Executive Summary

for

Proposed Standalone Cement Grinding Unit of 500 TPD in a Phased manner

at

SF. No. : 30/2, 30/3, 30/4

Village: Dheevanur,
Taluk: Thindivanam,
District: Villupuram,
State: Tamil Nadu.

By

M/s. Sakthipriyan Cements

Project termed under Schedule 3(b), Category B1 as per EIA Notification 2006 and its subsequent amendments

ToR Issued on F.No.9460/3(b)/ToR – 1300/2022 dated:01.11.2022

Baseline Monitoring Period – April to June 2023

EIA Consultant

M/s. HUBERT ENVIRO CARE SYSTEMS (P) LTD

(NABET Certificate No. NABET/EIA/24-27/RA0335 dated 27.06.2024 valid upto 31.03.2027)

Baseline Monitoring Laboratory

M/s. Vimta Labs Ltd

(NABL Certificate No. TC 5418 dated 31.03.2022 valid upto 30.3.2024)

August 2024

1. INTRODUCTION

M/s. Sakthipriyan Cements (herein after called as SPC) has proposed to establish a new unit at S.F. No:30/2, 30/3 & 30/4, Dheevanur Village, Thindivanam (Tk), Villuppuram District, Tamil Nadu for Manufacturing Ordinary Portland Cement (OPC), Pozzolanic Portland Cement (PPC) and Portland Slag Cements(PSC). The cost for the proposed standalone grinding unit project is Rs. 5.0 crores, and the capital cost for environmental protection measures are proposed as Rs. 40 Lakhs. The annual recurring cost is Rs. 10.0 lakhs per annum.

Project Scoping Category

As per the EIA Notification-2006 and amendments thereof; the proposed project activity falls under project activity of Schedule 3(b) Cement Plants-Standalone Grinding unit. The proposed industry falls under category 'B1'. Therefore, EC is required from SEIAA prior to setup of manufacturing facility.

The ToR application for prior environmental clearance for the proposed unit was submitted to SEIAA and received ToR vide **Letter No SEIAA-TN/F.No.9460/3(b)/ToR-1300/2022 dated: 01.11.2022.**

Baseline studies for one season (non-monsoon) i.e from **April to June 2023** were conducted by **M/s Vimta Labs Ltd**and potential environmental impacts of the project activities were identified, assessed and documented in this report.

As per the issued ToR, Draft EIA report has been prepared and submitted for Public Hearing (PH). After completion of Public Hearing, the Final EIA report along with action plan for commitment by the proponent will be submitted to TNSEIAA for further appraisal ofthe project and obtaining Environmental Clearance.

LOCATION OF THE PROJECT

The Total land area of 1.877 ha (4.64 acres) is under the Ownership of the promoter at S.F.No:30/2,30/3&30/4, Dheevanur Village, Thindivanam Taluk,Viluppuram District, Tamil Nadu at Latitude: 12°15'39.7" N & Longitude 79°34'00.81"E.The project site is close to NH-77 at 1.2 km in South direction & 6.8 km from the SH-5 in East direction. The nearest railway station is Thindivanam at 9.9 km in North direction. The nearest airport is located in

puducherry at a distance of 42.21 km in South East direction from the project site.The details of environmental setting are given in **Table - 1**.

Table 1 Environmental setting of the plant site (10 km radius)

<table>
<tr><th>Sr. No.</th><th>Particulars</th><th>Details</th></tr>
<tr><td>1.</td><td>Latitude & Longitude</td><td>
<table>
<tr><th>S.No</th><th>Latitude</th><th>Longitude</th></tr>
<tr><td>1</td><td>12°15'42.88"N</td><td>79°33'58.04"E</td></tr>
<tr><td>2</td><td>12°15'42.12"N</td><td>79°34'0.15"E</td></tr>
<tr><td>3</td><td>12°15'43.01"N</td><td>79°34'0.56"E</td></tr>
<tr><td>4</td><td>12°15'42.50"N</td><td>79°34'2.28"E</td></tr>
<tr><td>5</td><td>12°15'38.00"N</td><td>79°34'0.44"E</td></tr>
<tr><td>6</td><td>12°15'37.80"N</td><td>79°34'0.64"E</td></tr>
<tr><td>7</td><td>12°15'36.86"N</td><td>79°34'0.34"E</td></tr>
<tr><td>8</td><td>12°15'37.63"N</td><td>79°33'58.34"E</td></tr>
<tr><td>9</td><td>12°15'39.10"N</td><td>79°33'58.53"E</td></tr>
<tr><td>10</td><td>12°15'39.73"N</td><td>79°33'56.08"E</td></tr>
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</td></tr>
<tr><td>2.</td><td>Elevation above MSL</td><td>78 m</td></tr>
<tr><td>3.</td><td>Land use at the project site</td><td>Unclassified land use</td></tr>
<tr><td>4.</td><td>Nearest Habitation</td><td>Agoor (1.22 km, NNE)
Dhevanur (1.47 km, SSW)</td></tr>
<tr><td>5.</td><td>Nearest Highway</td><td>NH 77-Gingee to Thindivanam Road (1.2 km,S)
SH 5- Vanthavasi to Mayillam Road (6.8 km, E)</td></tr>
<tr><td>6.</td><td>Nearest Railway station</td><td>Thindivanam Station (9.9 km, SE)</td></tr>
<tr><td>7.</td><td>Nearest Air Port</td><td>Puducherry Airport (42.21 km, SE)
Chennai International Airport (102 km,NE)</td></tr>
<tr><td>8.</td><td>Nearest Sea Port</td><td>Cuddalore (64.88 km, SSE)</td></tr>
<tr><td>9.</td><td>Nearest Major Town</td><td>Tindivanam (9.9 Km, SE)</td></tr>
<tr><td>10.</td><td>Reserve Forest within 10-km radius</td><td>Nil</td></tr>
<tr><td>11.</td><td>Nearest water bodies</td><td>Dheevanur Lake (0.96 km, W)
Mannampoondi Lake (1.89 km, N)
Salai Lake (2.10 km, E)
Vilukkam Lake (2.56 km, E)
Kollar Lake (3.3 km, E)
Venganthur Pond (4.01 km SW)
Tributary River (4.31 km,SW)
Puliyanur Lake (5.03 km, N)
Taniyal Lake (6.44 km, N)
Gingee River (6.71 km, SW)
Meur Lake (8.17 km, S)
Modaiyur Lake(8.7 km, SW)
Chitheri (9.03 km, NNW)
Thenpasar Lake (9.31 km, SSE)
Kodium Lake (9.58 km, NE)
Botheri Lake (9.78 km, SE)
Vairapuram Big Lake (10 km, NE)</td></tr>
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Sr. No.	Particulars	Details
		Melsevur Lake (10 km, SSW)
12.	Hills/ Valleys	Nil
13.	Ecologically sensitive zones like Wild Life Sanctuaries, National Parks and biospheres	None within 10-km radius
14.	Defense Installation / Archaeological	Nil
15.	Historical places	None within 10-km radius
16.	Socio-economic factors	No resettlement and rehabilitation involved
17.	Nearest Hospitals	1. Mannampoondi Hospital- (2.78 km, NNW) 2. Rettanai Government Hospital- (6.89 km,SSW) 3. Government Hospital- Thindivanam, (9.49 km, SE)
18.	Religious places	1. Sri Nerkuthi Vinayagar Temple (1.17 km,SW) 2. Sri Lakshminarasimha Temple (9.29 Km,SE) 3. Masjide Thakva Pallivasal (1.73Km, NNW) 4. St.Joseph's Church (3.16Km,NW)
19.	Nearby Major Industries	1. NCC Agro Industries, (5.47 Km, SW) 2. Stellar Pipes (5.87 km, E) 3. Mint Industries (9.8 Km,SE) 4. Venmaniyathur SIPCOT, (4.5 Km,E)
20.	Fire and rescue service	Tamil Nadu Fire and Rescue service, Tindivanam– (10.83 km, SE)
21.	Seismic Zone	Seismically, this area is categorized under Zone II as per IS: 1893 (Part 1) 2002.

2. PROJECT DETAILS

I. MANUFACTURING DETAILS

The total production capacity is 500 TPD. The production will be carried out in three phases. Each cement will be produced in alternate days. The details of manufacturing capacity of cements products are listed in **Table - 2.**

Table 2 Details of manufacturing capacity

Sr.No	Products	Quantity (TPD)
1	A. PPC (Pozzolana Portland Cement)/ B. OPC (Ordinary Portland Cement)/ C. PSC (Portland Slag Cement)	**500**
	Phase – I	100
	Phase – II (Upon completion)	300
	Phase – III (Upon completion)	500
Note: A-Clinker: 65-75%, Pozzolanic Material: 15-35% and Gypsum: 3-5%, B-Clinker (90-95%), Gypsum (3-5%), Minor additional constituents (0-5%) and C-Clinker (45-65%), Granulated Blast Furnace Slag (30-50%), Gypsum (3-5%)		

Note: *Based on the market demand, the manufacturing of PPC, OPC & PSC will be in a phased manner.*

II. LAND REQUIREMENT

1.877 Ha (4.64 acres) of land has been procured for the proposed unit. The site falls in the unclassified land use zone by DTCP. The details of land-use breakup of the proposed plant are given in **Table - 3**.

Table 3 Details of Land use break-up

Sr. No	Plant Facilities	Area(ha)	Area (acres)	Percentage (%)
1	Plant Facilities Including Admin office etc.,	0.509	1.26	27.15
2	Raw Material Storage Area	0.063	0.15	3.23
3.	Solid waste storage area	0.002	0.007	0.15
4	Greenbelt development	0.789	1.95	42.00
5	Internal Road	0.153	0.373	8.08
6	Open Area	0.361	0.9	19.39
	Total	**1.877**	**4.64**	**100**

Source: SPC

III. RAW MATERIAL REQUIREMENT

The details of requirement of raw materials, sources and their mode of transportation are given in**Table-4.**

Table 4 Details of raw materials requirement

Sr. No	Raw Material	Quantity in TPD	Location	Distance (~km)	Transportation
1	Clinker	200	Andhra Pradesh	532.3	Closed trucks by road
2	Gypsum	25	Chennai	180	Closed trucks by road
3	Fly ash	175	Chennai	180	Closed trucks by road
4	GGBFS/Slag	100	Thoothukudi	420	Closed trucks by road

Source: SPC

IV. POWER AND FUEL REQUIREMENT

The power requirements for the proposed plant will be 500 KVA. The power requirements will be met from Tamilnadu Generation and Distribution Corporation Limited (TANGEDCO). Two (2) Nos of Diesel Generator with the capacity of 125 KVA will be used, in cases of the power failure. The fuel required for DG operation will be 40 lit/hr of diesel.

V. WATER REQUIREMENT

The water requirement for the proposed project will be 8.0 KLD which will be sourced from the Private supplier. Domestic consumption will be 1.35 KLD and for greenbelt activities and dust suppression will be 5.15 KLD and 1.5 KLD respectively. The details of water requirement are presented in **Table - 5.**

Table 5 Details of water requirement

Sr.No	Particulars	Consumption (KLD)	Source
1	Domestic	1.35	Private Suppliers
2	Greenbelt	5.15	
3	Dust Suppression	1.5	
Total		**8.0**	

Source: SPC

VI. MANPOWER REQUIREMENT

The Total manpower employed in the proposed unit will be 30 Persons as direct which includes Managers, Supervisors, Technical assistants and Skilled/semiskilled workers etc.,20 persons will be engaged as indirect employees.

3. BASELINE ENVIRONMENTAL STATUS

The 10 km radial distance from the existing plant boundary has been considered as study area for Environmental Impact Assessment (EIA) baseline studies. Environmental monitoring for various attributes like meteorology, ambient air quality, surface and ground water quality, soil characteristics, noise levels and flora & fauna have been conducted at specified locations and the secondary data collected from various government and semi-government organizations. Baseline environmental monitoring studies for the various environmental attributes were carried out during **April to June 2023**. The details of the baseline study are presented as follows:

I. METEOROLOGY

Meteorological data at the site was monitored during **April to June 2023**. It was observed that during study period temperature ranged from 25.8°C to 33.5°C. During the same period of observations, the relative humidity recorded was ranged from 63% to 75 %. Predominant wind directions are mostly from the South and South - West.

II. AMBIENT AIR QUALITY

To establish the baseline status of the ambient air quality in the study area, the air quality was monitored at eight (8) locations. The summary of the ambient air quality monitoring results is given in **Table - 6**

Table 6Summary of ambient air quality in the study area

Sr. No	Parameters	Concentration ($\mu g/m^3$)		NAAQS Limits, 2009 ($\mu g/m^3$)
		Minimum	Maximum	
1	Particulate matter $PM_{2.5}$	10.50 (AAQ-8)	26.86 (AAQ-7)	60
2	Particulate matter PM_{10}	31.94 (AAQ-8)	80.69 (AAQ-7)	100
3	Sulphur dioxide (SO_2)	5.80 (AAQ-8)	13.70 (AAQ-7)	80
4	Oxides of Nitrogen (NO_x)	9.20 (AAQ-8 & AAQ-1)	25.20 (AAQ-3 & AAQ-7)	80
5	Carbon monoxide, CO	214 (AAQ-8)	335 (AAQ1)	2000

Note: All the values are in $\mu g/m^3$
Ozone (O_3), VOC, Ammonia (NH_3), Lead (Pb), Arsenic (As) (ng/m^3), Nickel (Ni) (ng/m^3), Mercury (Hg), Benzene (C_6H_6 and Benzo (a) Pyrene (BaP) (ng/m^3) are below the Detectable Limit

III. WATER QUALITY

Eight (8) ground water samples and four (4) surface water samples within the study area were considered for assessment. The water samples are compared with the standards of drinking water IS 10500:2012.

Ground water Quality

The results of the ground water samples are compared with the standards for drinking water as per IS: 10500:2012. The analysis results indicate that the pH ranges in between 7.24 to 7.89, which is well within the specified standard of 6.5 to 8.5. The maximum pH of 7.89 was observed at Vempoondi (GW6) and the minimum pH of 7.24 was observed at Vilukkam (GW5). Total hardness was observed to be ranging from 231 to 582 mg/l. The maximum hardness was recorded at Plant site (GW1) and the minimum hardness was recorded at

Maniyampattu (GW8). The Total Dissolved Solids (TDS) concentrations were found to be ranging in between 612 to 1389 mg/l. The maximum TDS was recorded at Plant site (GW1) and the minimum TDS was recorded at Maniyampattu (GW8).Chlorides at all the locations were within the permissible limit, ranging in between 84.3 to 412.5 mg/l. Nitrates were found to be in the range of from 4.50 mg/l to 28.50 mg/l. The heavy metal content is below detectable limits.

Surface water Quality

During the baseline period season, 4 samples were taken for analysis. The analysis results indicate that the pH ranges in between 7.55 to 7.77, which is well within thespecified standard of 6.5 to 8.5. The maximum pH of 7.77 was observed at Dheevanur Lake(SW4) and the minimum pH of 7.55 was observed atVilukkam Lake (SW1).Total hardness was observed to be ranging from 86 to 379 mg/l. The maximum hardness of 379 mg/l was observed at Venganathur pond (SW3) and the minimum hardness of 86 mg/l was observed atVilukkam Lake (SW1).The Total Dissolved Solids (TDS) concentrations were found to be ranging in between 265 to647mg/l. Chlorides were ranging in between 15.0 and 127.5mg/l. Fluorides are ranging in 0.3 to 1.1 mg/l. Nitrates were found to be in the range of from 4.4 mg/l to 21 mg/l. Dissolved oxygen are ranging in 5.3-5.7 mg/l. Biological oxygen demand was less than 3-mg/l. Chemical oxygen demand are less than 5 mg/l. heavy metal content is below detectable limits.

IV. SOIL CHARACTERISTICS

Six (6) soil samples were collected in and around the plant site to assess the present soil quality of the region. It has been observed that the texture of the soil is mostly “sandy clay soil” in the study area. The common colour of the soil is pale brown. The pH of the soil ranged from 8.0 to 8.89, indicating that the soil is slightly Alkali in nature. The bulk density of soil ranges from 1.16 to 1.38 gm/cc.

V. NOISE LEVELS

The noise monitoring has been conducted for determination of ambient noise levels at eight (8) locations in the study area. The daytime (Lday) noise levels were found to be in the range of 42.8 dB (A) to 54.3 dB (A). The night time (L_{night}) noise levels were observed to be in the range of 39.0 dB (A) to 50.0 dB (A). Hence, the noise levels were found to be well within the range specified by CPCB norms.

VI. ECOLOGICAL ENVIRONMENT

As per MOEF and Forest Department of Tamilnadu state reveals that there are no Wildlife sanctuaries, National parks/biosphere reserves in 10 km radius from the proposed plant site boundary. As per the records of the Botanical Survey of India there are no plants of conservation importance in the study area. It can be concluded that there is seven species belonging Sch-I, two species of Sch-II (Indian grey mongoose and Indian fox/ Bengal fox House) and rest of species belongs Sch-III, Sch-IV and Sch-V of Wildlife Protection Act, 1972. Budget of Rs.2.5 lakhs/annum has been allotted for the wildlife conservation plan and submitted to the Chief Wildlife Warden for authentication, However Schedule II and III and other schedule IV birds are protected by the Indian Wildlife (Protection) Act, 1972. Since that species are found both in the core area and the buffer zone, both the project proponent and the State Forest and wildlife department are responsible for their conservation.

VII. SOCIO ENVIRONMENT

The study area (10-km radius) has a total population of 1,10,975 persons according to 2011 Census. The male and female constitute 50.1 % and 49.1 % of the total population respectively. As per census, the study area comprises 28% population belonging to Scheduled Castes (SC) and 1.4% belonging to Scheduled Tribes (ST). The literacy rate is found to be 55.40%. As per census 2011 records, the main workers were found to be 51.11% of the total population. The marginal workers and non-workers constituted to 9.44% and 48.89% of the total population.

4. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Impacts during Operational Phase

I. IMPACT ON SOIL

The soil quality remains the same as the proposed activity does not involve a change in land use pattern. The probable sources of degradation of soil quality will be due to settling of airborne particles and generation & disposal of hazardous wastes and sludges. The generated hazardous wastes will be disposed to TSDF. The airborne fugitive dust from the plant process such as raw material handling area and vehicular movement will be likely to be deposited on the topsoil in the immediate vicinity of the plant boundary. However, the fugitive emissions are likely to be controlled to a great extent through pollution control measures like water

sprinkling and the greenbelt development. Hence, no impact is envisaged on soil quality of the project site.

II. IMPACT ON AIR QUALITY

Particulate Matter (PM), Sulphur dioxide (SO_2) and Oxides of Nitrogen (NO_x) will be the major pollutants from the proposed activity. In order to control the emissions of particulates, the pollution control equipments are proposed. Adequate stack height has been provided to disperse gaseous emissions over a wider area. The maximum resultant ground level concentration of PM, SO_2 and NOx are given in **Table - 7**

Table 7 Total Maximum GLCs from the Cumulative Emissions

Pollutant	Max. Base line Conc. (µg/m^3)	Estimated Incremental Conc. (µg/m^3)	Total Conc. (µg/m^3)	NAAQ standard (µg/m^3)
PM	71.0	0.26	71.26	100
SO_2	13.7	0.18	13.88	80
NO_x	25.2	2.92	28.12	80
CO	335	43.04	378.04	4000

Gaseous Emission Control Measures:

The gaseous emissions Sox NOx & CO from the DG sets will be controlled by adequate stack height as per CPCB norms. The impact of fugitive emissions from the proposed activity on air quality of the region is insignificant.

III. IMPACT ON WATER QUALITY & MANAGEMENT

The entire water demand for the proposed activity will be met from the private tankers. SPC has estimated the water requirement for the proposed project to be 8.0 KLD. To minimize the impacts on groundwater table, SPC has proposed to develop rainwater harvesting structures for the plant use and this reduce the consumption of fresh water. Water will be mainly used at certain stages in the process like greenbelt development, drinking, dust suppression and domestic needs. No effluent generation is envisaged.The domestic wastewater of 1.14 KLD will be disposed into the septic tank followed by soak pit.

IV. IMPACT DUE TO SOLID WASTE GENERATION

In order to avoid problems associated with solid waste disposal, an effective solid waste management system will be followed. Hence, the impact due to solid waste generation during

the plant operation is not envisaged. The sources, quantity of the solid waste generated and waste management measures for proposed activity are presented in **Table – 8**

Table 8 Details of solid waste generation and management

Sr. No	Particulars	Quantity	Treatment and Disposal
Hazardous waste			
1	Used Oil	0.1 TPA	Used Oil will be given to authorized recyclers.
Solid wastes			
2	Total Domestic waste • Biodegradable • Non – biodegradable	13.5 kg/day 8.1 kg/day 5.4 kg/day	Biodegradable waste will be used as a manure for greenbelt and non biodegradable waste will be disposed to authorized vendors

Source: SPC

V. IMPACT ON NOISE LEVELS

The major noise generating sources are from the areas of DG-sets, ball mills, loading and unloading operations, vehicle movements. The predicted noise level through mathematic modeling at the boundary due to various plant activities will be ranging in between 65-80 dB (A). It is seen from the modelling results that the incremental noise levels are within the CPCB standards.

Noise Attenuation Measures

The following control measures will be implemented for the proposed project:

- All the design/installation precautions as specified by the manufacturers with respect to noise control will be strictly adhered to;
- High noise generating sources will be insulated adequately by providing suitable enclosures;
- All the necessary noise protective equipment will be supplied to workmen operating near high noise generating sources.
- The air compressor, DG sets, transformer etc. will be provided with acoustic enclosure;
- Other than the regular maintenance of the various equipment, ear plugs/muffs will be recommended for the personnel working close to the noise generating units;

and

- Adequate greenbelt development will also be developed in the plant boundary of the proposed plant.

VI. IMPACT ON ECOLOGY

The proposed industry is not going to discharge any treated or untreated effluents. Hence, it is not going to have any direct or indirect impacts on the Schedule I species that are most likely to occur in the study area of the project site. No direct or indirect damage is expected to the flora and fauna of the Study area. Further, as there are no rare or endangered or endemic or threatened terrestrial animal species within the project area, the project does not pose any direct threat to the flora and fauna of the study area. Further, the greenbelt will be developed in 42.0% of the total project area. Hence, the anticipated environmental impacts on the flora and fauna of the study area are negligible and easily reversible. It will not create any kind of environmental stress to the local flora and fauna.

The incremental concentrations of the air quality modelling show that the resultant levels of PM, SO_2 and NO_x are well within the permissible limits as per National Ambient Air Quality Standards, 2009. The impacts on aquatic ecology due to the proposed activity would be negligible as the treated water will be properly reused and no waste water will be discharged outside the plant premises. The proposed activity does not create any significant impact on aquatic bodies.

VII. IMPACT ON PUBLIC HEALTH

The discharge of waste materials (stack emission and solid wastes) from process operations can have some adverse impact on public safety and health in the surrounding area, if appropriate treatment procedures are not followed. As the plant pollution control equipments will be designed as per the modern available technology for controlling the impacts, no adverse impacts on public health in the area are anticipated.

5. ENVIRONMENTAL MANAGEMENT PLAN

Environmental Management Plan during the Construction Phase

I. SOIL ENVIRONMENT MANAGEMENT

Preparation of site will involve excavations and fillings. The earthen material generated during excavations and site grading periods, will be properly dumped and slope stabilisation will be

taken. The topsoil generated during construction will be preserved and reused for plantations. The additional greenbelt area will be delineated before start-up of earthwork and tree plantation will be taken up during erection stage itself.

II. AIR QUALITY MANAGEMENT

The activities like site development, grading and vehicular traffic contribute to increase in PM and NO_x concentrations. The mitigation measures recommended to minimize the impacts are:

- Water sprinkling in construction area;
- Proper maintenance of vehicles and construction equipment; and
- Tree plantation in the area earmarked for greenbelt development.

III. WATER QUALITY MANAGEMENT

- The earthwork (cutting and filling) will be avoided during the rainy season and will be completed during the summer season.
- Stone pitching on the slopes and construction of concrete drains for storm water to minimize soil erosion in the area will be undertaken.
- Soil binding and fast-growing vegetation will be grown within the plant premises to arrest the soil erosion.

IV. NOISE LEVEL MANAGEMENT

Operation of construction equipment and vehicular traffic contribute to the increased noise level. Recommended mitigation measures are:

- Enclosures for noise making units like pumps, DG sets, compressors etc.,
- Good maintenance of vehicles and construction equipment;
- Plantation of trees around the plant boundary to attenuate the noise; and
- Provision of earplugs and earmuffs to workers.

V. ECOLOGICAL MANAGEMENT

Minimum clearing of vegetation will be required. The existing trees will be preserved in the operation phase of the project. Thus, there will not be any ecological impact due to the project activity in its construction stage.

Environment Management Plan during the Operation Phase

During operation phase, the impacts on the various environmental attributes should be mitigated using appropriate pollution control equipment. The Environment Management Plan prepared for the proposed project aims at minimizing the pollution at the source itself.

I. AIR POLLUTION MANAGEMENT

Fugitive and flue gas emission from plant will contribute to increase in concentrations of PM, SO_2, $NO_x$and CO. The mitigation measures recommended are as follows:

- Raw material handling sections are major source for fugitive emissions;
- Adopting good housekeeping practice will also help in control of fugitive emission. Maintaining shop floor and roads in good condition minimizes the chances of fugitive emission; and
- The trucks and other vehicles shall be maintained and serviced regularly to reduce air emissions.

II. WATER POLLUTION MANAGEMENT

The recommended measures to minimise the impacts are as follows;

- Domestic wastewater will be disposed into septic tank followed by soak pit;
- Provision of storm water system to collect and store run-off water during rainy season and utilization of the same in the process to reduce the fresh water requirement; and
- Suitable rainwater harvesting structures to be constructed.

III. NOISE POLLUTION MANAGEMENT

The major noise generating sources are the DG-sets, grinding unit, loading and unloading operations, and vehicle movements. Some recommendations are;

- Adequate protective measures in the form of ear muffs/ear plugs have been provided to the workers working in high noise areas;
- In addition, reduction in noise levels in the high noise machinery areas could be achieved by adoption of suitable preventive measures such as suitable building layout in which the equipment is to be located; and
- Adequate greenbelt development is also being developed in the plant boundary.

IV. SOLID WASTE MANAGEMENT

All the dust collected in air pollution control equipment's is automatically recycled into the process. Hazardous waste such as used oil will be reused in the girth and pinion of the ball mill. Biodegradable waste will be used as a manure for greenbelt and non biodegradable waste will be disposed to authorized vendors.

V. ECOLOGICAL MANAGEMENT

Adequate attention will be paid to the plantation of trees, their maintenance and protection. The construction of cement grinding units does not involve any cutting of trees. The greenbelt area will be developed in an area of 0.78 ha (1.95 acres) which is 42 % total area.

VI. TRAFFIC STUDY

The project site is located at a distance of 1.0 Km from the National highway-77 Gingee – Tindivanam road. The engine driven vehicles were classified into various levels like two wheelers, auto rickshaw, car/utility, buses and trucks. The proposed activity involves the transport of raw material and finished goods near to and from the plant site. The present level of traffic on the existing road found to be 405.6 PCUs/hr. The total traffic generated from the proposed activity will be 429.6 PCUs/hr (405.6+24=429.6). The transportation in the proposed activity not create any significant impacts to the environment.

Table 9 Traffic scenario

Road	V	C*	V/C Ratio	LOS
Gingee-Tindivanam road	**Existing**			
	405.6	1500	0.27	B
	After proposed project			
	429.6	1500	0.2716	B

V= Volume in PCUs/hr & C= Capacity in PCUs/ hr

** Note: Capacity as per IRC Guidelines*

The existing level of service (LOS) of the Gingee-Tindivanam is 'B' which is Very Good. After considering the transportation of trucks due to the proposed project activity, meagre impact was envisaged. The level of service predicted to be 'B' (Very Good) even after the proposed project.

There will be a movement of trucks in the plant premise for the transportation of raw material and products but the proposed activity involves only a small increase in truck numbers which may never cause a significant impact. The vehicular movements can discharge SO_2, NO_x, CO and particulate emissions due to combustion engines. The emission from the vehicular movements can be controlled by good management practices of the vehicles.

- Vehicles used for transportation will be equipped with novel engine for reducing

emissions.

- Low sulphur-High Speed Diesel will be used for fuelling vehicles.
- Periodical maintenance of vehicles with emission testing will be carried out.

6. ENVIRONMENTAL MONITORING PROGRAM

The environmental monitoring program is important in terms of evaluating the performance of pollution control equipment installed in the plant. The sampling and analysis of the environmental attributes will be as per the guidelines of CPCB/TNPCB. The frequency of air, noise, surface water and ground water sampling and location of sampling will be as per the directives of Tamil Nadu Pollution Control Board.

7. BUDGETARY ALLOCATION FOR ENVIRONMENTAL PROTECTION

The management is quite conscious of its responsibility for maintaining clean and a healthy environment and it will adopt a comprehensive Environmental Management Plan (EMP) which will cover several environmental protection measures, not only for abatement of environmental pollution resulting from the project, but also for the improvement in the ambient environment. The overall investment in the proposed project is 500.00 Lakh. About Rs. 40.0 lakh as capital cost and Rs. 10.0 Lakh as recurring cost will be proposed for the environment protection program.

Table 10 Cost provision for environmental measures

Sr. No.	Description of Item	Capital Cost (Rs. in Lakhs)	Recurring Cost (Rs. in Lakhs)
1	Air Pollution control measures	24	1
2	Environmental monitoring & reporting	4	3
3	Greenbelt development	3	1.5
4	OHS measures	1	1
5	Fire protection & prevention measures	4	1.5
6	Rainwater Harvesting	2	1
7	Solid & Hazardous Waste Management	0.5	0.5
8	Septic Tank & Soak pit	1.5	0.5

Sr. No.	Description of Item	Capital Cost (Rs. in Lakhs)	Recurring Cost (Rs. in Lakhs)
Total		**40**	**10**

8. DISASTER MANAGEMENT PLAN

To tackle the consequences of a major emergency inside the plant premises or its immediate vicinity, a Disaster Management Plan has been formulated. The objective of the Disaster Management Plan is to make use of the combined resources of the commercial cementplant and the outside services, to achieve the following:

- Effect the rescue and medical treatment of casualties;
- Safeguard other people;
- Minimize damage to property and the environment;
- Initially contain and ultimately bring the incident under control;
- Identify any dead;
- Provide for the needs of relatives;
- Provide authoritative information to the media;
- Secure the safe rehabilitation of affected area; and
- Preserve relevant records and equipment for the subsequent inquiry into the cause and circumstances of the Emergency.

9. OCCUPATIONAL HEALTH & SAFETY MEASURES

Large projects where multifarious activities are involved during construction, testing, commissioning, operation and maintenance, the men, materials and machines are the basic inputs. Along with the benefits, the industrialization generally brings several problems like occupational health and safety. The industrial planner therefore has to take steps to minimize the impacts and to ensure appropriate occupational health and safety in the commercial cement plant.

The following measures are proposed:

- Conducting awareness programs at regular intervals to the employees;
- Providing safety kits and prevention kits; and
- Provision of first aid kit at the plant site to handle emergency situations that may arise.

- An amount of Rs. 1.0 lakhs will be allocated annually for the safety and health of the workers.

10. CORPORATE ENVIRONMENTAL RESPONSIBILITY

As per OM.F.No.22-65/2017-IA.III Dated: 1st May 2018, 2.0% of the total project cost (INR 5 crore) ie. 10 Lakhs, will be used for CER activities. The issues which will be raised during public consultation will be addressed in the form of action plan. SPC plans to engage in various CER activities, such as providing potable water facilities to a nearby school and improving infrastructure at the government school in Dheevanur village. A portion of the project budget will be allocated to these CER activities, which are expected to be completed within three years from the commencement of the establishment activity.

Table 11 CER Budget and its activities

Sr. No	Activity	Capital Cost (Lakhs)	2024-2025	2025-2026	2026-2027
1	Potable water supply facility for nearby Govt. School	4	2	1	1
2	Infrastructure facilities such as sanitary, library, sports amenities and smart classroom to Govt.Schools	4	2	1	1
3	Scholarship to economically weaker section students	1	0.5	0.25	0.25
4	Health Camps in nearby villages	1	0.5	0.25	0.25
		10	**5**	**2.5**	**2.5**

11. PROJECT BENEFITS

The basic requirement of the community needs will be strengthened by extending health care, educational facilities to the community, providing drinking water to the villages and taking part in various health care activities.

Implementation of the project will result in the following benefits

- Temporary employment for people from the neighboring villages during construction phase;
- 30 persons will be employed as direct and 20 persons will be employed as indirect.

- providing drinking water facility and revamping of bore wells facilities in the nearby villages;
- State will get revenue from payment towards taxes and water cess etc.,
- Reduces the demand and supply gap of cement products.

12. CONCLUSION

The proposed cement plant will have some marginal impacts on the local environment. However, the project also offers significant benefits, such as meeting future cement demand, providing employment opportunities for local residents, and improving transportation facilities. These advantages will ultimately enhance the living standards of the local communities.