



Dalmia Cement (Bharat) Limited

Amalgamated Aminabad & Khairulabad Limestone Mines under GO 50

Extent : 96.190 Ha

Plan Period Production : 73,33,330 Tonnes @ 14,66,666 TPA ROM (42 m BGL)

SF Nos. 103/2, 103/3, 104/3, 105/8, 108, 109, 110, 111, 112, 113/1, 113/2, 114/1, 114/2, 114/3, 115, 116/1, 116/2, 116/3, 117/1, 117/2, 117/3, 118/1, 118/2, 125, 126/1, 126/2, 126/3, 127, 133 of Aminabad Village & SF Nos. 448, 449, 452, 453/5, 455/2, 456/1, 478 of Khairulabad Village, Ariyalur Taluk & District, Tamil Nadu

ML Validity as per MMDR Amendment Act, 2015 - 31.03.2030

**Mining Plan Approval for Amalgamated Lease by
IBM, Chennai vide Letter No. TN/ALR/LST/MP-2098.MDS dated 05.10.2023
(Plan Period 2023-24 to 2027-28)**

Environmental Clearance under EIA Notification 2006

Schedule SI. No. 1(a) & Category 'B' (<250 Ha)

Summary Environmental Impact Assessment Report

(after TOR for Public Hearing)

Awarded TOR Identification No. TO24B0000TN5124077N dated 15.05.2024

December 2024

EIA Consultant



ABC Techno Labs India Private Limited, Chennai

**Accreditation Certificate : NABET/EIA/2225/RA0290 dated 11.06.2023
with Validity till 16.11.2025**

(SI. No. 4 of QCI/NABET List dated 29.10.2024)

Lab Accreditation : NABL Certificate No. TC-5770 dated 03.04.2024-valid till 02.04.2026

Summary Environmental Impact Assessment Report

1.0 Introduction

1.1 Project Proponent

M/s. Dalmia Cement (Bharat) Limited (DCBL) are operating Cement Plants at Dalmiapuram & Ariyalur in Tamil Nadu, Kadapa in Andhra Pradesh, Belgaum in Karnataka and Cement Units across Northeast & Eastern Regions. DCBL's Cement manufacturing capacity is now about 35.9 Million Tonnes per Annum (MTPA).

DCBL had established Dalmiapuram Cement Plant in the Year 1939 (Pre-Independence period). Dalmiapuram Plant (with Lines I & II) is now being operated for 3.23 MTPA Clinker and 5.00 MTPA Cement. DCBL is also running its Ariyalur Cement Plant at Govindapuram & Ottakovil at a distance of 35 km from Dalmiapuram. Dalmia Ariyalur Plant is now being operated for 2.50 MTPA Clinker and 4.00 MTPA Cement.

The limestone requirement of both Cement Plants is being met from Captive Limestone Mines in Ariyalur and Trichy Districts viz. Kallakudi-Kovandakurichi (KLK-KVK) Mines, Periyathirukonam (PTK) Mines and amalgamated Periyagalur, Aminabad & Khairulabad (PNR Group) Mines.

Presently, there are 800 Direct Employees and 3,000 Contract Employees working in Cement & Power Plants and Mines. Dalmiapuram Plant and Captive Mines are under the Administration of Unit Head, Dalmiapuram. The communication address is as follows :

Sri. K.Vinayagamurthi,
Unit Head,
 Dalmia Cement Bharat Limited,
 Dalmiapuram, Lalgudi Taluk,
 Tiruchirapalli District, Tamil Nadu-621 651.
 Telephone Nos. : 04329-235123; Fax : 04329-235111
 e-mail : k.vinayagamurthi@dalmiacement.com

1.2 Project Profile

PNR Group Mines are being operated in 3 Leases over an extent of 167.605 Ha (under GO No. 179 over an extent of 70.01 Ha in Periyagalur; under GO No. 2 over an extent of 95.345 Ha in Aminabad & Khairulabad Villages and under Rc No. 17783 over an extent of 2.25 Ha in Khairulabad Village for the total Production of 1.90 MTPA Limestone. DCBL has also obtained another Lease over an extent of 0.845 Ha in Aminabad village under GO Ms. No. 106 dated 12.05.2015. The State Government has amalgamated two Leases viz. GO Ms. No. 86 over an extent of 95.345 Ha & GO Ms. No.106 over an extent of 0.845 Ha - under GO Ms. No. 50 dated 27.02.2023 for a total extent of 96.190 Ha with its validity till 31.03.2030.

Amalgamated Lease GO Ms. No. 50 over an extent of 96.190 Ha falls in SF Nos. 103/2, 103/3, 104/3, 105/8, 108, 109, 110, 111, 112, 113/1, 113/2, 114/1, 114/2, 114/3, 115, 116/1, 116/2, 116/3, 117/1, 117/2, 117/3, 118/1, 118/2, 125, 126/1, 126/2, 126/3, 127, 133 of Aminabad Village & SF Nos. 448, 449, 452, 453/5, 455/2, 456/1, 478 of Khairulabad Village, Ariyalur Taluk & District, Tamil Nadu (**Fig. 1.1**). The mine is situated at a distance of about 6.8 km in east from Ariyalur Town. It is accessible by Ariyalur – V Kaikatti SH-139 which runs about 0.9 km in the south. There is no Rehabilitation & Resettlement issue due to the Proposal. Also, there is no litigation/pending case against the Proposal. The Mine Layout/Surface Plan is given as **Fig. 2.1**.

The Regional Controller of Mines, Indian Bureau of Mines (IBM), Chennai has approved the Mining Plan for GO 50 for the Block 2023-24 to 2027-28 vide Letter No. TN/ALR/LST/MP-2098.MDS dated 05.10.2023 which is valid till 31.03.2028.

Mineable Reserves ('111' Category) assed in the Lease is 9.97 Million Tonnes as on 01.04.2023 over an extent of 96.19 Ha. No Top Soil or Over Burden (OB) generation will be there till Conceptual Stage. The mining operation will be carried out by both Opencast Conventional Mining with controlled Drilling & Blasting and Non-Conventional Mining Method with Rock Breakers. Conventional mining operation method will be involving deep hole blasting techniques. Blasting is being done with slurry explosives and ANFO and Non-Electric shock tubes for controlling ground vibration and noise level. Fragmented limestone will be loaded by Hydraulic Excavators into Tippers. No Beneficiation/Screening is required. The Tippers transport limestone to Cement Plants by road - 19 km (Ariyalur Plant) and 40 km (Dalmiapuram Plant) respectively.

The production during the Plan period will be 73,33,330 Tonnes @ 14,66,666 TPA ROM (1.467 MTPA ROM)-**Table 1.1**. The Life of the Mine is 9 years. Conceptual Stage Ultimate Pit depth will be 42 m BGL. As Ground Water-table in the vicinity is ranging between 45-50 m BGL, mining will not intersect the ground water-table. At the Conceptual Stage, about 69.79 Ha will be opened out Pit Area which will be converted as water reservoir.

Mine Profile :

Mineable Reserves	:	9.97 Million Tonnes
Proposed Production	:	1.467 MTPA ROM & 1.10 MTPA Clean
No. of working days/annum	:	330 (3 shifts)
Life of the Mine	:	9 years
Ore:Waste Ratio	:	1:0
Bench height	:	6 m
Bench width	:	8-10 m
Bench slope	:	40-45°
Ultimate Pit Limit	:	42 m (BGL); Top RL 80 m Bottom RL 38 m
Ground Water-table at	:	45 m (Post-Mon)-50 m BGL(Pre-Mon)

Mining will not intersect the ground water-table.

Fig. : 1.1 Index Map

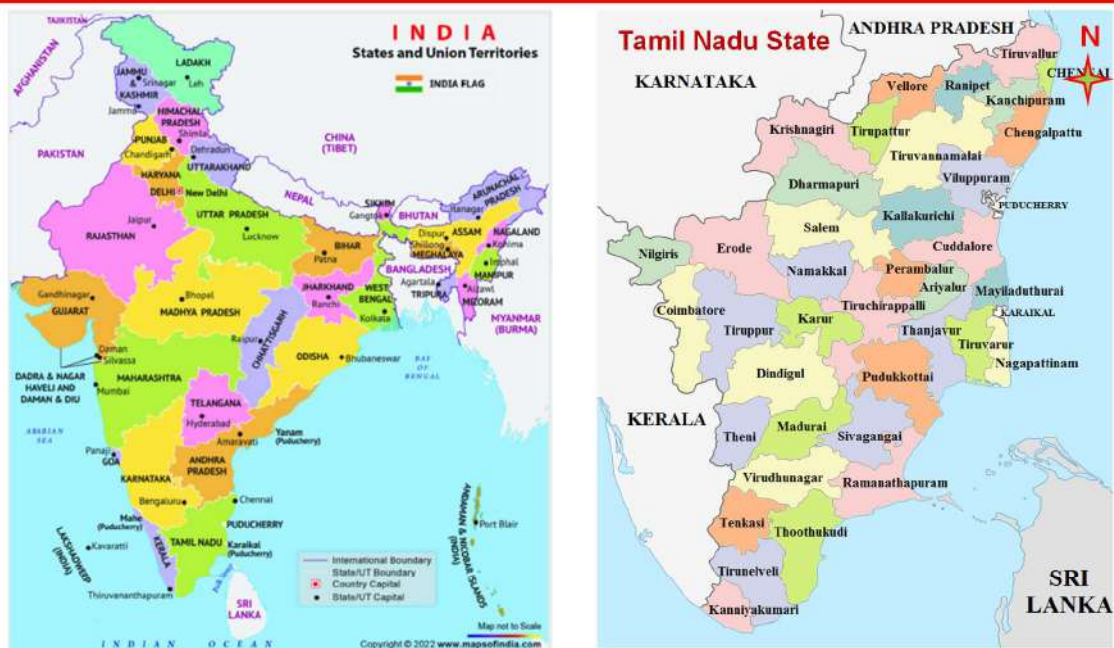


Table : 1.1 Production during Plan Period & Subsequent Periods

Year	Period	Top Soil, Tons	OB, Tons	ROM, Tonnes	Mineral Rejects, Tons	Clean Limestone, Tonnes	ROM:OB Ratio
I	<u>Plan Period:</u>						
1	2023-24	0	0	14,66,666	3,66,666	11,00,000	1:0
2	2024-25	0	0	14,66,666	3,66,666	11,00,000	1:0
3	2025-26	0	0	14,66,666	3,66,666	11,00,000	1:0
4	2026-27	0	0	14,66,666	3,66,666	11,00,000	1:0
5	2027-28	0	0	14,66,666	3,66,666	11,00,000	1:0
	Sub Total	0	0	73,33,330	18,33,330	55,00,000	-
II	<u>Lease Period:</u>						
6	2028-29	0	0	14,66,666	3,66,666	11,00,000	1:0
7	2029-30	0	0	14,66,666	3,66,666	11,00,000	1:0
	Lease Period	0	0	102,66,662	25,66,662	77,00,000	-
III	<u>Residual Period</u>						
8	After 31.03.2030	0	0	-	-	22,66,108	1:0
	Grand Total	0	0	-	-	99,66,108	-

The Limestone to be mined out from this Lease is Major Mineral in an extent of <250 Ha and falls in Category 'B' of Sl. No. 1(a) of EIA Notification 2006 (as amended) for prior Environmental Clearance (EC) from the State Level Environmental Impact Assessment Authority (SEIAA), Tamil Nadu. Accordingly, DCBL submitted the TOR Application vide Online Proposal No. SIA/TN/MIN/465337/2024 on 08.03.2024.

The Proposal was deliberated by the State Level Expert Appraisal Committee-Tamil Nadu (SEAC-TN) in its 457th Meeting held on 03.04.2024 (Sl. No. 11) and in SEIAA-TN Meeting held on 03.05.2024. Terms of Reference (TOR) has been awarded vide TOR Identification No. TO24B0000TN5124077N dated 15.05.2024 for preparing Environmental Impact Assessment (EIA) Report with Public Hearing.

Baseline Data (BLD) has been collected during December 2023-February 2024 (Summer Season) for the EIA Study in compliance with MoEF&CC Office Memorandum No. J-11013/41/2006-IA-II(I)(Part) dated 29.08.2017. EIA Report has been prepared in compliance with awarded TORs and submitted along with Summary EIA Reports (both in English and Tamil versions) for Public Consultation & Public Hearing.

EIA Consultant, M/s. ABC Techno Labs India Private Limited, Chennai has been accredited for various Sectors including Sector-1 (Mining Projects) for Category 'A' by the National Accreditation Board for Education & Training (NABET) vide Certificate NABET/EIA/2225/RA0290 dated 11.06.2023 with validity till 16.11.2025 (Sl. No. 4 of List dated 03.09.2024). ABC Laboratory is accredited by the National Accreditation Board for Testing and Calibration Laboratories (NABL) vide Certificate No. TC-5770 dated 03.04.2024 with validity till 02.04.2026.

2.0 Description of the Environment

2.1 Environmental Setting

The mine is situated at a distance of about 6.8 km in east from Ariyalur Town. It is accessible by Ariyalur – V Kaikatti SH-139 which runs about 0.9 km in the south. The ML area falls in Topo Sheet No. 58 M/4 and the coordinates are : 11°07'44.75" to 11°08'33.42" N Latitude & 79°06'57.96" to 79°08'09.13" E Longitude (**Fig. 1.2**). There are no eco sensitive areas National Parks, Wildlife Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar Sites, Tiger/Elephant Reserves, etc. (existing as well as proposed) within 10 km from the Mine. Karaivetti Bird Sanctuary is at 17.0 km in SW direction. There is an Archaeological/Fossil Museum at Varanavasi (8.5 km in SW). The following Reserve Forests (RFs) exist in the Study area of 10 km radius:

- ❖ Vannankurichi RF (mixed jungle) - 7.3 km in northeast.
- ❖ Managethi RF – 9.1 km (ENE).
- ❖ Vilangudi Extension RF-8.2 km (ESE)
- ❖ Vilangudi RF (Cashew Plantation) – 8.5 km (SE).
- ❖ Sundareswarapuram RF – 9.9 km (ESE).

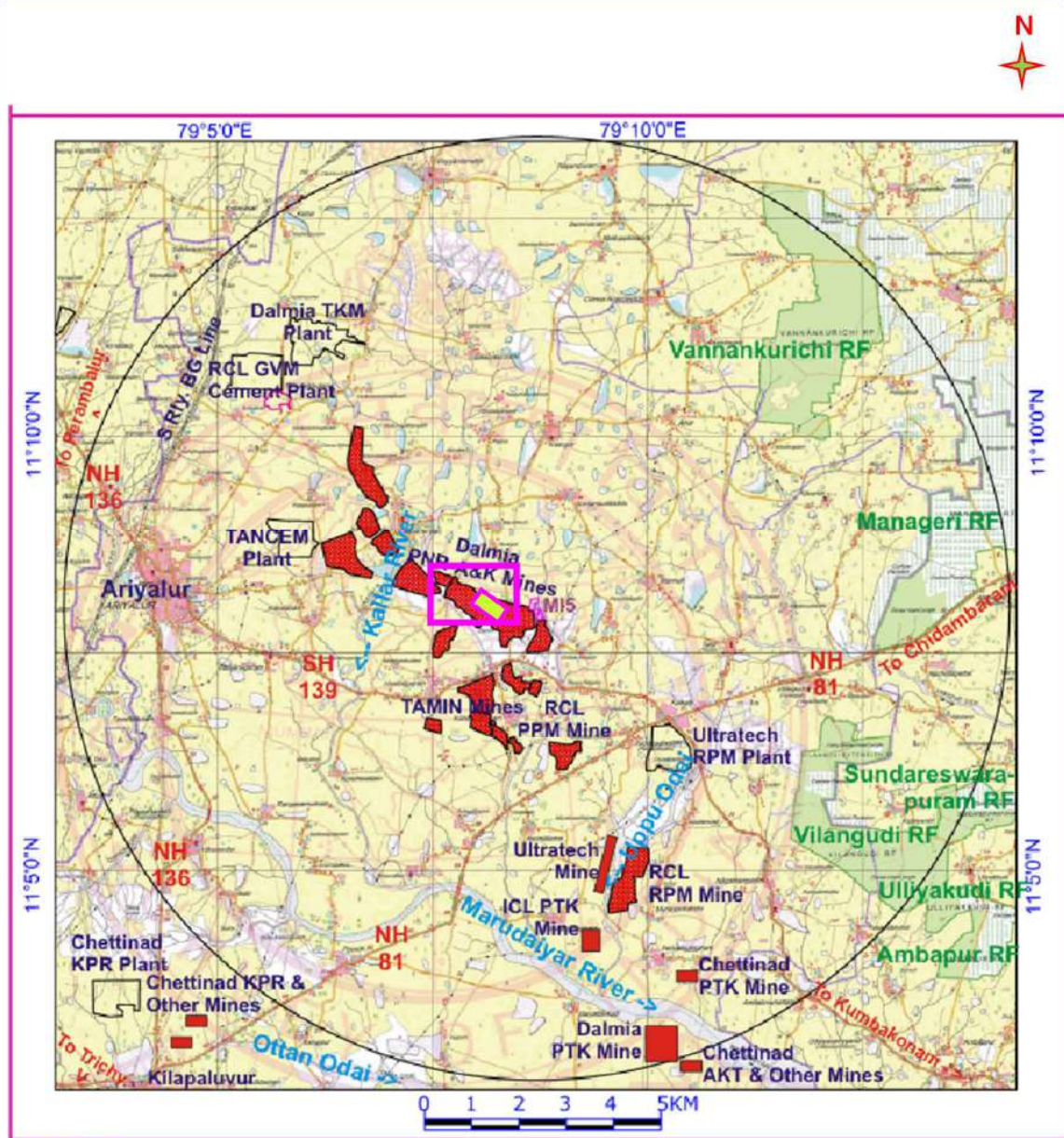
Kallankurichi Kaliyuga Varadharaja Perumal Temple is at 0.8 km in the north from the Lease. There is no perennial river in the study area. Seasonal River Marudaiyar drains the region which flows southwest to southeast at a distance of 5.4 km from the Lease. Kallar River flows adjacent to the lease (0.06 km in west). Uppu Odai at 3.8 km (ESE), Vilangudi Odai at 4.8 km (E) and Vanchiyam Odai at 7.0 km (WNW).

Trichy-Chidambaram National Highway NH-81 runs at 4.0 km in the southeast, Thanjavur-Ariyalur BP-Athur NH-138 runs at 3.5 km in the west and Kumbakonam-Ariyalur-Sendurai SH-139 runs at a distance of 1.7 km in the south. Southern Railway BG Line connecting Chennai Egmore-Trichy-Kanyakumari runs through Ariyalur at a distance of 5.3 km in the west. The nearest Airport is Trichy at a distance of 58.5 km in the southwest. The nearest Ports are at Karaikkal (82 km in southeast) and Cuddalore (95 km in northeast). State Head Quarters Chennai is at a distance of 220 km in the northeast.

Other than DCBL Dalmiapuram Plant (40 km away), there are five Cement Plants in the Region viz. Dalmia Cement Ariyalur Plant (4.0 MTPA; 4.9 km in NW), Ramco Cement Govindapuram Plant (5.5 MTPA; 4.2 km in NW), TN State Govt. owned TANCEM Plant near Kallankurichi (1.5 MTPA; 2.2 km in west), UltraTech Plant at Reddippalaiyam (1.2 MTPA; 4.2 km in the southeast) and Chettinad Cement Kilapaluvur Plant (5.5 MTPA; 10.0 km in the southwest).

-From the Lease Area, Dalmia PNR Mine Pit is at 15 m (East), Ramco PNR-A Pit at 0.8 km (SE) and TANCEM, UltraTech PNR, Khairulabad & Kallankurichi Mines at 0.015-0.8 km are located.

Fig. : 1.2 Topo Map – 10 km Radius



Legend :-

- DCBL GO 50 & RC No. 17783 Mines
- Other Mines
- Cement Plants

Sol Topo Sheet No. 58 M/4

Ramco Usenabad Mine is at 1.5 km (WNW). Ramco Kattupirangium, Pudupalayam & Reddipalayam Mines are at 2.9, 4.3 & 7.0 km (in SE) respectively, Ultratech Vellipirangiyum Mine at 6.5 (SE) & Ottakovil Mine at 7.5 km (NNW), ICL Periyathirukonam & Chettinad Periyathirukonam Mines at 7.0 km (SSE) & 9.3 km (SE), Dalmia Periyathirukonam Mines 10.0 km (SSE), etc. along with other Mines in the Study area.

The nearest village Kallankurichi is at 0.8 km in the north. Periyagalur is about 2.3 km in east. Kattupirangiyum (1.2 km in SW), Manakudi (1.1 km in NW) and Kovilankudikadu (2.7 km in NNE) are the other nearby villages. V.Kaikatti Junction is at 4.0 km distance in southeast. Taluk and District Headquarters Ariyalur Town is at a distance of 5.5 km in west.

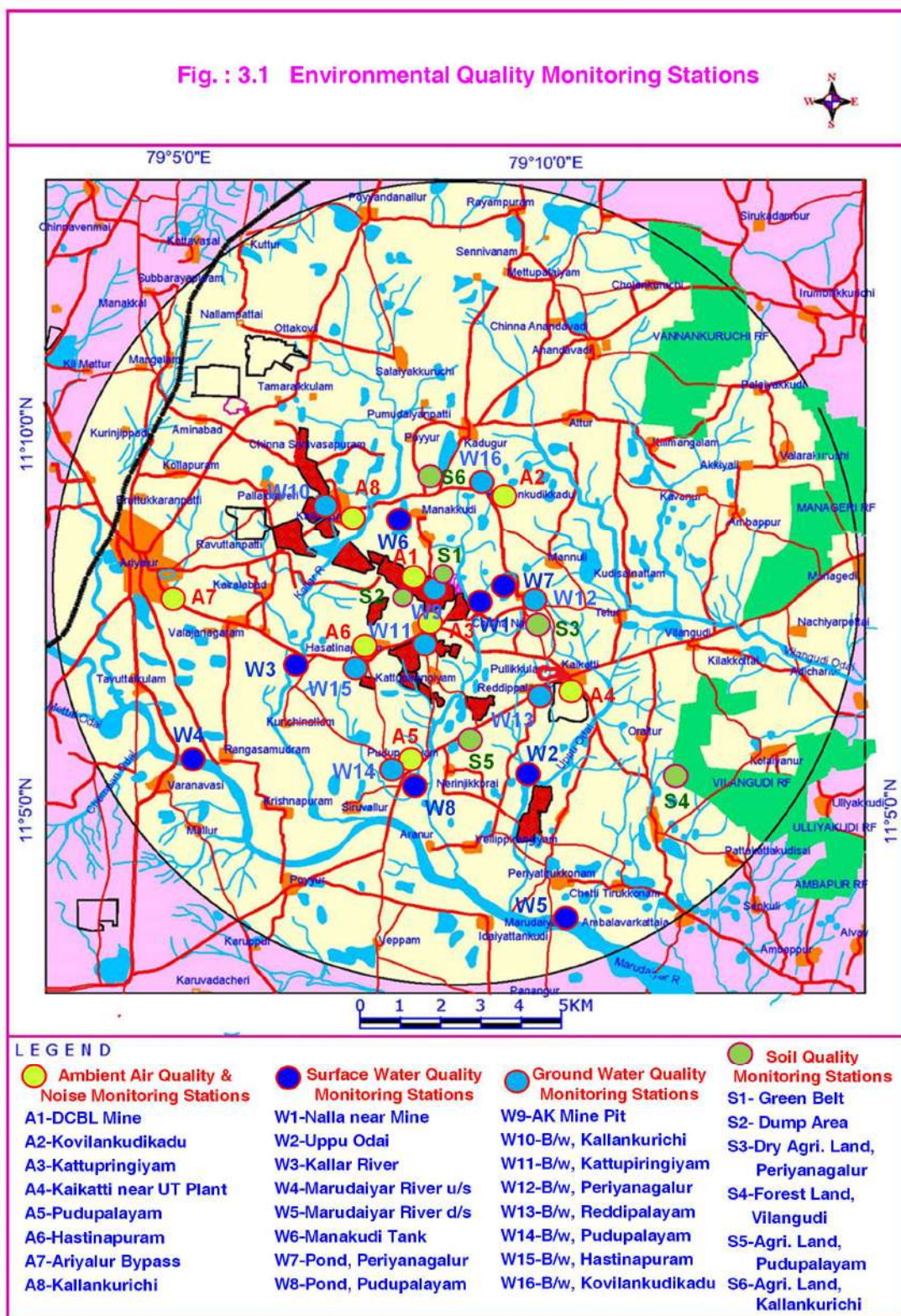
2.2 Baseline Environmental Status

The study area of 10 km radius (from boundary) (**Fig. 3.1**) has been considered for assessing the baseline environmental status. Project area does not fall in Critically Polluted Industrial Clusters listed by CPCB. As Bay of Bengal is at 100 km from the Lease, Coastal Regulation Zone (CRZ) applicability is not there. The monitoring stations were selected in such a way that the baseline environmental data reflects the Cumulative Impact of existing Mines and Industries in the Study area. The summary of baseline status is given in **Table 2.1**.

Table : 2.1 Environmental Baseline Status

Envl. Component	Main Parameters	Minimum	Maximum	Mean	Desirable Norms
Ambient Air Quality, ug/m ³	PM2.5	10	46	25.3	60
	PM10	20	74	45.3	100
	SO ₂	6	22	11.1	80
	NOx	6	26	13.5	80
Ambient Noise, dB(A)	Leq-Day	40.4	49.3	45.0	55
	Leq-Night	36.2	46.8	42.1	45
Surface Waters	TDS, mg/l	320	500	-	500/2100
Ground Waters	TDS, mg/l	360	550	-	500-2000
Soil Status	EC, mmhos/cm	1.50	1.79	-	0.2-0.5
	SAR	1.37	2.79	-	<5

Legend : PM2.5-Particulate Matter size less than 2.5 um; PM10- Particulate Matter size less than 10 um; SO₂-Sulphur dioxide; NOx-Oxides of Nitrogen; Leq-Day & Leq-Night - Equivalent Noise Levels during Day & Night Times; TDS-Total Dissolved Solids; EC-Electrical Conductivity & SAR-Sodium Absorption Ratio.



The findings of baseline environmental status of the study area are summarized below :

- ❖ The collected meteorological data during this season represented the local weather phenomena.
- ❖ The monitored ambient air quality in the study area was found to be in compliance with the Revised National Ambient Air Quality (NAAQ) 24-hourly Norms for Industrial, Residential, Rural and other areas.
- ❖ Ambient equivalent noise levels (Leq) during day and night times were found to be well within the MoEF&CC Norms.
- ❖ The water quality of surface waters was found to be in compliance with CPCB Norms.
- ❖ The ground water quality was found to be in compliance with the IS:10500-2012 Norms.
- ❖ The soil in the study area would very well support vegetation after amending it suitably.
- ❖ There is no eco sensitive area exists in the study area and only domesticated animals exist.
- ❖ The area is thinly populated and basic amenities are available almost in all villages.

Thus, there is **adequate buffer** for the proposed Project in the physical, biological and edaphic environments of the study area.

3.0 Anticipated Environmental Impacts

Being an existing Mine, it does not involve any major establishment or construction. Thus, Construction Phase Impacts are not there for Impact Assessment and Environmental Management Plan (EMP). The impacts during Operation Phase have been divided into two categories, viz. Localised and Cumulative. There are Cement Plants and Limestone Mines in the Study Area. Existing industrial activities are considered for Cumulative Impact Assessment for assessing their contribution. Cumulative Impact has been assessed for the identified Industries and assumed that the pollution due to other existing Industrial & Mining activities have already been covered under baseline environmental status and continue to remain same till the operation of the project.

Land Environment : Industrial/Mining activities are being carried out in an extent of 766.965 Ha in the Impact Zone. There is no additional Land requirement for the Proposal. There is Drilling & Blasting proposed and thus, vibration impact due to mining will be there. There is no Top Soil available at the mine as entire Top Soil generated ie, 144285 cu.m was fully utilised for Green Belt development. Mineral Rejects to the extent of 25,66,662 will be generated and dumped as Dump-2 in the western side of the Lease. At the Conceptual Stage, about 69.79 Ha will be opened out Pit Area which will be converted as water reservoir, 18.58 Ha will be under OB dump, 1.56 Ha under Utilities, 6.26 Ha under Green Belt (6.5% Coverage).

Traffic Impact : Limestone Transportation of Dalmia Mines (meant for Ariyalur Plant), Ramco Mines, TANCEM Mines and partly is through SH-139 towards Ariyalur Bypass. The existing traffic volume in the Project vicinity was found to be 5,251.1 Passenger Car Units (PCUs)/day. In the

Post-Project Scenario, there will be no addition of Vehicle from this amalgamated Mine as existing production will remain same. The existing Roads/SH are adequate to handle the proposed traffic volume due to the Project. Adequate parking area is provided in the Mine Area. Facilities for drivers (rest room, toilet, etc.) are also provided.

Air Pollution : Mining, Drilling & Blasting, Loading and Transporting activities would generate both fugitive dust emissions and smoke from HEM Machineries/Equipments & Transporting Tippers. AERMOD View Software is used for Predicting the maximum Ground Level Concentrations (GLCs) including Transportation Impact. The predicted maximum GLC-PM_{2.5} for cumulative activities is 0.29 ug/m³ and GLC-PM₁₀ for cumulative activities is 0.91 ug/m³ and found to be confined locally i.e. within 0.12 km radius. Also, adequate Buffer Level available (53.79-57.35%) in the Air Environment for the Proposal. Other pollutants SO₂ and NO_x emissions due to mining activities and their Predicted values are found to be low and are not reported.

Noise Levels : The blast induced ground vibration is controlled and maintained within permissible limits by using milli second delay detonators (MSDD) and NONEL shock tubes. The peak particle velocity (PPV) and noise levels during the blasting will be periodically monitored through 'Minimate' Instrument. In general, the work force is exposed to <85 dB(A) levels during the 8-hours Shift. Noise level at the nearest Lease boundary will be <55 dB(A) during day times and <45 dB(A) during night times and which will be within the MoEF&CC Norms for Residential and Rural Areas.

Water - Hydrogeology : On the monitoring day, the water level was observed in 10 Borewells in the Mine vicinity (within 5 km). The levels were found to be in the range 4.19 m BGL to 33.70 m BGL. **Based on the mine workings**, the Ground water-table level in the mine vicinity is at **45 m BGL** during Postmonsoon & **50 m BGL** during Premonsoon periods. There will be no Ground Water-table Intersection due to the Mining. Thus, no impact on the ground water levels of nearby Borewells due to mining on account of poor transmissivity.

The Lease requires about 15 KLD towards domestic consumption (5 KLD), and Dust Control Measures & Green Belt (10 KLD) which is met from mine pit seepage water. As per the State Ground Water Board (SGWB), the area falls in '**Semi Critical**' Category. Domestic sewage generation will be about 4.5 KLD which will be biologically treated in a Septic Tank followed by a Dispersion Trench. About 0.12 KLD effluent generation from the small Workshop which is treated in a Oil Separation Filter and treated effluent is used for Green Belt. 'Zero Effluent Discharge' will be adopted.

To pump out rain water collected in the Pit, a 7.5 HP Pump will be used. Dewatering will be @ 50 KLD during summer season and 125 KLD during the rainy periods.

Biological Environment : There is no habitat fragmentation or blocking of migratory corridors due to Project activities since there is no wild life movement or migratory birds movement in the study area. Thus, there will not be any significant impact on the existing flora-fauna of the area. ML area is surrounded by Mines & Mineral bearing areas, barren lands and dry agricultural lands within 1.0 km area. As the baseline AAQ are in lower levels as well as Predicted GLC is very low/insignificant, there will not be any impact on the surrounding dry agricultural lands due to the Project.

Socioeconomics : Based on the CSR Committee and declared CSR Policy of the Company, the following CSR activities will be covered and Reported :

- ❖ Eradicating extreme hunger and poverty.
- ❖ Promotion of education & vocational skills.
- ❖ Ensuring environmental sustainability.
- ❖ Contribution to the Prime Minister's National Relief Fund or any other fund set up by the Central Government or the State Governments for socioeconomic development and relief.

Occupational Health : Occupational Health Centre (with qualified Occupational Health Specialist) is established at Dalmiapuram. The First Aid Box is made available for immediate treatment. First Aid Training is imparted to the selected employees regularly. Personal Protective Equipment (PPEs) are provided for all employees working in the Mines. Occupational health surveillance programme is being carried out for all the employees regularly. Adequate care will be exercised to detect early incidences of occupational diseases for prompt treatment and cure. Safety aspects are also ensured to reduce incidents, if any.

4.0 Environmental Monitoring Programme

DCBL has EMP Monitoring Cell. The quality of air, noise, water, soil, etc. are being monitored at the identified locations as per MoEF&CC, IBM & TNPCB Norms by appointing an accredited external agency. For the Lease, periodical monitoring of Ambient Air Quality (3 locations), Fugitive emissions/Workzone Air Quality (4 locations), Ambient & Workzone Noise Levels (4 locations), Water (4 Surface & 4 Ground waters along with Mine Pit water) and Soil Quality (3 Locations) shall be undertaken and reported to Authorities.

5.0 Additional Studies

Detailed Risk Assessment and mitigative measures are delineated and an effective Disaster Management Plan, for natural and man-made disasters, is also submitted. DCBL management is able to deal with the situation efficiently to reduce confusion keeping in view of the likely sources of danger in the mine. The possibility of 'Offsite Emergency' situation is ruled out as the mine is not likely to pose any offsite emergency.

6.0 Project Benefits

Environmental Benefits : The proposal ensures the continuous limestone supply to the Cement Plants. Effective utilization of the Mineral for Cement manufacturing is a Mineral Conservation Measure.

Financial Benefits : Mineable Reserves from the Lease is 9.97 Million Tonnes. . As per MMDR Act 2015, 30% of Royalty Amount (about **Rs.23.93 Crores**) will be earmarked for District Mineral Foundation (DMF) and the amount will be spent for benefit of local villages in the Lease Area.

Social Benefits : Project employs 76 persons directly and 50 persons indirectly. The Project Cost is Rs.3.00 Crores. Adequate CER budget will be allotted. DMF amount @ 30% Royalty will be spent for Aminabad & Kairulabad Villages. The direct & indirect employment, CSR/CER activities, etc., will have a positive impact on the Socioeconomic Structure of the area.

7.0 Environmental Management Plan

Environmental Management Plan (EMP) is suggested to mitigate the possible negative impacts that may be caused to various attributes of environment due to the proposed mining operations.

7.1 EMP for Construction Phase

Being existing Mine, there will be **no Construction Phase** for the Project.

7.2 EMP for Operation Phase

Land Use :-

- ❖ Earthen bunds are to be strengthened along the boundaries to arrest wash-offs.
- ❖ Garland drains are to be maintained periodically around the Lease.
- ❖ Green Belt has to be developed and maintained along Lease boundary and Safety Barriers.
- ❖ No. of **trees planted shall be numbered** and referenced for review.
- ❖ No Blastings shall be carried out during night times and overcast conditions.
- ❖ Vibration Studies/Monitoring has to be carried out whenever Blastings carried out.
- ❖ Vibration Parameters viz. Peak Particle Velocity (PPV) and Noise Levels during Blastings shall comply with DGMS Norms for Residential Areas.
- ❖ The mined out Pits shall be converted into a Water Reservoirs to harvest Rain Water and to recharge the Ground Water-table in the vicinity.

Traffic Impact :-

- ❖ Regular wetting of haul roads has to be undertaken to arrest the fugitive emissions.
- ❖ Tippers are to be fully covered with Tarpaulin to avoid any spillage on transportation.
- ❖ No overloading of Tippers is allowed strictly.
- ❖ A strict Speed Limit of 30 km/hr. has to be enforced and monitored continuously.
- ❖ Compliance to 'Pollution under Control' Certification has to be ensured for the Tippers which has to be checked periodically.
- ❖ Restriction of Truck parking in the Public Road has to be implemented.
- ❖ Regular and preventive maintenance of transport vehicles has to be ensured.
- ❖ Effective Green Belt with thick foliage has to be developed and maintained.
- ❖ Security Guards are to be placed at the Public Road-Mine Haulage Road Junction to handle the inward and outward vehicles.

Air Environment :-

- ❖ Controlled Blasting has to be carried out and during day times only.
- ❖ No Blasting is carried out during overcast conditions.
- ❖ Water sprinkling on the Mining areas, loading point, haul roads, etc. has to be carried out.
- ❖ Covering of Trucks/Tippers with tarpaulin shall be ensured during Mineral transportation.
- ❖ Over loading of Tippers has to be avoided to control the spillages during transportation.
- ❖ Periodical maintenance and replacement of worn out accessories in the mine equipments.
- ❖ Tippers are to be maintained periodically.
- ❖ Periodical check up of vehicles for 'Emission Under Control' Certificate is to be ensured.
- ❖ Effective Green Belt with thick foliage has to be developed along boundaries and haul roads.
- ❖ Periodical Air Quality Monitoring shall be carried out and Reports submitted to the Authorities.

Noise Levels :-

- ❖ The noise and vibration generated due to the blasting operations shall be kept well within the limits by using milli-second delay electric detonators and by using Non-electric initiation system of blasting which completely eliminates air-blasts and thus reduces noise due to blasting.
- ❖ Deploying mining equipments shall be with in-built mechanism for reducing noise.
- ❖ Provision of silencers to modulate the noise generated by the machines.
- ❖ Providing sound proof operator's cabin of equipments.
- ❖ Provision of ear muffs/ear plugs to the workers in higher noise zones.
- ❖ Green Belt with thick foliage shall be maintained along roads and around lease boundary as acoustic barriers.
- ❖ Periodical Noise Monitoring shall be carried out and Reports submitted to the Authorities.

Water Environment :-

- ❖ The increased Mine Pit Water has to be utilized gainfully by increasing the supply to nearby Villages for Domestic Consumption as well as to agricultural activities nearby.
 - ❖ Mine Pit Water shall not be directly discharged without ensuring its quality.
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- ❖ Ground Water NOC for Dewatering has to be obtained/renewed from SGWA/CGWA Authority.
 - ❖ Periodical Monitoring of Water Level Data from existing Piezometer and nearby Wells in the vicinity has to be carried out along with the water quality.
 - ❖ Effective Afforestation in Backfilled Areas, with native species, is to be done.
 - ❖ Garland Drains and Settling Tanks are to be maintained and desilted periodically.
 - ❖ The de-silted quantity from the Garland Drains has to be used for Green Belt/Afforestation.
 - ❖ Ground Water Levels and Water Quality are to be periodically monitored at the identified Borewells & Dugwells in the Mine vicinity.
 - ❖ The monitored Water Quality data are to be periodically submitted to the IBM and with half-yearly Compliance Reports to SEIAA-TN & Regional Office, MoEF&CC, Chennai.

Biological Environment :-

- ❖ Effective Green Belt has to be developed and maintained, with the guidance of DFO, with about 90% Survival Rate.
- ❖ Native species shall be preferred for Green Belt development.
- ❖ Fruit bearing trees may also be preferred.
- ❖ Afforestation in backfilled & reclaimed areas shall be undertaken.
- ❖ Through the process of photosynthesis, plants assimilate carbon and return some of it to the atmosphere through respiration. The carbon that remains as plant tissue is then consumed by animals or added to the soil as litter when plants die and decompose. The primary way that carbon is stored in the soil is as **soil organic matter (SOM)**. SOM is a complex mixture of carbon compounds, consisting of decomposing plant and animal tissue, microbes (protozoa, nematodes, fungi, and bacteria), and carbon associated with soil minerals. Carbon can remain stored in soils for millennia, or be quickly released back into the atmosphere. Climatic conditions, natural vegetation, soil texture, and drainage all affect the amount and length of time carbon is stored.

Social Measures :-

CSR activities shall be carried out by providing social and welfare measures for the local residents and nearby villages around the mine area. The prime focus will be on the creating and maintaining of drinking water facilities for the students at the nearby Government Schools, establishing toilets especially for girl students at the schools, setting up of computer centres, maintenance of village roads & ponds, providing solar street lights, conducting free medical camps, etc.

Occupational Health Measures :-

- ❖ All employees are to undergo Medical Check-up on recruitment and periodically during employment. Maintenance of Pre, during & Post Employment Records are to be kept for periodical review.
 - ❖ Standard operating procedures for all operations with respect to occupational safety and health are to be in place.
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- ❖ Required Personal Protective Equipments for the Mine employees are to be provided.
- ❖ Provision of ergonomically designed seats for drivers/operators has to be ensured.
- ❖ Provision of illumination facilities are to be made at proper places of mines for ease of working during night times.
- ❖ Work comfort and its periodic review by a Committee is to be ensured.
- ❖ Provision of Rest Shelters at Mines has to be made.
- ❖ Provision of cool drinking water to employees has to be made.

Plastic Waste Management : There will be ban on one-time use and throw away Plastic usage in the Lease. Encourage the use of eco friendly alternatives such as banana leaf, areca nut palm plate, stainless steel glass, porcelain plates / cups, cloth bag, jute bag etc.

EMP Budget : The Project Cost is Rs.3.00 Crores. An amount of Rs.9.70 Lakhs has been earmarked as Capital EMP Budget and Rs.21.57 Lakhs per Annum as Operating Cost towards EMP measures, Green Belt maintenance, Environmental Monitoring, etc.

Public Hearing issued will be addressed and the **Action Plan with Budget will be included** in the EMP Budget for executing the Physical Activities as per MoEF&CC OM dated 30.09.2020.
