતુ ત્યારબાદ અન્ય કોઈ મૌખિક રજુઆત આવેલ ન હતી. વધુમાં પ્રાદેશિક અધિકારીશ્રી, ગુજરાત પ્રદુષણ નિયંત્રણ બોર્ડ દ્વારા જણાવવામાં આવેલ કે આ લોકસુનાવણી દરમ્યાન પણ કેટલીક લેખિત રજૂઆતો તેમને મળેલ છે, જે તમામ લેખિત રજૂઆતો તથા પ્રોજેક્ટ પ્રોપોનન્ટના પ્રત્યુત્તરોનો કાર્યસૂચીમાં સમાવેશ કરવામાં આવશે. તેઓ દ્વારા લોકસુનાવણીનો સારાંશ રજુ કરવામાં આવ્યો.

ત્યારબાદ તેમના દ્વારા અંતમાં લોક સુનાવણીમાં હાજર રહેલ સર્વે ગ્રામજનોનો આભાર માનવામાં આવેલ અને જીલ્લા કલેકટર અને જીલ્લા મેજીસ્ટ્રેટશ્રી, ભાવનગર તથા આ લોક સુનાવણીના અધ્યક્ષશ્રીની મંજુરીથી આ લોક સુનાવણી સમાપ્ત થયેલ જાહેર કરવામાં આવેલ.

એ. જે. રાઠોડ
પ્રાદેશિક અધિકારી,
ગુ.પ્ર.નિ.બોર્ડ,
ભાવનગર

આર. કે. મહેતા (આઈ. એ. એસ.)
જિલ્લા કલેકટર અને જિલ્લા મેજિસ્ટ્રેટ,
ભાવનગર

સ્થળ: નિરમા લિમિટેડ સિમેન્ટ
પ્લાન્ટ એરીયા,
નેશનલ હાઈવે ૮૬/૫૧, સર્વે
નં. ૮૦,
ગામ: પઢિયારકા, તા. મહુવા,
જીલ્લો ભાવનગર.

તારીખ : ૨૮/૦૪/૨૦૨૩

NIRMA LIMITED

REGD. OFFICE : NIRMA HOUSE, ASHRAM ROAD, AHMEDABAD - 380 009. PHONE : 079 - 27546565, 27546008 FAX : 079 - 27546803, 27546606
CIN : U24240GJ1969PLC003579 • Email : info@nirma.co.in • www.nirma.co.in

Date:04/08/2023

To,
The Member Secretary (Non-coal mining),
Ministry of Environment, Forest & Climate Change,
Indira Paryavaran Bhavan, 3rd Floor,Vayu Wing,
Aliganj, Jor-bagh Road,
New Delhi-110003

Subject: Authentication of self-translation of written representations received during & before public hearing conducted on 28/04/2023 of 3 limestone mines located at Village: Padhiyarka, Doliya, Vangar, Gujarada, Dudheri & Dudhala

Reference: Public Hearing proceeding of all 3 mines submitted to your good office on 23/05/2023

Dear Sir,

This is with reference to above mentioned subject; we would like to state that Gujarati to English translation at Annexure-C & Annexure-D in public hearing proceedings is commonly practiced English. In case of any discrepancy, the original Gujarati document shall be prevail.

We hope that above authentication is in-line with your requirement.

Thanking You
Yours Faithfully,

For, Nirma Limited

Authorized Signatory

Since the EIA can be uploaded of 50 MB size only, and the complete minutes of public hearing minutes are around 100 MB and have already uploaded in section 3.6-3.8 of Form C, therefore Annexue C and Annexure D of the public hearing minutes are not included here. They may be downloaded from the aforementioned sections and considered as part of this EIA/EMP document.

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FINAL
ENVIRONMENTAL IMPACT ASSESSMENT
AND
ENVIRONMENTAL MANAGEMENT PLAN

OF

GUJARDA, DUDHERI AND DUDHALA LIMESTONE MINE
AT
VILLAGES GUJARDA, DUDHERI AND DUDHALA,
TALUKA MAHUVA, DISTRICT BHAVNAGAR, GUJARAT
(EXTENT 681.62 Ha., 2.7 MTPA R.O.M)

Project Proponent:

NIRMA LTD.

Nirma House, Ashram Road, Ahmedabad (Gujarat)
Phone – 079-27546565–74. Fax – 079-27546999

ToR Granted: Letter No. J-11015/153/2016-IA.II (M)
Dated 6th February, 2023

Baseline Monitoring Period: 1st March - 2nd June 2021
(Summer Season) by Min Mec R&D Laboratory

AUGUST 2023
(Issue 02, Rev. 0)

EIA Consultant:

Centre for Envotech and Management Consultancy Pvt. Ltd.
AN ISO: 9001:2015, ISO 14001:2015 & ISO 45001:2018 certified company,
Empanelled with OCCL, Govt. of Odisha, OSPCB as Category "A" Consultant Organization,
Accredited by NABET, Quality Council of India for EIA studies
As Category "A" Consultant Organization
Regd. Off: Plot No. 522/3458, Pahal, Bhubaneswar-752101, Odisha.
E-mail: cemc_consultancy@yahoo.co.in, cemc122@gmail.com
Website: www.cemcpl.com

NIRMA LIMITED

REGD. OFFICE : NIRMA HOUSE, ASHRAM ROAD, AHMEDABAD - 380 009. PHONE : 079 - 27546565, 27546606 FAX : 079 - 27546603, 27546605
CIN : U24248GJ1969PLC003674 • Email : info@nirma.co.in • www.nirma.co.in

UNDERTAKING

I, Ashish Desai, S/O Shri Kantilal Desai,hereby, undertake that prescribed Terms of Reference received vide letter No.J-11015/153/2016-IA.II(M) dated 06.02.2023 with respect to EIA/EMP studies of Gujarda, Dudheri & Dudhala Limestone Mine (Extent 681.62 Ha., 2.70 MTPA R.O.M) located at Villages Gujarda, Dudheri & Dudhala, Taluka Mahuva, District Bhavnagar, Gujarat, has been complied while conducting the EIA studies. The contents (Information and data) as given by our consultant in the EIA/EMP report are factually correct, with full knowledge of the undersigned.

Ashish Desai

Place: Ahmedabad
Dated: 14.02.2023

Ashish Desai
Authorized
Signatory

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DECLARATION BY EXPERTS CONTRIBUTING TO THE EIA

EIA/EMP Report for Gujarda, Dudheri and Dudhala Limestone Mine of M/s Nirma Ltd. located at Villages Gujarda, Dudheri and Dudhala, Taluka Mahuva, District Bhavnagar, Gujarat"of M/s Nirma Ltd.

The baseline data was generated by MoEF & NABL Accredited Laboratory M/s Min Mec R&D Laboratory, a division of Min Mec Consultancy Pvt. Ltd., New Delhi.

We have carried out verified the baseline measurements carried out by M/s Min Mec R&D Laboratory.

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

EIA Coordinator:

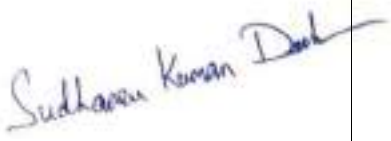
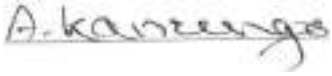
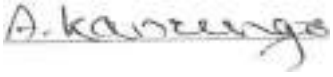
Name: Mr. Debashish Mishra



Signature and Date: 14.08.2023
Period of Involvement: December 2022-till date
Contact Information: 9438500471

Functional area experts:

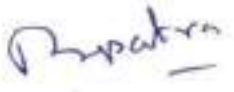
Sl. No.	Functional Area	Name of the expert/s	Involvement (period and task)		Signature and date
1	Air pollution monitoring, prevention and control (AP)	Mr. Dayananda Pandey	**Period:**	December 2022-till date	
			Task:	Prediction of Air Pollution and its Impacts & Mitigation Measures. Interpretation of Baseline Environment.	
2	Water pollution monitoring, prevention and control (WP)	Mrs. Anupama Swain	**Period:**	December 2022-till date	
			Task:	Prediction of Water Pollution and its Impacts & Mitigation Measures. Interpretation of results, comparison with limits for writing in present baseline scenario.	

Sl. No.	Functional Area	Name of the expert/s	Involvement (period and task)		Signature and date
3	Solid and hazardous waste management (SHW)	Er. Ananta Prasad Barik	**Period:**	December 2022-till date	
			Task:	Identification of nature of waste, categorization, and quantity of generated waste. Prediction of waste pollution and its management.	
4	Socio-economics (SE)	Mr. Sudhansu Kumar Dash	**Period:**	December 2022-till date	
			Task:	Secondary data of Census of India, 2011. Socio-Economic Survey; Socio Economic Impact Assesment.	
5	Ecology and biodiversity (EB)	Mr. Debashish Mishra	**Period:**	December 2022-till date	
			Task:	Ecological and biodiversity survey. Identification of species (flora and fauna) and preparation ofecology section in EIA/EMP report.	
6	Hydrogeology (HG)	Mr. Ashutosh Kanungo	**Period:**	December 2022-till date	
			Task:	Hydrogeological survey for assessing aquifer distribution of the area. Water resource evaluation of the area. Pre-monsoon & Post-monsoon collection of water level & quality data.	
7	Geology (Geo)	Mr. Ashutosh Kanungo	**Period:**	December 2022-till date	
			Task:	Geological survey for assessing aquifer distribution of the area. Water resource evaluation of the area. Pre-monsoon & Post-monsoon collection of water level & quality data.	

Sl. No.	Functional Area	Name of the expert/s	Involvement (period and task)		Signature and date
8	Soil conservation (SC)	Dr. Rabindra Kumar Mishra	**Period:**	December 2022-till date	
			Task:	Identification of existing quality of soil. Prediction of Impact and its management.	
9	Meteorology, air quality modeling and prediction (AQ)	Mr. Dayananda Pandey	**Period:**	December 2022-till date	
			Task:	Study of primary data, Air Quality Modelling and itsinterpretation.	
10	Noise and vibration (NV)	Dr. Dilip Kumar Pandey	**Period:**	December 2022-till date	
			Task:	Prediction of Noise Pollution & its Mitigation Measures. Review of the section of noise and vibration and recommended mitigation measures for control of noise and vibration.	
11	Land use (LU)	Dr. Nihar Ranjan Das	**Period:**	December 2022-till date	
			Task:	Satellite image interpretation and preparation of land use map of study area, prediction of impact on land use pattern (existing & proposed), suggest mitigation measures.	
12	Risk Assessment and hazard management (RH)	Er. Ananta Prasad Barik	**Period:**	December 2022-till date	
			Task:	Assess risk due to projectand prepare chapter on disaster management plan& safety measures.	

Declaration by the Head of the Accredited Consultant Organization

I, Dr. Bidyut Kumar Patra, hereby, confirm that the above mentioned experts prepared the EIA for Gujarda, Dudheri and Dudhala Limestone Mine of M/s Nirma Ltd. located at Villages Gujarda, Dudheri and Dudhala, Taluka Mahuva, District Bhavnagar, Gujarat" of **M/s Nirma Ltd.** I also confirm that I shall be fully accountable for any misleading information mentioned in this statement.



Signature:

Name: **Dr. Bidyut Kumar Patra**
Designation: **Director**

Name of the EIA Consultant Organization: **Centre for Envotech & Management Consultancy Pvt. Ltd.**

NABET Certificate No. & Issue Date: **NABET/EIA/2124/RA 0243, dated 05.09.2022 and Valid upto 18.03.2024.**

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QUALITY COUNCIL® OF INDIA
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National Accreditation Board for Education and Training

Certificate of Accreditation

Centre for Envotech & Management Consultancy Pvt. Ltd., Bhubaneswar

N5/305, IRC Village, Nayapalli, Bhubaneswar-751015, Odisha

*The organization is accredited as **Category-A** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA-EMP reports in the following Sectors –*

S.No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals – opencast only	1	1 (a) (i)	A
2	River Valley projects	3	1 (c)	A
3	Thermal power plants	4	1 (d)	B
4	Coal washeries	6	2 (a)	A
5	Mineral beneficiation	7	2 (b)	A
6	Metallurgical industries (ferrous & non-ferrous)	8	3 (a)	A
7	Petroleum refining industry	10	4 (a)	A
8	Petro-chemical complexes (industries based on processing of petroleum fractions & natural gas and/or reforming to aromatics)	18	5 (c)	A
9	Highways	34	7 (f)	A
10	Common Municipal Solid Waste Management Facility (CMSWMF)	37	7 (i)	B
11	Building and construction projects	38	8 (a)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated May 06, 2022 and posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no QCI/NABET/ENV/ACO/22/2511 dated Sept 05, 2022. The accreditation needs to be renewed before the expiry date by Centre for Envotech & Management Consultancy Pvt. Ltd., Bhubaneswar following due process of assessment.

Sr. Director, NABET
Dated: Sept 05, 2022

Certificate No.
NABET/EIA/2124/RA 0243

Valid up to
March 18, 2024

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to the QCI-NABET website.

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LIST OF ABBREVIATIONS

AMSL	-	Above mean sea level
AAQ	-	Ambient Air Quality
APHA	-	American Public Health Association
ANFO	-	Ammonium Nitrate–Fuel Oil
BDL	-	Below Detectable Limit
BGL	-	Below Ground Level
°C	-	Degree centigrade
CER	-	Corporate Environment Responsibility
CGWB	-	Central Ground Water Board
CHC	-	Community Health Centres
cm	-	Centi meter
CPCB	-	Central Pollution Control Board
CRZ	-	Coastal Regulation Zone
CSM	-	Continuous Surface Miner
CSR	-	Corporate Social Responsibility
CTE	-	Consent to establish
Cum/day	-	Cubic metres per day
Cum/hr	-	Cubic metres per hour
CGM	-	Commissioner of Geology and Mining
CCOM	-	Office of the Chief Controller of Mines
D	-	Dispensary
dB	-	Decibel
DCAS	-	Degree College Arts & Science only
DFO	-	Divisional Forest Officer
DG	-	Diesel Generator
DGMS	-	Director General of Mines Safety
E	-	East
EAC	-	Expert Appraisal Committee
EC	-	Environmental Clearance
EC	-	Engineering College
EIA	-	Environment Impact Assessment
EMD	-	Environment Management Department
EMP	-	Environmental Management Plan
EO	-	Others
FWC	-	Family Welfare Centre
FY	-	Financial Year
G	-	Gram

GDP	-	Gross Domestic Project
GLC	-	Ground Level Concentration
GoG	-	Government of Gujarat
Ha	-	Hectare
HA	-	Hospital Allopathic
HAM	-	Hospital Alternative Medicine
HEMM	-	Heavy Earth Moving Machinery
HQ	-	Head Quarters
HTL	-	High Tide Line
H.P.	-	Horsepower
HSD	-	High Speed Diesel
HRS	-	Hours
HMV	-	Heavy Motor Vehicles
IMD	-	Indian Meteorological Department
IBM	-	Indian Bureau of Mines
Kg	-	Kilogram
KL	-	Kilo litre
KLD	-	Kilo litre/day
KLH	-	Kilo litres per hour
KVA	-	Kilo Volt Ampere
KW	-	Kilo Watt
KWH	-	Kilo Watt Hour
L	-	Litres
Lpd	-	Litres per day
LOI	-	Letter of Intent
LTL	-	Low Tide Line
LMV	-	Light Motor Vehicles
M	-	Meter
m^2	-	Square meter
m^3	-	Cubic meter
MC	-	Medicine College
MCM	-	Million Cubic Meter
MCWC	-	Maternity And Child Welfare Centre
Mg/l	-	Miligram per litre
MHC	-	Mobile Health Clinic
MI	-	Management Institute
ML	-	Mine Lease
MoEF&CC	-	Ministry of Environment, Forest and Climate Change
MOU	-	Memorandum of Understanding

MS	-	Middle school
MT	-	Million Tonnes
MTPA	-	Million Tonnes Per Annum
MVA	-	Mega Volt Ampere
MW	-	Mega watt
MMDR	-	Mines and Minerals (Development and Regulation) Act
MMR	-	The Metalliferous Mines Regulations, 1961
MEMC	-	The Minerals(Evidence of Mineral Contents) Rules, 2015
MCDR	-	Mineral Conservation and Development Rules, 2017
N	-	North
NABL	-	National Accreditation Board of Laboratories
NFTC	-	Non Formal Training Centre
NGMF-C	-	Non Govt. Medical Facilities: Charitable
NGMF-IOP	-	Non Govt. Medical Facilities: In&Out patient
NGMF-MBBS	-	Non Govt. Medical Facilities: Medical practitioner with MBBS degree
NGMF-MS	-	Non Govt. Medical Facilities: Medicine shop
NGMF-ND	-	Non Govt. Medical Facilities: Medical practitioner with no degree
NGMF-O	-	Non Govt. Medical Facilities: Others
NGMF-OD	-	Non Govt. Medical Facilities: Medical practitioner with other degree
NGMF-OP	-	Non Govt. Medical Facilities: Out Patient
NGMF-TPFH	-	Non Govt. Medical Facilities: Traditional practitioner and faith healer
NH	-	National Highway
NOC	-	No objection certificate
Nos.	-	Numbers
NE	-	North- East
NAAQS	-	National Ambient Air Quality Standards
OB	-	overburden
OSHA	-	Occupational Safety & Health Administration
ONGC	-	Oil & Natural Gas Corporation
OPC	-	Ordinary Portland Cement
P	-	Polytechnic
PF	-	Protected Forest
PHC	-	Primary Health Centre
PHSC	-	Primary Health Sub-Centre
PPS	-	Pre-Primary School

PS	-	Primary school
PUC	-	Pollution Under Control
PM	-	Particulate Matter
PCU	-	Passenger Car Unit
PPE	-	Personal Protection Equipment
R&R	-	Resettlement and Rehabilitation
RF	-	Reserve Forest
ROM	-	Run of Mine
RPM	-	Respirable Particulate Matter
RO/ DM	-	Reverse Osmosis/ Demineralised
RET	-	Rare, Endangered and Threatened species
SFD	-	School For Disabled
SOI	-	Survey of India
SPCB	-	State Pollution Control Board
SPM	-	Suspended Particulate Matter
Sq.m.	-	Square metre
SS	-	Secondary school
SSS	-	Senior Secondary School
SC	-	Scheduled Caste
ST	-	Scheduled Tribe
T	-	Tonnes
TBC	-	TB Clinic
TOR	-	Terms of Reference
TPA	-	Tonnes Per Annum
UNFC	-	United Nations Framework Classification
VH	-	Veterinary Hospital
VTS/ITI	-	Vocational Training School/ Industrial Training Institute
W	-	West

COMPLIANCE OF TERMS OF REFERENCE (TOR)

Table 1 gives the compliance of Terms of Reference (TOR) for Gujarda, Dudheri & Dudhala Limestone mine (capacity 2.7 MTPA, Mine Lease area 681.62 Ha) of M/s Nirma Ltd., issued by Ministry of Environment, Forest and Climate Change vide Letter no. J-11015/153/2016-IA.II(M) dated 06 February, 2023.

TABLE 1: COMPLIANCE OF GENERIC TOR FOR OPENCAST MINE PROJECT

Sl. No. of TOR	Description as per MoEF&CC	Compliance
	SPECIFIC TERMS OF REFRERENCE	
1.	The Project Proponent needs to submit the letter from the State Coastal Zone Management Authority (SCZMA) at the time of appraisal of EC.	The copy of layout superimposed on the HTL/LTL map demarcated by Institute of Remote Sensing, Anna University, Chennai on 1:4000 scales and the letter dated 19.07.2023 received from GCZMA stating "….the proposed project of mining at Gujarda, Dudheri & Dudhala mine lease (681.62 ha), District Bhavnagar is outside CRZ area. You are further, directed to ensure that no mining activity shall be carried out in CRZ area means outside proposed boundary. Further, you shall provide physical demarcation at the boundary of your proposed project towards seaside before starting any mining activity" have been given in **Annexure XIX**.
2.	In view of the agricultural land proposed under the mining lease area, the Project Proponent needs to submit the Cost Benefit analysis comparing the current agricultural production and annual turnover including the cost and the benefits drawn by the local villages vis-a-vis the mineral cost and beneficiaries.	Cost Benefit analysis has been given in Table No. C9-1, Chapter 9.
3.	The Project Proponent shall ensure that the Shallow pits to depth of 4 m shall be refilled and reclaimed and given back to the farmers as agriculture land. Return all the proposed non-mining area to farmers/owners of the Land. The mining plan, *inter-alia*, includes the above mentioned details with regard to pits and reclamation.	The shallow pit of depth <4.0 mts. will be backfilled. The area of <4 m depth pits will be 15.66 Ha as shown in conceptual plan (Fig No. C4-5, Chapter 4), Backfilling is proposed after 2026-27/ 2027-28. Backfilled area shall be utilized for agriculture in case of private land and for plantation purpose in case of government land. Refer section 4.10.2, Chapter 4. Only that land shall be purchased from farmers that will be required for mining & allied activities (including greenbelt). Based on

Sl. No. of TOR	Description as per MoEF&CC	Compliance
		observations of EAC, MoEF&CC during meetings dated 23-24 May 2016 & 22-23 August 2016, the Company revised the initial mine lease proposal of 1497.4701 ha to a reduced area of 681.62 ha, thus, minimizing the impact on private agricultural land. Furthermore, the shallow pit in southern side of approximately <4 m depth & 15.66 ha area shall be backfilled and the private land portion of the backfilled area shall be returned to the owner. Accordingly, an agreement shall be executed prior to commencement of mining. The approved review of mining plan includes the details of pits and reclamation area. The review of mining plan has been approved by IBM and the copy of the approval letter is given in **Annexure XXII**.
4.	The Project Proponent needs to be submit the detailed note on mining methodology with specific reference to Continuous Surface Miner.	Detailed note on use of Continuous Surface Miner is given at section 2.5.1 in chapter 2 & alternatives of the technology in respect of Continuous Surface Miner is given at section 5.2 in chapter 5
5.	The Project Proponent needs to submit action plan for backfilling.	Action plan for backfilling is given at Section 2.7.1 in Chapter 2.
6.	The Project Proponent needs to submit the detailed measures to be taken for protection of turtle breeding sites and also needs to specifically address the movement of Lions and conservation in the Wildlife Conservation plan in consultation with the Forest Department.	The ecological sensitives areas Turtle breeding sites are not in vicinity of proposed site. The letter no. A/GMN/T-11/2075/22-23 dated 27.01.2023 from Deputy Chief Conservator of Forest, Bhavnagar certifying that the nearest turtle breeding centre is approximately 70 km from the limestone mines is for the same is given in **Annexure- XXV.** As per authenticated map provided by the forest department, there is no been any National Park, Sancturies, Biosphere Reserve, Wildlife Corridor, Ramsar Site, Tiger/Elephant Reserves in 10 km area of the mine (Letter given in **Annexure XXV**). Financial layout for conservation plan along with approval letter is given in **Annexure XXIII**.
7.	The Project Proponent should prepare	The EMP considering the scenario of pollution

Sl. No. of TOR	Description as per MoEF&CC	Compliance
	the EMP considering the scenario of pollution to be generated for normative and peak total excavation for assessing air and noise pollution. PP also needs to submit the breakup of total excavation in tonnes.	to be generated for normative and peak total excavation for assessing air is given at section 4.4.1 & 4.4.2 in chapter 4 and for noise pollution given at section 4.7.1 & 4.7.2 in chapter 4. The expected excavation during first plan period in terms of million tonnes is given in Table C2-9 of chapter 2.
8.	The Project Proponent needs to monitor the ambient air quality and noise level at the mine lease boundary, nearest village, predominant downwind direction and at other sensitive receptors. Accordingly, Project Proponent shall propose to install Continuous Ambient Air Quality Monitoring Station within certain timeline.	Ambient air quality and noise level has been monitored as a part of baseline study and is given at Section 3.4 & 3.8 in chapter 3. Continuous ambient air quality monitoring station will be installed after commencement of the start of operation of mine during the first year of operation
9.	The Project Proponent needs to carry out the cumulative impact assessment by considering all the mining activity including the transport scenario of the mines in the study area and should indicate the capacity of each mine considered for predication of air quality modeling. The control case and worst-case scenario needs to be demonstrated with controlling factor and GLCs values for all the pollutants needs to be clearly mentioned. The input parameters used for the modeling also needs to be submitted.	The cumulative impact assessment due to 3 mines is given at Section 4.4.1, Table No. C4-3 & Table No. C4-4 in Chapter 4.
10.	The Project Proponent needs to Study the traffic density and carrying capacity of the road and should include the same in the EIA/EMP report. PP needs to submit the map showing the transport route and its impact due to mining activity and the mitigation measures to be taken.	The traffic density and carrying capacity of the road is given at the section 3.9, and transportation map is given at Fig No. C4-2 of Chapter 4. The impact of the transportation and the mining activity are given at the section 4.4.1 and the Chapter 4.
11.	The Project Proponent shall monitor the water quality in the impact zone such as water reservoir, river water with Specific reference to the	The Langelier Saturation Index values for Pond near Khared village and Malan river near Barpara are -0.65 & -0.39 respectively and

Sl. No. of TOR	Description as per MoEF&CC	Compliance
	parameter Langelier Saturation Index to denote the impact of calcium carbonates on water bodies.	given at section 3.5.4, Chapter 3 of EIA.
12.	The Project Proponent needs to submit the detailed R&R plan covering all the components viz. number of Project Affected Families (PAF) and details of the land owned by them, break up of total compensation to be paid including method of calculation including the sources/references adopted and mode of payment etc. PP need to submit the plan for Socio economic development of the neighbourhood habitats based on the need based survey along with the time bound action plan. PP also needs to submit the possession certificate and timeline for acquiring the land at the time of appraisal of EC.	Detailed R&R Plan is given at section 3.11, Chapter 3, section 4.13 Chapter 4, Table No. C10-1 Chapter 10 & section 11.3.8 & 11.4.11 Chapter 11. Plan for socio economic development of the neighbourhood habitats based on the need based assessment along with the time bound action plan is given in section 8.4, Chapter 8. The company has purchased/ obtained surface rights (i.e. consented land) of some land and shall purchase/ obtain surface rights (i.e. consented land) as per the timeline given in Section 4.13, Chapter 4
13.	The Project Proponent shall carry out the assessment of impact due to the proposed project as per the guidelines issued by the Central Ground Water Authority from time to time and submit the same as a part of the EIA/EMP. The project proponent shall conduct hydrological study for projects involving intersection of ground water table as per the guidelines issued by the Central Ground Water Authority from time to time and submit the same as a part of the EIA/EMP.	There will be no intersection of ground water table during five years of plan period.Only during post-monsoon period, ground water will be encountered in 11^{th} year i.e. end of mine life period in pit no. 6. However, conceptual pit no. 6 bottom level will be kept above ground water level i.e. +4.0m AMSL to avoid intersecting ground water level. The shallow depth pits shall be backfilled simultaneously after mining for limestone and shall be converted into agriculture land / utilized for plantation purpose. M/s Ground Water & Mineral Investigation Consultancy Centre (P) Ltd., Jaipur has assessed the hydrogeological conditions and impact of mining in "Report on hydrogeological & hydrological studies of core and buffer zone of Gujarda, Dudheri & Dudhala limestone mine and impact of mining on water regime near village Gujarda, Dudheri & Dudhala, Taluka Mahuva, district Bhavnagar, Gujarat" in January 2022 Extract from the same has been included in Section 3.5, Chapter 3 and Section

Sl. No. of TOR	Description as per MoEF&CC	Compliance
		4.5.1, Chapter 4. Since the proposed mine pits will not intersect the ground water table, no mine seepage is envisaged and hence no permission is required from Central Ground Water Authority.
14.	The Project Proponent shall explore the possibility of reduction of specific water requirement by optimization / technology up gradation, etc. The efforts shall be delineated in the EIA/EMP.	Optimised water requirement and source is given in section 2.13 and water balance is shown in Fig No. C2-9 of Chapter 2.
15.	The Project Proponent shall prepare the scheme for mandatory recycle/re-use of water as specified by the Central Ground Water Authority for different category areas seeking NoC for ground water withdrawal and the shall submit as part of EIA/EMP report.	No ground water withdrawal is envisaged for this project. The rain water collected in mine pits as well reject from RO / DM plant of the proposed cement plant (when it becomes operational) shall be used to minimise fresh water requirement.
16.	The Project Proponent needs to carry out the Public Hearing as per provisions of EIA Notification, 2006. PP should also submit the time bound action plan on concerns of the public through a separate budget with capital expenditure with a timeline of 3 years. The Project proponent shall ensure that the activities proposed under the public hearing shall be different from the CSR activities.	The time bound action plan on concerns of the public has been incorporated in Table C7-3 of Chapter 7 after conducting the public hearing on 28.04.2023. We have completely ensured that the activities proposed under the public hearing is different from the CSR activities and public hearing activities have been given in the **Table No. C7-3** and CSR activities proposed have been given in the table **Table No. C8-2**
17.	The Project Proponent shall conduct drone survey of the mine lease area and buffer area and submit during the appraisal for EC.	Drone image attached in **Annexure XXVIII**.
	STANDARD TOR FOR MINING PROJECT	
18.	Year-wise production detail 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	Not Applicable. This is a new mine and no production has been done till date.

Sl. No. of TOR	Description as per MoEF&CC	Compliance
	had been any increase in production after the EIA Notification 1994 came into force, w.r.t the highest production achieved prior to 1994. The production details need to submit since inception of mine duly authenticated by Department of Mines & Geology, State Government.	
19.	A copy of the document in support of rightful lessee of the mine should be submitted. In case of new mines copy of LoI granted by State Government to be submitted. PP should ensure that LoI is valid at the time of grant of ToR. PP should submit the copy of lease deed/supplementary lease deed/extension letter/transfer deed, from its initial grant to subsequent renewals/ transfer/extension of validity.	Copy of Grant of Order of Mining Lease dated 08.01.2017 is in the name of Nirma Ltd. and the mining lease deed dated 11.01.2017 for 50 years i.e. upto 10.01.2067 is given in **Annexure II**.
20.	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.	All the documents are compatible to each other. The project data given in the EIA Report has been taken from approved Review of Mining Plan. The final Draft EIA report has been prepared.
21.	PP should submit the District Survey Report (DSR) as per S.O. 3611(E) dated 25.07.2018 in case of minor minerals.	Not applicable since this project is proposed for mining of major minerals only
22.	Brief of proposal to be submitted which include total excavation of the material required for the production of certain quantity of the minerals, location of the project, mining lease area, latitude longitude, seismic zone etc. In case of expansion project details of expansion viz. expansion in mining lease area or expansion in production of any particular mineral or expansion in total	Brief of proposal can be seen in Chapter 1, Section 1.4 Total excavation for production is given in Table C2-8, Chapter 2. Location of the project along with latitude longitude can be seen in Chapter 1, Section 1.4.3 and 1.4.4. Mining lease area boundary can be seen in Fig C2-1, Chapter 2. Seismic zone is given in Chapter 3, Section

Sl. No. of TOR	Description as per MoEF&CC	Compliance
	excavation, latest certified Compliance report (CCR) from IRO of conditions granted in existing EC needs to be submitted.	3.13. CCR and expansion not Applicable. This is a new mine. Hence no production has been done till date.
23.	The PP should submit the real-time aerial video footage & video of the mining lease area and of the transportation route.	Drone image attached in **Annexure XXVIII**. Photos of road also given in **Annexure XXVIII**. Video shall be submitted to and presented to MOEF during appraisal for EC since there is no provision to upload a video file of such large size in Form C on parivesh.nic.in, which is the application for the environmental clearance.
24.	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)	The boundary of the mine lease area superimposed on high resolution satellite image sourced from Google Earth is given in Section 1.4.3 earlier along with the coordinates. A map showing mine lease area and the 10 km radius around it superimposed on the SOI open series map is shown in Fig No. C3-1 of Chapter 3. The geological map of the mine lease area is given in Fig No. C2-2, Chapter 2. The interpreted satellite image showing the present land use of the project area and the area within 10 km of the project is given in Fig No. C3-12, Chapter 3.
25.	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.	As toposheet of the area is restricted, it is not available. However, open series map is available and the project area superimposed on the same is shown in Fig No. C3-1 of Chapter 3. The geological map of the area is given in Fig No. C2-2, Chapter 2. Geomorphology of the area has been discussed in terms of topography and drainage in Section 3.2, Chapter 3. Existing minerals were assessed through exploration carried out by CGM, GoG as explained in section 2.2.1 , Chapter 2. Mining history of the area- old pits have been found and mapped in present surface plan in

<table>
<tr><th>Sl. No. of TOR</th><th>Description as per MoEF&CC</th><th>Compliance</th></tr>
<tr><td></td><td></td><td>Fig No. C2-1, of Chapter 2.
Important water bodies, streams and rivers have been tabulated in Table No. C3-1 and can be seen in various maps such as Fig No. C3-2 (SOI map) and Fig No. C3-12 (interpreted satellite image), Chapter 3.
Soil characteristics area discussed in Section 3.7 of chapter 3.</td></tr>
<tr><td>26.</td><td>The PP should collect the Baseline data (BLD) in respect of initial level of the mining lease. For this permanent bench marks (BM) needs to be established at prominent location preferably close to mining leases in question and should have precisely known relationship to the level datum of the area, typically mean sea level.</td><td>Baseline study has been carried out. (Chapter 03).
Permanent Ground Control Points as permanent benchmarks have been established in lease area as follows:
<table>
<tr><th colspan="4">Bench Mark</th></tr>
<tr><th colspan="4">Ground Control Points survey by DGPS</th></tr>
<tr><th>Sr. No.</th><th>Latitude, N</th><th>Longitude, E</th><th>Altitude in m, AMSL</th></tr>
<tr><td>1</td><td>21.04863718</td><td>71.69869267</td><td>11.484</td></tr>
<tr><td>2</td><td>21.04440512</td><td>71.70527733</td><td>15.422</td></tr>
<tr><td>3</td><td>21.0551789</td><td>71.69703149</td><td>16.357</td></tr>
<tr><td>4</td><td>21.04921969</td><td>71.6867123</td><td>13.5</td></tr>
</table></td></tr>
<tr><td>27.</td><td>In case of sand mining, the entire mining lease area should be divided suitably into grids of 25 m x 25 m with the help of sections across the width of river and along the direction of flow of the river. The levels (MSL & RL) of the corner point of each grid
needs to be recorded. Each Grid should be suitably numbered for identification. PP should identity grids which will be worked out and grids which will come under no mining zone i.e. safety barriers from the river bank. PP should comply with the sustainable sand mining management guidelines 2016 and enforcement and monitoring guidelines, 2020 etc.</td><td>Not applicable.</td></tr>
<tr><td>28.</td><td>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</td><td>Details of plantation is given in para 4.12.1 of Chapter 4.
Trees recommended for plantation is given in Table No. C4-19 of Chapter 4.
The plant species have been selected from</td></tr>
</table>

Sl. No. of TOR	Description as per MoEF&CC	Compliance
	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.	native species and shall aid in pollution abatement. The phase wise plan for plantation is given in Table No. C4-20, Chapter 4.
29.	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report	Details of Onsite services and facilities is given in section 2.10 of Chapter 2
30.	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	Conceptual post mining land use is given in Table No. C4-14 and conceptual Mine Plan and section are shown in Fig No. C4-7 and C4-8 respectively of Chapter 4.
31.	The cost of the project (Capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	Capital and recurring cost towards implementation of EMP is given in Table No. C6-2 and C6-3, respectively of Chapter 6
32.	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.	This is a new mine. There is no violation in this mine, hence, not applicable.
33.	Compliance of the Ministry's Office Memorandum No. F: 3-50/2017-IA.III (Pt.), dated 30.05.2018 on the judgment of Hon'ble Supreme Court, dated the 2nd August, 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India needs to be submitted and	Noted

Sl. No. of TOR	Description as per MoEF&CC	Compliance
	included in the EIA/EMP Report.	
34.	PP shall submit a certificate from Chief Conservator of Forests regarding involvement of Forest Land in the mining lease area if any. In case forest land is involved i) PP should submit the proof of application made for obtaining forest clearance and ii) a map clearly showing the forest & non-forest area.	Not applicable as no forest land is involved.
35.	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.	Forest land is not present within Lease area.
36.	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.	Not Applicable since no forestland is present within mine lease area
37.	The vegetation in the RF/PF areas in the study area, with necessary details, should be given.	The natural vegetation in the study area predominantly consist of *Prosopis juliflora.* Reserve Forest present in the study area are RF near Patwa (2.5 km, SW), RF near Dudheri village (0.2 km, S), RF near Gujarada village (0.3 km, SE), RF near Doliya village (0.6 km, S), RF near Khared village (2.1 km, E), RF near Katpur village (7.4, E). The vegetation in the study area (including forests) is given in Section 3.10, Chapter 3.
38.	Details of litigation pending against the project, if any, with direction/order passed by any Court of Law against the project should be given	There is no litigation pending against the project. Company's adjoining proposed cement plant Environment Clearance is sub-judice before Hon. Supreme Court. Earlier, EC was cancelled by MoEF, New Delhi. However, NGT has set aside the cancellation of EC. An appeal has been filed in Hon. Supreme Court against the NGT order by the opponent and the matter is sub-judice, there is no stay in the matter.

Sl. No. of TOR	Description as per MoEF&CC	Compliance
39.	PP should submit the details of survey number [viz. survey no, area in hectare, classification of land (government, private, forest, grazing land etc.), villages] duly authenticated by State Government, falling in the mining lease area.	Mining lease deed has been executed in favour of PP on 11.01.2017 by the State Government and details of survey number [viz. survey no, area in hectare, classification of land (government, private, forest, grazing land etc.), villages] duly authenticated by State Government, falling in the mining lease area has been given in lease deed. Copy of details of survey nos authenticated by DILR, State Government is given in **Annexure-XXVI.**
40.	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.	The study area map is given in Fig No. C3-1, chapter 3. The waste generation in the plan period is given in Table No. C4-16 and limestone produced is given in section 2.8 of Chapter 2.
41.	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 pre-operational, operational and post operational phases and submitted, impact, if any, of change of land use should be given.	Land use of the study area as per Census 2011 is given in Table No. C3-12 of Chapter 3 and as per the interpretation for 10km satellite imagery is given in Fig No. C3-12, Chapter 3. The land use plan for existing, after five years and end of life of mine is given in Table No. C4-10, C4-11 and C4-12 respectively. Impact and Management of land is given in section 4.10 of Chapter 4.
42.	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.	There will be no overburden dumps outside mine lease area and no R & R issues are there for the proposed mine.
43.	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.	Impact and management of project on wildlife is given in section 4.12 of Chapter 4. Peafowl, Chinkara and Asiatic Lion are reported as the only Schedule I species present in the study area as per Wildlife Protection Act 1972 as amended upto 2019. Wildlife Conservation Plan for the same had been approved by the Forest Department on 20.12.2021. Approval letter & conservation plan are given in

Sl. No. of TOR	Description as per MoEF&CC	Compliance
		Annexure XXIII.
44.	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. Detailed 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 alongwith 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. Proof of its submission of conservation plan to the CWLW needs to be submitted.	Ecology of the study area is given in section 3.10 of Chapter 3. List of Flora and Fauna found in core and buffer zone is given in **Annexure XIII** and letter from DFO is given in **Annexure XIV.** Peafowl, Chinkara and Asiatic Lion area the Schedule I species reported from the study area. Conservation Plan for the same has been approved from Chief Wildlife Warden., Gandhinagar. Approval letter & conservation plan are given in **Annexure XXIII.** Rs. 19.9 lakh has been approved for the conservation of wildlife in the study area.
45.	PP shall submit a certificate from Chief Wildlife Warden regarding distance of mining lease from the protected area falling within 10 KM of the mining lease. In case project requires clearance under Wildlife (Protection) Act, 1972 then copy of application made for the same needs to be submitted.	There are no National parks, Wildlife Sanctuary, Biospheres reserves or Wildlife Corridor within 10 km radius. However, nearest National Park & Wildlife Sanctuary is the GIR National Park, GIR Wildlife Sanctuary & Mitiyala Wildlife Sanctuary located at a nearest distance of 80.9 km, 48.8 km and 48.1 km respectively. Duly authenticated map showing aforesaid distance alongwith certificate issued by the Chief Wildlife Warden, Gandhinagar vide letter dated: 13.01.2022 & 14.02.2022 are attached herewith as **Annexure XIV**
46.	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,	Base line data for water quality, noise level, soil and flora and fauna has been collected in summer season (1st March- 2nd June 2021). Site specific meteorological data is given in para 3.3.3 of Chapter 3. Air monitoring station has been chosen as per in view the pre-dominant downwind direction

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	noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented data-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.	and location of sensitive receptors and is given in Table No. C3-5 and shown in Fig No. C3-8 of Chapter 3. The mineralogical composition of PM10 of core zone is given in **Annexure V**.
47.	Air quality modelling 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 modelling 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.	Air quality modelling is given in section 4.4.1 of Chapter 4 and details is given in **Annexure XX** and cumulative impact for 3 mines is given in **Annexure XXI.**
48.	The PP should submit the photograph of monitoring stations & sampling locations. The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this, PP should submit the original test reports and certificates of the labs from which samples were analyzed.	The photograph of monitoring stations & sampling locations are given in **Annexure-XXVII.** Test Reports for Air, Water, Noise & Soil are given in **Annexure V, VII, X & XV** and certificates of the labs are given in **Annexure III.**

Sl. No. of TOR	Description as per MoEF&CC	Compliance
49.	The water requirement for the Project, its availability and source should be furnished. Quantity of surface or ground water to be used for the Project should be indicated. A detailed water balance should also be provided. Submit the year wise target for reduction in consumption of the ground/surface water by developing alternative source of water through rain water harvesting measures. 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. The capital and recurring expenditure to be incurred needs to be submitted.	Water requirement and source is given in section 2.13 and water balance is shown in Fig No. C2-9 of Chapter 2. The rain water collected in mine pits as well reject from RO / DM plant of the proposed cement plant (when it becomes operational) shall be used to minimize fresh water requirement.
50.	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.	Impact and mitigation measures of the project on water quality is given in section 4.6 of Chapter 4.
51.	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.	First order streams can be seen to originate from within the lease area and exit directly or merge into second order streams. Two second order streams are passing through the southern portion of lease and exit west wards. These streams feed the Samadhiyala salinity ingress control bund and overflow into the sea. Water logged area are present in southern part of the ML. These are shown in **Fig No. C3-1.**
52.	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.	Site elevation, working depth is given in Table No. C4-7, Chapter 4.
53.	Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary	There will be no intersection of ground water table during five years of plan period. However ground water intersection will occur in post

Sl. No. of TOR	Description as per MoEF&CC	Compliance
	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. In case of surface water is proposed to be utilized then Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	monsoon stage in pit no. 6 at 11th year of operation i.e. end of mine life. To avoid intersection of ground water, conceptual pit no. 6 bottom level will be kept above ground water level i.e. +4.0m AMSL The shallow depth pits shall be backfilled simultaneously after mining for limestone and shall be converted into agriculture land / utilized for plantation purpose. M/s Ground Water & Mineral Investigation Consultancy Centre (P) Ltd., Jaipur has assessed the hydrogeological conditions and impact of mining. Extract from the same has been included in Section 3.5, Chapter 3 and Section 4.5.1, Chapter 4. Since the proposed mine pits will not intersect the ground water table, no mine seepage is envisaged and hence no permission is required from Central Ground Water Authority.
54.	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.	Impact on transport is given in section 4.9 of Chapter 4.
55.	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.	The proposed land use at the end of plan period and life of mine is given in Table No. C4-11 and No. C4-12 of Chapter 4. The mine lease deed has been executed with District Collector, Bhavnagar. The change in land use from its present land use has to be carried out prior to commencement of mining,

Sl. No. of TOR	Description as per MoEF&CC	Compliance
		as per applicable rules of Govt. of Gujarat. Since the execution of lease deed, the second rights in case of government land has already been granted to the Company for mining. In case of private agricultural land, as and when the land becomes available for use by obtaining consent for mining/ownership, the change in land use to non-agriculture shall be obtained.
56.	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.	The R&R Plan/compensation details for the Project Affected People (PAP) has been incorporated in Chapter 3 Within the private land in conceptual pits at initial stage,as per latest survey carried out there are 18 houses/hutments in land of Gujarda (15 nos.), in land of Dudheri (3 Nos.) & Dudhala (0 Nos.) villages. There will be direct purchase or leasing of private land, with the willing consent of the private land owners. The detailed R&R Plan is given at section 3.11, Chapter 3, section 4.13 Chapter 4, Table No. C10-1 Chapter 10 & section 11.3.8 & 11.4.11 Chapter 11. Table C8-3, Chapter-8 is need based assessment. There are no ST in the villages touched by mine lease area as per Census 2011. SC are 30, 0, 44 & 18 in Dudhala No.1, Doliya, Gujarda & Dudheri village respectively. The schemes available for them from government are given in point 9, Table C8-3 along with action plan (proposed intervention) to aid them to use these schemes efficiently.
57.	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.	Implications and mitigation measures of surrounding public is given in section 4.14.2 of Chapter 4.
58.	Measures of socio economic significance and influence to the local	Measures of socio economic significance is given in section 4.13 of Chapter 4 and under

Sl. No. of TOR	Description as per MoEF&CC	Compliance
	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.	CSR and CER planning in sections 9.3 & 9.4 of Chapter 9.
59.	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.	The points raised in Public hearing & commitments have been incorporated in Table C7-3 of Chapter 7 after conducting the public hearing on 28.04.2023.
60.	Activity-wise time-bound action plan on the issues raised and commitment made during public hearing to be submitted as part of the final EMP Report in compliance of the Ministry's OM F.No.22-65/2017-IA.III dated 30° September, 2020.	The time bound action plan on concerns of the public has been incorporated in Table C7-3 of Chapter 7 after conducting the public hearing on 28.04.2023.
61.	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 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 proposed safeguard measures in each case should also be provided.	Nirma Ltd. has a well laid down Environment policy as given in section 10.2 of Chapter 10. Hierarchical system or administrative order of the Company to deal with environmental issues and for ensuring compliance with the EC conditions is given in section 10.3.1 of Chapter 10. The hierarchy of environmental cell is given in Fig C6.1 of Chapter 6 also.
62.	Detailed environmental management	EMP is given in Chapter 10.

Sl. No. of TOR	Description as per MoEF&CC	Compliance
	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.	
63.	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.	The project does not lie in critically polluted area. The nearest critically polluted area is Gujarat Industrial Development Corporation, Chitra, Bhavnagar present at a distance of 87 km, NE. The project does not fall in Aravalli range.
64.	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 furnished (Note: The mining projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).	The proposed project lies beyond distance of 0.5 km from High Tide Line of Arabian Sea Coast. The CRZ map has been prepared by Institute of Remote Sensing, Anna University, Chennai and reproduced in **Annexure XIX** along with report.
65.	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of opencast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.	Mine safety parameters are addressed as follows: ▪ ***Subsidence*** - not applicable as this is an open cast mine ▪ ***Slope stability-*** The standard practice of maintaining the slopes below the angle of repose of the material to be handled will be followed for ensuring safe opencast mining. The bench and ultimate pit slope shall be maintained below 45 degree and gradient of ramp at 1 in 16 shall be maintained as per MMR, 1961 as detailed in Approved Review of Mining Plan. After

Sl. No. of TOR	Description as per MoEF&CC	Compliance
		commencement of mine, geo-technical investigations on excavated and dumped material shall be carried out for identifying any mid course corrections, if needed. ***Blasting*** - It may be noted that only 50% of the mining operations shall be blasting based and balance shall be through surface miners. Safeguard measures that will be taken for blasting have been given in section 4.4.2, point 15 of Chapter 4. Blasting shall be carried out in compliance to DGMS, Dhanbad (Circular No. 7 dated 29-08-1997) as detailed in Section 4.8, Chapter 4. After commencement of operation, blasting studies shall be periodically carried out to check whether any modifications needed as per actual ground conditions.
66.	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.	As this is a proposed project, anticipated occupational Health and safety impact and preventive measures are given in section 4.14 of Chapter 4.
	The general points are also to be followed: -	
67.	A Disaster management Plan shall be prepared and included in the EIA/EMP report	Disaster management Plan is given in Chapter 7
a)	All documents to be properly referenced with index and continuous page numbering	All documents are properly referenced with index and continuous numbering
b)	Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.	The data is presented with the period of collection.
c)	Project Proponent shall enclose all the	All the analysis reports are enclosed and has

Sl. No. of TOR	Description as per MoEF&CC	Compliance
	analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the project.	been done by NABL Accredited Min Mec R & D laboratory. The certificate is given in **Annexure-III.**
c)	Where the documents provided are in a language other than English, an English translation should be provided.	All documents are provided in English
d)	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	The latest forms of MOEF&CC on parivesh portal shall be filled.
e)	While preparing the EIA Report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.	O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, has been followed while preparing EIA Report.
f)	Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing Changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. Process) will entail conducting the PH again with the revised documentation.	No change is there after the grant of TOR
h)	As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of	As the project is proposed, Environment Clearance is under process.

Sl. No. of TOR	Description as per MoEF&CC	Compliance
	the project, should be obtained from the Regional office of ministry of environment, forest and climate change, as may be applicable	
i)	The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.	The EIA report includes (i) Surface plan of the ML area is given in Fig No. C2-1 of chapter 2. (ii) Topography map indicating contours of main topographic features, drainage and mining area- Fig No. C3-1, Chapter 3. (iii) Geological map and section Fig No. C2-2 and No. C2-3, respectively, of Chapter 2. (iv) Section of the mine pit-five year development Plan in Fig No. C2-4 to C2-8 of Chapter 2.

CHAPTER 1

INTRODUCTION

1.1 PURPOSE OF THE EIA REPORT

Environmental Clearances is a statutory requirement for the projects listed in the Schedule of EIA notification dated 14th September 2006 and its amendments till date. Leases more than 250 ha mining lease area fall under Sl. No. 1(a) in category A of the schedule to the EIA Notification 2006. Category A project shall seek Environmental clearance from the Ministry of Environment, Forest & Climate Change (MoEF&CC), New Delhi. The procedure covers submission of application with Form 1 (Part-A & B) and pre-feasibility report to MoEF&CC, preparation of draft EIA/EMP in line with the Terms of Reference, applying to the State Pollution Control Board for public hearing, recording of suggestions/ objections and statements of the public and finalizing the EIA/EMP report after incorporating the responses and action plans to the points raised by the public. The final EIA/EMP report shall be submitted to the MoEF&CC which shall be appraised by the Expert Committee and thereafter only the Environmental Clearance is granted.

To obtain the Environmental Clearance for the proposed project, environmental studies have been carried out and Environmental Impact Assessment (EIA) / Environment Management Plan (EMP) has been prepared in line with Terms of Reference (TOR) issued by Ministry of Environment, Forest & Climate Change, New Delhi. This EIA/EMP report has been prepared for proposed 2.7 million tonnes per annum (MTPA) ROM production of Limestone by mechanized open cast method in the total ML area of 681.62 ha (reduced from 1489.4701 ha.) by M/s Nirma Limited in villages Gujarda, Dudheri and Dudhala, Tehsil Mahuva, District Bhavnagar, Gujarat.

1.2 IDENTIFICATION OF THE PROJECT

Nirma Ltd. (NL) is setting up a Cement Plant (capacity 1.91 MTPA) and a Captive Power Plant (capacity 50 MW) in first phase at village Padhiarka, Taluka: Mahuva, District Bhavnagar of Gujarat State. Company is also having Soda ash plant near Bhavnagar & limestone is used for manufacturing of Soda ash & company is proposing to use limestone in Soda ash plant with the permission of the State Govt.

In order to source the major raw material for the cement plant, the company has applied for various mining leases of limestone for captive use in Cement Plant located at Taluka Mahuva, district Bhavnagar. The State Govt. had issued Letter of Intent (LOI) to grant the mining lease near village Gujarda, Dudheri & Dudhala over an area of 1497.4701 ha vide letter no. MCR-102004-1943-CHH dated 15.02.2008. A copy of Letter of Intent (LOI) is attached as **Annexure II**.

Mining of limestone will be carried out as per Review of Mining plan with Progressive Mine Closure Plan approved by IBM on 05.08.2021. The proposed run of mine (R.O.M.) excavation of limestone is 9000 tonnes per day i.e. 2.7 MTPA.

The proposed "Gujarda, Dudheri & Dudhala Limestone Mines" of M/s Nirma Ltd. having lease area of 681.62 ha of land, according to the environmental notification 14th September, 2006 at project identification schedule read at 1(a)" Mining of Mineral'', comes under category 'A' project.

The project is located within villages Gujarda, Dudheri & Dudhala in under Mahuva Taluka of District Bhavnagar, Gujarat.

1.2.1 Background of the Project

Company submitted the fresh Form I(Part A & Part B) and Pre-feasibility Report for grant of Terms of Reference vide letter No. NL/BH/ENV-153/1933/2022 dated 18.11.2022. The EAC proposal in the 7th EAC (Non-Coal Mining) meeting held during 5th-6th December, 2022 for grant of Terms of Reference (ToR) under the provisions of EIA Notification, 2006 for M/s Nirma Limited for mining of limestone in Gujarda, Dudheri & Dudhala Limestone mine with production capacity of 2.7 MTPA in the mine lease area of 681.62 ha. The Additional details was sought on 13.12.2022 and company submitted the reply to the ADS on 16.12.2022. The proposal again considered in the EAC meeting held on 17th - 18th January 2023 and EAC recommended the proposal for grant of Terms of Reference. The Terms of Reference were issued for the preparation of EIA/EMP Report vide MOEF&CC's letter no. J-11015/153/2016-IA. II(M) dated 06.02.2023 (copy given in **Annexure I**).

The chronology regarding the project is as follows:

i. Company applied for mineral Limestone & Marl over an area of 1497.4701 ha at villages Dudhala, Gujarda & Dudheri, Taluka Mahuva in District Bhavnagar (Gujarat).

ii. The State Govt. issued LOI to grant the mining lease for mineral limestone and marl over an area of 1497.4701 ha vide letter no. MCR-102004-1943-CHH dated 15.02.2008.

iii. After reducing 8.0 Ha. falling in CRZ issued revised LOI for 1489.4701 Ha. vide Govt. letter no. MCR-102004-1943-CHH dated 02.02.2011 with one more condition to use the chemical grade limestone occurring on the upper portion in Soda ash manufacturing.

iv. Meantime, the Environmental Clearance was accorded for company's proposed cement plant at village Padhiarka, District Bhavnagar by MOEF, New Delhi vide letter no. J-11011/992/2007-IAII(I) dated 11.12.2008.

v. As per the statutory provisions in MCR at the time of fresh grant, State Government. had asked for Mining Plan. Thus, the Mining Plan including Progressive Mine Closure Plan as per Rule 22 of MCR 1960 for said Limestone Deposit at villages Dudhala, Gujarda & Dudheri was prepared and its approval obtained from competent authority i.e. IBM vide letter no. 682(23)(621)/2008-UDP dated 24.03.2009.

vi. The company submitted the project proposal to Ministry of Environment and Forests, Govt. of India which issued Terms of Reference (ToR) for the said mining lease area vide letter dated 24.03.2009.

vii. However, the Environmental Clearance of the cement plant was revoked by MoEF, New Delhi vide their order dated 01.12.2011. Hence, in the corresponding time period, the process of Environmental Clearance of the said mining lease was also stalled.

viii. The revoked order of the cement plant was challenged in Hon'ble **NATIONAL GREEN TRIBUNAL (NGT)**, which vide their order dated 14.01.2015 in the appeal no. 04 of 2012 has set aside MOEF's revocation order dated 01.12.2011.

ix. Accordingly, Company re-initiated the process for grant of Environmental Clearance for the mining lease area as per LOI by submission of a fresh proposal in April 2016 to Ministry of Environment, Forest & Climate Change (MoEF & CC), New Delhi.

x. The Expert Appraisal Committee (Mining) of MoEF&CC recommended the proposal for grant of ToR in Gujarda, Dudheri & Dudhala Limestone Mining Lease with reduced mining lease area of 681.62 Ha and issued Terms of Reference (TOR) vide letter no. J-11015/153/2016-IA II(M) dated 13.11.2017 for the mining lease. The Same has been extended vide letter no. F. No. J-11015/153/2016-IA-II (M) dated 16.03.2020 by MOEF&CC.

xi. Ministry of Mines, Govt. of India, New Delhi issued order titled "Mines & Minerals (Development and Regulations) Removal of Difficulties Order 2017" dated 04.01.2017. It permitted to consider the grant of the mining lease in those cases where in the condition of obtaining Environment Clearance has not been complied by the applicant on or before 11.01.2017 but all other conditions specified in LOI have been fulfilled.

xii. Accordingly, the order for grant of mining lease was issued by Industries and Mines Department, Govt. of Gujarat, Gandhinagar vide order no. MCR-102004-1943-CHH dated 08.01.2017 in an area of 681.62 Ha for 50 years (refer **Annexure- II**).

xiii. Thereafter, the mining lease deed was executed on 11.01.2017 between Dist. Collector, Bhavnagar, State Govt. and the lessee Nirma Ltd. for a

period of 50 years under the provision of MMDR Amendment Act, 2015 and also registered the executed mining lease deed with Sub, Registrar, Mahuva on 11.01.2017.

xiv. Under provision of Minerals (other than Atomic & Hydro Carbons Energy Minerals) Concession Rules, 2016, "Mine Development and Production Agreement (MDPA)' was signed between State Govt. and company on 11.01.2017.

xv. Accordingly, the proposal of Nirma Ltd. for seeking Environmental Clearance for production capacity 2.7MTPA was considered by MoEF&CC and issued Terms of Reference (TOR) vide letter no. J-11015/153/2016-IAII(M) dated 13.11.2017 for the reduced area 681.62 ha. The area reduction took place due to exclusion of Gaucher land, part of the Private Land, villages periphery and highway & its periphery area as safety barrier as per directions of EAC, MoEF&CC, New Delhi.

xvi. Modified Mining Plan along with Progressive Mine Closure Plan over an area of 681.62 ha. for Gujarda, Dudheri & Dudhala Limestone Mining Lease has been approved by Indian Bureau of Mines, Gandhinagar, Gujarat vide letter No. 684 (4) (1)/MP-197/2018-GNR dated 04.02.2019.

xvii. Thereafter Review of Mining Plan with progressive Mine closure Plan over area of 681.62 ha for Gujarda, Dudheri & Dudhala Limestone Mining Lease has been approved by Indian Bureau of Mines, Gandhinagar, Gujarat vide letter no. 684(4)(1)/MP-348(197)/2021-22 GNR/ 1121 dated 04.08.2021. Approval of the mine plan is enclosed as **Annexure XXII.**

The land ownership within the lease is private & government land as per revenue records and no any Gauchar land is involved in the lease area. Lease area does not form a part of any Reserve Forest, National park, Wild life Sanctuary or National biosphere reserve.

It is pertinent to be noted here that mining lease of Nirma Ltd. executed with condition that the lessee will have to produce Environment Clearance Certificate issued by MoEF& CC, New Delhi before commencing mining activity as per direction in MM(DR) Removal of Difficulties order 2017, dated: 04.01.2017.

Looking towards its date of execution, lease period as well as the five years block period of mining lease period has been started from year 2016-17. The date of expiry of mining lease period is 10.01.2067. Furthermore, the applicability of approved mining plan has also been started from the date of execution i.e. 11.01.2017 (FY 2016-17) and five year block period will be up to FY 2020-21 (31.03.2021).

Modified Mining Plan has been approved by IBM which was valid upto 31.03.2021. On expiry of Modified Mining Plan, Review of Mining Plan with

Progressive Mine Closure Plan for further five years period from 2021-22 to 2025-26 has been approved by Indian Bureau of Mines, Gandhinagar on 05.08.2021, as discussed earlier.

Salient features

The salient features of the project are summarized in **Table No. C1-1**.

TABLE NO. C1-1: SALIENT FEATURES OF THE PROJECT

Project name	Gujarda, Dudheri and Dudhala Limestone Mine
Project proponent	Nirma Limited
Villages in block area	Gujarda, Dudheri and Dudhala
Coordinates	Latitude: 21° 01' 1.31" N & 21° 03' 44.86" N Longitude: 71° 41' 15.21" E & 71° 43' 38.54" E
Mining Lease Area	681.62 Ha
Rated Capacity	2.7 MTPA
Mineable Reserves	20.574 million tonnes
Life of the mine	11 years (Life of mine may be increased subject to conversions of resources under 333 category into category of reserves 111)
Stripping ratio for plan period	1:0.00 tonne/ cum
Total Soil Generation during life of mine	0.57 Mcum
Method of Mining	Opencast Mechanized (Conventional & Non-conventional)
Working days	300 days, 2 shifts of 8 hours each
Manpower	84
Transportation	By road to Cement Plant of the company near Padhiarka & NH for Soda ash near Bhavnagar
Expected cost of the project	25 crores
Elevation of lease area	1 m to 22.23 m a.m.s.l.
Topography	Mostly plain with minor undulations
Water requirement	44 cum/day
Source of water	Narmada Water pipeline,/water tankers and mine water
Power requirement	100 KW, DG Set-5 KVA
Power source	Gujarat State Electricity Board / Captive Power Plant located at Cement Plant near Padhiarka.

1.3 PROJECT PROPONENT

M/s Nirma Ltd. (a Public Limited Company) is having its registered office at "Nirma House" on Ashram Road, Ahmedabad- 380009, Gujarat. Nirma Ltd. is one of the leading soda ash producing company in India.

Nirma Ltd. is a part of the Nirma Group engaged in the business of consumer products like soap, detergent and Industrial products like Sulphuric acid, Oleum, Distilled Fatty acids, Linear Alkyl Benzene, Soda ash (Light & Dense), Salt & Caustic Soda etc. This Group came in existence in the year 1980. Company has established Soda Ash manufacturing plant located in Bhavnagar and also acquired Soda Ash plant in Porbandar District of Gujarat. The present capacity of Soda ash plant is 10,08,000 TPA for Bhavnagar location and 5,40,000 TPA for Porbandar location. Company is also having captive Power Plants along with its Soda Ash plants in Bhavnagar & Porbandar District. The high quality of Limestone i.e. CaO >48% is one of the basic raw materials used in boiler of Power Plant for de-sulfurization process and soda ash manufacturing process. Company is continuously expanding its wings for increase in production capacities and diversification and set up a cement plant in Rajasthan. It has overall about 18000 employee-base and annual turnover of around Rs. 7000 crores.

Production facilities of the Nirma group at its various units are given in **Table No. C1-2**.

TABLE NO. C1-2: PRODUCTION FACILITIES OF NIRMA GROUP IN GUJARAT

Sl. No.	Location	District	State	Products Manufactured
1.	Kalatalav	Bhavnagar	Gujarat	Soda Ash, Detergent Powder & Cake, Toilet Soap, Edible Salt, solar salt & Caustic Soda etc.
2.	Alindra	Baroda	Gujarat	Linear Alkyl Benzene, Detergent Powder & Cake etc.
3.	Mandali	Mehsana	Gujarat	Oleum, Sulphuric Acid, Fatty Acids, Alpha Olefin Sulphonate, Glycerin, Toilet Soap, Detergent Powder & Cake etc.
4.	Moraiya	Ahmedabad	Gujarat	Detergent Powder & Cake, Single Super Phosphate, Packaging materials etc.

Sl. No.	Location	District	State	Products Manufactured
5.	Porbandar	Porbandar	Gujarat	Soda Ash
6.	Sachana	Ahmedabad	Gujarat	Intravenous Fluids, Large Volume Parenterals (LVP), Small Volume Parenterals (SVP), Medical Devices etc.

The company (Nirma Ltd.) is diversifying its activities into cement manufacturing in Gujarat.

1.4 BRIEF DESCRIPTION OF THE PROJECT

1.4.1 Nature of project

The proposed project is a limestone Mining Project located in villages Gujarda, Dudheri and Dudhala, Tehsil Mahuva, District Bhavnagar, Gujarat

1.4.2 Size

The proposed capacity will be 2.7 million tonnes per annum (MTPA) ROM production by mechanized open cast method (Conventional & Non-conventional) in the total ML area of 681.62 ha.

1.4.3 Location

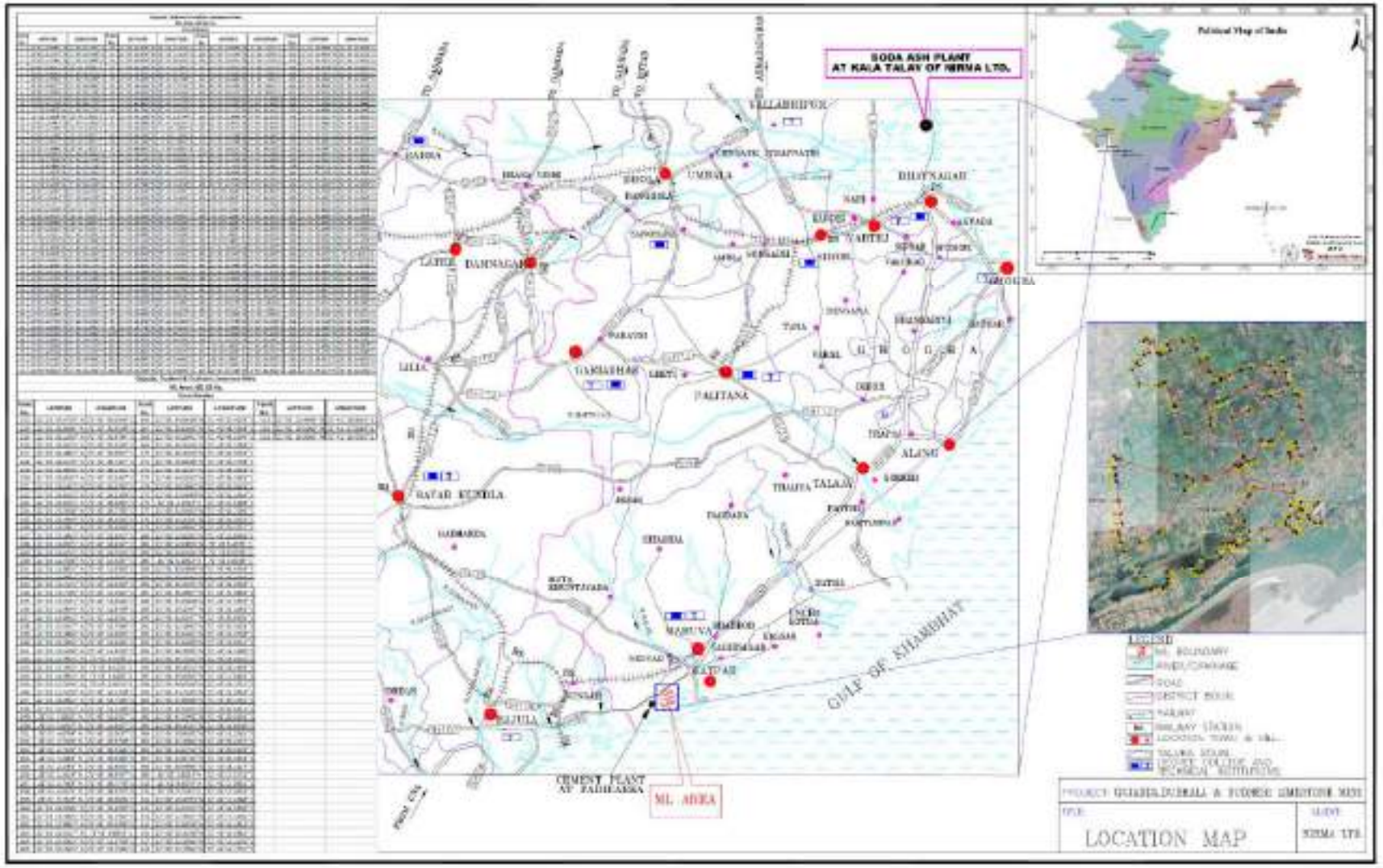
The proposed project is a limestone Mine present in villages Gujarda, Dudheri and Dudhala, Tehsil Mahuva, District Bhavnagar, Gujarat.

The lease area falls within the Survey of India Toposheet No. 41 O/12 (restricted). The area is bounded by the following geographical coordinates as per approved mining plan. Complete geographical coordinates are given in **Fig No. C1-1**.

Point (Refer Fig No. C1-1)	Latitude, N	Longitude, E	Remark
A	21° 03' 44.86"	71°42’9.60”	Pillar 70
B	21°01’45.55”	71°43’38.54”	Pillar 180
C	21°01’1.31”	71°41’39.94”	Pillar 256
D	21°02’21.15”	71°41’15.21”	Pillar 317

The location of the project can be seen in **Fig No. C1-1**.

FIG NO. C1-1: LOCATION MAP



1.4.4 Communication

Road

The mining lease area is located at a distance of about 4 km, NE of Mahuva town (Tehsil Headquarter) and is easily approachable by road. National Highway NH-51/NH-8E (Una/Rajula-Mahuva/Bhavnagar highway) passes through the Lease area. Mahuva is Taluka Head Quarter in Bhavnagar district of Gujarat. Mahuva is about 95 km from District Head Quarter Bhavnagar.

Rail link

The nearest railway station is Amrutvel present at a distance of 3.5 km, NW and Mahuva which lies on Mahuva-Rajula broad gauge section of Western Railway Zone and is present at a distance of about 5.3 km aerially in NE.

Air link

The nearest airport for regular commercial flight is Bhavnagar situated at about 90 km NE of ML area.

Arabian Sea Coast

The nearest Arabian sea coast is about 0.5 km South from mine lease.

Port

Pipavav is the nearest Port at about 23 km in west of mining lease area.

1.5 IMPORTANCE TO THE COUNTRY AND REGION

The principal use of limestone is in the Cement Industry. Other important uses are in boiler of Power Plant for de-sulfurization process as well as in soda ash manufacturing process as raw material and manufacture of quicklime (Calcium Oxide), slaked lime (Calcium hydroxide) and mortar. Pulverized limestone is used as a soil conditioner to neutralize acidic soils (agricultural lime). It is used in sculptures because of its suitability for carving. It is often found in medicines and cosmetics. In some circumstances, limestone is used for glass making. As a reagent in fuel-gas de-sulphurization, it reacts with sulphur dioxide for air pollution control. It can suppress methane explosions in underground coal mines. It is added to toothpaste, paper, plastic, paint, tiles and other materials as both white pigment and cheap filler. In blast furnaces, limestone binds with sillica and other impurities to remove them from the iron.

India has huge resources of limestone distributed over different parts of the country. It is comfortably placed in terms of annual capacity and production of cement. Cement-grade limestone occurs in all the limestone-bearing areas, while SMS, BF and chemical-grade limestone occur in selective areas.