Pre-Feasibility Report
(As per MoEF Letter No. J011013/41/2006-IA.II (I) dated 30th December 2010)

1. Executive Summary

Project		:	Bigodi Limestone Mine
Project Proponent		:	RCCPL Private Limited (formerly known as Reliance Cement Company Private Limited)
Village		:	Dithora, Sannehi Singti and Karaundi
Tehsil		:	Amarpatan
District		:	Satna
State		:	Madhya Pradesh
(i)	Proposed production, Mining Lease Area & ownership		Proposed production of limestone: 0.85 Million TPA (MTPA) Mine lease area: 184.149 Ha Ownership: RCCPL Private Ltd. Letter of Intent issued by Govt. of Madhya Pradesh vide No. F 3-1 / 2018 / 12 / 1 dated 24/03/2018 Enclosed: **Annexure-1: Letter of Intent and Name Change Letter from Govt. of Madhya Pradesh**
(ii)	Geographical co-ordinates		Geographic coordinates given in following **Annexure-3A**: Geographic coordinate list **Annexure-3B**: Google imagery
(iii)	Name of Rivers/ Nallahs/ Tanks/ Spring/ Lakes etc		Bihar nadi - Adjacent to ML area towards SE Lake near Govindgarh -7.7 km, SE Several small nallahs exist within study area.
(iv)	Name of Reserve Forest(s), Wild life Sanctuary/ National parks etc.		There are no national parks, wild life sanctuaries and eco-sensitive zones in the proposed study area. However, three Reserve Forests (RF) Mand, Papra and Govindgarh exist within a distance of 5 km from the boundary of proposed mining area.
(v)	Topography of ML area		312 m AMSL – 320 m AMSL
(vi)	Project proposal		**Total excavation: 2.71 MTPA** Limestone: 0.85 Million Ton Per Annum (MTPA) Waste/reject: 1.74 MTPA Topsoil/ Alluvium: 0.44 MTPA
(vii)	Name of Mineral mined		Limestone
(viii)	Life of mine		41 Years
(ix)	Mineral Reserve in Tonnes		UNFC Code — Quantity in Million Tonne 111 — 32.29 (Mineable Reserves) 221 — 15.46 (Blocked under statutory barriers)
(x)	Drilling/ Blasting		Yes
(xi)	Mining method		Opencast mechanized

(xii)	Water requirement & Source	183 KLD for dust suppression, washing of mining machinery, plantation and domestic purpose, initially from ground water.
(xiii)	Solid waste	Soil / Reject: 2.18 Million Tonne Per Annum will be generated
(xiv)	Cost of project	Total Rs.11000 Lakh including cost of land, machinery, pollution control measures, construction of mines office, weighbridge, man power etc.
(xv)	Any others (specify)	None

2) Introduction of the Project / Background Information

(i) Identification of Project and Project Proponent

Name of the Project:	Bigodi Limestone Mine
Mine Lease Area:	184.149 ha
Location:	Villages: Dithora, Sannehi Singti and Karaundi Tehsil: Amarpatan District: Satna State: Madhya Pradesh
Project Proponent:	RCCPL Private Ltd. (formerly known as Reliance Cement Company Private Ltd.) 2nd Floor, Industry House 159 Churchgate Reclamation, Mumbai – 400020 E-mail: ashok.k.singh@birlacorp.com Landline: 022 43435403 / 4343 5400 Mobile: 9323488618

(ii) Brief Description of the Nature of the Project.

The proposal is for limestone opencast mechanized mining from Bigodi Limestone Mine. Lease area spreads over an area of 184.149 Ha. at villages Sannehi Singti, Dithora and Karaundi, Tehsil: Amarpatan, District: Satna, State: Madhya Pradesh.

It is proposed to produce 0.85 Million TPA of limestone by opencast mechanized method of mining from the mine. Drilling and blasting is proposed.

Please refer **Annexure – 5** for surface plan and **Annexure-6** for geological plan.

(iii) Need for the project & its importance to the country and /or region

The global Limestone market is expected to grow significantly at a CAGR of 6.02% during the forecast period, 2018-2023. The Asia-Pacific region is estimated to lead the market due to its rapid growth in the building & construction industries. Cement is a cyclical commodity with a high correlation with GDP. Cement demand is closely linked to the overall economic growth of country, particularly the housing and infrastructure sector. Cement demand in real estate sector is spread across rural housing (40%), unban housing (25%) and construction/infrastructure/industrial activities (25%). While the rest 10% demand is contributed by commercial real estate sector.

Limestone is the main raw material for manufacturing of cement usually makes up around 65 percent of the final product. The mining and associated activities in the mineral bearing areas will bring about gains in gross domestic product, i.e. there is though a minor contribution by the proposed project but will add to the gains in the G.D.P. The applicable royalty, taxes, DMF, NEMT paid by applicant will thereby contribute to the regional revenue. The cement demand is expected to increase at 6-7% Compound Average Growth Rate (CAGR) led by revival in government spending in housing (especially affordable housing), marginal uptick in private housing, and fast growth in infrastructure spends. At regional level, eastern states followed by central and north regions would see healthier growth in demand over a low base as the state governments sharpen focus on development.

RCCPL Private Ltd. (formerly Reliance Cement Company Pvt. Ltd.) has an operating cement plant of 5 Million Tonne Per Annum (3.6 MTPA Clinker) capacity at villages Bharauli and Itehara, Tehsil: Maihar, District: Satna, Madhya Pradesh (MP).

Annual limestone requirement for 3.6 MTPA clinker plant is to the tune of 5.4 million ton. Limestone requirement for 50 years of economic plant of life is 270 million tonne, whereas limestone resources in existing mining leases are to the tune of 137 million tonne which is grossly inadequate to operate cement plant till its economic life.

To meet limestone requirement of cement plant, RCCPL Private Ltd. (formerly known as Reliance Cement Company Private Limited) has applied for mining leases in various part of Satna District of MP. The RCCPL Private Ltd. obtained Letter of Intent (LoI) for ML area in villages Sannehi Singti, Dithoura and Karaundi (184.149 Ha) of Tehsil: Amarpatan, District: Satna from Department of Mineral Resource, Govt. of Madhya Pradesh vide letter no. F 3-1 / 2018 / 12 / 1 dated 24/03/2018.

Limestone mined from this area will be used as captive sources for cement plant of RCCPL Private Ltd. in Maihar.

To convert LoI into mining lease grant preparation of mining plan is already on process and now applying for ToR for obtaining EC for above mentioned mining lease.

Enclosed **Annexure-1**: Letter of Intent

(iv) Demand supply gap

The production of limestone in 2016-17 at 313.2 million tonnes increased by about 2% as compared to that of the previous year. There were 771 reporting mines in 2016-17 against 807 during the previous year. Twenty-seven mines each producing more than 3 million tonnes per annum contributed 42% of the total production of limestone in 2016-17. The share of 15 mines each in the production range of 2 to 3 million tonnes was 11% of the total production. 24% of the total production was contributed by 54 mines each producing 1 to 2 million tonnes annually. The remaining 23% of the total production was reported by 673 mines and two associated mines during the year. Twenty-five principal producers contributed about 77% of the total production. About 3.3% of the production was reported by public sector mines as against 4% in the previous year. According to Department of Industrial Policy and Promotion (DIPP) reports. There is large gap between demand & supply of raw material (Limestone) for the production of cement. The cement plant of RCCPL Pvt. Ltd. aims to fill the demand – supply gap through optimum allocation and excavation of natural resources required to meet the demand effectively.

(v) Imports vs Indigenous production

Imports of limestone is not envisaged.

(vi) Export possibility
No export of limestone is proposed. The limestone produced from proposed mine shall be sent to the captive end use plant.

(vii) Domestic /export markets
The limestone produced from proposed mine is proposed for captive use in the cement plant. There is no proposal for export.

(viii) Employment Generation (Direct and Indirect) Due to Project.

During project period: 15 direct & 70 indirect
During operation period: 20 direct & 83 indirect

3) Project Description

(i) Type of Project including interlinked and interdependent project, if any

This is an opencast mechanized mining project linked to RCCPL Private Limited's integrated cement plant situated at villages Bharauli & Itahara at Tehsil Maihar, District Satna, in Madhya Pradesh. The proposed production capacity (for captive use only) from Dithora mine is 0.85 Million TPA.

(ii) Location (map showing general location, specific location and project boundary & project site specific layout) with coordinates.

The deposit is situated in Dithora, Sannehi Singti and Karaundi villages within Survey of India Toposheet No.: G44 V3
Geographical coordinates: Please refer -
Annexure – 3A: List of Geographic coordinates
Annexure - 3B: Google imagery
Annexure – 4: Study area in Toposheet

Detail of survey numbers is enclosed as **Annexure – 1** Letter of Intent

Sr.No.	Name of village	Area (Ha.)
1	Dithoura	125.313
2	Sannehi Singti	31.777
3	Karaundi	27.059

Total Lease Area: 184.149 Ha.

(iii) Details of alternate sites considered and the basis of selecting the proposed site, particularly the environmental considerations gone into should be highlighted.

Not applicable. This is a site specific project.

(iv) Size or Magnitude of operation

It is proposed to produce 0.85 Million TPA of limestone by opencast mechanized method of mining. During the production of limestone, waste / reject of 1.74 MTPA and alluvium/ topsoil of 0.44 MTPA will also be generated. Thus total excavation will be 3.03 MTPA. Drilling, blasting, loading, transporting and crushing is proposed.

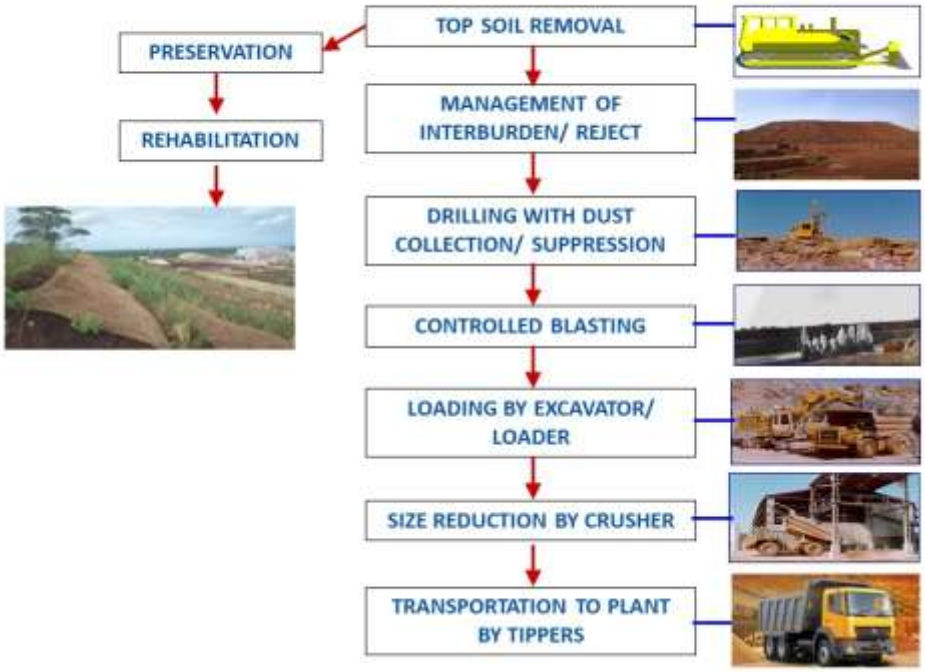
(v) Project Description with Process details

Mining Process

Fully mechanized opencast method of mining will be adopted. All operations of mining will be done by deployment of heavy earth moving machinery for deep hole drilling, excavation, loading & transportation. Various mining activities such as drilling, blasting, loading and transportation will be undertaken so as to ensure maximum mineral conservation and minimum environmental degradation. While planning, quality parameter of the deposit has been taken care of so as to have maximum blending ratio. Following measures will be taken for protection of nearby habitation.

- Drilling with dust collector / dust suppression
- Regular water sprinkling on haul roads
- Dust collector and water spraying at crusher
- Controlled blasting to minimize impact of noise and vibration
- Detailed vibration study will be carried out
- Periodic maintenance of mining machinery to control noise and emission within permissible limit
- Adequate safety barriers from habitation, road etc. as per statutory guidelines
- Creation of garland drain and settling pond for protecting water environment
- No mining operation during night shift

The main activities involved will be:



Mine will be operated in two shifts with working of 8 hours each. Systematic working will be done by formation of benches. All applicable laws such as MMR, Mines Act, MMDR, MCR, MCDR, explosive rules and other applicable acts, rules & regulations will be followed for safe, scientific & systematic working to follow the principles of safety & human health and conservation of mineral.

Site will be cleared with the help of dozer / loader and top soil will be utilized for plantation or stacked separately for future use. Removal of over burden will be done by loader / excavator. Drilling in hard strata will be done by DTH drills of hole dia. 115 mm. For blasting, explosives such as ANFO, slurry / emulsion explosives, Nonel detonator, Electric detonator etc. will be used.

Blasted limestone will be loaded in to the dumpers by loaders/ excavators. These materials will be transported to the crushing plant. The over burden will be loaded by loaders/ excavators and transported to the dumping yard/backfilling site by dumpers / tippers. Mining of limestone and handling of waste rock will be done by adequate size of mining machinery as per approved mining plan. The mine will be operated under the control of mines manager, who will be reporting to the agent of mine.

Land use status at conceptual stage / at the end of mine life is given under point no.5 (iii).

(vi) Raw material required along with estimated quantity, likely source, marketing area of final products, mode of transport of raw material and finished product.

The rocks exposed in the area, under consideration, apparently belong to the Nagod Limestone Formation of the Bhander Group. In Sannehi Sigti, Dithora & Karondi Deposit, the

rocks include a conformable package of Limestone, siliceous and High Magnesian Limestone as waste and Shale. The rocks in the area trend NE-SW to ENE-WSW with significant plunging of strike towards South West direction These sedimentary beds have sub horizontal to very low dip ranging from 5° - 7° due NW. The full sequence of litho-stratigraphic succession is not exposed anywhere within the mining lease area but could be delineated in the bore holes sections. On the basis of drill hole data and the geological knowledge acquired through repeated regional traverses, the following tentative litho-stratigraphic succession has been worked out for the entire area: -

Age	**Group**	**Formation**	**Member**
Recent to sub Recent			Lateritic Soil
Proterozoic	Upper Vindhyan		Sirbhu Shale
		Bhander Group	Nagod Limestone
			Ganurgarh limestone
		Rewa Group	Upper Rewa Sandstone

(vii) Resource optimization / recycling and reuse envisaged in the project, if any should be briefly outlined.

Solid Waste like overburden reject etc. produced during mining activity will be utilized for back filling in the worked-out pit simultaneously. Top soil generated will be used for plantation activity. Sub-grade limestone which is not suitable for cement making will be stored separately for future use, if any.

(viii) Availability of water, its source, Energy/power requirement and source should be given

Purpose	**Water requirement, KLD**	**Source**
Dust suppression at mine	128	Initially from groundwater
Dust suppression at crusher	10	
Green belt	30	
Domestic	5	
Workshop	10	
Total	**183**	

After five years of operation, considering the development of mines and filling of mine pit by rain water harvesting, fresh water requirement will be reduced considerably. The detail study will be carried out for proper water management.

Power Requirement

The power requirement for the mines will be ~ 1.0 MW and the same will be met through grid power. One DG set (250 KVA) will also be installed to meet the demand required during the emergency period for lighting and pumping purposes.

(ix) Quantity of wastes to be generated (liquid and solid) and scheme for their management / disposal.

Reject and Soil: ~ 2.18 MTPA

Overburden etc. produced during mining activity will be utilized for back filling in the worked-out pit. Top soil generated will be used for plantation activity.

There will be no use of water in mining process, however water used in mine workshop will generate effluent, which will be treated using oil-grease separator and treated water will be reused. Waste / Used oil will be disposed through authorized recycler. Domestic waste water will be generated and will be treated in septic tank/soak pits.

x) Schematic representation of the feasibility drawing which give information of EIA purpose.

The mine is categorized under category A (>100 ha) under schedule 1(a) of Gazette Notification dated Sep 14th, 2006 and subsequent amendments.

4) Site Analysis

i) Connectivity: The nearest city is Rewa which is 16 km, NE from proposed ML area. The nearest railway station and airport are Rewa and Khajuraho are at distance of 14.6 km and 135 km respectively.

ii) Land Form, Land use and Land Ownership

District	Tehsil	Village	Govt. land (Ha.)	Private land (Ha.)	Area (Ha.)
Satna	Amarpatan	Sannehi Singti	0.105	31.672	31.777
		Dithora	9.053	116.260	125.313
		Karoundi	5.251	21.808	27.059
		Total	**14.409**	**169.740**	**184.149**

(iii) Topography along with maps

The mine lease area is almost flat with gentle undulation. The highest ground level in the ML area is 320 m AMSL and lowest elevation is 312 m AMSL in ML area.

Please refer **Annexure-4, Annexure-5, Annexure-6** for Toposheet, surface plan and geological plan respectively.

iv) Existing land use pattern (agriculture, non-agriculture, forest, water bodies (including area under CRZ), shortest distances from the periphery of the project to periphery of the forest, national park, wildlife sanctuary, eco-sensitive areas, water bodies (distance from the HFL of the river), CRZ. In case of notified industrial area, a copy of the Gazette notification should be given.

Land use of ML area:	**Land ownership of ML area:**
Forest – Nil	Govt. land – 14.409 ha.
Govt. land – 14.409 ha.	Private land – 169.740 ha

Agricultural – 169.740 ha

Distance of Forest, National Park, Water Bodies etc. from the Project Site

There are no national parks, wild life sanctuaries and eco-sensitive zones in the proposed study area. Three reserve forests are within 5 Km. from ML boundary.

Bihar nadi is flowing adjacent to south-eastern of ML boundary. A lake is situated near Govindgarh at a distance of 7.7 km, SE from ML boundary. There are several small nallahs and ponds in study area.

(v) Existing infrastructure

Villages Dithora and Sannehi Sigti are close to the ML area. Detailed demographic survey will be carried out and data will be collected during EIA study. The villages have primary infrastructure like primary school, drinking water facility and other basic amenities like village road and electricity etc.

(vi) Soil classification

Soil cover in the area comprised of Black Cotton Soil generally present in the major parts of the ML area. It is sticky in nature and at some places intermixing with weathered shales, Red Clay & Yellow clay. The thickness of the soil cover in the area ranges from 0.45 m to 5.00 m.

(vii) Climatic data from secondary sources

The area subtropical climate and receives an average rainfall of 1200 mm annually. The variation in temperature is from 25°C to about 46° C in summers and 4°C to about 22°C during winter. The wind generally blows in northeast direction. From November to February the area experiences winter, while April to June the region experiences summer. The monsoon sets in by June and retreats by September. Relative humidity averages from 18% to 80% in a year. Proposed mining operation will adopt all types of mitigating measures thus no adverse effect on environment may be caused. Additionally, standard norms will be adopted for protection of environment.

(viii) Social Development & Infrastructure Availability

The following infrastructure facilities are available in the nearby villages of ML area

- Drinking water availability by open wells/bore wells
- Village roads
- Primary / secondary schools
- Primary health care facilities
- Public buildings / community halls
- Communication/ transportation facilities

5) Planning brief

i) Planning concept (type of industries, facilities, transportation, etc), Town and country Planning /Development authority Classification.

The proposed project is to set up 0.85 MTPA captive limestone mine at Sannehi-Singti, Dithora and Karaundi villages, Tehsil Amarpatan, District Satna, M.P. Opencast mechanized mining will be followed for raising the limestone.

ii) Population projection

The proposed mining project is envisaged to employ direct ~ 20 & indirect ~ 83 during operational period.

.

iii) Land use planning (breakup along with green belt area)

Land use planning in beginning and end of life of mine is as follows:

Sr. No.	Land Use Category	Pre-Operational	Operational	Post-Operational
		(Present)	(At the end of 1st 5 year plan)	(At the end of Life of Mine)
1	Soil Dump	0.000	6.699	0.000
2	Bund and Drain	0.000	0.486	0.000
3	Waste Dump	0.000	8.943	0.000
4	Excavation including protective bund	0.000	11.194	134.900
5	Area reclaimed with Backfilling and rehabilitated with plantation	0.000	4.036	119.150
6	Area rehabilitated with Water Reservoir	0.000	0.000	15.750
7	Road, mine road etc.	1.186	2.187	0.165
8	Infrastructure	0.000	4.000	1.000
9	Mineral Storage (Sub-grade/mineral)	0.000	0.680	0.000
10	Plantation & Greenbelt on safety barriers, along lease, road, powerline and other areas	0.000	2.100	25.890
11	Undisturbed area	182.963	147.860	22.194
Total	(excluding Sr.No.5 & 6 which is included in Sr.No.4)	184.149	184.149	184.149

iv) Assessment of infrastructure demand (physical & social)

Detail assessment of infrastructure demand will be covered in EIA study.

v) Amenities / facilities

Basic amenities / facilities will be studied during EIA.

6. Proposed infrastructure

i) Industrial area (processing area)
At mines the following infrastructure facilities will be created
• Administrative office with training facilities
• Garage and Workshop for Heavy earth moving equipment
• Canteen and other amenities
• Dewatering pumps for mine pits
• Approach road to mines office/crusher area and roads for dumper movement
• Diesel storage and pumping facility
• Explosive Magazine room

ii) Residential Area (Non-processing area)
Construction of residential complex has not been envisaged.

(iii) Green Belt

The main objective of the green belt is to provide a barrier between the mining activity and the surrounding areas. The green belt helps to capture the fugitive emissions and attenuate the noise generated apart from improving the aesthetics of the proposed mine lease area.

Plantation is proposed in mine premises i.e. along the internal roads, on storage yards and dump yards in mine areas and along the administrative buildings.

Plantation will be done as per the CPCB guidelines and as per IBM approved mining plan. Local forest department shall also be contacted for finalization of plant species.

(iv) Social Infrastructure
The key areas will be as follows:
• Health & Sanitation
• Infrastructure development
• Education support programme
• Horticulture and Agriculture
• Employability
• Environment and Energy

(v) Connectivity (traffic and transportation road/Rail/Metro/water ways, etc)
The existing transportation infrastructure is sufficient to cater the traffic from the mine.

vi) Drinking water management (Source & Supply of water)
It is proposed to source the domestic water for proposed mines through ground water after obtaining necessary clearances from the concerned authorities.

vii) Sewerage system
The domestic waste water from the mines will be treated in the septic tank/soak pits.

viii) Industrial waste management
No industrial wastes will be generated from the mine.

viii) Solid waste management

Solid waste like soil and overburden from mines will be managed as per the IBM approved mining plan. The top soil will be stored at appropriate place, which will be utilized for plantation purpose.

The overburden like dolomite and subgrade minerals will be stored separately for future use if any. While reject material will be used for backfilling.

ix) Power requirement and supply / source

The power requirement for the mines will be ~ 1.0 MW and the same will be met through grid power. One DG set (250 KVA) will also be installed to meet the demand required during the emergency period for lighting and pumping purposes.

7. Rehabilitation & Resettlement (R&R Plan)

Displacement of population is not envisaged. However, due to involvement of land oustees, R&R study will be carried out.

8. Project Schedule and Cost estimates

Project schedule:

During 1st year of mining operation, land acquisition, permissions for operations of mines, development of mines will be undertaken.

From 3rd year onwards, production will start in a phased manner and rated capacity of 0.85 MTPA will be achieved from 5th year onwards.

Project cost:

The capital cost for the proposed mining works out to Rs. 110 crores including environment management, pollution control measures.

9. Analysis of proposal (Final Recommendations)

Financial and social benefits with special emphasis on the benefit to the local people in terms of integrated development of villages falling in project area.

Financial benefits: Direct benefits to the National and State Exchequer:

- Royalty,
- DMF
- NMET
- Income by way of registration of vehicles
- Income tax from individual as well as corporate taxes by the cement company and ancillary units developed due to proposed industry.
- Inflow of money to the local market/economy due to exchange of money earned by direct and indirect employees.

Social Benefits:

The proposed mining project will generate new employment opportunity, which will have beneficial impact on the economy. Transportation facility and awareness towards the environment in the region will improve considerably. Socio-economic status of the region will definitely improve due to the project. The social welfare activities will be planned and implemented as per need assessment carried out by company's CSR team in the following areas:

- Medical assistance
- Education
- Agriculture improvement
- Vocational training
- Assistance in utilizing Government programme
- Assistance for generation livelihood opportunities
- Health and sanitation
- Creation of SHG
- Animal husbandry