

# **FEASIBILITY OF DHANORA LIMESTONE MINE**

## **INTRODUCTION**

The lease area lies approximately between the Latitudes 24°40'33.47850" N & 24°42'17.45375" N and Longitudes 74° 35' 34.48567" E & 74° 36' 22.05517" E. The lease area forms a part of the survey of India Topo sheet No. 45 L/10. The lease area is connected by State Highway Chittor-Neemuch leading to village Dhanora at 0.50 Kms. The Nimbahera is 7 Kms from village Dhanora. The lease area lies on a flat country that gradually slopes down towards the east. Water is mainly recharged by a seasonal nalla (during rains) running south to middle of lease. The limestone bands dipping gently towards east and west direction forms a syncline structure. The lease area is situated at 435 – 445 m above MSL.

The climate is semi-arid with an average annual rainfall of 600 mm. The temperature varies from 45°C in summer to as low as 1°C in winter. The area is drained by a nalla, which is a tributary of Non-Perennial River which feeds sea. Gambhiri road is the nearest railway station on the Ratlam-Ajmer meter gauge and Neemuch-Kota Broad gauge section of western railway. The lease area is 7km away from Gambhiri road railway station. Udaipur is the nearest airport & served by schedule flights of Indian and other Private Airlines. It lies on the air route between Delhi & Mumbai via Ahmedabad.

## **Brief History**

The M/s Wonder Cement Ltd., R.K. Nagar, Nimbahera, District-Chittorgarh (Rajasthan) have already a mining lease for Limestone (Cement Grade) over an area 740.93 hectare was granted vide Govt. order no.- F5 (76) Khan/ Gr.2/07, on dated 23-08-2008. This is another lease for limestone requirement fulfilled for expanded plant capacity. The Govt. of Rajasthan has sanctioned mining lease vide order no. No. P.12

(26)Khan/Group-2/2015 dt. 03.04.2018 for area of 255.0032 hectares for mineral limestone (Cement grade) near village/s Karunda, Payri, Dhanora, Maliyakheri (Now Dhanora Limestone Mine) in Tehsil Nimbahera, District Chittorgarh, Rajasthan.

The lease deed was executed & registered on 06-04-2018 for 50 years from 06-04-2018 to 05-04-2068.

At present the company is operating two limestone mine over an area of 740.93 ha. near villages Bhatkotari, Phalwa, Lasravan and Rasulpur and 255.0032 ha. Near village Dhanora, Payari, Karunda, Maliyakheri and Phalwa, Tehsil Nimbahera, District Chittorgarh, Rajasthan, to feed its cement plant. The mine is fully mechanised opencast mine operated with Heavy Earth Moving Machinery (HEMM).

**Environment Clearance:**

EC was obtained by company for mines vide letter no.-J-11015/46/2015-IA.II(M) on dated 05-01-2017 for capacity of 5.00 MTPA limestone (ROM). Later on amended environmental clearance obtained vide letter no. IA-J-11015/46/2015-IA.II(M) on dated 08-01-2018 for incorporate of crusher within lease.

Company obtained CTE vide letter no. F(Mines)/Chittorgarh (Nimbahera)/ 1867(1)/2017-2018/544-549 dated 26.04.2018 and CTO vide letter no. F(Mines)/Chittorgarh (Nimbahera)/1867(1)/2017-2018/538-543 dated 26.04.2018 for the capacity of 5.00 MTPA limestone (ROM) from RSPCB.

This Review of Mining Plan with PMCP is submitted under Rule 17 (2) of MCR, 2016 and Rule 23 of MCDR, 2017 respectively for a period from 01.10.2023 to 31.03.2028.

**Mining Plan /Scheme of Mining**

Mining plan with PMCP was approved vide letter no. 682 (23) (827)/2015-RCOM dated 29-07-2015 from RCOM, IBM, Udaipur and

Modification in the approved Mining plan was approved vide letter no. 548(4)(3) (1799)/2019 RCOM AJM 1464 for period of year - 2020-21 to 2023-23.

## GENERAL MINE DESCRIPTION

a) **Name of Applicant/ Lessee** M/S Wonder Cement Limited

Registration No. under IBM/226/2011  
Rule 45 of MCDR 1988

**Address** R. K. Nagar,  
Nimbahera – 312601,  
District - Chittorgarh, Rajasthan

Phone +91-1477 277777

Fax +91-1477 277733

Mobile +91-7726007063

E-Mail [info@wondercement.com](mailto:info@wondercement.com)

**Corporate Office Address** 17, Old Fatehpura,  
Seva Mandir Road,

District Udaipur - 313004

State Rajasthan

PIN Code 313004

Phone +91 294 2777777

Fax +91 294 2777733

Mobile No. +91-7726007063

E-Mail ID [info@wondercement.com](mailto:info@wondercement.com)

b) **Status of Applicant /  
Lessee**

Private Individual -

Co-Operative Association -

Private Company -

Limited Company A Limited company.

M/S Wonder Cement Limited is a limited company and the affairs of the company are controlled by Board of Directors.

Shri Parmanand Patidar, is the Director & Nominated owner of the Dhanora Limestone Mines. List of Board of Directors is given below:

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S. No.	DIN	Name & Address	Designation
1	8166	Shri Ashok Patni, "R.K. House, Madanganj-Kishangarh, District — Ajmer 305801, Rajasthan"	Chairman cum Whole Time Director
2	8230	Shri Suresh Patni, "R.K. House, Madanganj-Kishangarh, District — Ajmer 305801, Rajasthan"	Managing Director
3	136437	Shri Vimal Patni, "R.K. House, Madanganj-Kishangarh, District — Ajmer305801, Rajasthan"	Vice - Chairman cum Whole Time Director
4	3401589	Shri Kiran Dattatrayrao Patil, "1204, Tower-1, NCC Urban One Narsingi, Manchirevula, Rangareddy, Rangareddy, Telangana, India, 500075	Managing Director
5	88527	Shri Manish Sanghi, "121 Engineers Estate IP Extn Mayur Vihar, PH-1, East Delhi (110092)"	Joint Managing Director
6	9584	Shri Ibrahim Ali, "10-E, Old Fatehpura, Udaipur-313001, Rajasthan"	Whole Time Director
7	8413176	Shri Sanjay Chandrashekhar Joshi, "504,Udau Arcade Apartment Near Bigbazar, Sukhadiya Circle, New Fatehpura, Udaipur, Rajasthan (313001)"	Whole Time Director designated as Executive Director
8	199370	Shri Parmanand Patidar, "20, Kanchandeeep, Ganesh Nagar, Udaipur - 313001, Rajasthan"	Whole Time Director
9	5170081	Shri Vivek Patni, "R.K. House, Madanganj-Kishangarh, District — Aimer -305801. Raiasthan"	Director
10	8002136	Shri Rishabh Patni, "23, R.K. House, Old Fatehpura, Near Ahinsa Circle,	Director
11	1850902	Smt. Kusum Kataria, "Plot No. 10, Kusum Vihar Colony, Behind R.K. House, Kishangarh, Rajasthan (305801)"	Director

12	110978	Shri Ghanshyam Agrawal, "C-72, Valmiki Marg, Hanuman Nagar, Vaishali Nagar, Jaipur 302021, Rajasthan"	Independent Director
13	1643145	Shri Dilip Kumar Talesara, "6-7, TanishqNavratan Complex, Bedla Road, Girwa-Udaipur, Udaipur (313001), Rajasthan"	Independent Director
14	1550844	Shri Dwarka Prasad Somani, "47, Mehta Ki Back, Adinath Nagar, Fatehpura, Bedla Road, Girwa-Udaipur, Rajasthan, India (313001)	Director

**Shri Parmanand Patidar** is the Nominated owner under Mines Act 1952. Board resolution in favour of Nominated owner is attached as **Annexure No.-4**. Photo ID and address proof is attached as **Annexure No.-6**.

Public sector Undertaking

Joint Sector Undertaking No

Other (Specify) No

A Public Limited Company

- c) **Mineral(s) which are occurring in the area and which the applicant intends to mine** Limestone is occurring in the area and the applicant intends to mine limestone only.
- d) **Period for which the mining lease is granted / renewed/proposed to be applied** 50 Years, Lease period expiry date is 05.04.2068.
- 50 Years, Lease period expiry date is 05.04.2068.

- e) **Name of the prospecting agency** The area has been explored by two agencies the namely
1. Department of Mines & Geology,  
Govt. of Rajasthan,  
Khanij Bhawan, Near Shastri Circle,  
Udaipur – 313001, Rajasthan  
Phone; +91 294 2415091 to 95.  
E-Mail; director@dmg-raj.org
  2. Wonder Cement Ltd.  
17, Old Fatehpura,  
Seva Mandir Road,  
Udaipur (Rajasthan)  
Pin : 313004  
Phone : +91 294 300610  
Fax : +91 294 3006333  
Mobile : +91-7726007063  
E mail ID : corp.office@wondercement.com
  3. Central Drilling Associates (CDA)  
Shubham Tower ,First floor  
Block no.9 Plot no.18/1 B-2  
RPTS Road, Anjani Square  
Nagpur-15
- f) **Reference no. and date of consent letter from the state govt.:-** Mining lease for Dhanora Limestone mine was granted vide order no. No. P.12 (26)Khan/Group-2/2015 dt. 03.04.2018 for area of 255.0032 hectares for mineral limestone (Cement grade). Lease deed has been registered and excuted on dated 06.04.2018 for the period of 50 years (from 06.04.2018 to 05.04.2068) from date of registration.

## LOCATION OF MINE

District and State	Chittorgarh, Rajasthan
Taluka	Nimbahera
Village	Dhanora, Payari, Karunda, Malyakheri and Phalwa
Khasra No./Block Range / Felling Series etc.	Govt. Waste, Charagah & Private Land
Applied Area (hectares)	255.0032 ha.

The applied area falls in Toposheet No. 45 L/10.

### 1.0 Mineral Resource estimate for conversion to Mineral Reserve

1(a) Description of Mineral Resource estimate used as a basis for the conversion to a Mineral reserve.

Department of Mines & Geology Govt. of Rajasthan and Wonder Cement Limited done core drilling in three phased.

S. No.	Bore Hole No.	Type (Core / RC/DTH)	Spacing	Inclination	Collar Level in mRL	Depth in m.
1	DBH-2 to 8, 11,12,13,16 & 17	Core(NX)	100 to 400 m.	Vertical	437 to 443	50 to 100
2	DCB-1 to 73	Core (NQ)	100 to 200 m.		429 to 445	25 to 140

Dhanora Limestone Mine's deposit is **Bedded Stratiform and Tabular Deposit of Regular Habit** and for this category 200 x 200 meters grid interval is required for **G-1 Category** exploration as per Minerals (Evidence of Mineral Contents) Rules, 2015 which is **fulfilled**. Bore holes drilled by DMG are not on grid pattern but closed to grid.



Some bore holes drilled by WCL also on 100 x 100 meters grid intervals but average are on 200 x 200 meters interval.

The depth of all bore holes was drilled 25 to 140m.

After explored whole lease, on the basis of samples analysis 143.8100 Ha. Area falls under mineralised and remaining 111.1932 Ha. Area consider under non-mineralised zone.

### **Regional Mineral Survey**

The District comprises of rocks of Bhilwara Supergroup Vindyan Supergroup and Deccan Traps Therock formations of Eastern Rajasthan and also Mandasaur district of Madhya Pradesh were studied by Dr. A. M. Heron in (1917-36). He classified the limestone formations of this area under Nimbahera Limestone belt which is equivalent to the Semri series (which is now called as Khorip group) of Lower Vindhyan of Vindhyan Supergroup.

The name Vindhyan has been derived from the Vindhyan Mountains in Central India. The Calc–Argillaceous member of Khorip group which were deposited in the unstable shelf are further divided into Khori Malan Conglomerate at the base, grading in upward succession into Jiran Sandstone, Bari Shale, Nimbahera Limestone and Suket Shale with Limestone. Later on, it was revised by Balmiki Prasad (1984). Based on this the generalised stratigraphy succession of the Lower Vindhyan in the Chittorgarh – Jhalawar area are given in table below:

Age	Super Group	Group	Lithology
Quaternary	Cretaceous to Eocene	Deccan Traps	Alluvium
			Laterite
			Basalt
Middle to Upper Proterozoic	Vindhyan Super Group	Bhandar Group	Lower Bhandar (Bundi Hill) Sandstone
			Lower Shale Middle Sandstone Upper Shale
			Samria shale with Dolomitic Limestone
			Lower Bhandar (Lakheri) Limestone
			Ganurgarh Shale
		Rewa Group	Upper Rewa (Govindgarh) Sandstone with shale
			Jahri Shale with Limestone
			Lower Rewa (Indergarh) Sandstone
			Panna Shale with Limestone
		Kaimur Group	Kaimur (Chittorgarh) Sandstone
		Khorip Group	Suket Shale / Jhalrapatan Shale
			Nimbahera limestone
			Nimbahera Purple limestone
			Bari (Nimbahera) Shale, Sandstone
			Jiran Sandstone (Khori Malan Conglomeratic Sandstone & Boulder bed at the base)
		Larsawan Group	Binota Shale
			Kalmia Sandstone
		Sand Group	Palri Shale and Porcellanite

			Sava sandstone, Grit
		Satola Group	Bhagwanpura Limestone
			Khardeola Sandstone & grit, Shale
			Khairmalia Andesite
Archaean to Lower Proterozoic	Bhilwara Group	Ranthanbhor	Barisadri Quartzite, Shale, Phyllite
		Rajpura-Dariba / Pur-Banera Group	Quartzite, Dolomite marble, Graphitic mica schist/ Quartzite Conglomerate Calc-gneiss impure marble Mica Schist
		Intrusive	Dolerite sill and Dyke, Amphibolites, Berach Granite, Undifferentiated granite, Serpentine
		Hindoli Group	Shale, Shale, Phyllite Dolomite Tuff with Carbonate band Metasubgreywacke with thin volcanic band
		Mangalwar Complex	Biotite schist, Quartzite, Dolomite Migmatite, Granite gneiss, feldspathic mica schist Mica Schist Fuchist quartzite Dolomite Marble

**Litho units**

**Bhadesar Quartzite**

Quartzite is exposed in the western most part of Regional Mineral Survey (RMS) covered area forming high rising hill trending north south. It is fine to medium grained, off white colour and ferruginous at places.

### **Bhagwanpura Limestone**

Quartzite in east is followed by Bhagwanpura Limestone. It occurs in low lying area where exposures are sporadic and mostly the limestone is found concealed under alluvium. It is fine to medium grained and greyish in colour. Wherever exposed it is highly fractured. As per memoir of Valmiki Prasad the limestone is siliceous and dolomitic in nature.

### **Palri shale**

Greyish and purplish coloured Palri shale is exposed around village Palri which is extending in North up to village Dhani and further North.

### **Binota Shale**

The Palri shales are overlain by Binota shale and can be seen in well sections and in nala cuttings. These have been converted into soil after weathering. These shales lie in contact with Bari shales in eastern side. General trend of the shale varies from N-S to NE-SW with low eastern dips. This shale is typically olive green and being stained by brown, pink and purple colour locally and mottled with dark purple at places.

### **Bari shale**

Bari shale is also known as Nimbahera shale and conformably overlies Binota shales. Generally it is trending in N- S direction with low eastern dips. Repetition of shale beds is seen in the area due to folding. This shale is thinly bedded with thin laminations and showing colour bandings at places. It is typically purple or greenish purple coloured, sometimes also light brown and pale yellow in colour. It is arenaceous in the lower part and calcareous towards the top. Shale cannot be used as decorative stone.

### **Regional Geological Mapping**

#### **Nimbahera Limestone**

It is named from the town of Nimbahera in Chittorgarh district. It conformably overlies the Bari shale and also has gradational contact at places. It is repeated with the Bari shale due to folding. This is exposed intermittently for about 3.5 km length in N-S direction with 5° to 20° easterly dips.

It is fine grained, massive, hard compact, regularly jointed, slabby and occurs as thin to thick beds varying in thickness from 10 cm to over a meter. The limestone is pale, light to dark grey, greenish grey, pinkish and reddish brown in colour with grey green and red shale partings. It breaks with smooth surface. The lower brownish limestone generally grades into Bari shale through calcareous shale. The limestone is suitable for cement manufacturing purpose.

Bhatkotari Limestone deposit forms a part of the Nimbahera Limestone Belt and belongs to Semri Series of Lower Vindhyan age. The sequence of formation exposed in the Bhatkotari area is as follows:

- Purple Shale
- Dark Grey Limestone
- Grey Limestone
- Light Grey Limestone
- Pink Limestone
- Greenish Grey Limestone

In the area under investigation, the formations are gently folded to form a Syncline and Anticline. An Anticline is observed in the western part of the lease area along lease boundary.

The purple shale, which is the youngest formation, is seen along western boundary and outside the area. But in the area they are not exposed on surface either due to capping of soil (mainly in the agricultural field) or due to its splintery and fissile nature cause deformation and disintegration of Shale into clay. Such type of clay deposit may occur in few inches to a meter or even more than one meter in thickness.

The dark Grey limestone is underlain by Grey limestone and successively underlain by light Grey limestone, Pink Limestone, Greenish Grey limestone.

The thickness of soil cover varies from less than a meter to as much as 2 m. However, the data from the examination of the open wells in the area under investigation the deposit have aided in the study of the different limestone bands. The delineation of the different limestone bands is based predominantly on their colour. The quality of the different limestone bands has also to some extent aided in the recognition and demarcation of the different limestone bands.

As regards to the dark Grey, Grey and Light Grey Limestone bands there is a gradational change from one type of limestone to another. The pink/purple limestone observed/occurs in the central and western part are discontinuous lenses within the light Grey limestone bands, But in the eastern side it occurs as a continuous band.

The dark Grey Limestone is not so consistent as grade wise it varies in quality from small to large fluctuation. It is mainly due to presence of thick shale veins/partings. The major portion of this band is found to occur below a veneer of the soil cover. The occurrence of this band has been established by the data from the boreholes, well sections and also the trenches excavated.

The dark Grey limestone is overlying Grey limestone and successfully overlying light Grey limestone, Pink Limestone, Greenish Grey limestone.

The upper portion of this Light Grey Limestone band, which occurs immediately beneath the Grey Limestone band, is of good quality. Except on southeast and eastern side, light Grey Limestone is little bit lower in quality in comparison to the central and western side of light Grey limestone. It is only due to the leaching, corrosion and weathering of limestone, which might have taken place due to water/hydraulic action from

seepage of water from Dam site and due to the thick strata of clay/soil over it.

As we have described earlier that the pink Limestone does not occur as a continuous band but it occurs as lenses within the Light Grey Limestone. It is most consistent one and is of very good quality among the limestone bands, which occurs in lease area.

**Strike:**

The general strike of the limestone bands in this area is N – S and sharp changes in the strike direction are observed in places.

**Dip:**

The dips of the bands generally vary from 5 to 10 degree, sometimes exceeding more than 15 degree. However at places the beds are horizontal. The outcrops of the different limestone are seen mainly in the Govt. wastelands, while the private lands are devoid of outcrops due to capping of overburden soil or standing crops at the time of this investigation.

**Joints:**

Rock is sedimentary and joints are not visible at any place.

**Pits & trenches :**

There is no pits and trenches in this area.

**Drilling:**

Core drilling with vertical boreholes with total 4570.60 mtrs. by total 85 boreholes done by DMG and WCL. There is no trenching and pitting done for exploration in area. Resource/Reserve is estimated by SURPAC software and report is enclosed herewith. These holes are marked on Surface Geological Plan / sections.

S.No.	Bore Hole No.	Type (Core / RC/DTH)	Dia.	Spacing	Inclination	Collar Level in mRL	Depth in m
1	DBH 2	Core	NX	100 to 200 m	Vertical	440	50
2	DBH 3					440	50
3	DBH 4					437	50
4	DBH 5					437	50
5	DBH 6					435	50
6	DBH 7					440	50
7	DBH 8					440	75
8	DBH 11					440	50
9	DBH 12					440	50
10	DBH 13					440	50
11	DBH 16					435	50
12	DBH 17					435	100
13	DCB-01					438	94.5
14	DCB-02					437	52.5
15	DCB-03					437	55.4
16	DCB-04					436	100.25
17	DCB-05					441	55
18	DCB-06					440	72
19	DCB-07					440	132
20	DCB-08					438	117
21	DCB-09					440	51
22	DCB-10					442	50
23	DCB-11					441	137
24	DCB-12					436	126
25	DCB-13					437	134
26	DCB-14					438	94.5
27	DCB-15					437	122
28	DCB-16					438	25
29	DCB-17					441	25
30	DCB-18					443	25
31	DCB-19					443	30
32	DCB-20					445	25



33	DCB-21				445	25
34	DCB-22				445	25
35	DCB-23				444	25
36	DCB-24				443	93
37	DCB-25				443.5	41
38	DCB-26				442	25
39	DCB-27				442	25
40	DCB-28				444	86
41	DCB-29				441	25
42	DCB-30				441	25
43	DCB-31				445	65
44	DCB-32				429	25
45	DCB-33				438	25.75
46	DCB-34				444	25
47	DCB-35				439	25
48	DCB-36				440	25
49	DCB-37				440	55
50	DCB-38				441	60
51	DCB-39				440	65
52	DCB-40				441	26
53	DCB-41				436	25
54	DCB-42				437	120
55	DCB-43				440	117
56	DCB-44				436	25
57	DCB-45				436	25
58	DCB-46				440	44
59	DCB-47				435	25
60	DCB-48				435	25
61	DCB-49				436	25
62	DCB-50				436	25
63	DCB-51				440	39
64	DCB-52				438	115
65	DCB-53				439	25
66	DCB-54				441	25
67	DCB-55				441	25
68	DCB-56				441	25
69	DCB-57				441	25
70	DCB-58				440	25
71	DCB-59				441	25

72	DCB-60					441	140
73	DCB-61					440	86
74	DCB-62					438	78
75	DCB-63					440	55
76	DCB-64					440	70
77	DCB-65					438	55
78	DCB-66					439	25
79	DCB-67					439	25
80	DCB-68					440	25.7
81	DCB-69					438	72
82	DCB-70					439	57
83	DCB-71					441	25
84	DCB-72					442	25
85	DCB-73					442	57

Exploration was carried out by core bore hole drilling and diameter of coreNX in DBH series and DCB series is NQ (47.6 mm) in size.

Sr. no.	Bore Hole no.	Northing	Easting	Inclination	Collar level (mRL)	Hole Depth (In Meters)	Bore Holes mineralization
1	DBH-2	2729951	459345.4	90° (Vertical)	439.25	50	Positive
2	DBH-3	2730227	459412.1	90° (Vertical)	437.5	50	Positive
3	DBH-4	2730531	459194.3	90° (Vertical)	438.25	50	Positive
4	DBH-5	2730760	459315	90° (Vertical)	438.5	50	Positive
5	DBH-6	2731130	459321.1	90° (Vertical)	439	50	Positive
6	DBH-7	2731639	459312.8	90° (Vertical)	442	50	Positive
7	DBH-8	2731826	459225.2	90° (Vertical)	444.3	75	Positive
8	DBH-11	2731634	458865.8	90° (Vertical)	442.9	50	Positive
9	DBH-12	2732064	459233.8	90° (Vertical)	444.3	50	Positive
10	DBH-13	2732159	458921.2	90° (Vertical)	444.5	50	Negative
11	DBH-16	2730354	459138.7	90° (Vertical)	437.1	50	Positive
12	DBH-17	2730685	459377.8	90° (Vertical)	437.8	100	Positive

13	DCB-1	2729879	459218.6	90° (Vertical)	438	94.5	Positive
14	DCB-2	2729882	459013.6	90° (Vertical)	437	52.5	Positive
15	DCB-3	2730073	459013.6	90° (Vertical)	437	55.4	Positive
16	DCB-4	2730270	459219.6	90° (Vertical)	436	100.25	Positive
17	DCB-5	2731279	459017.6	90° (Vertical)	441	55	Positive
18	DCB-6	2731281	459214.6	90° (Vertical)	440	72	Positive
19	DCB-7	2731271	459424.6	90° (Vertical)	440	132	Positive
20	DCB-8	2731087	459407.6	90° (Vertical)	438	117	Positive
21	DCB-9	2731082	459014.6	90° (Vertical)	440	51	Positive
22	DCB-10	2731482	459015.6	90° (Vertical)	442	50	Positive
23	DCB-11	2731484	459386.6	90° (Vertical)	441	137	Positive
24	DCB-12	2730475	459419.6	90° (Vertical)	436	126	Positive
25	DCB-13	2730671	459403.6	90° (Vertical)	437	134	Positive
26	DCB-14	2730075	459221.6	90° (Vertical)	438	94.5	Positive
27	DCB-15	2730859	459401.6	90° (Vertical)	437	122	Positive
28	DCB-16	2731096	459531.6	90° (Vertical)	438	25	Negative
29	DCB-17	2731300	458916.6	90° (Vertical)	441	25	Positive
30	DCB-18	2731679	458911.6	90° (Vertical)	443	25	Negative
31	DCB-19	2731678	459010.6	90° (Vertical)	443	30	Positive
32	DCB-20	2732100	459019.6	90° (Vertical)	445	25	Positive
33	DCB-21	2732100	458918.6	90° (Vertical)	445	25	Negative
34	DCB-22	2732189	459028.6	90° (Vertical)	445	25	Negative
35	DCB-23	2732278	459031.6	90° (Vertical)	444	25	Negative
36	DCB-24	2732274	459222.6	90° (Vertical)	444	93	Positive
37	DCB-25	2732281	459118.6	90° (Vertical)	444	41	Positive
38	DCB-26	2732292	459425.6	90° (Vertical)	442	25	Negative

39	DCB-27	2732080	459418.6	90° (Vertical)	442	25	Negative
40	DCB-28	2732084	459213.6	90° (Vertical)	444	86	Positive
41	DCB-29	2732086	459621.6	90° (Vertical)	441	25	Negative
42	DCB-30	2732283	459621.6	90° (Vertical)	441	25	Negative
43	DCB-31	2731865	459221.6	90° (Vertical)	445	65	Positive
44	DCB-32	2731866	459010.6	90° (Vertical)	429	25	Positive
45	DCB-33	2729664	459023.6	90° (Vertical)	438	25.75	Negative
46	DCB-34	2731891	458912.6	90° (Vertical)	444	25	Negative
47	DCB-35	2731292	459528.6	90° (Vertical)	439	25	Negative
48	DCB-36	2731489	459537.6	90° (Vertical)	440	25	Negative
49	DCB-37	2731128	459202.6	90° (Vertical)	440	55	Positive
50	DCB-38	2731404	459208.6	90° (Vertical)	441	60	Positive
51	DCB-39	2730888	459095.5	90° (Vertical)	440	65	Positive
52	DCB-40	2731064	458918.6	90° (Vertical)	441	26	Positive
53	DCB-41	2730772	459597.6	90° (Vertical)	436	25	Negative
54	DCB-42	2730278	459427.2	90° (Vertical)	437	120	Positive
55	DCB-43	2729881	459373.6	90° (Vertical)	440	117	Positive
56	DCB-44	2730619	459574.6	90° (Vertical)	436	25	Negative
57	DCB-45	2730621	459791.6	90° (Vertical)	436	25	Negative
58	DCB-46	2729663	459400.6	90° (Vertical)	440	44	Positive
59	DCB-47	2730651	459987.6	90° (Vertical)	435	25	Negative
60	DCB-48	2730673	460080.6	90° (Vertical)	435	25	Negative
61	DCB-49	2730833	459988.6	90° (Vertical)	436	25	Negative
62	DCB-50	2730855	459788.6	90° (Vertical)	436	25	Negative
63	DCB-51	2730851	458909.6	90° (Vertical)	440	39	Positive
64	DCB-52	2730081	459308.6	90° (Vertical)	438	115	Positive

65	DCB-53	2729676	459215.6	90° (Vertical)	439	25	Positive
66	DCB-54	2729270	460003.6	90° (Vertical)	441	25	Negative
67	DCB-55	2729443	459779.6	90° (Vertical)	441	25	Negative
68	DCB-56	2729465	459610.6	90° (Vertical)	441	25	Negative
69	DCB-57	2729296	459790.6	90° (Vertical)	441	25	Negative
70	DCB-58	2729430	459998.6	90° (Vertical)	440	25	Negative
71	DCB-59	2729268	459638.6	90° (Vertical)	441	25	Negative
72	DCB-60	2729472	459380.6	90° (Vertical)	441	140	Positive
73	DCB-61	2729574	459217.6	90° (Vertical)	440	86	Positive
74	DCB-62	2731022	459296.4	90° (Vertical)	438	78	Positive
75	DCB-63	2730667	458953.6	90° (Vertical)	440	55	Positive
76	DCB-64	2730675	459129.6	90° (Vertical)	440	70	Positive
77	DCB-65	2730267	459008.6	90° (Vertical)	438	55	Positive
78	DCB-66	2730264	458862.6	90° (Vertical)	439	25	Negative
79	DCB-67	2730147	458873.6	90° (Vertical)	439	25	Negative
80	DCB-68	2729653	459496.6	90° (Vertical)	440	25.7	Negative
81	DCB-69	2730597	459221.6	90° (Vertical)	438	72	Positive
82	DCB-70	2730858	459241.6	90° (Vertical)	439	57	Positive
83	DCB-71	2731716	459408.6	90° (Vertical)	441	25	Positive
84	DCB-72	2731865	459412.6	90° (Vertical)	442	25	Negative
85	DCB-73	2731675	459218.6	90° (Vertical)	442	57	Positive
<b>Total Meters</b>						<b>4570.60</b>	

**Details of samples ana**

## **Samples Analysis**

Core drilling with vertical boreholes with total 4570.60 mtrs. by total 85 boreholes done by DMG and WCL. There is no trenching and pitting done for exploration in area. Resource/Reserve is estimated by SURPAC software and report is enclosed herewith.

The depth of all bore holes was drilled 25 to 140m. After explored whole lease, on the basis of samples analysis 143.8100 Ha. Area falls under mineralised and remaining 111.1932 Ha. Area considers under non-mineralised zone.

### **1(b) Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Mineral Reserves.**

The area has been explored by two agencies in the past namely Directorate of Mines & Geology (DMG), Govt. of Rajasthan (1 Phase) and Wonder Cement Ltd. (2 Phase). But resource calculated based on DMG data only and WCL drilling and analysed. reassess the resource are estimated on the exploration basis.

### **1 (c) The type and level of study undertaken to enable Mineral Resources to be converted to Mineral Reserves i.e. Prefeasibility/Feasibility level.**

Dhanora Limestone Mine's **deposit is Bedded Stratiform and Tabular Deposit of Regular Habit** and for this category 200 x 200 meters grid interval is required for **G-1 Category** exploration as per Minerals (Evidence of Mineral Contents) Rules, 2015 which is **fulfilled**. Bore holes drilled by DMG are not on grid pattern but closed to grid.

Some bore holes drilled by WCL also on 100 x 100 meters grid intervals but average are on 200 x 200 meters interval.

Details of resources estimated within the lease area, are as follows:

**RESORCE CALCULATION BY POLYGON METHOD**

Sno.	Section No	Sectional Area	Influence Length	Depth	Volume	Bulk Density	Tonnes	Level of Exploration	Sio2	Al2o3	Fe2o3	Cao	Mgo
1	2729100	0	100	0	0	2.5	0	331	0.00	0.00	0.00	0.00	0.00
2	2729200	0	100	0	0	2.5	0	331	0.00	0.00	0.00	0.00	0.00
3	2729300	0	100	0	0	2.5	0	331	0.00	0.00	0.00	0.00	0.00
4	2729400	29933.77	100	0	2993377	2.5	7483442	331	16.20	2.22	0.88	44.2 5	0.74
5	2729500	31359.53	100	0	3135953	2.5	7839884	331	16.72	2.29	0.90	43.8 4	0.75
6	2729600	29226.17	100	0	2922617	2.5	7306542	331	17.64	2.61	1.07	42.2 4	0.89
7	2729700	37167.93	100	0	3716793	2.5	9291984	331	17.12	2.58	1.18	42.3 1	0.92
8	2729800	45272.89	100	0	4527289	2.5	11318223	331	16.81	2.49	0.98	42.7 1	0.90
9	2729900	29723.34	100	0	2972334	2.5	7430836	331	17.93	2.58	0.97	42.2 3	0.85
10	2730000	30353.99	100	0	3035399	2.5	7588498	331	18.31	2.47	1.01	42.1 7	0.78
11	2730100	25605.58	100	0	2560558	2.5	6401395	331	19.37	2.65	1.06	41.5 6	0.73



12	2730200	42671.66	100	0	4267166	2.5	10667914	331	17.44	2.35	0.98	42.5 3	0.77
13	2730300	49511.79	100	0	4951179	2.5	12377949	331	17.70	2.39	0.93	42.6 1	0.76
14	2730400	44441.22	100	0	4444122	2.5	11110305	331	16.46	2.00	0.87	42.9 7	0.74
15	2730500	44030.84	100	0	4403084	2.5	11007711	331	15.81	1.95	0.90	43.3 3	0.81
16	2730600	49525.11	100	0	4952511	2.5	12381277	331	15.99	1.80	0.97	42.8 5	0.80
17	2730700	52504.17	100	0	5250417	2.5	13126043	331	16.56	1.79	0.99	42.4 2	0.77
18	2730800	49242.74	100	0	4924274	2.5	12310685	331	18.06	2.31	0.97	42.4 4	0.75
19	2730900	49238.25	100	0	4923825	2.5	12309562	331	18.58	2.50	0.95	42.3 5	0.77
20	2731000	42670.28	100	0	4267028	2.5	10667571	331	18.62	2.56	0.96	42.3 8	0.80
21	2731100	41577.5	100	0	4157750	2.5	10394376	331	18.75	2.50	1.03	42.2 2	0.80
22	2731200	42252.54	100	0	4225254	2.5	10563136	331	18.70	2.53	1.00	42.2 6	0.75
23	2731300	41336.68	100	0	4133668	2.5	10334171	331	18.60	2.64	0.94	42.5 0	0.74

24	2731400	41776.12	100	0	4177612	2.5	10444029	331	17.35	2.20	1.05	42.2 7	0.66
25	2731500	39978.76	100	0	3997876	2.5	9994691	331	16.42	1.90	1.09	42.2 5	0.62
26	2731600	38000.23	100	0	3800023	2.5	9500057	331	15.97	2.10	1.02	42.9 0	0.78
27	2731700	32424.15	100	0	3242415	2.5	8106039	331	16.35	2.40	0.98	42.9 4	0.90
28	2731800	30232.64	100	0	3023264	2.5	7558159	331	16.03	1.82	0.96	43.0 5	0.76
29	2731900	22241.94	100	0	2224194	2.5	5560486	331	21.35	3.28	1.23	39.6 2	0.87
30	2732000	22835.67	100	0	2283567	2.5	5708917	331	15.93	2.13	0.96	43.5 0	0.69
31	2732100	21942.39	100	0	2194239	2.5	5485597	331	17.84	2.41	1.01	42.6 1	0.72
32	2732200	19213.01	100	0	1921301	2.5	4803252	331	19.05	2.63	0.99	42.0 9	0.80
33	2732300	13876.95	100	0	1387695	2.5	3469236	331	19.69	2.76	1.03	41.6 4	0.82
	<b>Grand Total</b>				<b>109016786</b>		<b>272541965</b>		<b>17.45</b>	<b>2.32</b>	<b>0.99</b>	<b>42.5 5</b>	<b>0.78</b>

k) **Mineral Reserve / Resources:**

<b>Level of Exploration</b>	<b>Resources in million Tonnes</b>	<b>Grade</b>
<b>G1-Detailed Exploration</b>	<b>272.54</b>	-
<b>G2-General Exploration</b>		<b>44.43% CaO &amp; 14.29% SiO<sub>2</sub></b>
<b>G3-Prospecting</b>	-	-
<b>G4-Reconnassance</b>	-	-
<b>Total</b>	<b>272.54</b>	

Reserves are estimated out of resources under G1 category.

**Feasibility Assessment of Resources:**

Indicated Resources (UNFC Code 331) have been considered for reserve assessment and following are the criteria:

**1. Geological:** Exploration of the area has been carried by core bore hole drilling. Details of bore holes, depth & spacing has been discussed in details in the earlier pages and exploration reports with analysis reports.

**2. Mining :** Deposit is exposed on surface with no overburden. Thickness of limestone bed is estimated to be about 50 m. The bed is gently dipping or almost flat. The limestone requirement from the deposit is 5 million tonnes to meet the capacity at the cement plant. It is planned to achieve this rate of production in third year of Mining plan period. The deposit can be worked using mechanised opencast method of mining using HEMM.

Permission for mining in charagah has been taken and NOC is attached and yearly proposal of working is mostly in charagah land due to private land acquisition work is under progress.

There is no proposal for Nallah diversion in this plan period.

Statutory barriers are proposed along lease boundary (7.5m), nallah and temple as per rule.

Village road diversion is also under progress and will be completed shortly.

Mining will be carried out as per the provisions of MMR 1961.

**3. Beneficiation:** 01 nos. of Crusher with 1400 TPH capacity is within lease area and location mark on plan as plate no.2.

**4. Environmental Concern:** Company has been obtained the Environment Clearance from MoEF & CC vide letter no.-J-11015/46/2015-IA. II(M) on dated 05-01-2017 for capacity of 5.00 MTPA limestone (ROM). Later on amended environmental clearance obtained vide letter no. IA-J-11015/46/2015-IA. II(M) on dated 08-01-2018 for incorporate of crusher within lease.

Consent to Establish & Consent to Operate obtained & copies are enclosed as Annexure 5 from RSPCB. All conditions imposed in EC and consent to operate will strictly be complied.

**5. Economic Aspects:** Pre-Feasibility report is attached with the Mining Plan. Mining cost per tonne of limestone works out to Rs. 285 including royalty, depreciation, interest and overheads. Estimated capital expenditure is around Rs. 111.92 Crore of which 67% will be in the form of loan. The capital expenditure includes the estimated expenditure for equipments, Diversion of HT electric line, Diversion of nalla, Road diversion and land acquisition the private land. etc. Discounted Cash flow (DCF) rate of return has been worked out and it is +ve at 10 % to 12%. Internal rate of Return (IRR) works out to 17.754%. (All details are shown in the pre-feasibility report attached as Annexure 24).

**6. Legal / Administrative Aspects:** Mining operations has been started after compliance of all legal aspects like approved mining plan, obtained EC from MoEF & CC, CTE and CTO from RSPCB, permission from DGMS for HEMM etc. Company will comply with the conditions as per lease agreement, provisions of MMR 1961, MCR 1960, MCDR 1988 and is committed for implementation of these and related mining laws. No mining will be carried out in the private land without obtaining NOC from land owners.

Electric lines have been diverted outside of mining lease area.

In this mining plan maximum proposal of mining in Chargah land and NOC has been obtained from govt. authority.

There is no forest within lease area.

Based on the above feasibility assessment and economic aspects resources falling in the area other than blocked in various statutory barriers can be mined. The mineable tonnage and the resources blocked in the barriers is calculated bore hole wise and are given in table below. The mineable reserves are classified as under UNFC code 111. The tonnage which cannot be mined remains under UNFC code 331.

**k) Detailed calculation of reserves/ resources section wise :**

Reserve/Resource calculated based on Cross Sectional Area method. Boreholes were drilled on variable distances 100 x 200 and 200 X 200. The depth of all bore holes was drilled 25 to 140m. The limestone deposit of the area is **Bedded Stratiform and Tabular Deposit of Regular Habit**, thus it falls under category G-1 (331) , as per Part III of The Minerals (Evidence of Mineral Contents) Rules, 2015. The whole area is explored by core drilling.

Resources / Reserves blocked Calculation in 7.5 m Statutory Boundary barriers

Sno.	Section No	Sectional Area	Influence Length	Depth	Volume	Tonnes	Sio2	Al2o3	Fe2o3	Cao	Mgo	
1	2729400	3294.2	100	0	329420	823549	16.44	2.26	0.9	44.09	0.74	7.5 Statutory Boundary
2	2729500	453.94	100	0	45394	113486	19.82	2.72	1.04	41.65	0.75	7.5 Statutory Boundary
3	2729600	528.91	100	0	52891	132228	14.86	2.23	0.89	43.72	1.05	7.5 Statutory Boundary
4	2729700	590.43	100	0	59043	147608	14.28	2.22	0.9	43.83	1.11	7.5 Statutory Boundary
5	2729800	2307.63	100	0	230763	576908	15.04	2.25	0.93	43.42	1.03	7.5 Statutory Boundary
6	2729900	581.44	100	0	58144	145361	15.54	2.25	0.96	43.15	1	7.5 Statutory Boundary
7	2730000	729.49	100	0	72949	182372	16.22	1.96	1.09	43.35	0.84	7.5 Statutory Boundary
8	2730100	1006.51	100	0	100651	251627	18.22	2.35	1.26	42.42	0.76	7.5 Statutory Boundary
9	2730200	2817.53	100	0	281753	704382	15.71	1.88	1.01	44.14	0.77	7.5 Statutory Boundary
10	2730300	1444.64	100	0	144464	361161	16.2	2.1	0.84	44.55	0.78	7.5 Statutory Boundary
11	2730400	1472.79	100	0	147279	368197	16.83	1.8	0.94	42.84	0.7	7.5 Statutory Boundary
12	2730500	1305.12	100	0	130512	326279	15.65	1.81	0.87	43.45	0.77	7.5 Statutory Boundary
13	2730600	854.2	100	0	85420	213551	17.68	2.6	1.01	41.59	1	7.5 Statutory Boundary
14	2730900	154.29	100	0	15429	38574	17.58	2.48	0.91	42.9	0.8	7.5 Statutory Boundary

15	2731000	314.72	100	0	31472	78681	16.14	2.25	0.9	43.98	0.79	7.5 Statutory Boundary
16	2731100	285.85	100	0	28585	71461	16.44	2.3	0.93	43.7	0.81	7.5 Statutory Boundary
17	2731200	191.83	100	0	19183	47958	16.52	2.36	0.88	43.74	0.73	7.5 Statutory Boundary
18	2731300	122.22	100	0	12222	30554	19.77	2.63	0.92	41.88	0.73	7.5 Statutory Boundary
19	2731400	108.75	100	0	10875	27186	18.54	2.55	0.9	42.5	0.72	7.5 Statutory Boundary
20	2732300	1799.92	100	0	179992	449980	19.93	2.8	1.04	41.48	0.83	7.5 Statutory Boundary
<b>Total</b>					<b>2036441</b>	<b>5091103</b>						

#### Resources / Reserves blocked Calculation in UPL barriers

Sno.	Section No	Sectional Area	Influence Length	Depth	Volume	Tonnes	Sio2	Al2o3	Fe2o3	Cao	Mgo	
1	2729400	15238.26	100	0	1523826	3809565	15.76	2.18	0.87	44.56	0.74	UPL
2	2729500	14009.44	100	0	1400944	3502360	16.74	2.29	0.89	43.81	0.75	UPL
3	2729600	15724.32	100	0	1572432	3931080	17.7	2.49	0.96	42.53	0.88	UPL
4	2729700	9520.8	100	0	952080	2380200	15.97	2.31	0.93	42.93	1.06	UPL
5	2729800	20600.85	100	0	2060085	5150211	16.71	2.47	0.97	42.56	0.99	UPL
6	2729900	9833.45	100	0	983345	2458364	19.03	2.79	1.08	41.27	0.94	UPL
7	2730000	12643.1	100	0	1264310	3160776	19.8	2.7	1.06	41.3	0.82	UPL
8	2730100	8849.33	100	0	884933	2212332	21.04	2.89	1.13	40.72	0.77	UPL
9	2730200	20695.31	100	0	2069531	5173827	18.84	2.56	1	42.08	0.79	UPL
10	2730300	20592.21	100	0	2059221	5148054	18.04	2.35	0.94	42.68	0.77	UPL

11	2730400	14340.11	100	0	1434011	3585027	17.31	1.89	0.93	42.93	0.71	UPL
12	2730500	16167.96	100	0	1616796	4041989	18.08	2.4	0.97	42.29	0.83	UPL
13	2730600	18407.81	100	0	1840781	4601953	17.19	1.78	0.97	42.39	0.77	UPL
14	2730700	4762.65	100	0	476265	1190662	19.52	1.9	1.12	40.61	0.81	UPL
15	2730800	3741.21	100	0	374121	935303	19.01	2.55	0.95	41.89	0.8	UPL
16	2730900	8570.29	100	0	857029	2142573	17.39	2.44	0.88	43.12	0.8	UPL
17	2731000	7983.44	100	0	798344	1995859	17.32	2.41	0.94	43.22	0.81	UPL
18	2731100	7927.5	100	0	792750	1981874	17.72	2.51	0.99	42.91	0.82	UPL
19	2731200	8652.87	100	0	865287	2163218	17.63	2.53	0.92	43.05	0.74	UPL
20	2731300	8354.52	100	0	835452	2088629	18.1	2.56	0.91	42.81	0.71	UPL
21	2731400	14700.52	100	0	1470052	3675129	16.17	1.8	1.07	42.58	0.59	UPL
22	2731500	21352.07	100	0	2135207	5338017	14.77	1.45	1.1	42.9	0.54	UPL
23	2731600	18107.09	100	0	1810709	4526774	14.11	1.62	0.98	43.84	0.69	UPL
24	2731700	13790	100	0	1379000	3447500	13.9	2	0.83	44.54	0.91	UPL
25	2731800	8048.47	100	0	804847	2012118	15.45	1.75	0.88	43.43	0.78	UPL
26	2731900	4027.66	100	0	402766	1006914	22.58	3.58	1.31	38.62	0.86	UPL
27	2732000	2635.89	100	0	263589	658974	20.9	3.09	1.06	40.7	0.77	UPL
28	2732100	147.71	100	0	14771	36927	24.65	3.92	1.34	38.16	0.81	UPL
29	2732200	1803.86	100	0	180386	450965	22.78	3.23	1.17	39.56	0.86	UPL
30	2732300	7669.63	100	0	766963	1917408	20.96	2.92	1.09	40.8	0.84	UPL
					<b>Total</b>	<b>33889833</b>	<b>84724582</b>					



**Resources / Reserves blocked Calculation in High Tension Line barriers**

Sno.	Section No	Sectional Area	Influence Length	Depth	Volume	Tonnes	Sio2	Al2o3	Fe2o3	Cao	Mgo	
1	2729400	16498.04	100	0	1649804	4124509	16.54	2.24	0.88	44.03	0.74	HT Line
2	2729500	14518.15	100	0	1451815	3629537	17.28	2.34	0.91	43.47	0.75	HT Line
<b>Total</b>					<b>3101619</b>	<b>7754046</b>						

**Resources / Reserves blocked Calculation in Nallah barriers**

Sno.	Section No	Sectional Area	Influence Length	Depth	Volume	Tonnes	Sio2	Al2o3	Fe2o3	Cao	Mgo	
1	2729700	24.38	100	0	2438	6094	15.57	1.82	0.71	36.36	0.46	Nallah
2	2729800	1534.28	100	0	153428	383571	24.11	3.9	1.35	36.6	0.81	Nallah
3	2729900	2792.61	100	0	279261	698153	23.63	3.76	1.29	37.18	0.8	Nallah
4	2730000	4334.01	100	0	433401	1083504	21.42	3.11	1.06	39.16	0.73	Nallah
5	2730100	6549.54	100	0	654954	1637386	21.47	3.04	1.02	39.25	0.72	Nallah
6	2730200	10067.63	100	0	1006763	2516907	18.48	2.63	0.96	41.64	0.78	Nallah
7	2730300	20209.41	100	0	2020941	5052352	17.93	2.52	0.92	42.21	0.74	Nallah
8	2730400	16332.104	100	0	1633210.4	4083026	16.49	2.21	0.86	42.77	0.78	Nallah
9	2730500	7394.75	100	0	739475	1848688	15.64	2.03	0.82	42.96	0.78	Nallah
<b>Total</b>					<b>6923871</b>	<b>17309681</b>						

**MLB:** 7.5 m barrier along lease boundary **Benches:** Mineral left in benches to maintain Ultimate Pit Slope, **132 kv GSS:** Safety zone around sub station & Nallah.

Resources / Reserves Mineable Calculation

Sno.	Section No	Sectional Area	Influence Length	Depth	Volume	Tonnes	Sio2	Al2o3	Fe2o3	Cao	Mgo
1	2729100	0	100	0	0	0	0	0	0	0	0
2	2729200	0	100	0	0	0	0	0	0	0	0
3	2729300	0	100	0	0	0	0	0	0	0	0
4	2729400	145.63	100	0	14563	36408	19.37	3.3	1.4	41.85	0.83
5	2729500	2135.29	100	0	213529	533823	15.49	2.22	0.95	44.9	0.72
6	2729600	12969.83	100	0	1296983	3242458	17.69	2.78	1.22	41.82	0.89
7	2729700	27032.33	100	0	2703233	6758082	17.59	2.68	1.28	42.07	0.87
8	2729800	20830.13	100	0	2083013	5207533	16.58	2.45	0.98	43.23	0.81
9	2729900	16521.53	100	0	1652153	4130382	16.4	2.26	0.86	43.63	0.79
10	2730000	12661.92	100	0	1266192	3165479	15.89	2.04	0.93	44	0.74
11	2730100	9200.2	100	0	920020	2300049	16.41	2.18	1	43.93	0.68
12	2730200	9091.19	100	0	909119	2272798	13.62	1.7	0.95	44.05	0.72
13	2730300	7278.8	100	0	727880	1819699	16.37	2.21	0.91	43.1	0.79
14	2730400	7266.19	100	0	726619	1816547	14.65	1.66	0.79	43.66	0.7
15	2730500	19163.02	100	0	1916302	4790754	13.98	1.55	0.87	44.34	0.81
16	2730600	30263.09	100	0	3026309	7565773	15.22	1.8	0.96	43.16	0.82
17	2730700	47741.52	100	0	4774152	11935381	16.26	1.78	0.98	42.6	0.77
18	2730800	45501.53	100	0	4550153	11375383	17.99	2.29	0.97	42.49	0.74
19	2730900	40513.66	100	0	4051366	10128415	18.84	2.52	0.97	42.18	0.77
20	2731000	34372.13	100	0	3437213	8593032	18.94	2.59	0.96	42.18	0.8
21	2731100	33364.16	100	0	3336416	8341040	19.02	2.5	1.04	42.04	0.79
22	2731200	33407.84	100	0	3340784	8351960	18.99	2.53	1.03	42.05	0.76
23	2731300	32859.95	100	0	3285995	8214988	18.73	2.66	0.94	42.42	0.75
24	2731400	26966.86	100	0	2696686	6741714	17.99	2.41	1.04	42.1	0.7

25	2731500	18626.69	100	0	1862669	4656673	18.31	2.41	1.07	41.5	0.71
26	2731600	19893.13	100	0	1989313	4973283	17.66	2.54	1.06	42.05	0.86
27	2731700	18634.16	100	0	1863416	4658539	18.17	2.7	1.08	41.76	0.89
28	2731800	22184.17	100	0	2218417	5546042	16.24	1.85	0.99	42.92	0.75
29	2731900	18214.29	100	0	1821429	4553572	21.08	3.21	1.22	39.84	0.87
30	2732000	20199.77	100	0	2019977	5049943	15.28	2	0.95	43.86	0.67
31	2732100	21794.68	100	0	2179468	5448670	17.8	2.4	1.01	42.64	0.72
32	2732200	17409.15	100	0	1740915	4352287	18.67	2.57	0.97	42.35	0.8
33	2732300	4407.39	100	0	440739	1101848	17.38	2.47	0.93	43.19	0.79
<b>Total</b>		<b>630650.23</b>			<b>63065023</b>	<b>157662555</b>					

Resource/Reserve estimated by SURPAC software with maximum accuracy level and find out total resource is 275.46 million tones and out of this, 157.66 million tones is mineable reserve with avg. 17.40% SiO<sub>2</sub>, 2.31% Al<sub>2</sub>O<sub>3</sub>, 1.00% Fe<sub>2</sub>O<sub>3</sub>, 42.57% CaO and 0.77% MgO. Remaining 5.08 million tones blocked in 7.5 mtrs. Lease barriers, 24.58 million tones blocked in Nallah & other structures not belonging to owner, and 80.77 million tones blocked in benches (UPL) for maintain slope.

**PRESENTATION OF MINERAL LIMESTONE RESOURCES / RESERVES AS PER UNFC (As on 01.04.2022)**

	Category	UNFC Code	Quantity in million tonnes	Grade
		---		
<b>Total Resources</b>	<b>(A+B)</b>		<b>272.54</b>	
Reserves (A)	Proved	(111)	<b>157.66</b>	<b>42.53 % CaO 0.78 % MgO</b>
	Probable	(121)		
		(122)		
Remaining Resources (B)	Feasibility Mineral Resources	(211)	114.88	<b>41.42 % CaO 0.80 % MgO</b>
	Pre-Feasibility Mineral resources	(221)		
		(222)		
	Remaining Measured Mineral Resources	(331)		
	Remaining Indicated Mineral Resources	(332)		
	Inferred Mineral Resources	(333)		
	Reconnaissance Mineral Resources	(334)		

Grade requirement for cement manufacturing (as per NCBM) and grade of this deposit is given in table below:

Oxide components	Acceptable range for OPC ( 43 & 53 grade) %	Grade of the deposit %
CaO	44-52	44.5
MgO	3.5 (max)	0.70
SiO <sub>2</sub>	To satisfy LSF	14.07
Al <sub>2</sub> O <sub>3</sub>		1.22
Fe <sub>2</sub> O <sub>3</sub>		0.87
TiO <sub>2</sub>	<0.5	Not analysed
Mn <sub>2</sub> O <sub>3</sub>	<0.5	„
R <sub>2</sub> O(Na <sub>2</sub> O +K <sub>2</sub> )	<0.6	„
Total S as SO <sub>3</sub>	<0.6	„
P <sub>2</sub> O <sub>5</sub>	<0.6	„
Cl	<0.015	„
Free Silica	<8.0	„

### **MINEABLE RESERVES AND ANTICIPATED LIFE OF THE MINE :**

Mineable reserves have been calculated by taking into account the reserves in probable categories only. Future rate of production for ROM will be maintained at 5 MTPA.

<b>S. No.</b>	<b>Particulars</b>	<b>In million tonnes</b>
1.	Net Mineable Reserves as on 01.09.2022	157.66
2.	Mineral to be mined from 01.04.2023 to 31.03.2028.	25.0
3.	Remaining reserves at the end of plan period 01.04.2028. (1-2)	132.66
4.	Proposed rate of production per year (ROM)	5.0
5.	Life of mine at the end of Mining Plan period (3/4)	26.53 Years
6	Life of the mine (26+5 years plan periods) as on 01.04.2022.	<b>31.53 Years</b>

## 2.0 Cut off Parameters

The basis of the adopted cut-off grade(s) or quality parameters applied, including the basis, if appropriate, of equivalent metal formulas & the threshold values prescribed.

Cut off parameters consider as per Threshold Value as notified by IBM for limestone.

Threshold Value =CaO 34 %, (Min.) & MgO 5 % (Max.)

## 3.0 Mining factors or assumptions.

3(a) The method and assumptions used to convert the Mineral Resource to a Mineral Reserve (i.e. either by application of appropriate factors by optimization or by preliminary or detailed design supported with Conceptual plan for mining).

(i) Existing method for excavation:

### Existing Design Parameters: Mechanized Opencast Mining

The existing method of mining, mechanized opencast method (Category of Mine A) with benches of 10 m. Height and minimum bench width at 20-25 m Haulage roads will be of three-time width of machine plying with gradient of 1:16. The working by putting 115 mm dia DTH holes by ROC L-8, T-40 & IBH-10 Drill Machine & blasting by ANFO & Booster charge with NONEL. The blasted material will be loaded by 7.2 m<sup>3</sup> excavator in dumper of 55 tonnes & transported to crushing plant for sizing, which is situated out side the mining Lease.

3(b) Anticipated Ore to OB ratio, mine recoveries, dilutions etc. for both open cast and U/G workings.

Ore to OB ratio are given below.

Waste : Limestone Ratio  
cu.m : Tons  
0.026 : 1 (At conceptual stage)

3(c) The choice of, the nature and the appropriateness of the selected mining method(s), the size of the selected mining unit (length, width, height) and other mining parameters including associated design issues such as pre-strip, access, etc.

**Proposed method for excavation: Mechanized Opencast Mining**

**Proposed Design Parameters:**

The limestone deposit is covered by black cotton soil cover which is about 0.5-1 meter. The proposed method of mining will be fully mechanised opencast method as continue of existing method which is mentioned in above para. Following are the mining parameters:

S. No.	Particulars	Details
1	Method of Mining	Fully mechanised opencast method using HEMM including deep hole drilling and blasting
2	Bench Height	10 m
3	Bench width	20-25 m, (10 m. at the time of final closure of the mine)
4	Slope of Bench	80 °
5	Hole Dia.	115 m.
6	Hole burden	4.5 m.
7	Hole Spacing	6.5 m.
8	Sub-grade drilling	10%
9	Hole Depth	11 m.
10	Powder Factor	9.0 t/kg
11	Excavator Capacity	7.2 m <sup>3</sup>
12	Dumper capacity	55 t
13	Road Gradient	1:16
14	Stripping Ratio (tons: cu.m.)	1:00 No overburden in the area. (Mining Plan period) 1:0.026 (At Conceptual stage)

15	No. of working days per year	300
16	No. of shifts per day	3
17	Ultimate pit slope	45 <sup>0</sup>

Provisions of MMR 1961 will be strictly be adhered.

**3(d) -The assumptions made regarding geotechnical parameters (eg. pit slopes, stope sizes, etc.), grade control and pre-production drilling.**

Broad Drilling Parameters:

**Table - 16**

Height of bench	10.0 m
Depth of hole including sub grade drilling	11.00 m
Burden	4.0-4.5 m
Spacing	6.0-6.5 m
Sub Grade Drilling	10%
Inclination of Holes from vertical	80 <sup>0</sup>

**3(e) The major assumptions made and Mineral Resource model used for pit optimization (if appropriate).**

The limestone deposit lies on surface with no overburden to be excavated during this mining plan period. In future side burden will be excavated while mining on eastern side of the pit to excavate the limestone up to mineralised area at 320 mRL. At places top soil cover thickness ranges from 0 to 1.5 m (Avg. 0.2 m). Soil cover is about 0.2 m thick over the area proposed to be excavated during five year mining plan period. Deposit is having strike in N-S direction with 5<sup>0</sup> to 20<sup>0</sup> dip in eastern direction. It is proposed to work the deposit by fully mechanised method of mining using shovel dumper combination with deep hole drilling and blasting. The mine is proposed to produce 5 MTPA of limestone from second year onwards to meet the limestone requirement of



cement plant. This production rate is planned to be achieved in the second year of plan period.

It is proposed to mine in the area by developing benches of 9-10 mtrs. height and minimum bench width at 20-25 mtrs. Haulage roads to be of 15 mtrs width with gradient of 1:16.

**The various steps required for development / extraction of mineral are:**

- a. **Drilling:** Blast holes of 115 mm dia. are proposed to be drilled with hole burden of 4.5 m and spacing of 6.5m. Proposed hole is vertical and 10% sub grade drilling.
- b. **Blasting:** Blasting will be with ANFO and booster charge. Nonel for DTH and TLD shall be used to control ground vibration, noise and fly rocks
- c. **Loading:** Loading is proposed to be with Excavator having bucket capacity of 7.2 cu.m.
- d. **Transportation:** Transportation will be with 55 t capacity dumpers.
- e. **Crushing:** Crusher of 1400 TPH capacity is installed within lease. and at present limestone transporting to companies by conveyor.

Following broad design parameters have been considered.

- Individual bench slope will be 80° from vertical.
- Direction of advance of faces will be in all direction except East.
- Rock Breaker will be used for secondary breaking.
- Haul roads will be of 15 m. width. Width of the dumper track is 4.8 m. A minimum gradient of 1:16 will be maintained. A berm will be provided and drain on other side of the haulage road.
- Limestone after loading in to dumpers is taken to crusher for sizing.
- Water sprinkler will be used for dust suppression in the mine.
- Mine lies in close proximity to habitation and hence all necessary precautions related to blasting will be taken.

Provisions of MMR 1961 will be strictly be adhered. Lessee will obtain necessary permission from DGMS for use of HEMM.

**(f) Brief description of layout of mine workings, pit road layout of faces and sites for disposal of overburden / waste along with ground preparation prior to disposal of waste:**

Mine is working by mechanised opencast method of mining. The lease area is in close proximity to village hutments, village approach roads passes through the area, three HT electric lines traverses through the area, two plots of charagah lands lies within the area and one seasonal nalla runs through the area. Two crushing plants are also located within the lease area granted.

Above mentioned, HT lines shifting work & Road diversion work have been completed., Nallah shifting is not required in this plan period and statutory barrier will be maintained. Permission for mining in charagah land is obtained and NOC is attached.

- **Statutory barriers:** 7.5 m wide statutory barrier along the lease boundary as per the provision of Reg. 111(2) of MMR 1961.
- **Disposal of waste:** There is no overburden hence, no waste generation. Top soil will be removed separately and used directlyfor plantation. There is no stack proposed.
- **In the first five year of Mining Plan period :** Only one pit is proposed as per plan. Refer plate no.5

**(g) The mining dilution factors, mining recovery factors, and minimum mining widths used.**

The present production schedule of limestone given on the basis of bore core recovery basis, the solution cavities may be the reason for poor recovery i.e. about more than 90% and same is considered here. The detail prospecting

proposed in the plan period with the advance drilling technology and method of interpretation will help in optimization of limestone recovery.

In the mine, benches is 10 mtrs. height and minimum bench width at 20-25 mtrs. Haulage roads is 15 mtrs minimum width with gradient of 1:16.

**(h) The infrastructure requirements of the selected mining methods. Where available, the historic reliability of the performance parameters.**

The company is operating a cement plant and a mine adjacent to existing mining area. Various facilities are already in operation at cement plant and running mine and the same will be used for this mine also.

However, the following facilities will be provided for this mine separately.

- **Mine Office:** Mine office complex will have Manager's office, time office, engineers's office, Mine planning and quality control cell, stores etc.
- **First Aid Station:** A fully equipped first aid station will be established and maintained as per Mines rules 1955.
- **Canteen cum rest shelter:** As per Mines Rules 1955.
- **Drinking water:** Drinking water facility will be provide at mine site.
- **Ablution Block:** Urinals & lavatories will be provided at the mine office, rest shelter.
- **Portable Blasting Shelters:** Portable blasting shelters will be provided as per the requirement.

## **4.0 Metallurgical factors or assumptions.**

**4(a) The metallurgical process proposed and the appropriateness of that process to the type of deposit.**

The limestone deposit lies on surface with no overburden to be excavated during this mining plan period. At places top soil cover thickness ranges from 0.5 to 1.0 m. Soil cover is over the area proposed to be excavated during five year mining plan period. It is proposed to work the deposit by fully mechanised open cast method of mining using shovel dumper combination with deep hole drilling and blasting.

**4(b) The nature, amount and representativeness of metallurgical test work undertaken and the metallurgical recovery factors applied.**

The present production schedule of limestone given on the basis of bore core recovery basis, the solution cavities may be the reason for poor recovery i.e. about 90% and same is considered here. The detail prospecting proposed in the plan period with the advance drilling technology and method of interpretation will help in optimization of limestone recovery.

**4(c) Any assumptions or allowances made for deleterious elements.**

No deleterious elements are proposed to mining activity at this mine.

**4(d) The existence of any bulk sample or pilot scale test work and the degree to which such samples are representative of the ore body as a whole.**

A density of 2.5 has been considered for limestone.

4(e) The tonnages and grades reported for Mineral Reserves should state clearly whether these are in respect of material to the plant or after recovery. Comment on existing plant and equipment, including an indication of replacement and salvage value.

The limestone is producing at this mine is for captive consumption at the company's cement plant.

**Broad chemical specification of Cement Grade Run of Mine Limestone (end use):**

**Table - 18**

Content	Required
CaO	41-50
MgO	3.5 (Max)
SiO <sub>2</sub>	To satisfy LSF, Silica Modulus & Alumina Modulus (LSF 105 to 120, Silica Modulus 2 to 6, Alumina Modulus 1 to 2)
Al <sub>2</sub> O <sub>3</sub>	
Fe <sub>2</sub> O <sub>3</sub>	
TiO <sub>2</sub>	<0.5
Mn <sub>2</sub> O <sub>3</sub>	<0.5
R <sub>2</sub> O (Na <sub>2</sub> O+K <sub>2</sub> O)	<0.6
Total S as SO <sub>3</sub>	<0.6
P <sub>2</sub> O <sub>5</sub>	<0.6
Cl	<0.015
Free Silica	<8.0

**Calculation of LSF, SM & AM**

$$\begin{array}{l}
 \text{LSF} \quad \frac{\text{CaO}}{2.8\text{SiO}_2 + 1.18\text{Al}_2\text{O}_3 + 0.65 \text{Fe}_2\text{O}_3} \\
 \\
 \text{SM} \quad \frac{\text{SiO}_2}{(\text{Al}_2\text{O}_3 + \text{Fe}_2\text{O}_3)}
 \end{array}$$

AM

Al<sub>2</sub>O<sub>3</sub>Fe<sub>2</sub>O<sub>3</sub>

Looking at the above analysis results, limestone of the area is suitable for cement making.

## 5.0 Cost and revenue factors

### Direct & Indirect cost of Mining

#### 5A. Land Acquisition Charges

Planned capital expenditure is as follows:

<b><i>CAPITAL EXPENDITURE (In Rs.)</i></b>				
<b>Item</b>		<b>Cost /unit</b>	<b>No. of Units</b>	<b>Cost</b>
Excavator		5,00,00,000	2	10,00,00,000
Dumpers		2,50,00,000	10	25,00,00,000
Rock Breaker		50,00,000	1	50,00,000
Drills		3,00,00,000	1	3,00,00,000
Loader		60,00,000	1	60,00,000
Water Sprinkler		20,00,000	1	20,00,000
Dozer		2,00,00,000	1	2,00,00,000
ANFO Mixing m/c		40,00,000	1	40,00,000
Pick Up Van		20,00,000	1	20,00,000
Maint mobile Van		20,00,000	1	20,00,000
Tyre Handler		20,00,000	1	20,00,000
Jeep		5,00,000	2	10,00,000
Diversion of HT line		1,00,00,000	9	9,00,00,000
Road diversion		1,00,00,000	1	1,00,00,000
Misc Expenditure Bldg. Ev. Nallah diversion		1,00,00,000	2	2,00,00,000
Land Acquisition		7,00,000	732	51,24,00,000
Working Capital 1 month				1,00,00,000
Initial spares@5% of capital				5,28,20,000
<b>Total Capital Expenditure</b>				<b>1,11,92,20,000</b>

Total Capital requirement is around Rs. 111.92 carore , out of which 67% will be loan from the Financial institutions and remaining 33% from the company's equity. Loan will be at the interest rate of 11%.

Cost per tonne of Limestone is estimated as follows:

Mining cost is Dhanora limestone mine. Interest is at the rate of 11% on borrowed capital. Depreciation is calculated on straight line method with equipment life of 10 years. Expenditure on account of power line shifting and diversion of nalla is accounted in capital outlay.

<b>Limestone</b>		
<b>S.No.</b>	<b>Cost head</b>	<b>Cost (Rs./t)</b>
(i)	Direct Cost	168.78
	(a) Exploration	0.00
	(b) Mining	145.90
	(c) Beneficiation (Mechanical Only)	22.88
(ii)	Overhead Cost	12.75
(iii)	Depreciation	0.00
(iv)	Interest	3.37
(v)	Royalty	80.0
(vi)	Taxes	0.00
(vii)	Dead Rent	0.00
(viii)	Other(specify) DMF & NMET	<b>9.60</b>
	<b>Total</b>	<b>274.50</b>

<b>DEPRECIATION</b>			
<b>Item</b>	<b>Cost</b>	<b>Life</b>	<b>Depreciation</b>
Excavator	10,00,00,000	10	1,00,00,000
Dumpers	25,00,00,000	10	2,50,00,000
Rock Breaker	50,00,000	10	5,00,000
Drills	3,00,00,000	10	30,00,000
Loader	60,00,000	10	6,00,000
Water Sprinkler	20,00,000	10	2,00,000
Dozer	2,00,00,000	10	20,00,000
ANFO Mixing m/c	40,00,000	10	4,00,000
Pick Up Van	20,00,000	10	2,00,000
Maint mobile Van	20,00,000	10	2,00,000
Tyre Handler	20,00,000	10	2,00,000
Jeep	10,00,000	10	1,00,000
Diversion of HT line	9,00,00,000	10	90,00,000
Road diversion	1,00,00,000	10	10,00,000
Misc Expenditure Bldg. Ev. Nallah diversion	2,00,00,000	10	20,00,000
Land Acquisition	51,24,00,000	10	5,12,40,000
Initial spares	5,28,20,000	10	52,82,000
	1,10,92,20,000		11,09,22,000



5(b) The assumptions made regarding revenue including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, etc.

<i>Limestone Area 255.0032 ha.</i>										
Cost per tonn of Limestone ( incl. Dep, OH, Royalty, transport)							285			
Sale price per tonn of Limestone ( Average) ( likely to be realised)							350			
YEARS	1	2	3	4	5	6	7	8	9	10
PRODUCTION	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000
REVENUE	1,750,000,000	1750000000	1750000000	1750000000	1750000000	1750000000	1750000000	1750000000	1750000000	1750000000
COST OF PROD. INCLUDING DEPRECIATION	1,536,872,000	1,536,872,000	1,536,872,000	1,536,872,000	1,536,872,000	1,536,872,000	1,536,872,000	1,536,872,000	1,536,872,000	1,536,872,000
TOTAL OPERATING COST	1536872000	1536872000	1536872000	1536872000	1536872000	1536872000	1536872000	1536872000	1536872000	1536872000
GROSS OPERATING INCOM	213128000	213128000	213128000	213128000	213128000	213128000	213128000	213128000	213128000	213128000
BALANCE INCOME	213128000	213128000	213128000	213128000	213128000	213128000	213128000	213128000	213128000	213128000
PROJECT CASH FLOW	213128000	213128000	213128000	213128000	213128000	213128000	213128000	213128000	213128000	213128000

5(c) The allowances made for royalties payable, both Government and private.

<b>DISCOUNTED CASH FLOW STATEMENT ( ON TOTAL INVESTMENT)</b>								
			DISCOUNTED CASH FLOW@ 10%			DISCOUNT CASH FLOW @ 12%		
YEAR	CASH OUT	IN	P.V. FACTOR	OUT FLOW	IN FLOW	P.V. FACTOR	OUT FLOW	IN FLOW
1	1,118,720,000	213,128,000	0.909	1,016,916,480	193,733,352	0.893	999,016,960	190,323,304
2		213,128,000	0.826		176,043,728	0.797		169,863,016
3		213,128,000	0.751		160,059,128	0.712		151,747,136
4		213,128,000	0.683		145,566,424	0.636		135,549,408
5		213,128,000	0.621		132,352,488	0.567		120,843,576
6		213,128,000	0.564		120,204,192	0.507		108,055,896
7		213,128,000	0.53		112,957,840	0.452		96,333,856
8		213,128,000	0.467		99,530,776	0.409		87,169,352
9		213,128,000	0.424		90,366,272	0.361		76,939,208
10		213,128,000	0.386		82,267,408	0.322		68,627,216
11		213,128,000	0.351		74,807,928	0.288		61,380,864
12		213,128,000	0.319		67,987,832	0.257		54,773,896
13		213,128,000	0.299		63,725,272	0.229		48,806,312
<b>TOTAL</b>	1,118,720,000	2,770,664,000		1,016,916,480	1,519,602,640		999,016,960	1,010,226,720
<b>Excess of pv over capital cost</b>					1,314,456,284			949,613,117

5(d) Basic cash flow inputs for a stated period.

The basic cash flow input have used for period of 10 years.

5(e) Yearly planned production, Net Present Value (NPV) and Internal Rate of Return (IRR) of the deposit, intrinsic value of the deposit based on annual projected production.

#### INTERNAL RATE OF RETURN

YEAR	Discount Cash Flow	40% P V factor	Discount Present Value	50% P V factor	Present Value
1	213,128,000	0.625	133205000	0.588	125319264
2	213,128,000	0.391	83333048	0.346	73742288
3	213,128,000	0.224	47740672	0.204	43478112
4	213,128,000	0.153	32608584	0.12	25575360
5	213,128,000	0.095	20247160	0.07	14918960
6	213,128,000	0.06	12787680	0.041	8738248
7	213,128,000	0.037	7885736	0.024	5115072
8	213,128,000	0.023	4901944	0.014	2983792
9	213,128,000	0.015	3196920	0.008	1705024
10	213,128,000	0.009	1918152	0.005	1065640
11	213,128,000	0.006	1278768	0.003	639384
12	213,128,000	0.004	852512	0.002	426256
13	213,128,000	0.002	426256	0.001	213128
TOTAL	2,770,664,000		350382432		303920528
less investment			334264840		289940184
Net Present Value			16117592		13980344

- Capital Expenditure is estimated around Rs. 111.902 carore. Out of which 67% will be borrowed capital from financial institutions.
- Capital expenditure includes expenditure to be incurred for diversion of electrical line, diversion of naala, diversion of road and land acquisition.
- Estimated Operating cost per tonne of limestone works out to Rs. 285 including depreciation and interest on capital. Cess etc.
- Discounted Cash Flow (DCF) is +ve at 10 % and 12% rate of discount.
- Internal rate of return (IRR) works out to be 17.754%.
- All the expenses will be met from the revenue generated by selling of Cement & cash flow will be maintained by Cement Factory.
- No marketing is needed for limestone as it is used for captive purpose
- Hence the project is viable.

## **6.0 Market assessment**

**6(a) The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.**

The limestone in the mining lease area is fit for use in cement manufacturing.

**6(b) A customer and competitor analysis along with the identification of likely market windows for the product.**

The limestone to be produced at this mine will be used for captive consumption at the company's cement plant.

**6(c) Price and volume forecasts and the basis for these forecasts.**

The price and volume forecast of on basis of current market condition & other industries supply material.

**6(d) For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.**

Nil

## **7.0 Other modifying factors**

**7(a) The effect, if any, of natural risk, infrastructure, environmental, legal, marketing, social or governmental factors on the likely viability of a project and/or on the estimation and classification of the Mineral Reserves.**

Company has obtained environment clearance from MoEF, New Delhi and Consent to Establish and Consent to operate from state Pollution Control Board. Company will follow all the conditions imposed in the clearances and consents and submit the required returns to concerned authorities. Air quality, water quality, Noise level, vibration monitoring will be carried as per EC and IBM circulars.

## **Environment Management Plan:**

### **i) Storage and Preservation of Top Soil:**

At places top soil cover thickness ranges from 0.5 to 1.0 m. Soil cover over the area proposed to be excavated during five year mining plan period, therefore it will be used for plantation time to time.

### **ii) Proposal For Reclamation Of Land Affected By Mining Activities: During And At The End Of Mining.**

No mined-out land shall achieve the final position during the mining Plan period.

By the end of life of mine 160.343 ha. area will be degraded and out of this 122.713 ha. area converted into water reservoir and 20.008ha. will use for plantation over upper two mined out benches, 32.719 ha. Baran land will be used for Plantation.

Mined out area also will use for backfilling as per conceptual plan.

### **iii) Programme of Aforestation:**

At the end of mining Plan period about 35.90 hect. Area will be covered by green belt. Mined out area for safety purpose and also plantation will be done.

<b>ACTIVITY</b>	<b>Year 2023-24</b>	<b>Year 2024-25</b>	<b>Year 2025-26</b>	<b>Year 2026-27</b>	<b>Year 2027-28</b>
Plantation area (in ha.)	0.6	0.6	0.6	0.6	0.6
Plantation (Nos)	600	600	600	600	600

#### **iv) Stabilization And Vegetation Of Dumps**

Waste dump will be stack as per plan and finally total material backfilled in the mined-out area. Dump will be stabilised by proper benching and garland drain around the dump area.

#### **v) Measures To Control Erosion / Sedimentation Of Water Courses**

The area lies flat to gently undulating terrain between western hills having north-south strike direction. The Vindhyan sedimentary form the catchment area of Gambhiri River, which is tributary of Berach River and Berach is a main tributary of River Banas. Due to moderate rainfall, the area has well developed drainage and has given origin to ephemeral rivers like Gambhiri river. The long term average rainfall is 984 mm.

**vi) Treatment and Disposal of Water From Mine :** No mine water is proposed to be discharged outside lease area. Mine water from direct precipitation will be used for crusher plant process, water sprinkling and plantation. A water quality is being monitored regularly for its adjoining wells, cement plant and buffer zones. Surface and Ground water samples were analysed in regular basis and results are attached as **Annexure No.15A**. The ground water encountered is potable.

#### **vii) Measures of Minimizing Adverse Effects On Water Regime:**

A water quality is being monitored regularly for its adjoining wells, cement plant and buffer zones. Surface and Ground water samples were analysed in regular basis as per MOEF & CC Guideline and compliance will be submitted regularly. The ground water encountered is potable and there no adverse effect on water regime.

#### **viii) Measures To Minimize Vibrations Due To Blasting And Check Noise Pollution :**

Competent persons deployed for blasting operations. The mining operations will be restricted to safety zone of nearest settlements; the blasting pattern will be designed to keep the ground vibrations & noise to a minimum. The frequency of blasting too will be optimized by adopting multi-row blasting using NONEL.

The DGMS circular regarding permissible limits of ground vibration and actual data generation by our MINIMATE blaster is attached.

**ix) Measures For Protection of Historical Monuments And For Rehabilitation Of Human Settlement Likely To Be Disturbed Due To Mining Activity**

There is no historical monuments within the area and also in surrounding area (5.0-10.0 km zone), So no step is required to protect the historical monuments. There is no village and human settlement within the mining area. Therefore, no rehabilitation scheme or provision of compensation land will be required.

Interaction of local people with outsiders, and improvement in communication, which will enhance their present status of knowledge and confidence.

**7(b) The status of titles and approvals critical to the viability of the project, such as mining leases, discharge permits, government and statutory approvals.**

**Land Acquisition:**

Land acquisition work is in progress.

**Diversion of Electric Power Line.**

Major electric lines are already shifted from working area.

**National Park.**

No national park, wildlife sanctuary biosphere reserves lies in the area. There is no tribal issue in the Nimbahera Tehsil.

**7(c) Environmental descriptions of anticipated liabilities. Location plans of mineral rights and titles.**

Company has obtained environment clearance from MoEF, New Delhi and Consent to Establish and Consent to Operate from state Pollution Control Board. Company will follow all the conditions imposed in the clearances and consents and submit the required returns to concerned authorities. Air quality, water quality, Noise level, vibration monitoring will be carried as per EC and IBM circulars.



## 8.0 Classification.

8(a) The basis for the classification of the Mineral Reserves into varying confidence categories.

**PRESENTATION OF MINERAL LIMESTONE RESOURCES / RESERVES AS PER UNFC: (As on 01.09.2022)**

	Category	UNFC Code	Quantity in million tonnes	Grade
		---		
<b>Total Resources</b>	<b>(A+B)</b>		<b>272.54</b>	
Reserves (A)	Proved	(111)	157.66	<b>42.53 % CaO 0.78 % MgO</b>
	Probable	(121)		
		(122)		
Remaining Resources (B)	Feasibility Mineral Resources	(211)	114.88	<b>41.42 % CaO 0.80 % MgO</b>
	Pre-Feasibility Mineral resources	(221)		
		(222)		
	Remaining Measured Mineral Resources	(331)		
	Remaining Indicated Mineral Resources	(332)		
	Inferred Mineral Resources	(333)		
	Reconnaissance Mineral Resources	(334)		

### **MINEABLE RESERVES AND ANTICIPATED LIFE OF THE MINE :**

Mineable reserves have been calculated by taking into account the reserves in probable categories only. Future rate of production for ROM will be maintained at 5 MTPA.

S. No.	Particulars	In million tonnes
1.	Net Mineable Reserves as on 01.09.2022	157.66
2.	Mineral to be mined from 01.04.2023 to 31.03.2028.	25.0
3.	Remaining reserves at the end of plan period 01.04.2028. (1-2)	132.66
4.	Proposed rate of production per year (ROM)	5.0
5.	Life of mine at the end of Mining Plan period (3/4)	26.53 Years
6	Life of the mine (26+5 years plan periods) as on 01.10.2022.	<b>31.53 Years</b>

**Reserve will be re assess after completion of exploration work and analyzed the samples. Life of mine will be change accordingly.**

**8(b) Finalization of estimates of grade wise mineable quantities in contemplation with proposed preliminary mine design/conceptual plan subject to all necessary approvals/contracts have been confirmed or there are reasonable expectations that all such approvals/contracts will be obtained within a reasonable timeframe and with certification that that Economic viability is not affected by short-term adverse market conditions provided that longer-term forecasts remain positive.**

The anticipated cost of mining is Rs. 285 /- per tonne cost. Average sale value is assumed at Rs. 350/- tone of Limestone.

**Feasibility assessment of mineral resources: -**

Mining of Limestone from mineable reserves is economically feasible in view of the following: -

- No marketing is needed for limestone as there is demand in the market
- The lessee has own cement industry.
- Internal Rate of Return is 40%
- Discounted Cash flow is positive at 12%.
- No village/ Hutment are to be displaced due mining operation.
- Environment clearance will be obtained from the MOEF, New Delhi.
- Consent to Establish and Consent to operate has obtained from State Pollution Control Board.

Prepared and signed by

**Shailendra Singh Bist**  
Mining Geologist  
Technically Qualified Person