



Shree Cement Limited (SCL)

Environmental Clearance for Tiruttani Clinker Grinding Unit with Cement Production Capacity of 3.50 MTPA (OPC, PPC, PSC, RHPC, SRC and Composite Cement) along with Railway Sidings & DG Sets for total Capacity of 1250 KVA (Stand Alone Grinding Unit)

SF Nos. 329/2, 329/3, 329/4, 329/5, 329/6pt, 329/9, 329/10, 329/11A1pt, 329/11A2B, 330/2pt, 330/3, 330/4A, 330/4B, 330/4C, 330/4Dpt, 330/4Ept, 330/5, 330/6, 330/7, 330/8, 330/9, 330/10 of **Tiruttani Village**, 372/3Cpt, 372/4A, 372/4B, 374/2Apt, 374/3B2pt, 374/3Cpt, 374/3D, 374/3E, 374/3F1, 374/3F2, 374/3Gpt, 374/3Hpt, 374/4A1pt, 374/4A2pt, 374/5, 374/6, 374/7, 374/8pt, 374/9pt, 374/10, 374/11pt, 374/12, 374/15B1, 374/15B2, 378/10, 378/11, 378/12, 378/13, 378/15, 379/18, 379/19, 379/20, 379/7B, 379/11B, 383/5, 383/6, 383/7A, 383/7B, 383/7C, 383/8A, 383/8B, 383/8C of **Devasenapuram Village** & 423/3pt, 423/4pt, 424/1, 424/2, 424/3A, 424/3B, 424/3C, 424/4, 424/5, 425pt, 426pt of **Valliammapuram Village**, **Karthikeyapuram Panchayat, Tiruttani Taluk, Tiruvallur District, Tamil Nadu**

Environmental Clearance under EIA Notification 2006 Schedule SI. No. 3(b) - Category 'B'

Draft Environmental Impact Assessment Report

(after TOR for Public Hearing)

Awarded TOR Identification No. TO25B1103TN5124110N dated 19.08.2025

Baseline Data Collection Period : Jun.-Aug. 2025 (Premonsoon Season)

October 2025

EIA Consultant



ABC Techno Labs India Private Limited, Chennai

Accreditation Certificate : NABET/EIA/2225/RA0290 dated 11.06.2023

with Validity till 15.02.2026 (SI. No. 4 of QCI/NABET List)

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

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Disclaimer

This EIA-EMP Report for 'Proposed Tiruttani Clinker Grinding Unit with a Cement production capacity of 3.50 MTPA (OPC/PPC/PSC/RHPC/ SRC/CC) along with Railway Siding and DG Sets for total capacity of 1250 KVA (Stand Alone Grinding Unit) in Tiruttani, Devasenapuram & Valliammapuram Villages in Tiruttani Taluk, Tiruvallur District of Tamil Nadu' by M/s. Shree Cement Limited has been prepared by M/s. ABC Techno Labs India Private Limited, Chennai for obtaining Environmental Clearance.

This EIA Report has been prepared using information received from Project Proponent, Site visits, collecting Primary Data and compilation of Secondary Data from available resources. This Report has been prepared with all cares and vetted and finalised with the Project Proponent M/s. Shree Cement Limited.

This Document, as a part or whole, cannot be used for any other purpose other than stated purpose.

For ABC Techno Labs India Private Limited


Authorized Signatory

Date: 12.09.2025
Place: Chennai.



ABC TECHNO LABS INDIA PRIVATE LIMITED

(Accredited by NABL, NABET, Approved by FSSAI, APEDA & Agmark, Recognized by MoEF&CC, BIS)

(In ISO 9001, ISO 14001, ISO 45001 & ISO 22000 Certified Company)

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Certificate of Plagiarism Check

Title of EIA Report	Proposed Tiruttani Clinker Grinding Unit with a Cement production capacity of 3.50 MTPA (OPC/PPC/PSG/RHPC/SRC/CC) along with Railway Siding and DG Sets for total capacity of 1250 KVA (Stand Alone Grinding Unit) in Tiruttani, Devasenapuram & Valliammapuram Villages in Tiruttani Taluk, Tiruvallur District of Tamil Nadu by M/s. Shree Cement Limited.
Name of Accredited Organization	ABC Techno Labs India Private Limited, Chennai
Unique Identification Number	NABET/EIA/2225/RA0290
Name of EIA Coordinator (EC)	K Sekar
Name of the Software	Plagiarism Software – Online Plagiarism Checker https://plagiarismchecker.co
Date of check	Completed on 12.09.2025

I hereby certify that this EIA report has been evaluated using online software Online Plagiarism Checker (<https://plagiarismchecker.co>). The report has been analysed by the system and based on it, I certify that the EIA Report produced in accordance with good scientific practice.

Signature of EIA Coordinator

Name: K. Sekar

Designation: EC

For ABC Techno Labs India Private Limited

Authorized Signatory

Date: 12.09.2025

Place: Chennai.



ABC TECHNO LABS INDIA PRIVATE LIMITED

(Accredited by NABL, NABET, Approved by FSSAI, APEDA & Agmark, Recognized by MoEF&CC, BIS)

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**Project Proponent Declaration**

[in compliance with MoEF Office Memorandum No. J-11013/41/2006-IA.II (I) dated 04.08.2009]

We, M/s. Shree Cement Limited (SCL), have applied to the State Level Environmental Impact Assessment Authority (SEIAA)-Tamil Nadu for prior Environmental Clearance of "Proposed Tiruttani Clinker Grinding Unit with a Cement production capacity of 3.50 MTPA (OPC/PPC/PSC/RHPC/ SRC/CC) along with Railway Siding and DG Sets for total capacity of 1250 KVA (Stand Alone Grinding Unit) in Tiruttani, Devasenapuram & Valliammapuram Villages in Tiruttani Taluk, Tiruvallur District of Tamil Nadu" vide Parivesh Online proposal No. SIA/TN/IND1/542782/2025 on 25.06.2025 and the File has been accepted by SEIAA under File No. 12367 on 27.06.2025.

Further, the proposal was deliberated by the State Expert Appraisal Committee (SEAC)-Tamil Nadu in its 595th Meeting held on 21.07.2025 and SEIAA-TN in its 868th Meeting held on 08.08.2025. TOR has been granted vide Identification No. TO25B1103TN5124110N dated 19.08.2025 with Public Hearing.

EIA Consultant, M/s. ABC Techno Labs India Private Limited, Chennai has been accredited for various Sectors including Sector-3 (a) (Cement 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). ABC Laboratory is accredited by the National Accreditation Board for Testing & Calibration Laboratories (NABL) vide Certificate No. TC-5770 dated 03.04.2024 - valid till 02.04.2026.

The Environmental Impact Assessment (EIA) Report and Executive Summary of Environmental Impact Assessment Reports have been prepared in compliance with the granted TORs and as per the generic structure proposed in EIA Notification 2006 and submitted. The data submitted in the EIA Report are factually correct.

For, Shree Cement Limited

Sunil Raosaheb Deshmukh

Head- Environment & Authorized Signatory

Date : 27.10.2025

Place : Gurugram.

Shree Cement Limited

Corporate office : DLF Eptome, Building No 5, Tower B, 9th Floor, DLF Cyber City, Gurugram, Haryana - 122002
Tel: +91-124-4699200 | www.shreecement.com | CIN : L26943RJ1979PLC001935

Registered Office : Bangur Nagar, Beawar, Rajasthan - 305901 | Tel: 01462-228101-06 | shreebwn@shreecement.com
Group Corporate Office : 21 Strand Road, Kolkata, West Bengal - 700007



EIA Consultant Undertaking

[in compliance with MoEF Office Memorandum No. J-11013/41/2006-IA.II (I) dated 04.08.2009]

M/s. Shree Cement Limited (SCL), have applied to the State Level EIA Authority (SEIAA)-Tamil Nadu for prior Environmental Clearance of Proposed Tiruttani Clinker Grinding Unit with a Cement production capacity of 3.50 MTPA (OPC/PPC/PSG/RHPC/ SRC/CC) along with Railway Siding and DG Sets for total capacity of 1250 KVA (Stand Alone Grinding Unit) in Tiruttani, Devasenapuram & Valliammapuram Villages in Tiruttani Taluk, Tiruvallur District of Tamil Nadu vide Parivesh Online proposal No. SIA/TN/IND1/542782/2025 on 25.08.2025 and the File has been accepted by SEIAA under File No. 12387 on 27.08.2025.

The Proposal was deliberated by the State Expert Appraisal Committee (SEAC)-Tamil Nadu in its 595th Meeting held on 21.07.2025 and SEIAA-TN in its 868th Meeting held on 08.08.2025. TOR has been awarded vide Identification No. TQ25B1103TN5124110N dated 19.08.2025 with Public Hearing.

EIA Consultant, M/s. ABC Techno Labs India Private Limited, Chennai has been accredited for various Sectors including Sector-9 (Cement Plants) for Category 'A' by the National Accreditation Board for Education & Training (NABET) vide Certificate NABET/EIA/2225/RA0290 dated 11.08.2023 with validity till 18.11.2025 (Sl. No. 4 of List). ABC Laboratory is accredited by the National Accreditation Board for Testing & Calibration Laboratories (NABL) vide Certificate No. TC-5770 dated 03.04.2024 - valid till 02.04.2026.

The Environmental Impact Assessment (EIA) Report and Summary Environmental Impact Assessment Reports have been prepared in compliance with the awarded TORs and as per the generic structure proposed in EIA Notification 2006 and submitted. The data submitted in the EIA Report are factually correct.

For ABC Techno Labs India Private Limited

Authorised Signatory

Date: 12.09.2025
Place: Chennai.



ABC TECHNO LABS INDIA PRIVATE LIMITED

(Accredited by NABL, NABET, Approved by FSSAI, APEDA & Agmark, Recognised by MoEF&CC, BIS)

(In ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 Certified Company)

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Awarded ToRs

File No: 12367
Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment
Authority(SEIAA), TAMIL NADU)



Dated 19/08/2025



To,

Thiru.Sunil Raosaheb Deshmukh
M/s. Shree Cement Limited
Bangur Nagar, Post Box No. 33, Beawar 305901, Rajasthan, India, Beawar, RAJASTHAN, Shree
Cement Ltd., Bangur Nagar, Post Box No. 33, 305901
sunil.deshmukh@shreecement.com

Subject: Grant of Terms of Reference along with Public Hearing under the provision of the EIA Notification
2006,as amended -regarding.

Sir/Madam,

Sub: SEIAA, TN – Terms of Reference (ToR) along with Public Hearing issued for the Proposed
Tiruttani Clinker Grinding Unit with Cement production capacity of 3.50 MTPA (OPC, PPC, PSC,
RHPC, SRC and CC) along with Railway Sidings and DG Sets for total capacity of 1250 KVA (Stand
Alone Grinding Unit) at S.F. Nos. 329/2, 329/3, 329/4, 329/5, 329/6pt, 329/9, 329/10, 329/11A1pt,
329/11A2B, 330/2pt, 330/3, 330/4A, 330/4B, 330/4C, 330/4Dpt, 330/4Ept, 330/5, 330/6, 330/7, 330/8,
330/9, 330/10 of Tiruttani Village, 372/3Cpt, 372/4A, 372/4B, 374/2Apt, 374/3B2pt, 374/3Cpt, 374/3D,
374/3E, 374/3F1, 374/3F2, 374/3Gpt, 374/3Hpt, 374/4A1pt, 374/4A2pt, 374/5, 374/6, 374/7, 374/8pt,
374/9pt, 374/10, 374/11pt, 379/18, 379/19, 379/20, 379/7B, 383/8B, 383/7B, 383/8C, 383/8A, 383/7C,
374/12, 374/15B1, 378/11, 378/15, 374/15B2, 378/10, 378/13, 383/5, 383/6, 383/7A, 378/12, 379/11B
of Devasenapuram Village & 423/3pt, 423/4pt, 424/1, 424/2, 424/3A, 424/3B, 424/3C, 424/4, 424/5,
425pt, 426pt of Valliammapuram Village in Tiruttani Taluk, Tiruvallur District, Tamil Nadu by M/s.
Shree Cement Limited – ToR issued along with Public Hearing – Preparation of EIA Report –
Regarding.

Ref: 1. Online Application No. SLA/TN/IND1/542782/2025 Dated: 25.06.2025.

2. Your application for Terms of Reference dated: 27.06.2025.

3. Minutes of the 595th SEAC Meeting held on 21.07.2025.

4. Minutes of the 868th SEIAA Meeting held on 08.08.2025.

2. The particulars of the proposal are as below :

(i) TOR Identification No.	TO25B1103TN5124110N
(ii) File No.	12367
(iii) Clearance Type	TOR
(iv) Category	B1

(v) Project/Activity Included Schedule No.	3(b) Cement plants Tiruttani Clinker Grinding Unit with a production capacity of 3.50 MTPA (OPC/PPC/PSC/RHPC/SRC/CC) along with Railway Siding and DG Sets for total capacity of 1250 KVA (Stand Alone Grinding Unit) at Tiruttani, Devasenapuram and Valliammapuram villages, Tiruttani Taluk, Tiruvallur District of Tamil Nadu by M/s. Shree Cement Limited
(vii) Name of Project	
(viii) Name of Company/Organization	Shree Cement Limited
(ix) Location of Project (District, State)	THIRUVALLUR, TAMIL NADU
(x) Issuing Authority	SEIAA
(xi) Applicability of General Conditions	no
(xii) Applicability of Specific Conditions	no

1. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1 (Part A and B) were submitted to the SEIAA for an appraisal by the SEAC under the provision of EIA notification 2006 and its subsequent amendments.

2. The above-mentioned proposal has been considered by SEIAA in the meeting held on 08.08.2025. The minutes of the meeting and all the Application and documents submitted [(viz. Form-1 Part A, Part B,)] are available on PARIVESH portal which can be accessed by scanning the QR Code above.

3. The State Expert Appraisal Committee (SEAC), based on the information & clarifications provided by the project proponent and after detailed deliberations on all technical aspects recommended the proposal for grant of Terms of Reference with public hearing under the provision of EIA Notification, 2006 and as amended thereof subject to the stipulation of specific and general conditions as detailed in Annexure (2).

4. The SEIAA has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after accepting the recommendations of the SEAC hereby decided to issue the following Terms of Reference with public hearing for instant proposal M/s. Shree Cement Limited under the provisions of EIA Notification, 2006 and as amended thereof.

5. The Ministry/SEIAA-TN reserves the right to stipulate additional conditions, if found necessary.

6. The Terms of Reference with public hearing to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.

7. This issues with the approval of the Competent Authority.

8. The TORs with public hearing prescribed shall be valid for a period of three years from the date of issue, for submission of the EIA/EMP report as per OM No.J-11013/41/2006-LA-II(T)(part) dated 29th August, 2017.

Copy To

1. The Additional Chief Secretary to Government, Environment & Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi 110032.
3. The Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-600 032.
4. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi 110003
5. The Greater Commissioner Chennai Corporation.
6. Stock File.

Annexure I

Specific Terms of Reference for (Cement Plants)**1. Seac Conditions - Site Specific**

S. No	Terms of Reference
1.1	1. The PP should submit the land documents for all the survey numbers proposed. 2. The PP should furnish the Fresh water Commitment letter obtained from the competent authority. 3. The PP shall provide the details of advanced Air Pollution Technologies adopted for minimizing the pollution load during the submission of EIA report. 4. The PP shall find the possibility of alternative fuel for the proposed coal usage and detailed plan for phasing out of coal. 5. The PP should furnish the dust control mitigation measures in a detailed manner. 6. PP shall provide details of Raw material used for cement grinding and its type of storage facilities. 7. The PP shall provide details of the traffic study for transportation of materials to the cement plant. 8. The PP shall furnish an action plan for achieving carbon neutrality by 2030. 9. The PP shall consider cumulative baseline study to obtain an accurate representation of pollution levels in the study area. 10. The PP shall furnish a detailed report on the type of cement to be produced, production capacity, and the technology to be used. 11. The PP shall furnish a report with a detailed explanation of the production process, from raw material extraction to cement manufacturing and distribution. Here, the PP shall spell out the energy consumption (kw/hr) for each stage of size reduction and processing along with strategies towards the energy saving to reduce the carbon footprint. 12. The PP shall furnish a report on the infrastructure (e.g., kilns, mills, silos), utilities (e.g., water, electricity), transportation routes, and storage facilities. 13. Copy of the village map, FMB sketch and "A" register shall be furnished. 14. Detailed Evacuation plan during emergency/natural disaster/unto ward accidents shall be submitted. 15. The space allotment for solid waste disposal and sewage treatment & grey water treatment plant shall be furnished. 16. Details of the Solid waste management plan shall be prepared as per solid waste management Rules, 2016 and shall be furnished. 17. Cumulative impacts of the Project considering with other infrastructure developments and industrial parks in the surrounding environment within 5 km & 10 km radius shall be furnished. 18. The project proponent shall furnish detailed baseline monitoring data with prediction parameters for modeling for the ground water, emission, noise and traffic. 19. As per the MoEF&CC Office Memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020, the proponent shall furnish the detailed EMP.

2. Seiaa Standard Conditions:

S. No	Terms of Reference
2.1	1. Impacts on Energy requirement. 2. Impacts on living System (air, water, soil & micro-organisms). 3. Impacts on terrestrial & aquatic within and surrounding areas. 4. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall furnish the detailed EMP mentioning all the CER activities as committed with the action plan.

S. No	Terms of Reference
	5. The proponent shall provide details on the adequate parking facility provided including vehicles of all the workers & visitors and a clean traffic plan. 6. The project proponent shall furnish the action taken to improve water usage efficiency in the building. 7. The project proponent shall conduct detailed study of biodiversity flora & fauna including invasives /endemic vulnerable species. 8. The project proponent shall furnish NOC obtained from competent authority that there is no encroachment of water bodies (including canals). 9. The project proponent shall conduct detailed soil investigation including microflora/fauna. 10. The project proponent shall study impact on livelihoods of locals. 11. The project proponent shall furnish List of trees available in the project area. 12. The project proponent shall study impact of activities on water bodies/wetlands. 13. The proponent shall furnish details on the measures taken to make the Buildings energy efficient confirming to green building norms. 14. The disaster management and disaster mitigation plan shall be furnished and should be seriously adhered to avoid calamities. 15. The project proponent shall conduct studies on the presence of invasive and alien species around the project the area and shall furnish mitigate measures to prevent their spread. 16. The proponent shall furnish details on the actions taken to reduce anthropogenic GHGs such as CO₂, CH₄, nitrous oxide, etc., resulting from human activities. 17. The proponent shall furnish details on the strategies adopted to decarbonize the building. 18. The proponent shall furnish measures taken to mitigate the impact on critically endangered species, biodiversity, etc., due to the modification of the habitat. 19. The proponent shall develop emergency response plan in addition to the disaster management plan. 20. The proponent shall furnish details on building-friendly pest control strategies developed using non chemical measures so as to control the pest population thereby not losing beneficial organisms. 21. The proponent shall furnish details on strategies developed to ensure the buildings in blocks don't trap heat and become local urban heat islands. 22. The proponent shall develop detailed evacuation plan for disabled people and safety evacuation plan during emergencies. 23. The proponent shall explain the methodology adopted to control thermal Environment and other shocks in the building. 24. The proponent shall provide details on the provisions for controlled ventilation and lighting systems.]

Standard Terms of Reference for Industrial Projects - I

1. Preliminary Requirements

S. No	Terms of Reference
1.1	EIA/EMP report cover page shall consists of project title with location, applicable schedule of the EIA Notification, 2006, ToR letter No. with date, study period along with EIA consultant & laboratory details with QCINABET/NABL accreditation certificate detail.
1.2	Besides, following points shall be compiled as per QCINABET norms: a. Disclaimer by the EIA consultant. b. Declaration by the Functional Area Experts contributed to the EIA study and declaration by the head of the accredited consultant organization/authorized person. c. Undertaking by the project proponent owning the contents (information and data) of the EIA/EMP report. d.

S. No	Terms of Reference
	Undertaking by the EIA consultant regarding compliance of ToR issued by MoEF&CC. e. Consultant shall submit the Plagiarism Certificate for the EIA/EMP Report.

2. Executive Summary

S. No	Terms of Reference
2.1	Table of Contents of the EIA report including list of tables/figures/annexures/abbreviations/symbols/notations.
2.2	Point wise compliance to the ToR issued by MoEF&CC.

2.1 Introduction

S. No	Terms of Reference
2.1.1	Name of the project along with applicable schedule and category as per EIA, 2006.
2.1.2	Location and accessibility

2.2 Project Description

S. No	Terms of Reference
2.2.1	Resource requirements (Land; water; fuel; manpower)
2.2.2	Operational activity
2.2.3	Key pollution concerns

2.3 Baseline Environment Studies

S. No	Terms of Reference
2.3.1	Ambient air quality
2.3.2	Ambient Noise quality
2.3.3	Traffic study
2.3.4	Surface water quality
2.3.5	Ground water quality
2.3.6	Soil quality
2.3.7	Biological Environment

S. No	Terms of Reference
2.3.8	Land use
2.3.9	Socio-economic environment

2.4 Anticipated Impacts

S. No	Terms of Reference
2.4.1	Impact on ambient air quality
2.4.2	Impact on ambient noise quality
2.4.3	Impact on road and traffic
2.4.4	Impact on surface water resource and quality
2.4.5	Impact on ground water resource and quality
2.4.6	Impact on terrestrial and aquatic habitat
2.4.7	Impact on socio-economic environment

2.5 Alternative Analysis

S. No	Terms of Reference
2.5.1	No Data Found

2.6 Environmental Monitoring Program

S. No	Terms of Reference
2.6.1	Ambient air, noise, water and soil quality
2.6.2	Noise quality management plan
2.6.3	Emission and discharge from the plant
2.6.4	Green Belt
2.6.5	Social Parameters

2.7 Additional Studies

S. No	Terms of Reference
2.7.1	Risk assessment
2.7.2	Public consultation

S. No	Terms of Reference
2.7.3	Action plan to address the issues raised during public consultation as per MoEF&CC O.M. dated 30/09/2020

2.8 Project Benefits

S. No	Terms of Reference
2.8.1	No Data Found

2.9 Environment Management Plan

S. No	Terms of Reference
2.9.1	Air quality management plan
2.9.2	Noise quality management plan
2.9.3	Solid and hazardous waste management plan
2.9.4	Effluent management plan
2.9.5	Storm water management plan
2.9.6	Occupational health and safety management plan
2.9.7	Green belt development plan
2.9.8	Socio-economic management plan
2.9.9	Project cost and EMP implementation budget

3. Introduction

S. No	Terms of Reference
3.1	Background about the project
3.2	Need of the project
3.3	Purpose of the EIA study
3.4	Scope of the EIA study

4. Project Description**4.1 Site Details**

S. No	Terms of Reference
4.1.1	Location of the project site covering village, Taluka/Tehsil, District and State.
4.1.2	Site accessibility
4.1.3	A digital toposheet in pdf or shape file compatible to google earth of the study area of radius of 10km and site location preferably on 1:50,000 scale. (including all eco-sensitive areas and environmentally sensitive places).
4.1.4	Latest High-resolution satellite image data having 1 m - 5 m spatial resolution like quickbird, Ikonos, IRS P-6 pan sharpened etc., along with delineation of plant boundary co-ordinates. Area must include at least 100 m all around the project location.
4.1.5	Environment settings of the site and its surrounding along with map.
4.1.6	A list of major industries with name, products and distance from plant site within study area (10km radius) and the location of the industries shall be depicted in the study area map.
4.1.7	In case if the project site is in vicinity of the water body, 50 meters from the edge of the water body towards the site shall be treated as no development/construction zone. If it's near the wetland, Guidelines for implementing Wetlands (Conservation and Management) Rules, 2017 may be followed.
4.1.8	In case if the project site is in vicinity of the river, the industry shall not be located within the river flood plain corresponding to one in 25 years flood, as certified by concerned District Magistrate/Executive Engineer from State Water Resources Department (or) any other officer authorized by the State Government for this purpose as per the provisions contained in the MoEF&CC Office Memorandum dated 14/02/2022.
4.1.9	In case of canal/ nala/ seasonal drain and any other water body passing through project site, the PP shall submit the suitable steps /conservation plan/mitigation measures along with contouring, Run -off calculations, disposal etc. A robust and full proof Drainage Conservation scheme to protect the natural drainage/water bodies and its flow parameters; along with Soil conservation scheme and multiple Erosion control measures shall be provided in the report.
4.1.10	Type of land, land use of the project site needs to be submitted.
4.1.11	Status of acquisition of land. If acquisition is not complete, stage of the acquisition process as per the MoEF&CC O.M. dated 7/10/2014 shall be furnished.
4.1.12	Project proponent shall prepare Engineering layout plan showing all internal roads minimum 6 m width and 9 m turning radius for smooth traffic flow inside including fire tender as per NBC. Road network shall connect all service areas in layout. This drawing shall include area statement showing plot area, area under roads, parking, green belt with calculations and % with respect to plot area of project site and proper indexing. If located within an Industrial area/Estate/Complex, layout of Industrial Area indicating location of unit within the Industrial area/Estate.
4.1.13	Project proponent shall submit contour map of project site along with drainage disposal system with calculations and drawings supported with proper indexing including Rain Water Harvesting details with calculations mentioning about GW recharge along with relevant

S. No	Terms of Reference
	drawing.
4.1.14	A detailed report covering all aspects of Fire Safety Management and Fire Emergency Plan shall be submitted.
4.1.15	Details of drone survey for the site, needs to be included in report and presented before the EAC during appraisal of the project.

4.2 Forest And Wildlife Related Issues (If Applicable)

S. No	Terms of Reference
4.2.1	Status of Forest Clearance for the use of forest land shall be submitted.
4.2.2	Copy of application submitted for clearance under the Wildlife (Protection) Act, 1972, to the Standing Committee of the National Board for Wildlife if the project site located within notified Eco-Sensitive Zone, 10 km radius of national park/sanctuary wherein final ESZ notification is not in place as per MoEF&CC Office Memorandum dated 8/8/2019.
4.2.3	The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, Eco-sensitive Zone and Eco-sensitive areas, the project proponent shall submit the map duly authenticated by Divisional Forest Officer showing the distance between the project site and the said areas.
4.2.4	Wildlife Conservation Plan duly authenticated by the Competent Authority of the State Government for conservation of Schedule I fauna along with budget and action plan, if any exists in the study area.

4.3 Salient Features Of The Project

S. No	Terms of Reference
4.3.1	Products with capacities in Tons per Annum for the proposed project.
4.3.2	If expansion project, status of implementation of existing project, details of existing/proposed products with production capacities in Tons per Annum.
4.3.3	Site preparatory activities.
4.3.4	List of raw materials required and their source along with mode of transportation.
4.3.5	Other than raw materials, other chemicals and materials required with quantities and storage capacities.
4.3.6	Manufacturing process details along with process flow diagram of proposed units.
4.3.7	Consolidated materials and energy balance for the project.
4.3.8	Total requirement of surface/ ground water and power with their respective sources, status of

S. No	Terms of Reference
	approval.
4.3.9	Water balance diagram
4.3.10	Details of Emission, effluents, hazardous waste generation and mode of disposal during construction as well as operation phase.
4.3.11	Man-power requirement.
4.3.12	Cost of project and scheduled time of completion.
4.3.13	In case of expansion projects, project proponent shall submit structural stability certificate showing whether existing structure withstand for proposed expansion activity.
4.3.14	Brief on present status of compliance (Expansion/modernization proposals) a. Cumulative Environment Impact Assessment for the existing as well as the proposed expansion/modernization shall be carried out. b. Cumulative Impact Assessment need to be carried out by greenfield projects considering the nearby industries. c. In case of ground water drawl for the existing unit, action plan for phasing out of ground water abstraction in next two years except for domestic purposes and shall switch over to 100 % use of surface water from nearby source. d. Copy of all the Environment Clearance(s) including Amendments/validity of extension/transfer of EC, there to obtained for the project from MoEF&CC/SEIAA shall be attached as Annexures. A Certified Compliance Report (CCR) of the Integrated Regional Office of the Ministry of Environment, Forest and Climate Change/ or concerned authority as per OM No. IA3-22/10/2022-IA III [E 1772581], dated 8th June, 2022 on the status of compliance of conditions stipulated in all the existing environment clearances including amendments shall be provided. A Certified Compliance Report (CCR) issued by the concerned Authority shall be valid for a period of one year from the date of inspection. e. In case the existing project has not obtained Environment Clearance, reasons for not taking EC under the provisions of the EIA Notification 1994 and/or EIA Notification 2006 shall be provided. A proper justification needs to be submitted along with documentary proof. Copies of Consent to Establish/No Objection Certificate and Consent to Operate (in case of units operating prior to EIA Notification 1994 or 2006, CTE and CTO of FY 2005-2006) obtained from the SPCB shall be submitted. Further, compliance report to the conditions of CTO from the Regional Office of the SPCB shall be submitted, as per OM No. IA3-22/10/2022-IA III [E 1772581], dated 8th June, 2022. CCR on CTO conditions issued by the concerned SPCBs/PCCs shall be valid for a period of one year from the date of inspection of the project.

5. Description Of The Environment

S. No	Terms of Reference			
5.1	Study period			
5.2	Approach and methodology for data collection as furnished below			Remarks
	Attributes	Network	Sampling Frequency	
	Air Environment			
	Micro-Meteorological	Minimum 1 site	hourly continuous	
	IS 5182 Part 1-20			

S. No	Terms of Reference
	in the project impact area • Wind speed (Hourly) • Wind direction • Dry bulb temperature • Wet bulb temperature • Relative humidity • Rainfall • Solar radiation • Cloud cover • Environmental • Lapse Rate Pollutants • PM10 • SO₂ • NO_x • CO • HC • Other parameters relevant to the project and topography of the area As per National Ambient Air Quality Standards, CPCB Notification. At least 8-12 locations • Site specific primary data is essential • Secondary data from IMD, New Delhi • CPCB guidelines to be considered. • Sampling as per CPCB guidelines • Collection of AAQ data (except in monsoon season) • Locations of various stations for different parameters should be related to the characteristic properties of the parameters. • The monitoring stations shall be based on the NAAQM standards as per GSR 826(E) dated 16/11/2009 and take into account the predominant wind direction, population zone and sensitive receptors including reserved forests, • Raw data of all AAQ measurement for 12 weeks of all stations as per frequency given in the NAAQM Notification of 16/11/2009 along with min., max., average and 98% values for each of the AAQ parameters from data

S. No	Terms of Reference
	of all AAQ stations should be provided as an annexure to the EIA Report. Noise Hourly equivalent noise levels At least 8-12 locations as per CPCB norms Water Parameters for water quality - pH, temp, turbidity, magnesium hardness, total alkalinity, chloride, sulphate, nitrate, fluoride, sodium, potassium, salinity - Total nitrogen, total phosphorus, DO, BOD, COD, Phenol - Heavy metals - Total coliforms, faecal coliforms - Phyto plankton - Zoo plankton For River Bodies - Total Carbon - pH - Dissolved Oxygen - Biological Demand - Free NH₄ - Boron - Sodium Absorption Ratio - Electrical Conductivity For Ground Water Traffic Study Type of vehicles Land Environment Samples for water quality should be collected and analyzed as per: • IS: 2488 (Part 1-5) methods for sampling and testing of Industrial effluents • Standard methods for examination of water and wastewater analysis published by American Public Health Association • Yield of water sources to be measured during critical season • Standard methodology for collection of surface water (BIS standards) Ground water monitoring data should be collected at minimum of 8 locations (from existing wells /tube wells/existing current records) from the study area and shall be included.

S. No	Terms of Reference
	• Frequency of vehicles for transportation of materials • Additional traffic due to proposed project Soil • Particle size distribution • Texture • pH • Electrical conductivity • Cation exchange capacity • Alkali metals • Sodium Absorption Ratio (SAR) • Permeability • Water holding capacity • Porosity Land use/Landscape • Location code • Total project area • Topography • Drainage (natural) Cultivated, forest, plantations, water bodies, roads and settlements Biological Environment 1. Aquatic • Primary productivity • Aquatic weeds • Enumeration of phyto plankton, zoo plankton and benthos • Fisheries • Diversity indices • Trophic levels • Detailed description of flora and fauna (terrestrial and aquatic) existing in the study area shall be given with special reference to rare, endemic and endangered species. Indicator species which indicate ecological and environment degradation should be identified and included to clearly state whether the proposed project would result in to any adverse effect on any species. • Samples to collect from upstream and downstream of discharge point, nearby tributaries at downstream, and also from dug wells close to activity site. • For forest studies, direction of wind should be considered while Soil samples be collected as per BIS specifications

S. No	Terms of Reference															
	• Rare and endangered species selecting forests. • Marine Parks/ Sanctuaries/ closed areas (coastal regulation zone (CRZ)) • Secondary data to collect from Government offices, NGOs, published literature. 2. Terrestrial • Vegetation-species list, economic importance, forest produce, medicinal value • Importance value index (IVI) of trees • Fauna • Avi fauna • Rare and endangered species • Sanctuaries / National park / Biosphere reserve • Migratory routes socio-economic Demographic structure • Infrastructure base • Economic resource base • Health status: Morbidity pattern • Cultural and aesthetic attributes. • Education Socio-economic survey is based on proportionate, stratified and random sampling method. • Primary data collection through questionnaire • Secondary data from census records, statistical hand books, topo sheets, health records and relevant official records available with Govt. agencies Approach and methodology for data collection as furnished below <table><tr><th>Attributes</th><th>Sampling</th><th>Remarks</th></tr><tr><td></td><td>Network</td><td>Frequency</td></tr><tr><td>Air Environment</td><td></td><td></td></tr><tr><td>Micro-Meteorological</td><td>Minimum 1 site in the project area</td><td>hourly continuous</td></tr><tr><td>• Wind speed (Hourly)</td><td></td><td></td></tr></table> IS 5182 Part 1-20 • Site specific primary data	Attributes	Sampling	Remarks		Network	Frequency	Air Environment			Micro-Meteorological	Minimum 1 site in the project area	hourly continuous	• Wind speed (Hourly)		
Attributes	Sampling	Remarks														
	Network	Frequency														
Air Environment																
Micro-Meteorological	Minimum 1 site in the project area	hourly continuous														
• Wind speed (Hourly)																

S. No	Terms of Reference
	• Wind direction • Dry bulb temperature • Wet bulb temperature • Relative humidity • Rainfall • Solar radiation • Cloud cover • Environmental • Lapse Rate is essential • Secondary data from IMD, New Delhi • CPCB guidelines to be considered. Pollutants • PM10 • SO₂ • NO_x • CO • HC • Other parameters relevant to the project and topography of the area At least 8-12 locations As per National Ambient Air Quality Standards, CPCB Notification. • Sampling as per CPCB guidelines • Collection of AAQ data (except in monsoon season) • Locations of various stations for different parameters should be related to the characteristic properties of the parameters. • The monitoring stations shall be based on the NAAQM standards as per GSR 826(E) dated 16/11/2009 and take into account the predominant wind direction, population zone and sensitive receptors including reserved forests. • Raw data of all AAQ measurement for 12 weeks of all stations as per frequency given in the NAAQM Notification of 16/11/2009 along with min., max., average and 98% values for each of the AAQ parameters from data of all AAQ stations should be provided as an

S. No	Terms of Reference
	annexure to the EIA Report. Noise Hourly equivalent noise levels At least 8-12 locations per CPCB norms Water Parameters for water quality - pH, temp, turbidity, magnesium hardness, total alkalinity, chloride, sulphate, nitrate, fluoride, sodium, potassium, salinity - Total nitrogen, total phosphorus, DO, BOD, COD, Phenol - Heavy metals - Total coliforms, faecal coliforms - Phyto plankton - Zoo plankton For River Bodies - Total Carbon - pH - Dissolved Oxygen - Biological Demand - Free NH₄ - Boron - Sodium Absorption Ratio - Electrical Conductivity For Ground Water Traffic Study Type of vehicles - Frequency of vehicles for Land Environment transportation of materials

S. No	Terms of Reference
	• Additional traffic due to proposed project Soil • Particle size distribution • Texture • pH • Electrical conductivity • Cation exchange capacity • Alkali metals • Sodium Absorption Ratio (SAR) • Permeability • Water holding capacity • Porosity Land use/Landscape • Location code • Total project area • Topography • Drainage (natural) Cultivated, forest plantations, water bodies, roads and settlements Biological Environment 1. Aquatic • Primary productivity • Aquatic weeds • Enumeration of phyto plankton, zoo plankton and benthos • Fisheries • Diversity indices • Trophic levels • Rare and endangered species • Detailed description of flora and fauna (terrestrial and aquatic) existing in the study area shall be given with special reference to rare, endemic and endangered species. Indicator species which indicate ecological and environment degradation should be identified and included to clearly state whether the proposed project would result in to any adverse effect on any species. • Samples to collect from upstream and downstream of discharge point, nearby tributaries at downstream, and also from dug wells close to activity site. • For forest studies, direction of wind should be considered while selecting forests. • Secondary data to collect from Government offices, NGOs,

S. No	Terms of Reference
	• Marine Parks/ Sanctuaries/ closed areas /coastal regulation zone (CRZ) published literature. 2. Terrestrial • Vegetation-species list, economic importance, forest produce, medicinal value • Importance value index (IVI) of trees • Fauna • Avi fauna • Rare and endangered species • Sanctuaries / National park / Biosphere reserve • Migratory routes socio-economic Demographic structure • Infrastructure resource base • Economic resource base • Health status Morbidity pattern • Cultural and aesthetic attributes. • Education Socio-economic survey is based on proportionate, stratified and random sampling method. • Primary data collection through questionnaire • Secondary data from census records, statistical hand books, topo sheets, health records and relevant official records available with Govt. agencies
5.3	Interpretation of each environment attribute shall be enumerated and summarized as given below: • Ambient air quality • Ambient Noise quality • Surface water quality • Ground water quality • Soil quality • Biological Environment • Land use • Socio-economic environment
5.4	The PP should submit the photograph of monitoring stations & sampling locations. The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyze the samples.

6. Anticipated Environment Impacts And Mitigation Measures (In Case Of Expansion, Cumulative Impact

Assessment Shall Be Carried Out)

S. No	Terms of Reference												
6.1	Identification of potential impacts in the form of a matrix for the construction and operation phase for all the environment components <table><tr><th>Activity</th><th>Environment</th><th>Ecological</th><th>Socio-economic</th></tr><tr><td>Construction phase</td><td></td><td></td><td></td></tr><tr><td>Operation phase</td><td></td><td></td><td></td></tr></table>	Activity	Environment	Ecological	Socio-economic	Construction phase				Operation phase			
Activity	Environment	Ecological	Socio-economic										
Construction phase													
Operation phase													
6.2	Impact on ambient air quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase • Details of stack emissions from the existing as well as proposed activity. • Assessment of ground level concentration of pollutants from the stack emission based on AQIP Modelling The air quality contours shall be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any along with wind rose map for respective period • Impact on ground level concentration, under normal, abnormal and emergency conditions. Measures to handle emergency situations in the event of uncontrolled release of emissions.												
6.3	Impact on ambient noise quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase												
6.4	Impact on traffic (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase												
6.5	Impact on soil quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase												
6.6	Impact on land use (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase												
6.7	Impact on surface water resource and quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase												
6.8	Impact on ground water resource and quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase												
6.9	Impact on terrestrial and aquatic habitat (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase												
6.10	Impact on socio-economic environment (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase												
6.11	Impact on occupational health and safety (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase												

7. Analysis Of Alternatives (Technology & Site)

S. No	Terms of Reference
7.1	No project scenario
7.2	Site alternative
7.3	Technical and social concerns
7.4	Conclusion

8. Environmental Monitoring Program

S.No	Terms of Reference																		
S.1	Details of the Environment Management Cell																		
S.2	Performance monitoring schedule for all pollution control devices shall be furnished.																		
S.3	Corporate Environment Policy a. Does the company have a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report. b. Does the Environment Policy prescribe for standard operating process / procedures to bring into focus any infringement / deviation / violation of the environment or forest norms / conditions? If so, it may be detailed in the EIA. c. What is the hierarchical system or Administrative order of the company to deal with the environment issues and for ensuring compliance with the environment clearance conditions? Details of this system may be given Page 9 of 10 d. Does the company have system of reporting of non compliances / violations of environment norms to the Board of Directors of the company and / or shareholders or stakeholders at large? This reporting mechanism shall be detailed in the EIA report																		
S.4	Action plan for post-project environment monitoring matrix: <table><thead><tr><th>Activity</th><th>Aspect</th><th>Monitoring Parameter</th><th>Location</th><th>Frequency</th><th>Responsibility</th></tr></thead><tbody><tr><td>Construction phase</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Operation phase</td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table>	Activity	Aspect	Monitoring Parameter	Location	Frequency	Responsibility	Construction phase						Operation phase					
Activity	Aspect	Monitoring Parameter	Location	Frequency	Responsibility														
Construction phase																			
Operation phase																			

9. Additional Studies:

S. No	Terms of Reference
9.1	Project proponent shall submit a study report on Decarbonisation program, which would essentially consist of company's carbon emissions, carbon budgeting/ balancing, carbon sequestration activities and carbon capture, use and storage after offsetting strategies. Further, the report shall also contain time bound action plan to reduce its carbon intensity of its operations and supply chains, energy transition pathway from fossil fuels to Renewable energy etc. All these activities/ assessments should be measurable and monitorable with defined time frames.

S. No	Terms of Reference															
9.2	Details of adoption/ implementation status/plan to achieve the goal of Glasgow COP26 Climate Submit with regard to enhance the non-fossil energy, use of renewable energy, minimization of net carbon emission and carbon intensity with long-term target of "net Zero" emission.															
9.3	Implementation status/measures adopted for avoiding the generation of single used plastic waste.															
9.4	In cases the project is located in Critically and Severely Polluted Areas, additional mitigation measures adopted and detailed action plan to be submitted in the EIA/EMP Report as per MoEF&CC O.M. No. 22-23/2028-IA III dated 31/10/2019 and MoEF&CC O.M. No. 22-23/2028-IA III dated 5/07/2022 has to be submitted.															
9.5	Public consultation details (Entire proceedings as separate annexure along with authenticated English Translation of Public Consultation proceedings).															
9.6	As part of Corporate Environment Responsibility (CER) activity, company shall adopt nearby villages based on the socio-economic survey and undertake community developmental activities in consultation with the village Panchayat and the District Administration. In this regard, time bound action plan as per the MoEF&CC Office Memorandum dated 30/09/2020 shall be submitted.															
9.7	Summary of issues raised during public consultation along with action plan to address the same as per MoEF&CC O.M. dated 30/09/2020 <table><thead><tr><th rowspan="2">S.No</th><th rowspan="2">Physical activity and action plan Name of the Physical Activity</th><th colspan="3">Year of implementation (Budget in INR)</th><th rowspan="2">Total Expenditure (Rs. in Crores)</th></tr><tr><th>1st</th><th>2nd</th><th>3rd</th></tr></thead><tbody><tr><td></td><td>Targets</td><td></td><td></td><td></td><td></td></tr></tbody></table>	S.No	Physical activity and action plan Name of the Physical Activity	Year of implementation (Budget in INR)			Total Expenditure (Rs. in Crores)	1st	2nd	3rd		Targets				
S.No	Physical activity and action plan Name of the Physical Activity			Year of implementation (Budget in INR)				Total Expenditure (Rs. in Crores)								
		1st	2nd	3rd												
	Targets															
9.8	Risk assessment • Methodology • Hazard identification • Frequency analysis • Consequence analysis • Risk assessment outcome															
9.9	Emergency response and preparedness plan															

10. Project Benefits

S. No	Terms of Reference
10.1	Environment benefits
10.2	Social infrastructure
10.3	Employment and business opportunity

S. No	Terms of Reference
10.4	Other tangible benefits

11. Environment Cost Benefit Analysis

S. No	Terms of Reference
11.1	Net present value
11.2	Internal rate of return
11.3	Benefit cost ratio
11.4	Cost effectiveness analysis

12. Environment Management Plan (Construction And Operation Phase)

S. No	Terms of Reference
12.1	Air quality management plan
12.2	Noise quality management plan
12.3	Action plan for hazardous waste management
12.4	Action plan for solid waste management
12.5	Action plan for e-waste management.
12.6	Action plan for plastic waste management, considering the Plastic Waste Management Rules 2016.
12.7	Action plan for construction and demolition waste management.
12.8	Effluent management plan
12.9	Storm water management plan
12.10	Rain water harvesting plan
12.11	Plan for maximum usage of waste water/treated water in the Unit
12.12	Occupational health and safety management plan
12.13	Green belt development plan: An action plan for Green Belt development consisting of 3 tiers of plantations of native species all along the periphery of the project of adequate width shall be raised in 33% of total area with a tree density shall not less than 2500 per ha within a time frame of one year shall be submitted. Survival rate of green belt shall be monitored on periodic basis to ensure that survival rate not be less than 80 %.

S. No	Terms of Reference
12.14	Socio-economic management plan
12.15	Wildlife conservation plan (In case of presence of schedule I species)
12.16	Total capital cost and recurring cost/annum for environment pollution control measures shall be included.
12.17	Explore possibilities for recycling and reusing of treated water in the unit to reduce the freshwater demand and waste disposal.
12.18	An Action Plan for improving the house-keeping activities in the raw material handling area need to be submitted
12.19	Action plan for the stock piles with impervious floor, provision of gulland drains and catch pits to trap run off material shall be submitted.
12.20	Action plan to limit the dust emission from all the stacks below 30 mg/Nm ³ shall be furnished.
12.21	Action plan for fugitive emission control in the plant premises shall be provided.

13. Conclusion Of The Eia Study

S. No	Terms of Reference
13.1	No Data Found

14. In Addition To The Above, Any Litigation Pending Against The Project And/or Any Direction/order Passed By Any Court Of Law Against The Project, If So, Details Thereof Shall Also Be Included. Has The Unit Received Any Notice Under The Section 5 Of Environment (Protection) Act, 1986 Or Relevant Sections Of Air And Water Acts? If So, Details Thereof And Compliance/attr To The Notice(s) And Present Status Of The Case.

S. No	Terms of Reference
14.1	No Data Found

15. Air Cooled Condensers Shall Be Used In The Power Plant.

S. No	Terms of Reference
15.1	No Data Found

16. Details Of Dry Ash Handling System Along With Supplementary Coal Handling System Shall Be Submitted.

S. No	Terms of Reference
16.1	No Data Found

17. Plan For Transportation Of Coal Shall Be Submitted.

S. No	Terms of Reference
17.1	No Data Found

18. Plan Along With Technical Details Of Scr Shall Be Submitted.

S. No	Terms of Reference
18.1	No Data Found

19. In Case Of Expansion Project, Status Of Ash Utilization Of Previous Years (Up To 5 Years), Action Plan For 100% Ash Utilization Along With Timeline Need To Be Submitted

S. No	Terms of Reference
19.1	No Data Found

Standard Terms of Reference for (Cement plants)**1.**

S. No	Terms of Reference
1.1	Limestone and coal linkage documents along with the status of environment clearance of limestone and coal mines.
1.2	Quantum of production of coal and limestone from coal & limestone mines and the projects they cater to;
1.3	Present land use shall be prepared based on satellite imagery. High-resolution satellite image data having 1m-5m spatial resolution like quickbird, Ikonos, IRS P-6 pan sharpened etc. for the 10 Km radius area from proposed site. The same shall be used for land use/land-cover mapping of the area.
1.4	If the raw materials used have trace elements, an environment management plan shall also be included.
1.5	Plan for the implementation of the recommendations made for the cement plants in the Corporate Responsibility for Environmental Protection (CREP) guidelines shall be prepared.
1.6	Energy consumption per ton of clinker and cement grinding
1.7	Provision of waste heat recovery boiler
1.8	Arrangement for co-processing of hazardous waste in cement plant.
1.9	Provision of Alternate fuels.

S. No	Terms of Reference
1.10	Details of Implementation of Fly Ash Management Rules
1.11	Emission/Effluent norms as per GSR 496 (E) dated 9/5/2016 [EPA Rules 1986].
1.12	Action plan for the stock piles with impervious floor, provision of garland drains and catch pits to trap run off material shall be submitted.
1.13	Action plan to limit the particulate matter emission from all the stacks below 30 mg/Nm3 shall be furnished.
1.14	PP shall explore the possibility of plastic waste utilization in the Plant/Unit process.
1.15	Action plan for 100 % solid waste utilization shall be submitted.
1.16	PM (PM10 and P2.5) present in the ambient air must be analysed for source analysis – natural dust/RSPM generated from plant operations (trace elements) of PM10 to be carried over.



Digitally Signed by A. Rahul Nadh IAS
Member Secretary, SEIAA

Date: 19/08/2025

Awarded ToRs & their incorporation in EIA Report

1. SEAC Conditions – Site Specific

Sl. No.	Awarded ToR	Incorporation in EIA Report Page No.
1.1	1. The PP should submit the land documents for all the survey numbers proposed.	Doc-3 256-264
	2. The PP should furnish the Fresh water Commitment letter obtained from the competent authority.	To be submitted on receipt
	3. The PP shall provide the details of advanced Air Pollution Technologies adopted for minimizing the pollution load during the submission of EIA report.	117-119 197
	4. The PP shall find the possibility of alternative fuel for the proposed coal usage and detailed plan for phasing out of coal.	113
	5. The PP should furnish the dust control mitigation measures in a detailed manner	116-120
	6. PP shall provide details of Raw material used for cement grinding and its type of storage facilities.	106-109
	7. The PP shall provide details of the traffic study for transportation of materials to the cement plant.	193-195
	8. The PP shall furnish an action plan for achieving carbon neutrality by 2030.	220
	9. The PP shall consider cumulative baseline study to obtain an accurate representation of pollution levels in the study area.	66-68 122, 127
	10. The PP shall furnish a detailed report on the type of cement to be produced, production capacity and the technology to be used.	99-100 109-112
	11. The PP shall furnish a report with a detailed explanation of the production process, from raw material extraction to cement manufacturing and distribution. Here, the PP shall spell out the energy consumption (kw/hr) for each stage of size reduction and processing along with strategies towards the energy saving to reduce the carbon footprint.	This is a Stand Alone Clinker Grinding Unit. 99 105-114
	12. The PP shall furnish a report on the infrastructure (e.g., kilns, mills, silos), utilities (e.g., water, electricity), transportation routes, and storage facilities.	107-109 113-115
	13. Copy of the village map, FMB sketch and "A" register shall be furnished.	58
	14. Detailed Evacuation plan during emergency/natural disaster/untoward accidents shall be submitted.	225-233
	15. The space allotment for solid waste disposal and sewage treatment & grey water treatment plant shall be furnished.	101, 115-116 121
	16. Details of the Solid waste management plan shall be prepared as per solid waste management Rules, 2016 and shall be furnished.	121
	17. Cumulative impacts of the Project considering with other infrastructure developments and industrial parks in the surrounding environment within 5 km & 10 km radius shall be furnished.	188

Sl. No.	Awarded ToR	Incorporation in EIA Report Page No.
	18. The project proponent shall furnish detailed baseline monitoring data with prediction parameters for modelling for the ground water, emission, noise and traffic.	
	19. As per the MoEF&CC Office Memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020, the proponent shall furnish the detailed EMP.	To be complied after Public Hearing 239

2. SEIAA Standard Conditions

Sl. No.	Awarded ToR	Incorporation in EIA Report Page No.
2.1	1. Impacts on Energy requirement.	114
	2. Impacts on living System (air, water ,soil & micro-organisms).	188-211
	3. Impacts on terrestrial & aquatic within and surrounding areas.	188-211
	4. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall furnish the detailed EMP mentioning all the CER activities as committed with the action plan.	To be complied after Public Hearing 239
	5. The proponent shall provide details on the adequate parking facility provided including vehicles of all the workers & visitors and a clean traffic plan.	100-101 103
	6. The project proponent shall furnish the action taken to improve water usage efficiency in the building.	Not Applicable to this Grinding Unit
	7. The project proponent shall conduct detailed study of biodiversity flora & fauna including invasives /endemic vulnerable species.	168 172-179
	8. The project proponent shall furnish NOC obtained from competent authority that there is no encroachment of water bodies (including canals).	To be submitted 104
	9. The project proponent shall conduct detailed soil investigation including microflora/fauna.	166-167
	10. The project proponent shall study impact on livelihoods of locals.	209
	11. The project proponent shall furnish List of trees available in the project area.	191
	12. The project proponent shall study impact of activities on water bodies/wetlands.	207-208
	13. The proponent shall furnish details on the measures taken to make the Buildings energy efficient confirming to green building norms.	Not Applicable to this Grinding Unit
	14. The disaster management and disaster mitigation plan shall be furnished and should be seriously adhered to avoid of calamities.	225-233
	15. The project proponent shall conduct studies on the presence of invasive and alien species around the project the area and shall furnish mitigate measures to prevent their spread.	Nil
	16. The proponent shall furnish details on the actions taken	220

Sl. No.	Awarded ToR	Incorporation in EIA Report Page No.
	to reduce anthropogenic GHGs such as CO ₂ , CH ₄ , nitrous oxide, etc., resulting from human activities.	
	17. The proponent shall furnish details on the strategies adopted to decarbonize the building.	Not Applicable to this Grinding Unit
	18. The proponent shall furnish measures taken to mitigate the impact on critically endangered species, biodiversity, etc., due to the modification of the habitat.	Nil 179
	19. The proponent shall develop emergency response plan in addition to the disaster management plan.	225-233
	20. The proponent shall furnish details on building-friendly pest control strategies developed using non chemical measures so as to control the pest population thereby not losing beneficial organisms.	Not Applicable to this Grinding Unit
	21. The proponent shall furnish details on strategies developed to ensure the buildings in blocks don't trap heat and become local urban heat islands.	Not Applicable to this Grinding Unit
	22. The proponent shall develop detailed evacuation plan for disabled people and safety evacuation plan during emergencies.	225-233
	23. The proponent shall explain the methodology adopted to control thermal Environment and other shocks in the building.	Not Applicable to this Grinding Unit
	24. The proponent shall provide details on the provisions for controlled ventilation and lighting systems.	Not Applicable to this Grinding Unit

Standard Terms of Reference for Industrial Projects-1

Sl. No.	Awarded ToR	Incorporation in EIA Report Page No.
1	Preliminary Requirements	
1.1	EIA/EMP report cover page shall consists of project title with location, applicable schedule of the EIA Notification, 2006, ToR letter No. with date, study period along with EIA consultant & laboratory details with QCI/NABET/NABL accreditation certificate detail.	Complied. Cover Page consists of project title with location, applicable schedule of the EIA Notification, 2006, ToR letter No. with date, study period along with EIA consultant & Laboratory details with QCI/NABET/NABL accreditation certificate detail.
1.2	Besides, following points shall be compiled as per QCI/NABET norms: a. Disclaimer by the EIA consultant. b. Declaration by the Functional Area Experts contributed to the EIA study and declaration by the head of the accredited consultant organization/authorized person.	7 244-245

Sl. No.	Awarded ToR	Incorporation in EIA Report Page No.
	c. Undertaking by the project proponent owning the contents (information and data) of the EIA/EMP report.	9
	d. Undertaking by the EIA consultant regarding compliance of ToR issued by MoEF&CC.	10
	e. Consultant shall submit the Plagiarism Certificate for the EIA/EMP Report.	8
2	Executive Summary	
2.1	Table of Contents of the EIA report including list of tables/figures/ annexures/ abbreviations/symbols/notations.	2-6
2.2	Point wise compliance to the ToR issued by MoEF&CC.	36-52
	Executive Summary	53
2.1	Introduction	53
2.1.1	Name of the project along with applicable schedule and category as per EIA, 2006.	53
2.1.2	Location and accessibility	54
2.2	Project description	61
2.2.1	Resource requirements (Land; water; fuel; manpower)	61-63
2.2.2	Operational activity	63-65
2.2.3	Key pollution concerns	65-66
2.3	Baseline Environment Studies	66
2.3.1	Ambient air quality	68
2.3.2	Ambient Noise quality	69
2.3.3	Traffic study	69
2.3.4	Surface water quality	69
2.3.5	Ground water quality	70
2.3.6	Soil quality	70
2.3.7	Biological Environment	70
2.3.8	Land use	70
2.3.9	Socio-economic environment	71
2.4	Anticipated impacts	71
2.4.1	Impact on ambient air quality	73
2.4.2	Impact on ambient noise quality	73
2.4.3	Impact on road and traffic	74
2.4.4	Impact on surface water resource and quality	74
2.4.5	Impact on ground water resource and quality	74
2.4.6	Impact on terrestrial and aquatic habitat	75
2.4.7	Impact on socio-economic environment	75
2.5	Alternative analysis	76
2.6	Environmental Monitoring program	76
2.6.1	Ambient air, noise, water and soil quality	76
2.6.2	Noise quality management plan	76
2.6.3	Emission and discharge from the plant	76
2.6.4	Green Belt	76
2.6.5	Social Parameters	76
2.7	Additional Studies	77
2.7.1	Risk assessment	77
2.7.2	Public consultation	77
2.7.3	Action plan to address the issues raised during public consultation as per MoEF&CC O.M. dated 30/09/2020	77

Sl. No.	Awarded ToR	Incorporation in EIA Report Page No.
2.8	Project Benefits	77
2.9	Environment Management Plan	77
2.9.1	Air quality management plan	78
2.9.2	Noise quality management plan	79
2.9.3	Solid and hazardous waste management plan	79
2.9.4	Effluent management plan	79
2.9.5	Storm water management plan	79
2.9.6	Occupational health and safety management plan	80
2.9.7	Green belt development plan	79
2.9.8	Socio-economic management plan	80
2.9.9	Project cost and EMP implementation budget	80
3	Introduction	81
3.1	Background about the project	83
3.2	Need of the project	91
3.3	Purpose of the EIA study	81
3.4	Scope of the EIA study	98
4	Project Description	99
4.1	Site Details	83
4.1.1	Location of the project site covering village, Taluka/Tehsil, District and State.	83
4.1.2	Site accessibility	86
4.1.3	A digital toposheet in pdf or shape file compatible to google earth of the study area of radius of 10km and site location preferably on 1:50,000 scale. (including all eco-sensitive areas and environmentally sensitive places).	94
4.1.4	Latest High-resolution satellite image data having 1 m - 5 m spatial resolution like quickbird, Ikonos, IRS P-6 pan sharpened etc., along with delineation of plant boundary co-ordinates. Area must include at least 100 m all around the project location.	88
4.1.5	Environment settings of the site and its surrounding along with map.	91
4.1.6	A list of major industries with name, products and distance from plant site within study area (10km radius) and the location of the industries shall be depicted in the study area map.	96
4.1.7	In case if the project site is in vicinity of the water body, 50 meters from the edge of the water body towards the site shall be treated as no development/construction zone. If it's near the wetland, Guidelines for implementing Wetlands (Conservation and Management) Rules, 2017 may be followed.	Not Applicable 95
4.1.8	In case if the project site is in vicinity of the river, the industry shall not be located within the river flood plain corresponding to one in 25 years flood, as certified by concerned District Magistrate/Executive Engineer from State Water Resources Department (or) any other officer authorized by the State Government for this purpose as per the provisions contained in the MoEF&CC Office Memorandum dated 14/02/2022.	Not Applicable
4.1.9	In case of canal/ nala/ seasonal drain and any other water	Not Applicable

Sl. No.	Awarded ToR	Incorporation in EIA Report Page No.
	body passing through project site, the PP shall submit the suitable steps /conservation plan/mitigation measures along with contouring, Run -off calculations, disposal etc. A robust and full proof Drainage Conservation scheme to protect the natural drainage/water bodies and its flow parameters; along with Soil conservation scheme and multiple Erosion control measures shall be provided in the report.	104
4.1.10	Type of land, land use of the project site needs to be submitted.	86 90
4.1.11	Status of acquisition of land. If acquisition is not complete, stage of the acquisition process as per the MoEF&CC O.M. dated 7/10/2014 shall be furnished.	86
4.1.12	Project proponent shall prepare Engineering layout plan showing all internal roads minimum 6 m width and 9 m turning radius for smooth traffic flow inside including fire tender as per NBC. Road network shall connect all service areas in layout. This drawing shall include area statement showing plot area, area under roads, parking, green belt with calculations and % with respect to plot area of project site and proper indexing. If located within an Industrial area/Estate/Complex, layout of Industrial Area indicating location of unit within the Industrial area/Estate.	100-103
4.1.13	Project proponent shall submit contour map of project site along with drainage disposal system with calculations and drawings supported with proper indexing including Rain Water Harvesting details with calculations mentioning about GW recharge along with relevant drawing.	104-106
4.1.14	A detailed report covering all aspects of Fire Safety Management and Fire Emergency Plan shall be submitted.	232-233
4.1.15	Details of drone survey for the site, needs to be included in report and presented before the EAC during appraisal of the project.	To be submitted at the time of SEAC Meeting.
4.2	Forest and wildlife related issues (if applicable)	Not Applicable
4.2.1	Status of Forest Clearance for the use of forest land shall be submitted.	Not Applicable
4.2.2	Copy of application submitted for clearance under the Wildlife (Protection) Act, 1972, to the Standing Committee of the National Board for Wildlife if the project site located within notified Eco-Sensitive Zone, 10 km radius of national park/sanctuary wherein final ESZ notification is not in place as per MoEF&CC Office Memorandum dated 8/8/2019.	Not Applicable
4.2.3	The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, Eco-sensitive Zone and Eco-sensitive areas, the project proponent shall submit the map duly authenticated by Divisional Forest Officer showing the distance between the project site and the said areas.	Not Applicable
4.2.4	Wildlife Conservation Plan duly authenticated by the Competent Authority of the State Government for conservation of Schedule I fauna along with budget and	Not Applicable No Schedule-I Fauna noticed

Sl. No.	Awarded ToR	Incorporation in EIA Report Page No.
	action plan, if any exists in the study area.	
4.3	Salient features of the project	99
4.3.1	Products with capacities in Tons per Annum for the proposed project.	100
4.3.2	If expansion project, status of implementation of existing project, details of existing/proposed products with production capacities in Tons per Annum.	Not Applicable
4.3.3	Site preparatory activities.	100
4.3.4	List of raw materials required and their source along with mode of transportation.	106-107
4.3.5	Other than raw materials, other chemicals and materials required with quantities and storage capacities.	107-109
4.3.6	Manufacturing process details along with process flow diagram of proposed units.	109-112
4.3.7	Consolidated materials and energy balance for the project.	113-114
4.3.8	Total requirement of surface/ ground water and power with their respective sources, status of approval.	113-116
4.3.9	Water balance diagram	116
4.3.10	Details of Emission, effluents, hazardous waste generation and mode of disposal during construction as well as operation phase.	71-76 116-121
4.3.11	Man-power requirement.	96
4.3.12	Cost of project and scheduled time of completion.	97
4.3.13	In case of expansion projects, project proponent shall submit structural stability certificate showing whether existing structure withstand for proposed expansion activity.	Not Applicable
4.3.14	Brief on present status of compliance (Expansion/modernization proposals) a. Cumulative Environment Impact Assessment for the existing as well as the proposed expansion/modernization shall be carried out. b. Cumulative Impact Assessment need to be carried out by greenfield projects considering the nearby industries. c. In case of ground water drawl for the existing unit, action plan for phasing out of ground water abstraction in next two years except for domestic purposes and shall switch over to 100 % use of surface water from nearby source. d. Copy of all the Environment Clearance(s) including Amendments/validity of extension/transfer of EC, there to obtained for the project from MoEF&CC/SEIAA shall be attached as Annexures. A Certified Compliance Report (CCR) of the Integrated Regional Office of the Ministry of Environment, Forest and Climate Change/ or concerned authority as per OM No. IA3-22/10/2022-IA.III [E 1772581], dated 8th June, 2022 on the status of compliance of conditions stipulated in all the existing environment clearances including amendments shall be provided. A Certified Compliance Report (CCR) issued by the concerned Authority shall be valid for a period of one year from the date of inspection.	Not Applicable

Sl. No.	Awarded ToR	Incorporation in EIA Report Page No.
	e. In case the existing project has not obtained Environment Clearance, reasons for not taking EC under the provisions of the EIA Notification 1994 and/or EIA Notification 2006 shall be provided. A proper justification needs to be submitted along with documentary proof. Copies of Consent to Establish/No Objection Certificate and Consent to Operate (in case of units operating prior to EIA Notification 1994 or 2006, CTE and CTO of FY 2005-2006) obtained from the SPCB shall be submitted. Further, compliance report to the conditions of CTO from the Regional Office of the SPCB shall be submitted, as per OM No. IA3-22/10/2022-IA.III [E 1772581], dated 8th June, 2022. CCR on CTO conditions issued by the concerned SPCBs/PCCs shall be valid for a period of one year from the date of inspection of the project.	

5	Description of the Environment	122																	
5.1	Study period	Premonsoon (Jun.-Aug. 2025) -																	
5.2	Approach and methodology for data collection as furnished below :127, 131-134																		
	<table><tr><th rowspan="2">Attributes</th><th colspan="2">Sampling</th><th rowspan="2">Remarks</th><th rowspan="2">Compliance</th></tr><tr><th>Network</th><th>Frequency</th></tr><tr><td>Air Environment Micro-Meteorological • Wind speed (Hourly) • Wind direction • Dry bulb temperature • Wet bulb temperature • Relative humidity • Rainfall • Solar radiation • Cloud cover • Environmental • Lapse Rate</td><td>Minimum 1 site in the project impact Area</td><td>hourly continuous</td><td>IS 5182 Part 1-20 • Site specific primary data is Essential. • Secondary data from IMD, New Delhi • CPCB guidelines to be considered.</td><td>136-140</td></tr><tr><td>Pollutants • PM10 • SO2 • NOx • CO • HC • Other parameters relevant to the project and topography of the area</td><td>At least 8-12 locations 8-Locations</td><td>As per National Ambient Air Quality Standards, CPCB Notification. 3 months in the Season</td><td>• Collection of AAQ data (except in monsoon season) • Locations of various stations for different parameters should be related to the characteristic properties of the parameters • The monitoring stations shall be based on the NAAQM standards as per GSR 826(E) dated 16/11/2009 and take into account the predominant wind direction, population zone and sensitive receptors</td><td>141-153</td></tr></table>	Attributes	Sampling		Remarks	Compliance	Network	Frequency	Air Environment Micro-Meteorological • Wind speed (Hourly) • Wind direction • Dry bulb temperature • Wet bulb temperature • Relative humidity • Rainfall • Solar radiation • Cloud cover • Environmental • Lapse Rate	Minimum 1 site in the project impact Area	hourly continuous	IS 5182 Part 1-20 • Site specific primary data is Essential. • Secondary data from IMD, New Delhi • CPCB guidelines to be considered.	136-140	Pollutants • PM10 • SO2 • NOx • CO • HC • Other parameters relevant to the project and topography of the area	At least 8-12 locations 8-Locations	As per National Ambient Air Quality Standards, CPCB Notification. 3 months in the Season	• Collection of AAQ data (except in monsoon season) • Locations of various stations for different parameters should be related to the characteristic properties of the parameters • The monitoring stations shall be based on the NAAQM standards as per GSR 826(E) dated 16/11/2009 and take into account the predominant wind direction, population zone and sensitive receptors	141-153	
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				including reserved forests, •Raw data of all AAQ measurement or 12 weeks of all stations as per frequency given in the NAAQM Notification of 16/11/2009 along with min., max., average and 98% values for each of the AAQ parameters from data of all AAQ stations should be provided as an annexure to the EIA Report.	
Noise Hourly equivalent noise levels	At least 8-12 locations 8 Locations	Once in the Season	As per CPCB norms	154-156	
Water Parameters for water quality •pH, temp, turbidity, magnesium hardness, total alkalinity, chloride, sulphate, nitrate, fluoride, sodium, potassium, salinity •Total nitrogen, total phosphorus, DO, BOD, COD, Phenol •Heavy metals •Total coliforms, faecal coliforms •Phyto plankton •Zoo plankton	8 Locations	Once in the Season	Samples for water quality should be collected and analyzed as per: •IS: 2488 (Part 1-5) methods for sampling and testing of Industrial effluents •Standard methods for examination of water and wastewater analysis published by American Public Health Association	160-166	
For River Bodies •Total Carbon •pH •Dissolved Oxygen •Biological Oxygen Demand •Free NH4 •Boron •Sodium Absorption Ratio •Electrical Conductivity	Surface water quality of the nearest River (60m upstream and downstream) and other surface water bodies	-	•Yield of water sources to be measured during critical season •Standard methodology for collection of surface water (BIS standards)	Not Applicable	
For Ground Water	8 Locations	Once in the Season	Ground water monitoring data should be collected at minimum of 8 locations (from existing wells /tube wells/ existing current records) from the study area and shall be	164-165	

	Traffic Study	Type of vehicles	• Frequency of vehicles for transportation of materials • Additional traffic due to proposed project	included. As per IRC Norms	193-196
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	Biological Environment 1. Aquatic • Primary productivity • Aquatic weeds • Enumeration of phytoplankton, zoo plankton and benthos • Fisheries Diversity indices • Trophic levels • Rare and endangered species • Marine Parks/ Sanctuaries/ closed areas /coastal regulation zone (CRZ) 2. Terrestrial • Vegetation-species list, economic importance, forest produce, medicinal value • Importance value index (IVI) of trees • Fauna • Avi fauna	10 Locations	Once in the Season	• Detailed description of flora and fauna (terrestrial and aquatic) existing in the study area shall be given with special reference to rare, endemic and endangered species. Indicator species which indicate ecological and environment degradation should be identified and included to clearly state whether the proposed project would result in to any adverse effect on any species. • Samples to collect from upstream and downstream of	168 172-179

	• Rare and endangered species Sanctuaries / National park / Biosphere reserve • Migratory routes			discharge point, nearby tributaries at downstream, and also from dug wells close to activity site. • For forest studies, direction of wind should be considered while selecting forests. • Secondary data to collect from Government offices, NGOs, published literature.	
	Socio-economic Demographic structure • Infrastructure resource base • Economic resource base • Health status: Morbidity pattern • Cultural and aesthetic attributes. • Education	Study Area of 10 km Radius	Once in the Season & Census 2011	Socio-economic survey is based on proportionate, stratified and random sampling method. • Primary data collection through questionnaire • Secondary data from census records, statistical hard books, toposheets, health records and relevant official records available with Govt. agencies	180-187
5.3	Interpretation of each environment attribute shall be enumerated and summarized as given below: • Ambient air quality • Ambient Noise quality • Surface water quality • Ground water quality • Soil quality • Biological Environment • Land use • Socio-economic environment			187	
5.4	The PP should submit the photograph of monitoring stations & sampling locations. The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyze the samples.			Complied 128-130	

Sl. No.	Awarded ToR	Incorporation in EIA Report Page No.												
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Activity	Environment	Ecological	Socio-economic											
Construction phase														
Operation phase														
6.2	Impact on ambient air quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase •Details of stack emissions from the existing as well as proposed activity. •Assessment of ground level concentration of pollutants from the stack emission based on AQIP Modelling The air quality contours shall be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any along with wind rose map for respective period •Impact on ground level concentration, under normal, abnormal and emergency conditions. Measures to handle emergency situations in the event of uncontrolled release of emissions.	190 196 197 197-206 206												
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Sl. No.	Awarded ToR	Incorporation in EIA Report Page No.																		
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8.4	Action plan for post-project environment monitoring matrix: <table><tr><th>Activity</th><th>Aspect</th><th>Monitoring Parameter</th><th>Location</th><th>Frequency</th><th>Responsibility</th></tr><tr><td>Construction phase</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Operation phase</td><td></td><td></td><td></td><td></td><td></td></tr></table>	Activity	Aspect	Monitoring Parameter	Location	Frequency	Responsibility	Construction phase						Operation phase						218-219
Activity	Aspect	Monitoring Parameter	Location	Frequency	Responsibility															
Construction phase																				
Operation phase																				

Sl. No.	Awarded ToR	Incorporation in EIA Report Page No.																										
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9.1	Project proponent shall submit a study report on Decarbonisation program, which would essentially consist of company’s carbon emissions, carbon budgeting/ balancing, carbon sequestration activities and carbon capture, use and storage after offsetting strategies. Further, the report shall also contain time bound action plan to reduce its carbon intensity of its operations and supply chains, energy transition pathway from fossil fuels to Renewable energy etc. All these activities/ assessments should be measurable and monitorable with defined time frames.	220																										
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9.5	Public consultation details (Entire proceedings as separate annexure along with authenticated English Translation of Public Consultation proceedings).	To be complied after Public Hearing.																										
9.6	As part of Corporate Environment Responsibility (CER) activity, company shall adopt nearby villages based on the socio-economic survey and undertake community developmental activities in consultation with the village Panchayat and the District Administration. In this regard, time bound action plan as per the MoEF&CC Office Memorandum dated 30/09/2020 shall be submitted.	To be complied after Public Hearing.																										
9.7	Summary of issues raised during public consultation along with action plan to address the same as per MoEF&CC O.M. dated 30/09/2020 <table border="1"><thead><tr><th rowspan="2">Sl. No.</th><th colspan="2">Physical activity and action plan</th><th colspan="3">Year of implementation (Budget in INR)</th><th rowspan="2">Total Expenditure (Rs. in Crores)</th></tr><tr><th>Name of the Activity</th><th>Physical Targets</th><th>1st</th><th>2nd</th><th>3rd</th></tr></thead><tbody><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table>	Sl. No.	Physical activity and action plan		Year of implementation (Budget in INR)			Total Expenditure (Rs. in Crores)	Name of the Activity	Physical Targets	1st	2nd	3rd															To be complied after Public Hearing.
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	Name of the Activity	Physical Targets	1st	2nd	3rd																							
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Sl. No.	Awarded ToR	Incorporation in EIA Report Page No.
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11.3	Benefit cost ratio	NA
11.4	Cost effectiveness analysis	NA
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12.12	Occupational health and safety management plan	238
12.13	Green belt development plan: An action plan for Green Belt development consisting of 3 tiers of plantations of native species all along the periphery of the project of adequate width shall be raised in 33% of total area with a tree density shall not less than 2500 per ha within a time frame of one year shall be submitted. Survival rate of green belt shall be monitored on periodic basis to ensure that survival rate not be less than 80 %.	238 103
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12.15	Wildlife conservation plan (In case of presence of schedule I species)	Not Applicable
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12.17	Explore possibilities for recycling and reusing of treated water in the unit to reduce the freshwater demand and waste disposal.	115 116
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Sl. No.	Awarded ToR	Incorporation in EIA Report Page No.
	of garland drains and catch pits to trap run off material shall be submitted.	
12.20	Action plan to limit the dust emission from all the stacks below 30 mg/Nm ³ shall be furnished.	116-117
12.21	Action plan for fugitive emission control in the plant premises shall be provided.	117-120
13	Conclusion of The EIA Study	240-242
14	In Addition To The Above, Any Litigation Pending Against The Project And/or Any Direction/order Passed By Any Court Of Law Against The Project, If So, Details Thereof Shall Also Be Included. Has The Unit Received Any Notice Under The Section 5 Of Environment (Protection) Act, 1986 Or Relevant Sections Of Air And Water Acts? If So, Details Thereof And Compliance/ATR to The Notice(s) And Present Status Of The Case.	Nil 54
15	Air Cooled Condensers shall be used In the Power Plant	Not Applicable
16	Details of Dry Ash Handling System along with Supplementary Coal Handling System shall be submitted	Not Applicable
17	Plan for Transportation of Coal shall be submitted	Not Applicable
18	Plan along with Technical Details of SCR shall be submitted	Not Applicable
19	In case of Expansion Project, status of ash utilization of previous years (up to 5 years), action plan for 100% ash utilization along with timeline need to be submitted	Not Applicable

Standard Terms of Reference for Cement Plants

Sl. No.	Awarded ToR	Incorporation in EIA Report Page No.
1.1	Limestone and coal linkage documents along with the status of environment clearance of limestone and coal mines.	NA for this GU 107
1.2	Quantum of production of coal and limestone from coal & limestone mines and the projects they cater to;	Not Applicable
1.3	Present land use shall be prepared based on satellite imagery. High-resolution satellite image data having 1m-5m spatial resolution like quickbird, Ikonos, IRS P-6 pan sharpened etc. for the 10 Km radius area from proposed site. The same shall be used for land used/land-cover mapping of the area.	168 169-170
1.4	If the raw materials used have trace elements, an environment management plan shall also be included.	Nil 167
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1.7	Provision of waste heat recovery boiler	Not Applicable 212
1.8	Arrangement for co-processing of hazardous waste in cement plant.	Not Applicable
1.9	Provision of Alternate fuels.	Not Applicable
1.10	Details of Implementation of Fly Ash Management Rules	Not Applicable
1.11	Emission/Effluent norms as per GSR 496 (E) dated 9/5/2016 [EPA Rules 1986].	Not Applicable 115-116

Sl. No.	Awarded ToR	Incorporation in EIA Report Page No.
1.12	Action plan to limit the particulate matter emission from all the stacks below 30 mg/Nm ³ shall be furnished.	118
1.13	PP shall explore the possibility of plastic waste utilization in the Plant/Unit process.	Not Applicable 212
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1.15	PM (PM10 and P2.5) present in the ambient air must be analysed for source analysis – natural dust/RSPM generated from plant operations (trace elements) of PM10 to be carried over.	154

Executive Summary

1.0 Introduction

1.1 Name of the Project, Applicable Schedule & Category as per EIA, 2006

M/s. Shree Cement Limited (SCL) are one of the largest Cement manufacturers in India. SCL's Cement and Clinker manufacturing facilities are located at Beawar, Ras & Nawalgarh in Rajasthan, Balodabazar-Bhatapara in Chhattisgarh, Sedam in Karnataka, Guntur in Andhra Pradesh and Ras Al Khaimah (RAK) in United Arab Emirates (UAE). It has split grinding units at twelve locations Pan-India. Presently, the cement production capacity of SCL Group stands at 62.8 Million Tonnes per Annum (MTPA). The communication addresses are :

Registered Office : M/s. Shree Cement Limited, Bangur Nagar, Masuda Road, Andheri Deori, Beawar (Erstwhile Ajmer), Rajasthan – 305901 Phone: (+91)1462-228101-06 Fax: (+91)1462-228117/228119	Corporate Office : M/s. Shree Cement Limited, DLF Epitome, Building No 5, Tower B, 9th Floor Cyber City, DLF Phase 2, Sector-24, Gurugram, Haryana – 122002. Contact Mobile No. : +91 9773350412 Email : sunil.deshmukh@shreecement.com
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The cement demand is steadily increasing in northern Districts of Tamil Nadu including Chennai and Southern Districts of nearby Andhra Pradesh State due to infrastructure development activities. Thus, SCL is proposing its Tiruttani Clinker Grinding Unit (TCGU) at Tiruttani near the Raw Material sources at Chennai and Marketing Centres.

After the Tamil Nadu Global Investors Meet in 2024, a Memorandum of Understanding (**MoU**) has been signed on 08.01.2024 between **GUIDANCE**, a nodal Agency of Government of Tamil Nadu and SCL for establishing the Cement Grinding Unit at Tiruttani in two Phases. In the first Phase, SCL TCGU is proposed with a Cement production capacity of **3.50 Million Tonnes per Annum (MTPA)** (OPC/PPC/PSC/RHPC/SRC/CC- Composite Cement) along with Railway Siding and DG Sets for total capacity of 1250 KVA (1000 KVA or 2x500 KVA & 1x250 KVA) for standby operations. Project Cost of Rs. 838 Crores.

The identified Site is over an extent of **19.58 Ha** with 14.848 Ha of SCL's own Land and 4.735 Ha is Govt. Poramboke Land (on exchange for SCL's nearby lands). The entire land is located outside Tiruttani Municipal Limit in Tiruttani Village, Devasenapuram Village & Valliammapuram Villages, Karthikeyapuram Panchayat, in Tiruttani Taluk, Tiruvallur District of Tamil Nadu.

The Stand Alone Grinding Unit falls under Sl. No. 3(b) & Category 'B' with non-applicability of General Conditions of EIA Notification 2006 (as amended thereof) and requires Prior Environmental Clearance (EC) from the State Environment Impact Assessment Authority-Tamil Nadu (SEIAA-TN).

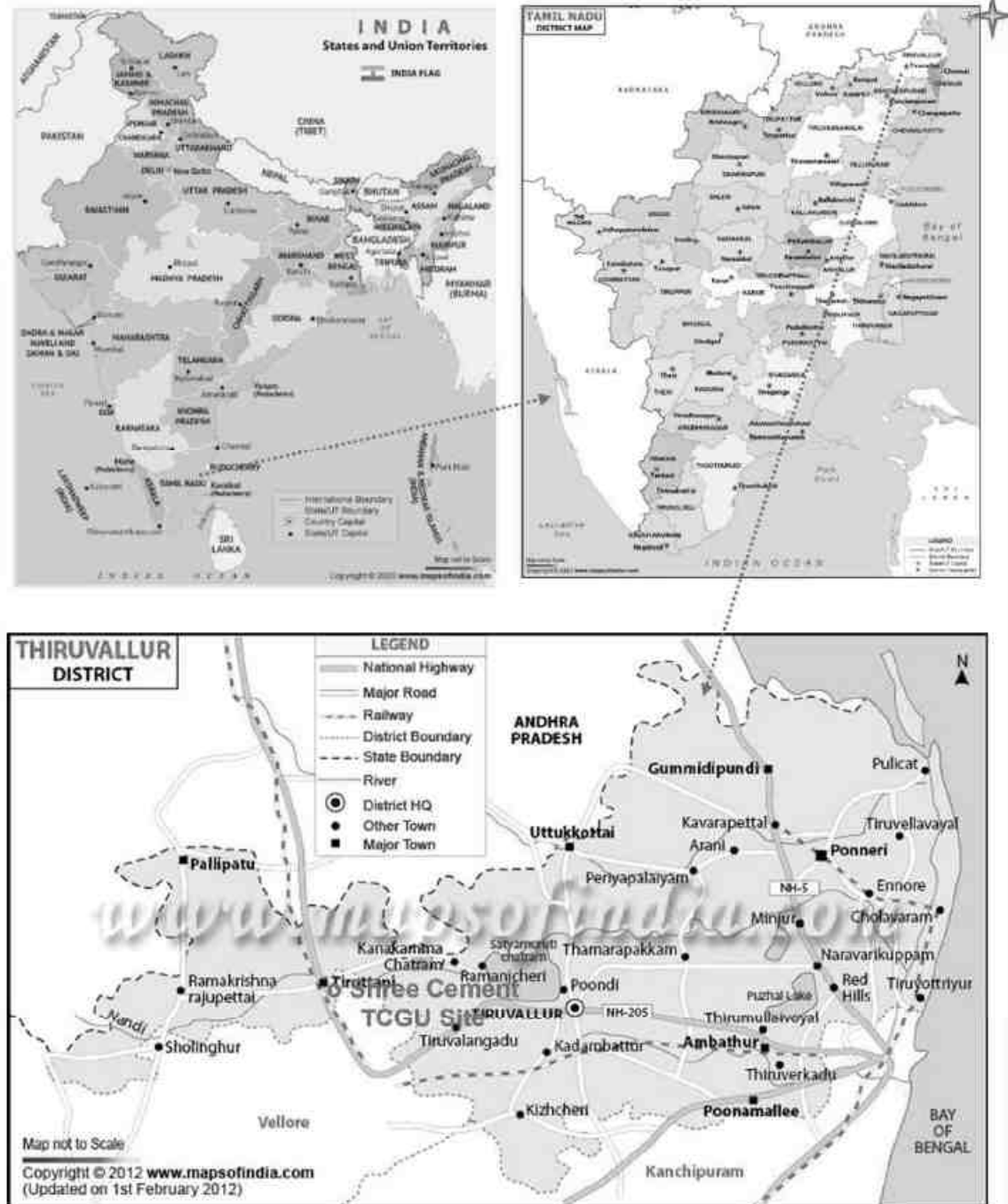
Location : SCL has proposed TCGU over an extent of **19.58 Ha**, **outside Tiruttani Municipal Limit**, in SF Nos. 329/2, 329/3, 329/4, 329/5, 329/6pt, 329/9, 329/10, 329/11A1pt, 329/11A2B, 330/2pt, 330/3, 330/4A, 330/4B, 330/4C, 330/4Dpt, 330/4Ept, 330/5, 330/6, 330/7, 330/8, 330/9, 330/10 of **Tiruttani Village**, 372/3Cpt, 372/4A, 372/4B, 374/2Apt, 374/3B2pt, 374/3Cpt, 374/3D, 374/3E, 374/3F1, 374/3F2, 374/3Gpt, 374/3Hpt, 374/4A1pt, 374/4A2pt, 374/5, 374/6, 374/7, 374/8pt, 374/9pt, 374/10, 374/11pt, 374/12, 374/15B1, 374/15B2, 378/10, 378/11, 378/12, 378/13, 378/15, 379/18, 379/19, 379/20, 379/7B, 379/11B, 383/5, 383/6, 383/7A, 383/7B, 383/7C, 383/8A, 383/8B, 383/8C of **Devasenapuram Village** & 423/3pt, 423/4pt, 424/1, 424/2, 424/3A, 424/3B, 424/3C, 424/4, 424/5, 425pt, 426pt of **Valliammapuram Village**, Karthikeyapuram Panchayat, Tiruttani Taluk, Tiruvallur District, Tamil Nadu (**Fig. 1.1**). Site in FMB Sketch is given as **Plate I**. About 14.848 Ha is SCL's own Patta Lands and 4.735 Ha is Govt. Poramboke Land (SF Nos. 2 & 4 in Tiruttani Village - Dug wells and Rock-0.2914 Ha & SF No. 425 pt in Valliammapuram Village - Maichal land-4.4435 Ha). SCL owns additional lands over an extent of 6.4831 Ha near the Site and offered to exchange them for Govt. Poramboke Land of 4.735 Ha suitably as required by the State Government. Site Regional Setting is shown in **Plate II**. Site in Google Earth Image is shown in **Plate III**. Site Photographs are shown in **Plate IV**.

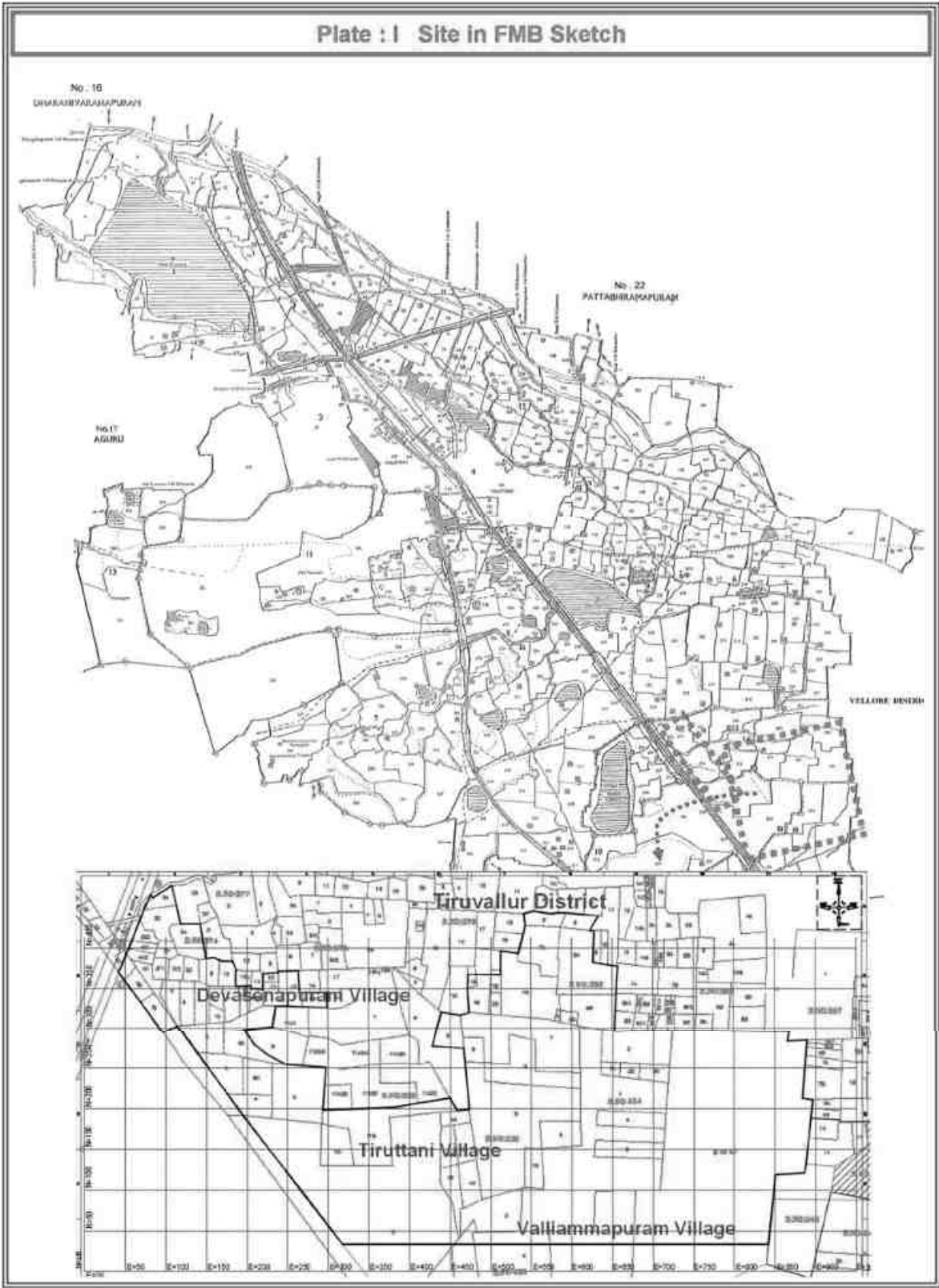
The Site falls in Survey of India Topo Sheet No. 57 O/12 (Open Series Map D44N12). Study Area of 10 km Radius falls in Topo Sheets No. 57 O/11 & 57 O/12 (**Fig. 1.2**). Site falls within the Coordinates 13°9'36.54" to 13°9'51.65" North Latitude & 79°37'29.42" to 79°37'56.66" East Longitude. There are **no Eco Sensitive Areas** like National Parks, Wildlife Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar Sites, Tiger/Elephant Reserves, etc. (existing as well as proposed), within 10 km from the Site. There are two Reserved Forests (RFs) viz. **Kolattur RF** @ 8.5 km in SE direction & **Ammanur RF** near Arakkonam @ 8.0 in SSE direction. The shortest Tamil Nadu-Andhra Pradesh State Border is at 10.1 km in northeast. **Arulmighu Sri Subramaniaswamy Temple-Tiruttani**, a Hindu Pilgrimage Centre, is at 2.4 km in northwest. INS-Rajali Defence Air Strip, Arakkonam is at 11.4 km in SSE direction. The seasonal Nandi River flows at 1.3 km in north and confluences into Nagari River in northeast. There are dugwells and rainfed irrigation Tanks in the Study Area. There is **no nalla crossing** at the Site.

Accessibility : Site is accessible from **Tiruttani Bypass** connecting NH-716 (Chennai-Tirupati Section) and is connected to SH-58 Tiruttani-Arakkonam-Kancheepuram Section). Site is well connected by Road and Rail networks (Southern Railway BG Line of Chengalpattu-Kancheepuram-Arakkonam-Tiruttani-Renigunta Section). Southern Railway BG Line runs adjacent to the Site. Railway Sidings are proposed from Icchiputhur Railway Station (3 km in south)/Tiruttani Railway Station (2 km in NW). Arakkonam Railway Junction is at 9.3 km in SSE direction. District Head Quarters Tiruvallur is at 28 km in the east and State Head Quarters Chennai is at 55 km in the east.

There is **no Rehabilitation & Resettlement (R&R)** issue due to the Proposal. Also, there is **no Litigation/Pending Case** against the Proposal.

Fig. : 1.1 Index Map







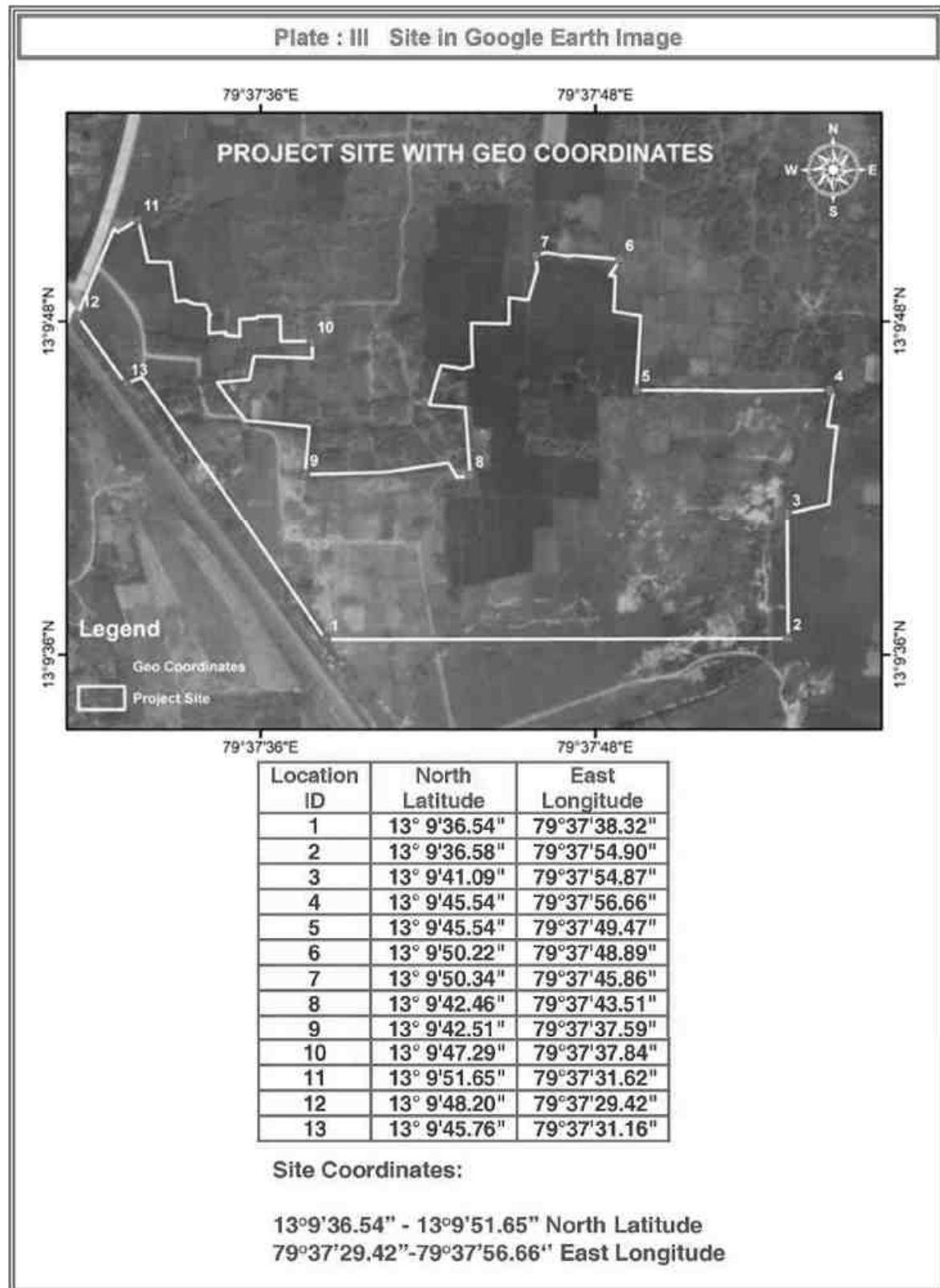


Plate : IV Site Photographs





Tiruttani Municipality Limit with a Population of 44,781 Persons is at 0.4 km in the west (aerial distance). Kilandur with a Population of 2,945 is at 0.7 km (NNE). There are **no major industry** in the Study Area.

The Stand Alone Grinding Unit falls under Sl. No. 3(b) & Category 'B' with non-applicability of General Conditions of EIA Notification 2006 (as amended thereof) and requires Prior Environmental Clearance (EC) from State State Environment Impact Assessment Authority-Tamil Nadu (SEIAA-TN). Accordingly, TOR Application was submitted by SCL vide Parivesh Online proposal No. **SI/TN/IND1/542782/2025 on 25.06.2025**. After paying Online Scrutiny Fees, the File has been accepted by SEIAA on 27.06.2025 under File No. 12367.

The Proposal was deliberated by the State Expert Appraisal Committee (SEAC)-Tamil Nadu in its 595th Meeting held on 21.07.2025 and SEIAA-TN in its 868th Meeting held on 08.08.2025. TOR has been awarded vide Identification No. TO25B1103TN5124110N dated 19.08.2025 with Public Hearing.

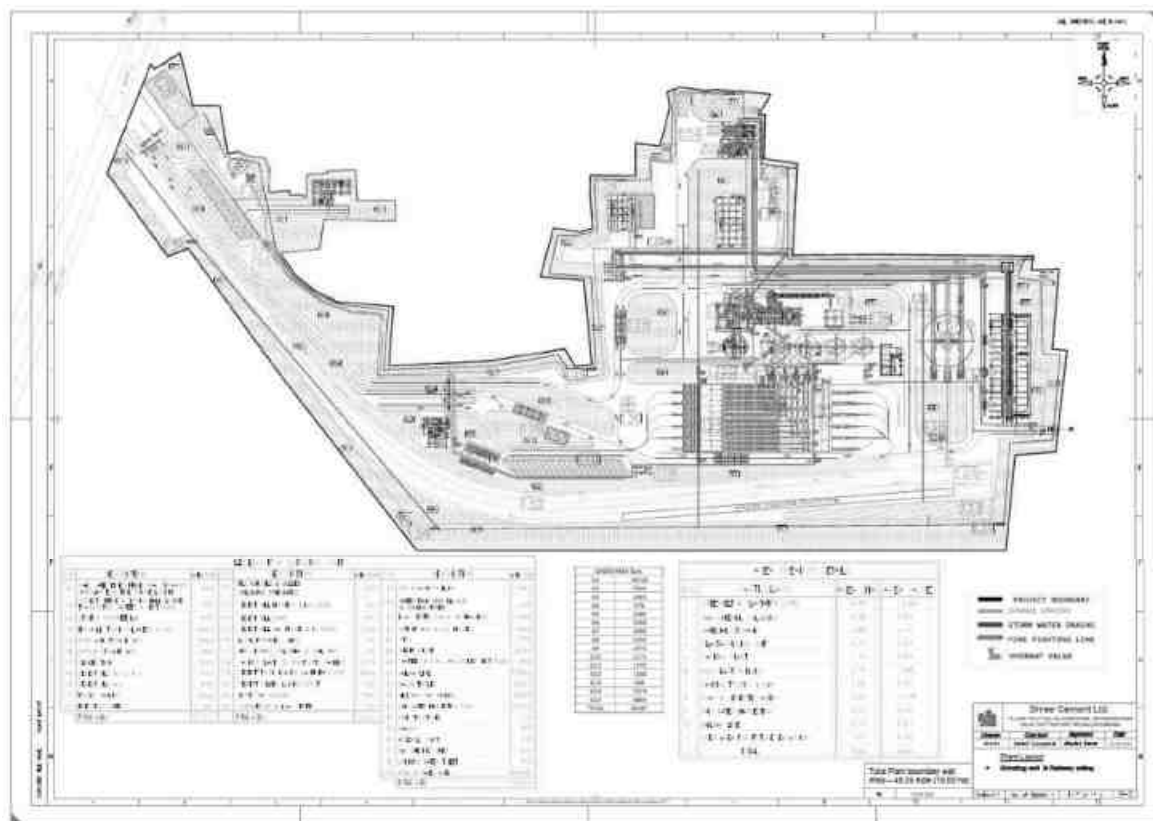
The EIA Consultant, M/s. ABC Techno Labs India Private Limited, Chennai has been accredited for various Sectors including Sector-9 (Cement Plants) for Category 'A' by NABET vide Certificate NABET/EIA/2225/RA0290 dated 11.06.2023 with validity till 16.11.2025 (Sl. No. 4 of the List) which will be extended by NABET periodically. 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. Baseline Data (BLD) was collected during Jun.-Aug. 2025 (Premonsoon Season) for the EIA Study as the area experiences NE Monsoon during Oct.-Dec. months.

The Draft Environmental Impact Assessment (Draft EIA) Report has been prepared in compliance with **Awarded Standard TORs & Specific TORs** for Cement Plants and also as per the generic structure proposed in Appendix III of EIA Notification 2006. The Draft EIA along with Summary EIA Reports (both in English & Tamil Languages) are submitted for the Public Consultation & Public Hearing.

2.0 Project Description

2.1 Resource Requirements

Land : The identified Site is over an extent of 19.58 Ha. The emphasis has been given for an optimum Layout (**Fig. 2.1**). Greenbelt, preferably native Tree species, will be developed in 3-Tiers along the boundaries as well as inside the Plant over an extent of **6.46 Ha** (33% coverage) @ **1,500 trees/Ha**, thus a total of **9,690 Trees** with about **90% Survival Rate**. **All internal roads** are designed for minimum **6 m width and 9 m turning radius** for smooth traffic flow inside the Unit including fire tender, as per NBC Norms.

Fig. : 2.1 Proposed Layout

Water : As this is only a grinding unit, water is mainly required for equipment cooling (100 KLD in addition to 3 KLD RO Rejects), domestic consumption (15 KLD) and Green Belt (5 KLD). Total fresh water requirement for the Grinding Unit will be **120 KLD**. With recycled water, total Water Demand will be 134 KLD. The area falls in '**Semi Critical Area**' and Ground Water drawl for industrial purpose is permitted with Rain Water Harvesting measures. Existing Dugwells and Borewells at the Site will be the source for initial Phase. Required **NOC** will be obtained from State PWD and submitted. Surface water from an intake well in Nandi River will also be explored after obtaining prior permission from PWD. Desalination Plant supply will also be utilised.

Fuel : A small quantity of coal (0.015 MTPA) is required for HAG operation to remove the moisture from the raw material. **Coal having Sulphur content <0.5%** will be utilised. Further, **Dolochar @ 25 TPD and Biomass @ 25 TPD** will also be utilised **as alternatives for Coal**. HSD @ 300 LPD will be utilised for standby DG Set operations.

Power : Total power requirement will be around 22 MW which will be sourced from TN State Electricity Grid and DG Sets for back-up. Energy consumption per ton of cement will be 28 Kwh (PPC) to 51 KWh (PSC). Solar Street Lights, LED Bulbs utilisation & Energy Management System will be in place. SCL plans to have a 10 MWp Solar Plant nearby in future.

Manpower : The Project will give Direct Employment to 50 persons and Indirect Employment to 200 persons, thus, total **250 employment during Construction Phase**. Local labourers will be pooled for the Construction. The Project will give Direct Employment to 50 persons and Indirect / Contract Employment to 150 persons, thus, total **200 employment during Operation Phase**. Local people will be given preference for Contractual Works

Construction period of **24 months** from the date of signing/ effectiveness of the contract is foreseen for the project.

2.2 Operational Activity

SCL TCGU will be with a **cement grinding capacity of 3.5 MTPA @ 10,500 TPD** of various Cements viz. Ordinary Portland Cement (OPC), Pozzolana Portland Cement (PPC), Portland Slag Cement (PSC), Rapid Hardening Portland Cement (RHPC), Sulphate Resistant Cement (SRC), Composite Cement (CC) etc. along with Railway Siding and DG Sets for standby operations of total capacity of 1250 KVA (1000 KVA or 2x500 KVA & 1x250 KVA) (**Table 2.1**).

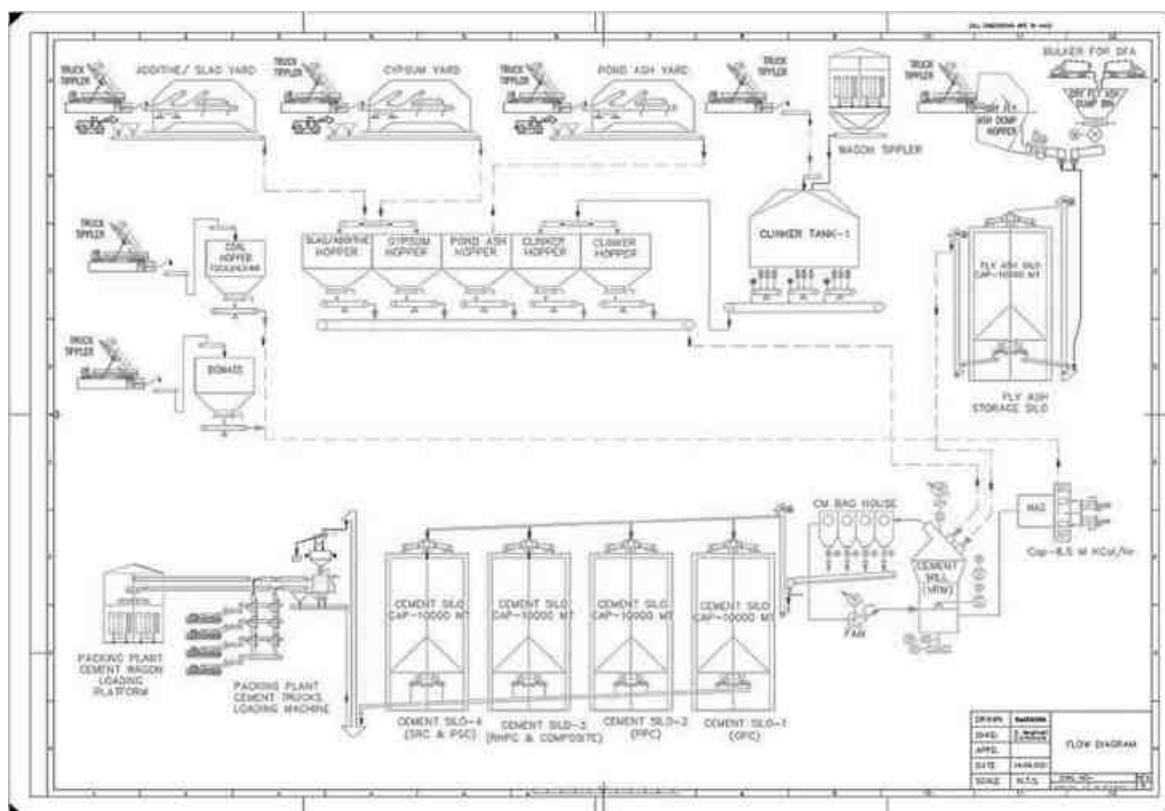
Table : 2.1 SCL TCGU – Plant Configuration

Project Component	Capacity
Cement Grinding (OPC, PPC, PSC, RHPC, SRC and Composite Cement)	3.5 MTPA
DG Sets for Standby Operations	1250 KVA [1000 KVA or (2 x 500 KVA) & 250 KVA]
Railway Siding for Raw Material & finished Product Transportation	Part of Project

There will be **no Clinker manufacturing in this Grinding Unit**. Main process of manufacturing of Cement involves **inter-grinding of Clinker** (received from SCL Cement Plants), **Gypsum and other Pozzolana materials** in the specified ratio in a Cement Mill for Packing and Dispatch it to the local market. Major steps involved in the process of Clinker Grinding Unit are given as below:

- ❖ Clinker storage & handling.
- ❖ Gypsum storage & handling.
- ❖ Fly Ash, Pond Ash and slag storage, handling and drying with Hot Air Generator.
- ❖ Coal, Dolochar & Biomass storage, grinding & handling.
- ❖ Cement production and storage.
- ❖ Cement packing and dispatch.

Clinker will be transported from SCL sister Plants at Guntur in Andhra Pradesh, Kodla in Karnataka & Balodabazar (Chhattisgarh) by Railway Wagons and as well as through roads. Fly Ash will be sourced from Thermal Power Plants in Chennai. The general Process Flow Chart is given as **Plate V**.

Plate : V Process Flow Chart

The sources of raw materials i.e. Clinker; Fly ash, Gypsum & Slag and their approximate distances with mode of transportation from proposed project site separately for OPC, PPC, PSC, RHPC, SRC & Composite Cement are given in **Table 2.2**.

Table : 2.2 Raw Materials Quantity, Source & Mode of Transportation

Raw Material	Requirement, MTPA				Source	Road Distance & Mode of Transportation
	OPC/ RHPC/ SRC	PPC	PSC	CC		
Clinker	3.255	2.03	1.33	1.33	SCL's Plant in Karnataka, Andhra Pradesh and Chhattisgarh	By Road & Rail Karnataka-660 km, Andhra Pradesh-447 km & Chhattisgarh-1267 km
Gypsum	0.245	0.245	0.245	0.245	Chemical Gypsum (Vizag); Synthetic Gypsum from sister unit of SCL at Kodla (Karnataka), Imported Gypsum from Iran via Ennore Port	By Road & Rail Vizag, A.P-800 km Karnataka-660 km Ennore Port- 80 km

Raw Material	Requirement, MTPA				Source	Road Distance & Mode of Transportation
	OPC/ RHPC/ SRC	PPC	PSC	CC		
Fly ash	-	1.225	-	1.225	NTPC and nearby Thermal power plants	By Road & Rail 80 km
Slag	-	-	1.925	0.7	Salem & Vizag Steel,	By Road & Rail: 275 – 300 Km & 800 km – 850 Km
Total	3.50	3.50	3.50	3.50	-	-

*Cement production will be done 3.5 Million TPA only either from various options as OPC, RHPC, SRC, PPC, PSC & Composite Cement.

Ordinary Portland Cement (OPC): OPC is manufactured by inter-grinding of ordinary Clinker with gypsum only. No other additives are mixed with the cement. RHPC/SRC are also manufactured by inter-grinding of ordinary Clinker with gypsum only.

Pozzolana Portland Cement (PPC): PPC is manufactured by inter-grinding of Clinker with gypsum and pozzolanic materials like fly ash, etc.

Portland Slag Cement (PSC): PSC is manufactured by either inter-grinding the clinker, Gypsum & Granulated Slag (or GGBS) with Ordinary Portland Cement by means of mechanical blenders.

Portland Composite Cement (PCC): Composite cement is a mixture of high quality clinker (IS:16353-2015), fly ash (IS:3812 (Part 1) - 2013), granulated slag (IS:12089-1987) and gypsum.

2.3 Key Pollution Concerns

Air Pollution : The main pollutant expected from the Cement Grinding Unit will be Particulate Matter (PM). The identified sources of dust/PM are : Wagon Tippler, Truck unloading (Tippler), Hoppers, Storage Silos, Weigh feeders, Cement Mills, and Packers. Emissions from these sources, other than Cement Mills & Packers, would be fugitive in nature. Fully covered Storage Facilities (Covered Sheds, RCC Silos) are proposed for Raw Materials and Products. In total, **61 Nos. Bag Filters** are proposed for both Process Stacks & Fugitive Source to control PM emission <30 mg/Nm³. Dust collected from the Bag Filters will be recycled in the Cement manufacturing process. DG stacks will be with **acoustic enclosures and stack height** as per TNPCB/CPCB Norms.

Water Pollution : A 5 KLD RO Plant is proposed to treat the Ground water for drinking purpose. RO Rejects of 3 KLD will be fully utilized for equipment cooling in the Unit. Domestic Sewage to the tune of 12 KLD will be treated in a 15 KLD Sewage Treatment Plant (STP) based on MBBR Technology and Treated Sewage of 11 KLD, in compliance with TNPCB **Norms for On-land**

irrigation, will be fully utilized for Green Belt development & maintenance. Thus, '**Zero Effluent Discharge**' will be adopted/practiced.

Solid/Hazardous Wastes : There will not be any process wastes generation from the Unit. STP Sludge (1.0 kg/day) generated from STP will be used as manure for greenbelt. Municipal (organic) solid wastes @ 40 kg/day from the Unit will be composted and used as manure for the Green belt. Inorganic wastes (Non-biodegradable) @ 10 kg/day will be sold to local Vendors. Solid waste such as road dust comprises of a mixture of dust, clay and soil will be generated from regular sweeping of roads @ 0.5 TPA which will be utilised for filling the low lying areas within the Plant Site.

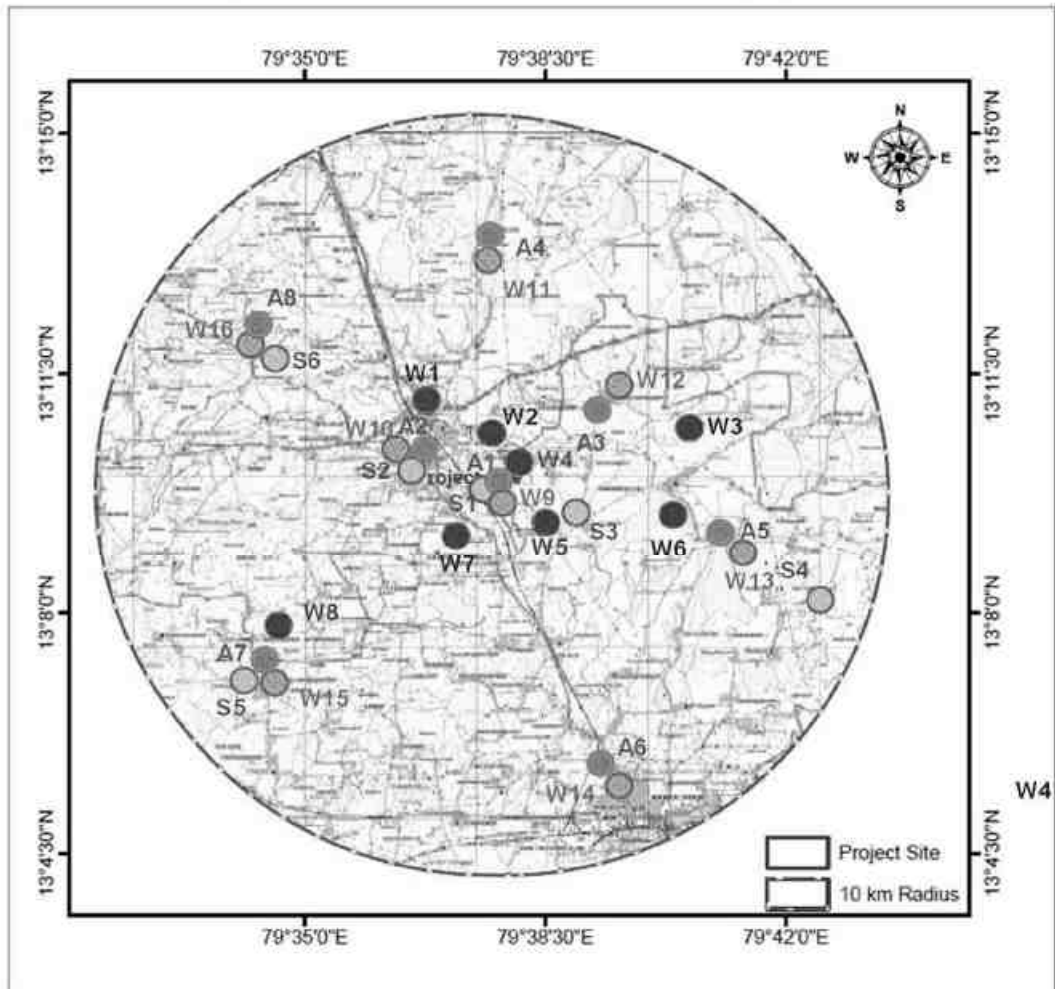
Used oil / Spent oil @ 25 KL/Annum, Grease & Waste residue (contaminated cotton rags) containing oil @ 2.0 Tonnes/Annum and Empty Barrels @ 100 Nos./ Annum will be generated as per Schedule- I of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016; which will be sold to CPCB/ TNPCB authorized recyclers.

3.0 Baseline Environmental Studies

The study area of **10 km radius (from boundary of the Site) (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 70 km from the Site, Coastal Regulation Zone (**CRZ**) **applicability is not there**. Considering the Environmental setting of the project, project activities and their interaction, environmental regulations and Standards, following Environmental Attributes have been included in EIA Study :

- ❖ **Site specific Micro-meteorological Data** from Study Area for the Season on wind speed, wind direction (wind roses), temperature, humidity, cloud cover, atmospheric pressure, rainfall, etc.
- ❖ **Ambient Air Quality Monitoring at 8 locations** on 24-hourly basis, continuously for 2 days in a week for 4 weeks in a month for 3 months in the season for all 12 parameters as per Revised NAAQ Norms.
- ❖ Noise Level Measurements at **8 locations** (air quality monitoring stations) for Leq, Lday and Lnight values once in the season.
- ❖ Water Quality Monitoring – grab sampling of Surface Water (**8 locations**) and Ground Water (**8 Locations**) - once in the Season.
- ❖ Soil Quality Monitoring at **6 locations** once in the Season for Textural & Physical Parameters, Nutrients, etc.
- ❖ **Land Use Pattern** based on recent available Satellite Imagery.
- ❖ Biotic Attributes for : **Flora & Fauna** in Core & Buffer Zones.
- ❖ **Socio-Economic** Profile, based on 2011-Census and **Need Based Assessment**, once in the study period for: Total Population / Household Size, Gender Composition, SC / ST Population, Literacy Levels, Occupational Structure, etc.

The summary of baseline status is given in **Table 3.1**.

Fig. : 3.1 Environmental Quality Monitoring Stations

Source : Survey of India Toposheet No : 57Q/11,57Q/12

Legend:-

Ambient Air Quality & Noise Monitoring Stations	Surface Water Quality Monitoring Stations	Ground Water Quality Monitoring Stations	Soil Quality Monitoring Stations
A1-Project Site	W1-Nandi River Upstream	Borewells at:	S1-Project Site
A2-Tiruttani	W2-Nandi River near Site	W9-Project Site	S2-Barren Land, Tiruttani
A3-Perungalathur	W3- Nandi River Downstream	W10-Tiruttani	S3-Agri. Land, Ulliyampakkam
A4-Talavedu	W4-Kilanthur Lake	W11-Talavedu	S4-Kolattur RF
A5-Mudur	W5-Ulliyampakkam Lake	W12-Perungalathur	S5-Dry Field, Guruvarajapet
A6-Arakonam	W6-Valarpuram Lake	W13-Mudur	S6- Agri. Land, Suryanagaram
A7-Guruvarajapet	W7-Perumaltangal Pond	W14-Arakonam	
A8-Suryanagaram	W8-Chinnakadampur Lake	W15-Guruvarajapet	
		W16-Suryanagaram	

Table : 3.1 Environmental Baseline Status

Envl. Component	Main Parameters	Minimum	Maximum	Mean	Desirable Norms
Ambient Air Quality, $\mu\text{g}/\text{m}^3$	PM2.5	15	29	22.0	60
	PM10	31	61	46.0	100
	SO ₂	5	11	6.9	80
	NO _x	11	20	14.7	80
Ambient Noise, dB(A)	Leq-Day	43.8	53.3	48.9	55
	Leq-Night	40.8	48.0	43.3	45
Surface Waters	TDS, mg/l	370	650	-	500/2100
Ground Waters	TDS, mg/l	410	1050	-	500-2000
Soil Status	EC, $\mu\text{S}/\text{cm}$	124	207	-	200-500
	SAR	0.84	1.10	-	<5

Legend : PM2.5-Particulate Matter size less than 2.5 μm ; PM10- Particulate Matter size less than 10 μm ; SO₂-Sulphur dioxide; NO_x-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.

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

3.1 Ambient Air Quality

Micrometeorology : Predominant winds were from WSW/SW directions (215° – 259°). Mean Wind velocity was 7.2 kmph with Calm condition 1.6%. Temperature values were ranging from 23.5 °C to 39.3 °C with mean value of 30.6 °C. Mean maximum relative humidity value was 64.0%. Mean atmospheric pressure value was computed as 757.6 mm of mercury. Clear sky prevailed predominantly. There was no rainy day in the Season. The monitored meteorological data were found to be **in compliance with local weather phenomena**.

Ambient Air Quality : All 12 AAQ parameters (24/8/1 hourly basis) were monitored in compliance with NAAQ Norms. During the study, each **192 samples** were collected, analysed and reported.

Particulate Matter size less than 2.5 μm -**PM2.5** values (24 hours Time Weighted) were monitored in the range between 15-29 **microgram/cu.m ($\mu\text{g}/\text{m}^3$)** in the Study Area with a **mean value of 22.0 $\mu\text{g}/\text{m}^3$** against NAAQ Norm value of **60 $\mu\text{g}/\text{m}^3$** (24 hours Time Weighted). Particulate Matter size less than 10 μm -**PM10** values were monitored in the range between 31-61 $\mu\text{g}/\text{m}^3$ with a **mean value of 46.0 $\mu\text{g}/\text{m}^3$** against NAAQ Norm value of **100 $\mu\text{g}/\text{m}^3$** (24 hours Time Weighted). **SO₂** values were monitored in the range between 5-11 $\mu\text{g}/\text{m}^3$ with a **mean value of 6.9 $\mu\text{g}/\text{m}^3$** against NAAQ limit value of **80 $\mu\text{g}/\text{m}^3$** (24 hours Time Weighted). **NO_x** values were monitored in the range between 11-20 $\mu\text{g}/\text{m}^3$ with a **mean value of 14.7 $\mu\text{g}/\text{m}^3$** against NAAQ limit value of **80 $\mu\text{g}/\text{m}^3$** (24 hours Time Weighted).

O₃ concentrations (**hourly samples reported for 8-hour average**) were monitored in the range between <10-17.1 µg/m³ with a **mean value of 13.2 µg/m³** against NAAQ limit value of 100 µg/m³ (8 hours Time Weighted).

NH₃-Ammonia; CO-Carbon monoxide; Pb-Particulate Lead; As-Particulate Arsenic; Ni-Particulate Nickel; C₆H₆-Benzene and BaP-Benzo (a) pyrene in particulate phase levels were monitored below respective detectable limits.

While comparing with the National Ambient Air Quality (NAAQ) Standards (as amended thereof), **all monitored values were found to be well within the respective limit values for 24-hourly periods** for Industrial, Residential, Rural and other Areas.

3.2 Ambient Noise Levels

Ambient Noise Levels were ranging from 28.0 dB(A) to 101.7 dB(A) during day times and from 27.4 dB(A) to 101.2 dB(A) during night times on the monitoring days. Noise Levels monitored at the Site had the influence of Traffic in Tiruttani Bypass and Railway Line round the clock. Ambient Equivalent Noise Levels (Leq) were ranging from 43.8 dB(A) to 53.3 dB(A) during day times and from 40.8 dB(A) to 48.0 dB(A) during night times on the monitoring day. Day Equivalent Noise (Lday) level was found to be 48.9 dB(A) and Night Equivalent Noise (Lnight) level was 43.3 dB(A). While comparing with the MoEF&CC Leq Norms for day and night times, the monitored **ambient noise levels were well within the limit values** for their respective Category Area.

3.3 Traffic Study

For assessing the baseline status, the Traffic Survey based on Indian Road Congress-IRC: 64/106 Norms were carried out at Tiruttani Bypass - Muthur Road Junction during a Week Day (Wednesday; 16.07.2025) and also during the Week end (Sunday; 20.07.2025). Based on the Survey, existing Traffic Volumes at the Junction is computed in Passenger Car Units (PCUs). The existing traffic volume in the Project vicinity was found to be **5,491.9 PCU/day**.

3.4 Surface Water Quality

The **surface water** samples were monitored with pH in the range 6.98-7.89 against the Limit value of 6.5-8.5. DO levels were in the range 4.5-5.9 mg/l against the minimum requirement value of 4.0-6.0 mg/l for Surface Waters. While EC values were in the range 580-970, TDS values were monitored in the range of 370-650 mg/l against the Limit values of 500/2100 mg/l. Chloride values ranging from 87 mg/l to 145 mg/l. Iron content was found to be in the range 0.21-0.91 mg/l. Oil and grease, phenolic compounds, cyanides, sulphides and insecticides were found to be absent. Trace metals were found to be in traceable levels. BOD and COD values were found to be <2-8.4 mg/l

and 18-46 mg/l respectively. The surface water quality were found to be within the prescribed CPCB Norms for **Class-C** (Drinking Water Source after Conventional Treatment and Disinfection) Norms.

3.5 Ground Water Quality

The pH of the **ground water** samples were ranging from 7.18-8.17 against the BIS Norm of 6.5-8.5. While EC values were in the range 640-1580, TDS values were monitored in the range 410-1050 mg/l (Norm 500 mg/l or 2,000 mg/l in the absence of alternate source). Chloride values were found to be in the range 108-287 mg/l (Norm 250/1000 mg/l). Iron content was found to be in the range BDL-0.41 mg/l. Oil & Grease, Cyanides, Phenols, Pesticides, etc. were found to be absent. Most of the trace metals were monitored to be below their detectable limits. In general, the water quality of ground waters were found to be within the prescribed IS:10500-2012 Norms for Drinking in the absence of an alternative source.

3.6 Soil Quality

Soils with medium compaction and Loam/Clay Loam texture are dominant in the study area. Soil pH values were found to be in alkaline range (7.46-8.11) and Electrical Conductivity values were in the range 124-207 $\mu\text{S/cm}$. There was low moisture content at the monitoring locations. Significant levels of Nitrogen, Phosphorous and Potassium (NPK) values were monitored at all locations. Sodium Absorption Ratio was in the range 0.84-1.10 (desirable value being <5). There was **no heavy metals intrusion/leaching** into the ground strata. The soils would support the vegetation, if amended suitably.

3.7 Land Use

Agricultural Land occupies the majority of the study area with about 59.26% of area. Plantation occupies 1.88% and Forest area occupies 1.03%. Barren Land occupies about 16.91% and Scrub Land occupies 2.30%. Industry Land occupies 0.53% of the study area only. Built-up Land occupies 10.29% and Water body occupies about 7.80% of the study area.

3.8 Biological Environment

A general ecological survey was carried out in the study area of 10 km radius area. **Study Area is not part of any National Park, Sanctuary, Biosphere Reserve, Wildlife Corridors, Migratory Path, etc.** The detailed study revealed dominance of *Cocos nucifera*, *Azadirachta indica*, *Acacia auriculiformis*, *Acacia nilotica* etc. Totally 38 species of trees found in the study area along with 19 shrub species, 27 herb species and 17 climber species. During the vegetation survey in the study area, *Tectona grandis* (Teku) were categorized as endangered species under IUCN (International Union for Conservation of Nature and Natural resources) guidelines.

No wild mammalian species was directly sighted during the field survey. Common Indian hare, Palm squirrel, House mouse, etc. were observed during primary survey. Livestock like cattle, goat, poultry, duck are reared for dairy products, meat, egg and for agriculture purpose. Majority of cattle are of local variety. Summary of Fauna Survey is :

Endangered species	:	None
Threatened species	:	None
Near Threatened species	:	None
Vulnerable species	:	None

3.9 Socio-economic Environment

The area within a 0-2 km radius includes both rural and urban settlements, represented by Kilandur village and Tiruttani Town. Together, they account for 18,904 households with a total population of 77,175 persons (38,558 males and 38,617 females). Within the 0–2 km radius, no major industries have been reported. The 2-5 km zone is characterized by a dense educational ecosystem with numerous schools and colleges, including specialized institutions for pharmacy, nursing, education, and women's studies. The healthcare network is well-established, with both government and private hospitals ensuring accessibility. Industrial activity is sparse, with only one glass industry identified in this range. This combination of educational, health, and industrial institutions indicates a socially supportive environment with balanced access to learning, medical services, and livelihoods.

Local people are frequently suffering from fever, asthma, diarrhea, etc. and no occupational related disease recorded.

4.0 Anticipated Environmental Impacts

Any Project would create impact on the environment in two distinct phases viz. Construction Phase which may be regarded as temporary & short term and Operation Phase which would have long term effects. The impacts have been assessed for the Project by assuming that the **Cumulative Impact of existing industrial activities has already been covered under baseline environmental status** and continue to remain same till the operation of the Project.

4.1 Construction Phase

No buildings/structures in the site and no demolition works is required. Proposed Grinding Unit construction will be for : Clinker storage & handling, Gypsum storage & handling, Fly Ash, Pond Ash and slag storage, handling and drying with Hot Air Generator, Coal, Dolochar & Biomass storage, grinding & handling, Cement production and storage & Cement packing and dispatch.

Site is having uniform terrain and no levelling is required as such. Top Soil @ 26,240 cu.m will be scrapped, stored and utilised for Green Belt development.

4.1.1 Impact on Land Use

Plant area will be established over an extent of 4.08 Ha out of 19.58 Ha (20.80% coverage) with Railway Siding over an extent of 2.70 Ha. Greenbelt & plantation will be developed in 6.46 Ha (33% coverage) and maintained. No Township is proposed other than a small Guest House. Being located under the Bypass and adjacent to Railway Line, the developments at the Site will have relatively low impact on Land Use of the Area. Construction residues will be utilised for leveling and landscaping works and no demolition waste.

4.1.2 Impact on Road & Traffic

On an average, 10-15 Truck loads/day will be visiting the site and will not have any adverse impact to the existing traffic volume in Tiruttani Bypass.

4.1.3 Impact on Ambient Air Quality

The main sources of emission during the construction period are the movement of materials & equipments at site and dust emitted during the installation related activities. However, the impact will be for short duration and confined locally at the Site.

4.1.4 Impact on Noise Levels

There will be very less impact on the existing noise levels due to construction, traffic for loading and unloading, construction, fabrication and handling of equipments & materials, etc. The likely increase of about 1-2 dB(A) in Leq Noise Levels will be confined locally.

4.1.5 Impact on Surface & Ground Water Quality

The District enjoys a **tropical climate**. Annual Normal rainfall of the Site area is **950 mm**. Pre-Project Runoff is 37,202 KL/ Annum and Post Project Runoff is 74,312 KL/ Annum. About 87% of natural drain from the Site 32,215 KL/Annum will be maintained after effective Rain Water Harvesting (RWH) measures and thus, there will not be any significant impact on the receiving water bodies in the vicinity. There are 3 Nos. Dugwells (irrigation wells) & 2 Borewells at the Site. About 50 KLD fresh water demand will be there during Construction Phase which will be tapped from permitted Dugwells and Borewells within the premises. As Tiruttani Block falls in 'Semi Critical' Area, the **ground water tapping will be permitted** with the proposed RWH Measures.

4.1.6 Impact on Biological Environment

There are 12 Neem, 37 Palmyra, 15 Date Palm, 8 Teak, 10 Nuna (total 72) Trees along with 18 Coconut Trees and Plantain plantation in the Site. Well grown trees including Palmyra trees **will be numbered and transplanted** as such to the boundaries of Site for Green Belt development. Other than 2 Reserved Forests at 8 km distance, there are **no Eco Sensitive Areas** like National Parks, Wildlife Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar Sites, Tiger/Elephant Reserves, etc. (existing as well as proposed), within 10 km from the Site.

4.1.7 Impact on Socioeconomic Environment

There is no rehabilitation and resettlement involved in the project. The Project will give Direct Employment to 50 persons and Indirect Employment to 200 persons, thus, total 250 employment during Construction Phase. Local labourers will be pooled for the Construction and provided with all Personal Protective Equipments (PPEs) like Mask, Gloves, etc. Sanitization will be ensured at the all workplaces. Water, electricity, toilet facilities, etc. will be provided to Construction Labours during the Construction Phase. This is a positive impact due to the Proposal.

4.2 Operation Phase

4.2.1 Impact on Air Quality

Emissions from sources, other than Cement Mills & Packers, would be fugitive in nature. Bag Filters are proposed to control PM emission $<30 \text{ mg/Nm}^3$. Other stack emissions will not have significant contribution. All material conveyors are fully covered and provided with Bagfilters at Transfer Points. The Plant operations will be in compliance with new Emission Standards issued by MoEF&CC for Cement Industry vide Notifications dated 25.08.2014 and amended on 09.05.2016 & 10.05.2016. Standby DG sets will be with in-built acoustic enclosures and required stack height as per TNPCB Norms.

AERMOD View (9.6.5 Version) is used for Prediction Modelling for applicable Parameters **PM_{2.5}, PM₁₀, SO₂ & NO_x (CO levels were below BDL)**. The **maximum incremental GLC** for PM_{2.5} is $0.22 \mu\text{g/m}^3$, PM₁₀ - $0.75 \mu\text{g/m}^3$, SO₂ - $1.95 \mu\text{g/m}^3$ & NO_x $2.92 \mu\text{g/m}^3$. There will be **adequate Buffer** in the Air Environment for proposed activities. The cumulative impacts were found to be confined locally i.e. within 0.9 km radius from the Plant boundaries.

4.2.2 Impact on Ambient Noise Quality

Grinding Mill be the main source of noise. The noise level within the plant at a distance of one meter from the source will be maintained at $<85 \text{ dB(A)}$ level for 8-hours exposure. Noise level at nearest plant boundary will be $<55 \text{ dB(A)}$ during day times and $<45 \text{ dB(A)}$ during night times. Thus, the noise levels will be well within the permissible MoEF&CC Norms for Residential Areas.

4.2.3 Impact on Traffic Volume

Raw and Finished Materials are being transported by **both Rail and Road Modes**. Tiruttani Bypass from NH-716 will be the transportation route for the TCGU. Road Over Bridge on Railway Line near the Site will have Service Road of 12 m width on either side for to & fro traffic meant for the Grinding Unit. Railway Sidings are proposed from Ichchiputhur Railway or Tiruttani Railway Station in north. There will be 1,694 Truck movements for transportation of Raw Material & finished Product Cement during the Operation Phase.

In the Post-Project Scenario, there will be an addition of **2,428 Vehicles** (in 2 ways) i.e. 5,943 PCU/Day to the existing traffic volume. Cumulatively, the traffic volume in the Project vicinity will be **11,170.4 PCU/day**. **The net increase (cumulative) will be 5,679 PCU/day**. The existing Bypass, Service Roads and NHs are adequate to handle the proposed traffic volume due to the Project.

4.2.4 Impact on Surface Waters Resource and Quality

Nandi River originates from Nandi Hills in Karnataka and flows through Tiruttani. Nandi River irrigates a substantial amount of agricultural land (744.48 acres) in the Tiruttani region. Surface water from an intake well in Nandi River, that flows 1.3 km north of the Site, will be utilised to meet the fresh water demand of 120 KLD after obtaining prior permission from PWD.

4.2.5 Impact on Ground Waters Resource and Quality

The area falls in '**Semi Critical Area**' and Ground Water drawl for industrial purpose is permitted with Rain Water Harvesting measures. Existing Dugwells and Borewells at the Site will be the source for initial Phase. Required **NOC** will be obtained from State PWD and submitted. Alternatively, Desalination Plant supply will also be utilised (purchase water). Domestic Sewage to the tune of 12 KLD will be treated in a 15 KLD Sewage Treatment Plant (STP) based on MBBR Technology (**Fig. 2.5**) and Treated Sewage of 11 KLD, in compliance with **TNPCB Norms for On-land irrigation**, will be fully utilized for Green Belt development & maintenance. Thus, '**Zero Effluent Discharge**' will be adopted/practiced.

4.2.6 Impact on Solid Wastes

The dust collected from the various Air Pollution Control (APC) Measures viz. Bag Filters will be totally recycled in the process for cement manufacturing. Thus, there will not be any process wastes generation from the Unit. STP Sludge (1.0 kg/day) generated from STP will be used as manure for greenbelt. Municipal (organic) solid wastes @ 40 kg/day from the Unit will be composted and used as manure for the Green belt. Inorganic wastes (Non-biodegradable) @ 10 kg/day will be sold to local Vendors.

Used oil / Spent oil @ 25 KL/Annum, Grease & Waste residue (contaminated cotton rags) containing oil @ 2.0 Tonnes/Annum and Empty Barrels @ 100 Nos./ Annum will be generated as per Schedule- I of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016; which will be sold to CPCB/ TNPCB authorized recyclers.

Used Lead acid batteries of about 150 Nos./Annum will be generated which will be stored in the designated storage area and will be disposed-off / sold to registered vendors as per Battery waste Management Rules 2020.

E-Wastes @ 0.15 Tonnes/Annum will be generated after 2 years of start of operation in the form of used electrical equipment, Cables, CFL/ LED Lights, which will be sold to registered vendors as per E- Waste Management Rules, 2016.

4.2.7 Impact on Terrestrial and Aquatic Habitat

The plant will not have any significant impact on surrounding ecology and biodiversity. About 33% green belt has been developed and maintained. No waste water will be discharged outside Plant boundary as well as no natural water course will be disturbed. Therefore, impact on aquatic habitat is not envisaged.

Green Belt, preferably native Tree species, will be developed in 3-Tiers along the boundaries as well as inside the Plant over an extent of **6.46 Ha @ 1,500 trees/Ha**, thus a total of **9,690 Trees** with about **90% Survival Rate**.

4.2.8 Impact on Socio-economic Environment

About 200 persons will get employment (50 Direct & 150 Contractual) during Operation Phase of the Project. The Project will bring Rs. 838 Crores investment to the Region. There will be a huge positive impact due to the proposal, by way of employment, better socioeconomic conditions, improved local and regional economy, etc. This would be a positive long term impact due to the Project.

As per the Companies Act 2013, Companies should spend at least 2% of the Profit after Tax of the previous year for CSR activities but not lower than 2% of average of previous three years Profit after Tax. SCL will carry out various Social Measures for the local as well as regional populations as per CSR Norms. As per OM dated 30th Sept., 2020, & OM dated 20th Oct., 2020 Socio-Economic Developmental activities will be formulated on the basis of the issues raised during Public hearing which will be addressed in EMP and implemented in a time bound manner with the start of the industrial activities.

4.2.9 Impact on Occupational Health

An industrial worker may be exposed to Physical, Chemical, Biological, Mechanical and Psychosocial hazards. All efforts will be taken and followed to avoid the accidents and have a good 'Occupational Environment'. Entry Level and Periodical Medical Examinations of the Employees will be undertaken by the Unit. The Medical Reports will be reviewed and evaluated for Occupational Health related problems.

5.0 Alternative Analysis

Initially, 3 Locations were identified viz. Tiruttani, Chitteri & Mosur in Tiruvallur District and Ranipet Districts in Tamil Nadu. Keeping in view the proximity to the major markets in the Northern Tamil Nadu and Andhra Pradesh State, the proposed Tiruttani Clinker Grinding Unit has been selected near Tiruttani.

6.0 Environmental Monitoring Programme

6.1 Ambient Air, Noise, Water & Soil Quality

Periodical monitoring of the ambient air quality, fugitive emissions, stack emissions, noise levels, water and soil quality shall be undertaken. The periodical status reports shall be submitted to TNPCB on monthly basis and SEIAA-TN & Integrated Regional Office, MoEF&CC-Chennai as Half Yearly Status Reports.

Continuous online stack monitoring equipment/systems for PM will be installed to Cement Mill stack and the online real time monitoring data will be transmitted to TNPCB Care Air Centre & CPCB servers continuously. **Three (3 Nos.) Continuous Ambient Air Quality Monitoring Stations (CAAQMS)** will be installed in the Plant for transmission of real time monitoring data to TNPCB Care Air Centre & CPCB servers continuously.

Data on Stack Emissions and Ambient Levels of PM_{2.5}, PM₁₀, SO₂ & NO_x will also displayed at the Main Gate for general public view.

Further Online Continuous Effluent Monitoring (CEM) System is installed in the STP and it is connected to the TNPCB Water Watch Centre.

SCL will be estimated the demand of infrastructure (Physical & Social) in the nearby area of the plant site and appropriate developmental activities will be undertaken under for various rural developmental programmes and initiatives for the up-liftment of the nearby communities from time to time.

7.0 Additional Studies

Risk Assessment : Detailed risk assessment and mitigative measures are delineated and an effective Disaster Management Plan, for natural and man-made disasters, will be in place.

Public Consultation & Hearing : Adequate Budget will be allotted in **EMP Budget** for addressing Public Hearing issues for execution in 2-3 years period, in compliance with OM dated 30th Sept., 2020, & OM dated 20th Oct., 2020.

8.0 Project Benefits

Environmental Benefits : Waste materials from other Industries like Fly Ash, Gypsum, Slag, etc. are beneficially utilised for the cement manufacturing.

Social Benefits : The Unit will generate employment for about 250 people (50 Direct & 200 Indirect) during the Construction Phase. About 200 persons will get employment (50 Direct & 150 Contractual) during Operation Phase of the Project.

Financial Benefits : The Project will bring **Rs. 838 Crores** investment to the Region. There will be a huge positive impact due to the proposal, by way of employment, better socioeconomic conditions, improved local and regional economy, etc.

9.0 Environmental Management Plan

An Environmental Management Plan (EMP) is formulated for mitigation of adverse impacts and is based on present environmental status and impact appraisal. The following environmental management plans are proposed for mitigation of impacts on the environment.

9.1 Construction Phase

The following EMP measures shall be undertaken during the Construction Phase:

- ❖ It shall be ensured that no change due to the constructions to the hydrology/natural drainage of the area.
- ❖ All the topsoil excavated shall be stored and maintained for use for Green Belt development.
- ❖ The construction materials like sand, stone chips, etc. shall be obtained only from approved quarries.
- ❖ Proper placement of construction machineries shall be ensured to eliminate vibrations and noise.
- ❖ All construction machinery items shall be well lubricated to reduce noise.
- ❖ High Speed Diesel with low sulphur content shall be used for running the construction machineries.

- ❖ The labourers for the construction works shall be pooled from the local public.
- ❖ Adequate drinking water and sanitary facilities shall be provided for construction workers.
- ❖ PPEs shall be provided to the construction workers. Protection devices viz. ear plugs/ear muffs shall be provided to the workers during welding works.
- ❖ The safe disposal of wastewater and solid wastes generated shall be ensured.
- ❖ On completion of construction, all debris and extraneous materials shall be cleared off and no residuals should be left at the site.
- ❖ EMP Cell ensure the periodical Monitoring of Environmental Parameters during the Construction Period and ensure its compliance with Norms.

9.2 Operation Phase

9.2.1 Traffic Volume

- ❖ Adequate measures shall be taken to avoid any traffic congestion near the entry and exit points.
- ❖ Security Guards will be posted at the Road Junction to handle the inward and outward vehicles from the Plant to the Bypass/Highway.
- ❖ Adequate parkings will be provided in the Plant.
- ❖ Facilities for **drivers (rest room, toilet, etc.)** will also be provided.
- ❖ All Trucks will be fully covered with Tarpaulin to avoid any spillage on transportation.
- ❖ Regular and preventive maintenance of transport vehicles has to be ensured.
- ❖ Compliance to 'Pollution under Control' Certification has to be checked periodically.

9.2.2 Air Quality Management Plan

- ❖ Adequate air pollution control systems viz. Bag Filters, etc. shall be installed in the Cement Mills & Packers to control PM emissions <30 mg/Nm³.
- ❖ Inside the Plant, all materials transfer shall be through closed conveyor belts.
- ❖ Adequate dust extraction systems shall be installed at various transfer points.
- ❖ Fully covered sheds shall be provided for Gypsum & Coal storages.
- ❖ RCC Silos shall be provided for Clinker, Fly Ash & Cement storages.
- ❖ Suction arrangements with suitably designed Bag Filters shall be provided at Silos to arrest the fugitive emissions.
- ❖ Dense Phase Pneumatic Handling System for receiving and conveying Fly Ash.
- ❖ Charter on Corporate Responsibility for Environmental Protection (CREP) Guidelines for Fugitive Emission Control in Cement Industries shall be fully complied.
- ❖ The periodical evaluation for the efficiency performance of Bag Filters shall be carried out.
- ❖ Periodical Ambient Air Quality and Stack Emissions shall be undertaken and the Status Reports shall be submitted to the Authorities as required.

9.2.3 Noise Quality Management Plan

- ❖ Noise generating sources would be maintained properly to minimise noise and vibrations.
- ❖ For all fans, compressors etc. vibration isolators shall be provided to reduce noise.
- ❖ Provision of silencers shall be made wherever possible.
- ❖ The operators shall be provided with necessary safety and protection equipment like ear plugs, ear muffs etc.

9.2.4 Effluent Management Plan

- ❖ Water consumption shall not be more than the consented quantity.
- ❖ No trade effluent shall be discharged from the Plant.
- ❖ The domestic sewages from the Plant shall be treated effectively in the Sewage Treatment Plant so as to meet the TNPCB Discharge Norms and the treated sewage shall be used for Green Belt.
- ❖ 'Zero Effluent Discharge' shall be practiced.
- ❖ Effective Rain Water Harvesting Systems shall be adopted and harvested water shall be utilized for the industrial needs so as to conserve the fresh water demand.
- ❖ Periodical monitoring for specific parameters shall be done regularly.

9.2.5 Solid & Hazardous Waste Management Plan

- ❖ It should be ensured that there is no industrial solid waste from the Plant.
- ❖ The dust collected from APC Measures will be consumed in the Plant fully.
- ❖ Solid wastes from STP Plant shall be vermi composted and used as manure for Green Belt.
- ❖ Waste Oil shall be collected and sold to the CPCB/TNPCB Authorised Agency for further treatment & disposal.
- ❖ The municipal wastes shall be collected, transported, treated in a landfill (composting) within the Plant vicinity to make use of it as manure for Green Belt.
- ❖ Used Lead acid batteries will be generated which will be stored in the designated storage area and will be disposed off / sold to registered vendors as per prevalent rules.

9.2.6 Storm Water Management Plan

- ❖ SCL shall harvest Rain Water through Roof Tops, RWH Ponds with Recharge Mechanism. Roof Top Collections shall be directly stored and used as Raw Water for the Plant.
- ❖ Harvested water by surface drain shall also be utilized for the industrial needs so as to conserve the fresh water demand.

9.2.7 Biodiversity Plan

- ❖ Green Belt (33% Coverage) shall be developed and maintained effectively.
- ❖ Local species and fruit bearing trees may also be developed to have a thick canopy cover.

- ❖ The treated sewage shall be used fully for the Green Belt development.
- ❖ There will be **ban on one time use and throw away Plastic usage** in the Plant in compliance with Tamil Nadu, Environment and Forests (EC-2) Department, G.O.(D) No. 84 dated 25.06.2018. SCL will encourage the use of eco friendly alternative such as banana leaf, areca nut palm plate, stainless steel glass, porcelain plates / cups, cloth bag, jute bag etc.

9.2.8 Occupational Health

- ❖ SCL shall provide a safety & healthy working conditions and continually improve the occupational health and safety performance.
- ❖ Its objectives shall be to achieve zero accident and safe work environment, to improve moral and health of all employees and to maintain the emission levels below the norms.
- ❖ SCL shall provide ergonomic support in work comfortness with periodical review.

9.2.9 Socio-economic Management Plan

As per the Companies Act 2013, Companies should spend at least 2% of the Profit after Tax of the previous year for the CSR activities but not lower than 2% of average of previous three years Profit after Tax.

9.3 Project Cost & EMP Implementation Budget

The total Project Cost of Rs. 838 Crores. A budgetary allotment of Rs.19.23 crores has been made as Capital EMP Cost and Rs.1.30 crores per annum towards Operating EMP Cost (Table 8.2). Adequate Budget for Corporate Environmental Responsibility (**CER**) **Budget** will be allotted in compliance with MoEF&CC OM dated 30th Sept., 2020 & OM dated 20th Oct., 2020, on the basis of the issues raised during the Public Hearing and will also be part of EMP Cost.

1.0 Introduction

1.1 Purpose of the Report

M/s. Shree Cement Limited (SCL) are one of the largest Cement manufacturers in India. SCL's Cement and Clinker manufacturing facilities are located at Beawar, Ras & Nawalgarh in Rajasthan, Balodabazar-Bhatapara in Chhattisgarh, Sedam in Karnataka, Guntur in Andhra Pradesh and Ras Al Khaimah (RAK) in United Arab Emirates (UAE). It has split grinding units at twelve locations Pan-India. Presently, the cement production capacity of SCL Group stands at 62.8 Million Tonnes per Annum (MTPA).

The cement demand is steadily increasing in northern Districts of Tamil Nadu including Chennai and Southern Districts of nearby Andhra Pradesh State due to infrastructure development activities. Thus, SCL is proposing its Tiruttani Clinker Grinding Unit (TCGU) at Tiruttani near the Raw Material sources at Chennai and Marketing Centres.

After the Tamil Nadu Global Investors Meet in 2024, a Memorandum of Understanding (**MoU**) has been signed on 08.01.2024 between **GUIDANCE**, a nodal Agency of Government of Tamil Nadu and SCL for establishing the Cement Grinding Unit at Tiruttani in two Phases. In the first Phase, SCL TCGU is proposed with a Cement production capacity of **3.50 Million Tonnes per Annum (MTPA)** (OPC/PPC/PSC/RHPC/SRC/CC- Composite Cement) along with Railway Siding and DG Sets for total capacity of 1250 KVA (1000 KVA or 2x500 KVA & 1x250 KVA) for standby operations. Project Cost of Rs. 838 Crores.

The identified Site is over an extent of **19.58 Ha** with 14.848 Ha of SCL's own Land and 4.735 Ha is Govt. Poramboke Land (on exchange for SCL's nearby lands). The entire land is located outside Tiruttani Municipal Limit in Tiruttani Village, Devasenapuram Village & Valliammapuram Villages, Karthikeyapuram Panchayat, in Tiruttani Taluk, Tiruvallur District of Tamil Nadu. Site is accessible from **Tiruttani Bypass** connecting NH-716 (Chennai-Tirupati Section). As per DTCP, the Site falls in 'Non-Planning Area' and will be converted into Industrial Use. There is no Rehabilitation & Resettlement (R&R) issue due to the Proposal. Also, there is no Litigation/Pending Case against the Proposal.

Site falls in Survey of India Topo Sheet No. 57 O/12 (Open Series Map D44N12) within the Coordinates 13°9'36.54" to 13°9'51.65" North Latitude & 79°37'29.42" to 79°37'56.66" East Longitude. There are no Eco Sensitive Areas within 10 km from the Site. There are two Reserved Forests (RFs) viz. Kolattur RF @ 8.5 km in SE direction & Ammanur RF near Arakkonam @ 8.0 in SSE direction. The shortest Tamil Nadu-Andhra Pradesh State Border is at 10.1 km in northeast. Arulmighu Sri Subramaniaswamy Temple-Tiruttani, a Hindu Pilgrimage Centre, is at 2.4 km in northwest. The seasonal Nandi River flows at 1.3 km in the north.

Southern Railway BG Line (Arakkonam-Tiruttani-Renigunta Section) runs adjacent to the Site. Railway Sidings are proposed from Icchipuhur Railway Station (3 km in south)/Tiruttani Railway Station (2 km in NW). Arakkonam Railway Junction is at 9.3 km in SSE direction. District Head Quarters Tiruvallur is at 28 km in the east and State Head Quarters Chennai is at 55 km in the east. Tiruttani Municipality with a Population of 44,781 Persons, with all basic amenities, is at 0.4 km in the west (aerial distance).

The Project will give Direct Employment to 50 persons and Indirect Employment to 200 persons, thus, total 250 employment during Construction Phase. Local labourers will be pooled for the Construction. The Project will give Direct Employment to 50 persons and Indirect / Contract Employment to 150 persons, thus, total 200 employment during Operation Phase. Local people will be given preference for Contractual Works.

The Stand Alone Grinding Unit falls under Sl. No. 3(b) & Category 'B' with non-applicability of General Conditions of EIA Notification 2006 (as amended thereof) and requires Prior Environmental Clearance (EC) from the State Environment Impact Assessment Authority-Tamil Nadu (SEIAA-TN). Accordingly, TOR Application was submitted by SCL vide Parivesh Online proposal No. **SIA/TN/IND1/542782/2025 on 25.06.2025**. After paying Online Scrutiny Fees, the File has been accepted by SEIAA on 27.06.2025 under File No. 12367.

The Proposal was deliberated by the State Expert Appraisal Committee (SEAC)-Tamil Nadu in its 595th Meeting held on 21.07.2025 and SEIAA-TN in its 868th Meeting held on 08.08.2025. TOR has been awarded vide Identification No. TO25B1103TN5124110N dated 19.08.2025 with Public Hearing for the Environmental Impact Assessment (EIA) Study & Report.

The EIA Consultant, M/s. ABC Techno Labs India Private Limited, Chennai has been accredited for various Sectors including Sector-9 (Cement Plants) for Category 'A' by NABET vide Certificate NABET/EIA/2225/RA0290 dated 11.06.2023 with validity till 16.11.2025 (Sl. No. 4 of the List) which will be renewed by NABET periodically. 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.

In compliance with MoEF&CC Office Memorandum No. J-11013/41/2006-IA-II(I)(Part) dated 29.08.2017 the Baseline Data (BLD) for the Study was collected during Jun.-Aug. 2025 (Premonsoon Season) as the area experiences NE Monsoon during Oct.-Dec. months.

The Draft EIA Report has been prepared in compliance with awarded TORs and submitted along with Summary Environmental Impact Assessment Reports (both in English and Tamil versions) for Public Consultation & Public Hearing.

1.2 Identification of Project Proponent

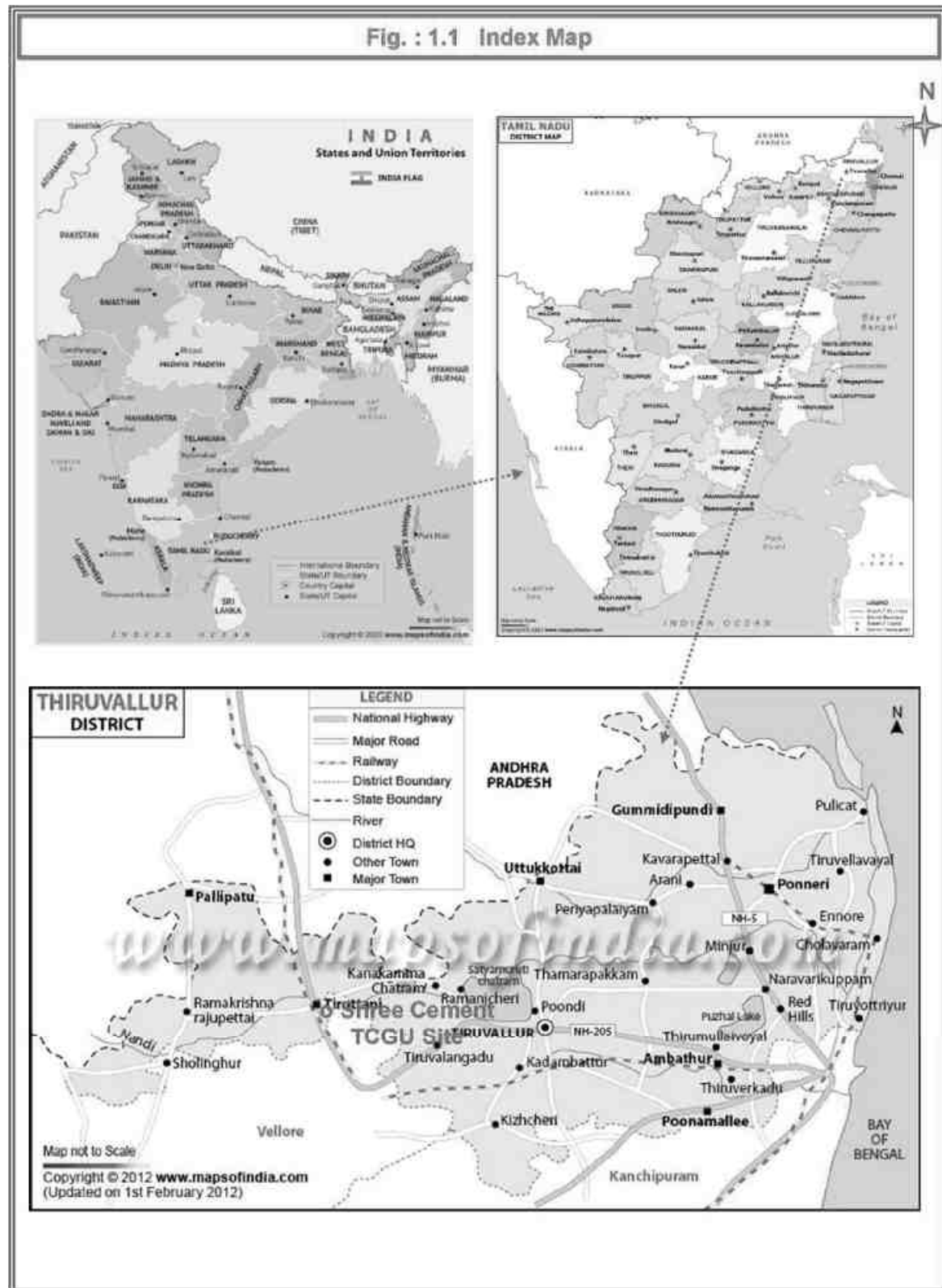
M/s. Shree Cement Limited (SCL) are one of the largest Cement manufacturers in India. SCL's Cement and Clinker manufacturing facilities are located at Beawar, Ras & Nawalgarh in Rajasthan, Balodabazar-Bhatapara in Chhattisgarh, Sedam in Karnataka, Guntur in Andhra Pradesh and Ras Al Khaimah (RAK) in United Arab Emirates (UAE). It has split grinding units at twelve locations viz. Khushkhara, Suratgarh & Jobner in Rajasthan, Roorkee in Uttarakhand, Aurangabad in Bihar, Bulandshahr & Etah in Uttar Pradesh, Panipat in Haryana, Hansda in Jharkhand, Cuttack in Odisha and Patas in Maharashtra and Purulia in West Bengal. Presently, the cement production capacity of SCL Group stands at 62.8 Million Tonnes per Annum (MTPA). Total power plants capacity is 1084.94 MW (including 503.0 MW Thermal, 242.50 MW WHRS, 283.14 MW Solar Plant and 56.3 MW Wind Mills). The communication addresses are :

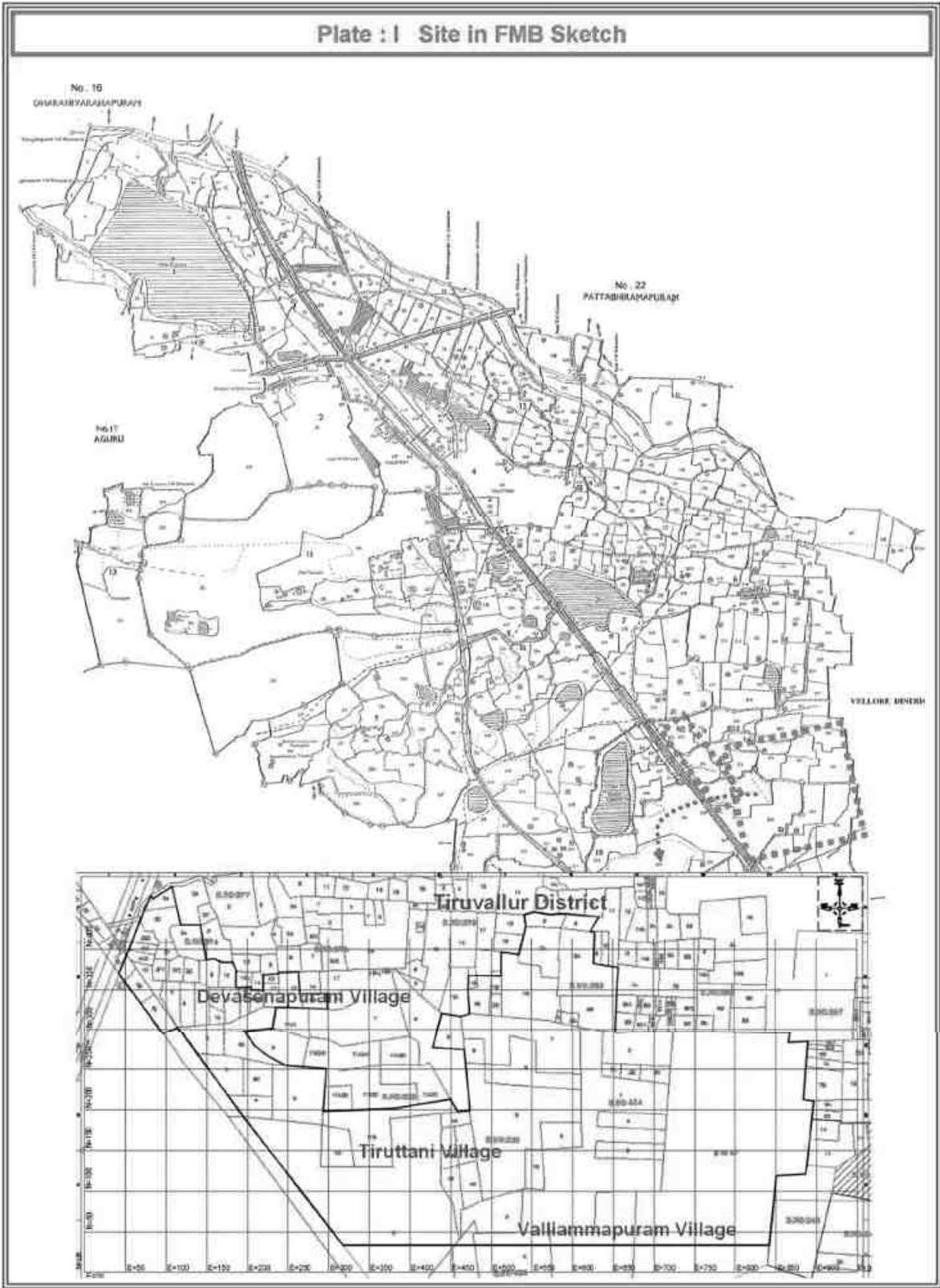
Registered Office : M/s. Shree Cement Limited, Bangur Nagar, Masuda Road, Andheri Deori, Beawar (Erstwhile Ajmer), Rajasthan – 305901 Phone: (+91)1462-228101-06 Fax: (+91)1462-228117/228119	Corporate Office : M/s. Shree Cement Limited, DLF Epitome, Building No 5, Tower B, 9th Floor Cyber City, DLF Phase 2, Sector-24, Gurugram, Haryana – 122002. Contact Mobile No. : +91 9773350412 Email : sunil.deshmukh@shreecement.com
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1.3 Identification of the Project

SCL is one of the Corporates participated in Tamil Nadu Global Investors Meet-2024. As committed in the meeting, a Memorandum of Understanding (MoU) has been signed on 08.01.2024 between **GUIDANCE**, a nodal Agency of Government of Tamil Nadu and SCL for establishing a Cement Grinding Unit at Tiruttani in two Phases (**Document-1**). In the first Phase, SCL TCGU is proposed with a Cement production capacity of **3.50 MTPA** (OPC/PPC/PSC/RHPC/SRC/CC- Composite Cement) along with Railway Siding and DG Sets for total capacity of 1250 KVA (1000 KVA or 2x500 KVA & 1x250 KVA) for standby operations.

Location : SCL has proposed TCGU over an extent of **19.58 Ha, outside Tiruttani Municipal Limit**, in SF Nos. 329/2, 329/3, 329/4, 329/5, 329/6pt, 329/9, 329/10, 329/11A1pt, 329/11A2B, 330/2pt, 330/3, 330/4A, 330/4B, 330/4C, 330/4Dpt, 330/4Ept, 330/5, 330/6, 330/7, 330/8, 330/9, 330/10 of **Tiruttani Village**, 372/3Cpt, 372/4A, 372/4B, 374/2Apt, 374/3B2pt, 374/3Cpt, 374/3D, 374/3E, 374/3F1, 374/3F2, 374/3Gpt, 374/3Hppt, 374/4A1pt, 374/4A2pt, 374/5, 374/6, 374/7, 374/8pt, 374/9pt, 374/10, 374/11pt, 374/12, 374/15B1, 374/15B2, 378/10, 378/11, 378/12, 378/13, 378/15, 379/18, 379/19, 379/20, 379/7B, 379/11B, 383/5, 383/6, 383/7A, 383/7B, 383/7C, 383/8A, 383/8B, 383/8C of **Devasenapuram Village** & 423/3pt, 423/4pt, 424/1, 424/2, 424/3A, 424/3B, 424/3C, 424/4, 424/5, 425pt, 426pt of **Valliammapuram Village**, Karthikeyapuram Panchayat, Tiruttani Taluk, Tiruvallur District, Tamil Nadu (**Fig. 1.1**). Site in FMB Sketch is given as **Plate I**.





Accessibility : Site is accessible from **Tiruttani Bypass** connecting NH-716 (Chennai-Tirupati Section) and is connected to SH-58 Tiruttani-Arakkonam-Kancheepuram Section). Southern Railway BG Line (Arakkonam-Tiruttani-Renigunta Section) runs adjacent to the Site. Railway Sidings are proposed from Icchiputhur Railway Station (3 km in south)/Tiruttani Railway Station (2 km in NW). Arakkonam Railway Junction is at 9.3 km in SSE direction. District Head Quarters Tiruvallur is at 28 km in the east and State Head Quarters Chennai is at 55 km in the east. Regional Setting is shown in **Plate II**.

Possession of the Site : The identified Site is over an extent of **19.58 Ha** with 14.848 Ha of SCL's own Patta Lands and 4.735 Ha is Govt. Poramboke Land (SF Nos. 2 & 4 in Tiruttani Village - Dug wells and Rock-0.2914 Ha & SF No. 425 pt in Valliammapuram Village - Maichal land-4.4435 Ha) (**Table 1.1**). **SCL owns additional lands over an extent of 6.4831 Ha** near the Site and offered to exchange them for Govt. Poramboke Land of 4.735 Ha suitably as required by the State Government. The request Letter by SCL submitted to the District Collector, Tiruvallur on 06.06.2024 is under process (**Document-2**). Patta copies are annexed as **Document-3**.

Table : 1.1 SCL Patta Lands in Tiruttani, Devasenapuram & Valliammapuram Villages

Sl. No.	Village Name	Area in Acres	Area in Ha.	Land Use
1	Tiruttani	19.50	7.89	Dugwells, Barren and Dry Agri. Lands
2	Devasenapuram	9.48	3.83	Barren and Dry Agricultural Lands
3	Valliammapuram	19.41	7.85	Barren & Govt. Poramboke (Maichal) Lands
Total		48.39	19.58	

Site History : The entire land is located outside Tiruttani Municipal Limit. Site is Barren and Dry Agri. Lands predominantly. Poramboke land was Maichal land which is now fully barren land. Site in Google Earth Image is shown in **Plate III**. Site Photographs are shown in **Plate IV**. As per DTCP, the Site falls in 'Non-Planning Area' (**Document-4**) and will be converted into 'Industrial Use' before Consents for the Project from Tamil Nadu Pollution Control Board (TNPCB). There is **no Rehabilitation & Resettlement (R&R)** issue due to the Proposal. Also, there is **no Litigation/Pending Case** against the Proposal.

Site Land Use : Existing Land Use of the Site is shown in **Plate V**. There are 3 Nos. Dugwells (irrigation wells) & 2 Borewells at the Site which will be utilised for Raw Water demand **as permitted** by State Ground and Surface Water Resources Data Centre, WRD, Taramani. There are 12 Neem, 37 Palmyra, 15 Date Palm, 8 Teak, 10 Nuna (total 72) Trees along with 18 Coconut Trees and Plantain plantation in the Site. Well grown trees including Palmyra trees **will be numbered and transplanted** as such to the boundaries of Site for Green Belt development. Existing Power Lines will be shifted out of Site boundaries suitably through TANGEDCO.



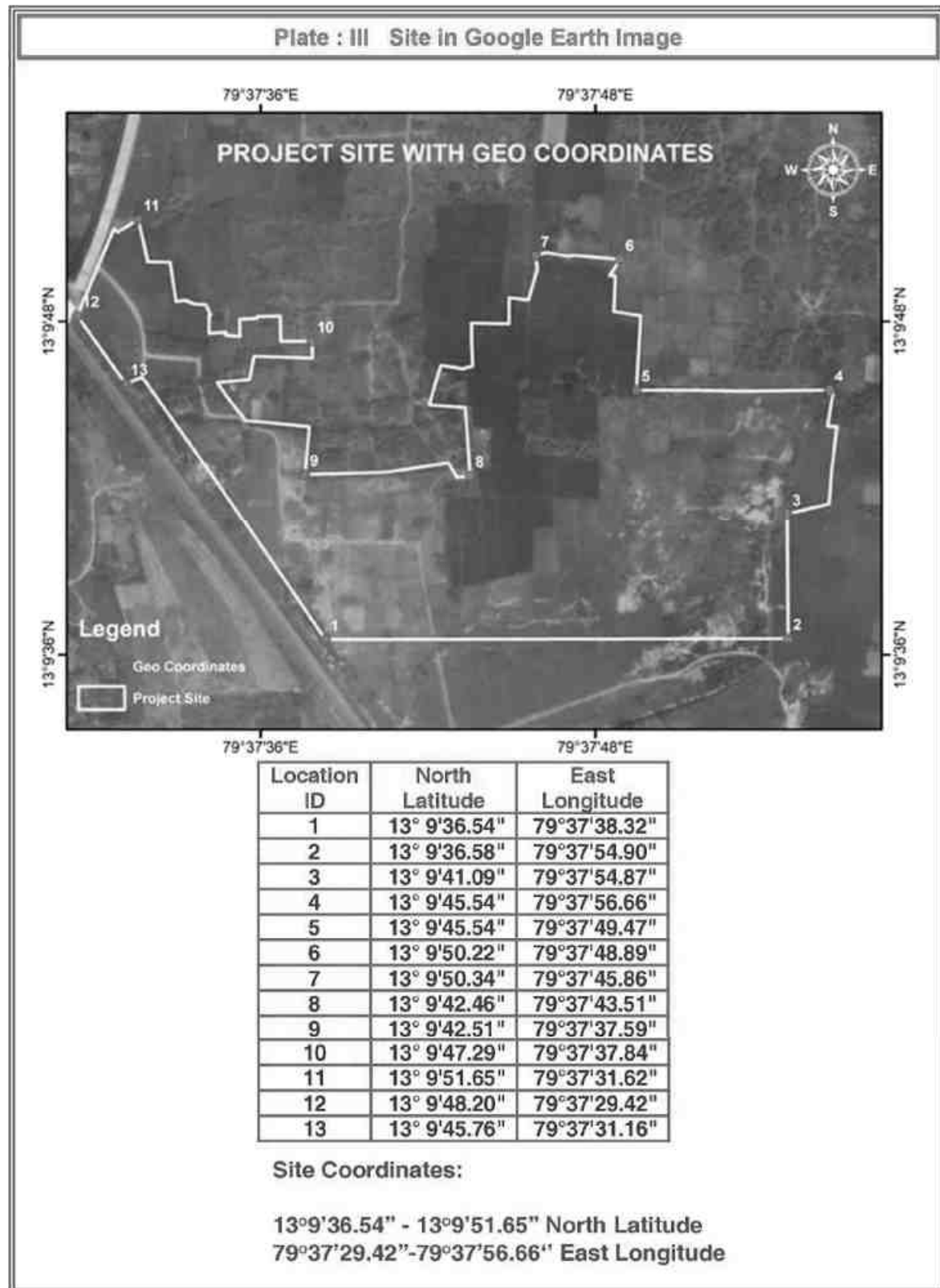


Plate : IV Site Photographs



Chengalpet-Kancheepuram-Arakkonam-Tiruttani Rd, Tamil Nadu 631211,
India

Latitude 13° 9' 50.418" N Longitude 79° 37' 30.024" E
Local 11:05:59 Altitude 82 m
GMT 05:35:59 Sunday, 13.10.2024



Chengalpet-Kancheepuram-Arakkonam-Tiruttani Rd, Tamil Nadu 631211,
India

Latitude 13° 9' 50.298" N Longitude 79° 37' 30.06" E
Local 11:04:10 Altitude 82 m
GMT 05:34:10 Sunday, 13.10.2024



Chengalpet-Kancheepuram-Arakkonam-Tiruttani Rd, Tamil Nadu 631211,
India

Latitude 13° 9' 42.306" N Longitude 79° 37' 33.654" E
Local 11:54:18 Altitude 84 m
GMT 06:24:18 Sunday, 13.10.2024



Chengalpet-Kancheepuram-Arakkonam-Tiruttani Rd, Tamil Nadu 631211,
India

Latitude 13° 9' 42.276" N Longitude 79° 37' 33.63" E
Local 11:54:08 Altitude 84 m
GMT 06:24:08 Sunday, 13.10.2024



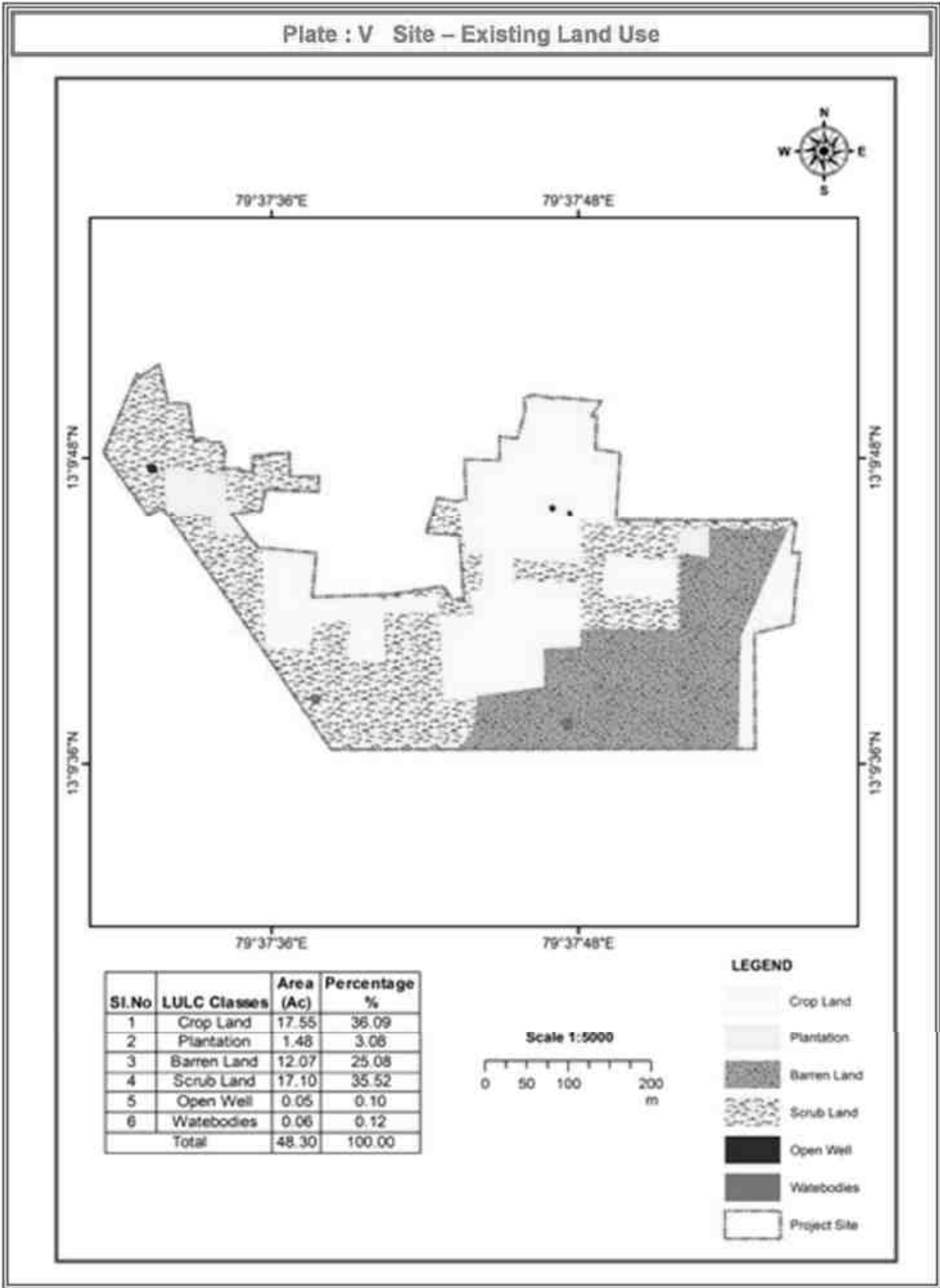
Chengalpet-Kancheepuram-Arakkonam-Tiruttani Rd, Tamil Nadu 631211,
India

Latitude 13° 9' 42.348" N Longitude 79° 37' 33.654" E
Local 11:56:39 Altitude 84 m
GMT 06:26:39 Sunday, 13.10.2024



Chengalpet-Kancheepuram-Arakkonam-Tiruttani Rd, Tamil Nadu 631211,
India

Latitude 13° 9' 49.476" N Longitude 79° 37' 29.508" E
Local 12:05:22 Altitude 84 m
GMT 06:35:22 Sunday, 13.10.2024



1.4 Need for the Project and its importance to the Country & Region

1.4.1 Need for the Proposal

The cement demand is steadily increasing in northern Districts of Tamil Nadu including Chennai and Southern Districts of nearby Andhra Pradesh State due to infrastructure development activities of private and governmental projects of the Region viz. construction of highways, roads, flyovers, bridges, building apartments & townships, etc. Thus, SCL is proposing its Green field Tiruttani Clinker Grinding Unit at Tiruttani near the Raw Material Sources and Marketing Centres.

1.4.2 Important to the Country & Region

The Cement Industry in India is among the Core Industries that is vital for economic growth and development. Ever since the Industry was de-licensed in 1991, there has been remarkable growth that metamorphosed it to a globally competitive market, making India the second largest producer of cement after China in the world. It has become synonymous with construction activity and the per capita consumption of cement is accepted as an important indicator of the country's economic growth.

Government of India has been laying a massive emphasis on infrastructure development with 100 smart cities, modernization of 500 cities, affordable housing for all by 2027, cement concreting of national highways, provision of sanitation facilities, etc. all in pipeline for development over the course of next years. These all leads to future growth of Indian Cement Industry. The Indian cement sector has a robust demand profile, stimulated mostly by government plans to build physical and social infrastructure like Pradhan Mantri Awaas Yojana (PMAY-G and PMAY-U), Pradhan Mantri Gramin Sadak Yojana (PMGSY) (Prime Minister's Rural Road Scheme), Concrete Roads, Smart cities, Swachh Bharat (Clean India), Construction of hospitals and educational institutions, Canal lining projects, Cold chain storage projects etc.

1.4.3 Demand - Supply Gap

Indian government has set a target to invest INR 100 Billion on developing infrastructure from 2024- 2026. In view of INR 100 billion investment on infrastructure, Indian cement industry is estimated to have cement consumption of 570 Million TPA and industry consumption is expected to cross 85% capacity utilization. The execution of government development of infrastructure is observed is high and even in many sectors it is found to be touching 90% level. Therefore, the cement demand is expected to touch 725 MT by 2028 in high growth scenario (*Source: Indian Cement Industry Report*). The housing sector is the biggest demand driver of cement, accounting for about 67% of the total consumption in India. The other major consumers of cement include infrastructure at 13%, commercial construction at 11% and industrial construction at 9%. To meet the rise in demand, cement companies are expected to add 95 Million Tonnes (MT) capacity over

the next four years. The country's per capita consumption stands at around 240 kg against global average of 530 kg per capita, which shows significant potential for the growth of industry.

The Government of India is strongly focused on infrastructure development to boost economic growth and is aiming for World Class Cement Concrete Highways, Creation of 100 Smart cities, Dedicated Freight Corridors, Clean India Mission, Ultra Mega Power Projects, Connectivity improvement including Water Transport. The government also intends to expand the capacity of the railways and the facilities for handling and storage to ease the transportation of cement and reduce transportation costs. These measures would lead to increased construction activity thereby boosting cement demand.

1.4.4 Imports & Indigenous Production

The proposed Grinding Unit project will utilize locally available Raw Materials namely Clinker, Gypsum, Fly Ash and Slag. Imports are not feasible.

1.4.5 Export Possibility

Export of cement does not seem to be viable in near future.

1.4.6 Domestic / Export Markets

Cement market for the proposed Grinding Unit would be Tamil Nadu, Andhra Pradesh, Kerala, Karnataka, Telangana & Maharashtra. Existing marketing model of selling through authorized dealers adopted by SCL shall be replicated. Entire output (other than institutional sales) shall be sold through the authorized dealers. Institutional sales such as sales to customers having large requirement of cement like Private builders or Govt. agencies etc. shall be effected directly by the Company from the factory site. Dealers may sell the product to a network of retailers attached to its area of operation or directly to the ultimate consumer. Company may use its existing marketing offices and depots or may open new depots at strategic locations to ease movement of cement into the market.

1.5 The Proposal

Main process of manufacturing of cement involves inter-grinding of Clinker, Gypsum and other Pozzolana materials in the specified ratio in a Cement Mill for Packing and Dispatch it to the local market. SCL TGU will be with a cement grinding capacity of **3.5 MTPA** of various Cements viz. Ordinary Portland Cement (OPC), Pozzolana Portland Cement (PPC), Portland Slag Cement (PSC), Rapid Hardening Portland Cement (RHPC), Sulphate Resistant Cement (SRC), Composite Cement (CC) etc. along with Railway Siding and DG Sets for standby operations of total capacity of 1250 KVA (1000 KVA or 2x500 KVA & 1x250 KVA).

1.6 Environmental Setting

The Site falls in Survey of India Topo Sheet No. 57 O/12 (Open Series Map D44N12). Study Area of 10 km Radius falls in Topo Sheets No. 57 O/11 & 57 O/12 (**Fig. 1.2**). Site falls within the Coordinates :

North Latitude	:	13°9'36.54" to 13°9'51.65"
East Longitude	:	79°37'29.42" to 79°37'56.66".

The region falls in Seismic Zone III. The elevation of the Plant area ranges from 85 m to 94 m above MSL. Environmental Setting of 15 km Radius is given in **Table 1.2**.

Site is well connected by Road with Tiruttani Bypass connecting NH-716 (Chennai-Tirupati Section) and SH-58 Tiruttani-Arakkonam-Kancheepuram Section) and Rail networks (Southern Railway BG Line of Chengalpattu-Kancheepuram-Arakkonam-Tiruttani-Renigunta Section). Southern Railway BG Line run adjacent to the Site.

There are **no Eco Sensitive Areas** like National Parks, Wildlife Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar Sites, Tiger/Elephant Reserves, etc. (existing as well as proposed), within 10 km from the Site. There are two Reserved Forests (RFs) viz. **Kolattur RF** @ 8.5 km in SE direction & **Ammanur RF** near Arakkonam @ 8.0 in SSE direction. The shortest Tamil Nadu-Andhra Pradesh State Border is at 10.1 km in northeast. **Arulmighu Sri Subramaniaswamy Temple-Tiruttani**, a Hindu Pilgrimage Centre, is at 2.4 km in northwest. INS-Rajali Defence Air Strip, Arakkonam is at 11.4 km in SSE direction.

General Condition of EIA Notification 2006 (as amended) **is not attracted** for the Project. Also, none of the followings are located in the Study Area :

- ❖ **Protected areas** notified under the Wild life (Protection) Act, 1972.
- ❖ **Critically polluted area** as notified by CPCB .
- ❖ **Eco -Sensitive areas** as notified.
- ❖ **Interstate boundaries** within 5 km radius from the boundary of the proposed site.
- ❖ Coastal Regulation Zone (**CRZ**) Area.

The seasonal Nandi River flows at 1.3 km in north and confluences into Nagari River which confluences into Kosasthalai River in northeast. There are dugwells and rainfed irrigation Tanks near the Site.

In the study area, there are primary schools, dispensaries, small hospitals, places of worship in nearby area of the project site.

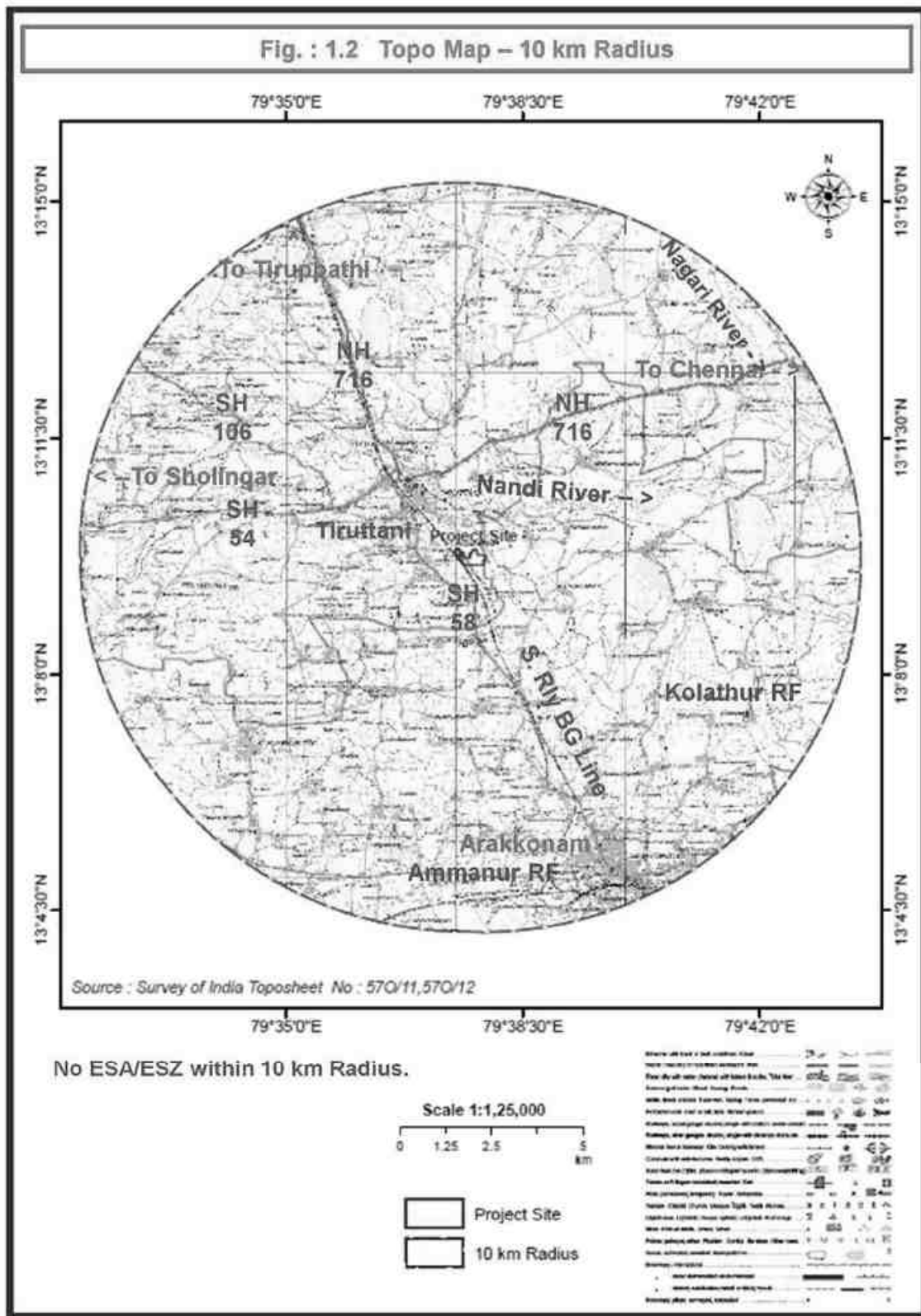


Table : 1.2 Environmental Setting – 15 km Radius

Sl. No.	Areas	Aerial Distance(within 15 km) Proposed Project location boundary
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Nil
2	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	Nil
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	Kolattur RF @ 8.5 km in SE direction Ammanur RF @ 8.0 in SSE direction
4	Inland, coastal, marine or underground waters	Seasonal Nandi River @ 1.3 km in N Seasonal Nagari River @ 8.8 km in NE
5	State, National boundaries	TN-AP Border at 10.1 km in NE
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	Arulmighu Sri Subramaniaswamy Temple-Tiruttani, a Hindu Pilgrimage Temple, @ 2.4 km (NW)
7	Defence installations	INS-Rajali Defence Air Strip, Arakkonam is at 11.4 km in SSE direction.
8	Densely populated or built-up area & Areas occupied by sensitive man-made land uses (<i>hospitals, schools, places of worship, community facilities</i>)	Taluk Headquarters Tiruttani Town is at 0.5 km in northwest. Arakkonam Town @ 8.7 in SSE
9	Areas containing important, high quality or scarce resources(<i>ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals</i>)	Nil
10	Areas already subjected to pollution or environmental damage (those where existing legal environmental standards are exceeded)	Nil
12	Areas susceptible to natural hazard which could cause the project to present environmental problems	The region falls in Seismic Zone III.

Tiruttani Municipality Limit with a Population of 44,781 Persons is at 0.4 km in the west (aerial distance). Nearest habitations to the Site are given in **Table 1.3**.

Table : 1.3 Site – Nearest Habitations

Village	Distance in km & Direction	Total Population
Tiruttani Municipality limit	0.4 (W)	44,781
Tiruttani Village	0.3 (NE)	670
Pattakollai	0.2 km (N)	141
Karthikeyapuram	0.7 km (WSW)	3,434
Kilandur	0.7 km (NNE)	2,945

Tiruttani Railway Station is at 2.0 km in NW & Arakkonam Railway Junction is at 9.3 km in SSE direction. District Head Quarters Tiruvallur is at 28 km in the east and State Head Quarters Chennai is at 55 km in the east.

There are **no major industry** in the Study Area. Chennai Port is at 72 km (E), Ennore Kamaraj Port at 75 km (ENE) & Adani Kattupalli Port at 77 km ENE. Chennai Airport is at 60 km (SE) & INS Rajali Defence Airstrip at 11.4 km (SE). North Chennai Thermal Power Station, NTPC Tamil Nadu Energy Limited (**Fly Ash Sources**), etc. are located near Ennore Kamaraj Port.

1.7 Employment Potential

The Project will give Direct Employment to 50 persons and Indirect Employment to 200 persons, thus, total **250 employment during Construction Phase**. Local labourers will be pooled for the Construction. The Project will give Direct Employment to 50 persons and Indirect / Contract Employment to 150 persons, thus, total **200 employment during Operation Phase**. Local people will be given preference for Contractual Works (**Table 1.4**).

Table : 1.4 Employment Potential of the Project

Sl. No.	Phase & Category	Employees
I	Construction Phase	
1	Direct	50
2	Indirect (Avg.)	200
Total-Construction Phase		250
II	Operation Phase	
1	Direct	50
2	Contractual	150
Total-Operation Phase		200

1.8 Project Cost

The Project Cost of Rs. 838 Crores (**Table 1.5**). A budgetary allotment of Rs.19.23 crores has been made as Capital EMP Cost and Rs.1.30 crores per annum towards Operating EMP Cost. Adequate Budget for Corporate Environmental Responsibility (CER) Budget will be allotted in compliance with MoEF&CC OMs dated 30th Sept., 2020 & OM dated 20th Oct., 2020, on the basis of the issues raised during the Public Hearing and will also be part of EMP Cost.

Table : 1.5 Project Cost Breakup

Sl. No.	Component	Cost in Rs. Crores
1	Land	58
2	Building (Plant + Infrastructures)	157
3	Plant & Machinery	440
4	Wagon Tippler	65
5	Cement bags wagon loading	62
6	Railway Siding	56
Total		838

1.9 Project Schedule

The project will start only after obtaining Environmental Clearance and all other required clearances from the statutory authorities. Construction period of **24 months** from the date of signing/ effectiveness of the contract is foreseen for the project (**Table 1.6**).

Table : 1.6 Project Schedule

Sl. No.	Project Activity	Months											
		2	4	6	8	10	12	14	16	18	20	22	24
1	Land Preparation												
2	Boundary Wall civil work												
3	Detail Engineering												
4	Plant machine and Auxiliary order placement												
5	Civil Construction												
6	Equipment Delivery												
7	Fabrication												
8	Erection												
9	Final Commissioning												

1.10 Scope of the EIA Study

The Stand Alone Grinding Unit falls under Sl. No. 3(b) & Category 'B' with non-applicability of General Conditions of EIA Notification 2006 (as amended) and requires Prior Environmental Clearance (EC) from the State Environment Impact Assessment Authority-Tamil Nadu (SEIAA-TN). Accordingly, TOR Application was submitted by SCL vide Parivesh Online proposal No. **SIA/TN/IND1/542782/2025 on 25.06.2025**. After paying Online Scrutiny Fees, the File has been accepted by SEIAA on 27.06.2025 under File No. 12367. The Proposal was deliberated by the State Expert Appraisal Committee (SEAC)-Tamil Nadu in its 595th Meeting held on 21.07.2025 and SEIAA-TN in its 868th Meeting held on 08.08.2025. TOR has been awarded vide Identification No. TO25B1103TN5124110N dated 19.08.2025 with Public Hearing.

The EIA Consultant, M/s. ABC Techno Labs India Private Limited, Chennai has been accredited for various Sectors including Sector-9 (Cement Plants) for Category 'A' by NABET vide Certificate NABET/EIA/2225/RA0290 dated 11.06.2023 with validity till 16.11.2025 (Sl. No. 4 of the List) which will be extended by NABET periodically. 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. Baseline Data (BLD) was collected during Jun.-Aug. 2025 (Premonsoon Season) for the EIA Study as the area experiences NE Monsoon during Oct.-Dec. months.

The Draft Environmental Impact Assessment (Draft EIA) Report has been prepared in compliance with **Awarded Standard TORs & Specific TORs** for Cement Plants and also as per the generic structure proposed in Appendix III of EIA Notification 2006 with the following Chapters:

- ❖ Introduction with Need for the Project & Environmental Setting.
- ❖ Project Profile - an outline of the Project and allied activities.
- ❖ Baseline Environmental Status.
- ❖ Anticipated Impacts along with Prediction of Impacts and Mitigation Measures.
- ❖ Analysis of Alternatives (Technology & Site).
- ❖ Environmental Quality Monitoring Programme.
- ❖ Project Benefits.
- ❖ Additional Studies like Risk Assessment, DMP, etc.
- ❖ Cost-Benefit Analysis, if any.
- ❖ Environmental Management Plan
- ❖ Summary & Conclusion.
- ❖ Disclosure of Consultants engaged.

The Draft EIA along with Summary EIA Reports (both in English & Tamil Languages) are submitted for the Public Consultation & Public Hearing.

2.0 Project Profile

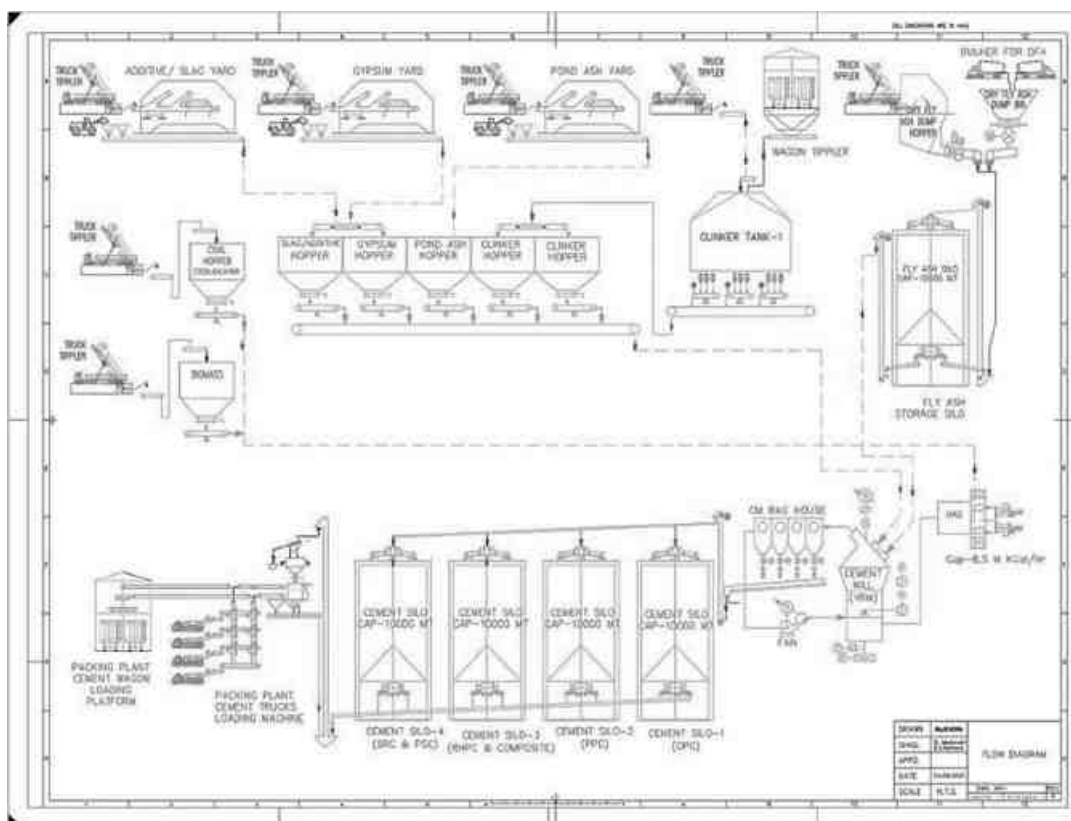
2.1 Description of the Proposal

There will be **no Clinker manufacturing in this Grinding Unit**. Main process of manufacturing of Cement involves **inter-grinding of Clinker** (received from existing Clinker Units/Cement Plants of SCL), **Gypsum** and **other Pozzolana materials** in the specified ratio in a Cement Mill for Packing and Dispatch it to the local market. Major steps involved in the process of Clinker Grinding Unit are given as below:

- ❖ Clinker storage & handling.
- ❖ Gypsum storage & handling.
- ❖ Fly Ash, Pond Ash and slag storage, handling and drying with Hot Air Generator.
- ❖ Coal, Dolochar & Biomass storage, grinding & handling.
- ❖ Cement production and storage.
- ❖ Cement packing and dispatch.

The general Process Flow Chart is given as **Plate VI**.

Plate : VI Process Flow Chart



2.2 Magnitude of Operation

SCL TCGU will be with a **cement grinding capacity of 3.5 MTPA @ 10,500 TPD** of various Cements viz. Ordinary Portland Cement (OPC), Pozzolana Portland Cement (PPC), Portland Slag Cement (PSC), Rapid Hardening Portland Cement (RHPC), Sulphate Resistant Cement (SRC), Composite Cement (CC) etc. along with Railway Siding and DG Sets for standby operations of total capacity of 1250 KVA (1000 KVA or 2x500 KVA & 1x250 KVA) (**Table 2.1**). The details of composition of the cement manufacturing will be as given in **Table 2.2**.

Table : 2.1 SCL TCGU – Plant Configuration

Project Component	Capacity
Cement Grinding (OPC, PPC, PSC, RHPC, SRC and Composite Cement)	3.5 MTPA
DG Sets for Standby Operations	1250 KVA [1000 KVA or (2 x 500 KVA) & 250 KVA]
Railway Siding for Raw Material & finished Product Transportation	Part of Project

Table : 2.2 Various Cements & their Composition

Raw Material	Proportion by Weight (%)			
	OPC / RHPC / SRC	PPC	PSC	CC
Clinker	93	58	38	38
Chemical / Mineral Gypsum	7	7	7	7
Fly Ash (Max.)	-	35	-	35
Slag	-	-	55	20
Total	100	100	100	100

The major raw materials requirement is estimated considering 100% of individual type of cement i.e. OPC/PPC/PSC/RHPC/SRC/CC. However, the actual quantity will be less than the proposed as a mix of different type of products will be produced.

2.3 Plant Layout & Land Use

The emphasis has been given for an optimum Layout (**Fig. 2.1**). No buildings/structures in the site and no demolition works is required. The elevation of the Plant area ranges from 85 m to 94 m above MSL. No Reclamation is required. Top soil excavated @ 26,240 cu.m during the civil works will be used for greenbelt development. Proposed Land Use is given in **Table 2.3**. Greenbelt & plantation will be developed in 6.46 Ha (33% coverage) and maintained (**Fig. 2.2**). Railway Sidings are proposed from Icchiputhur Railway or Tiruttani Railway Station in north. No Township is proposed other than a small Guest House.

Fig. : 2.1 Proposed Layout (Machineries)

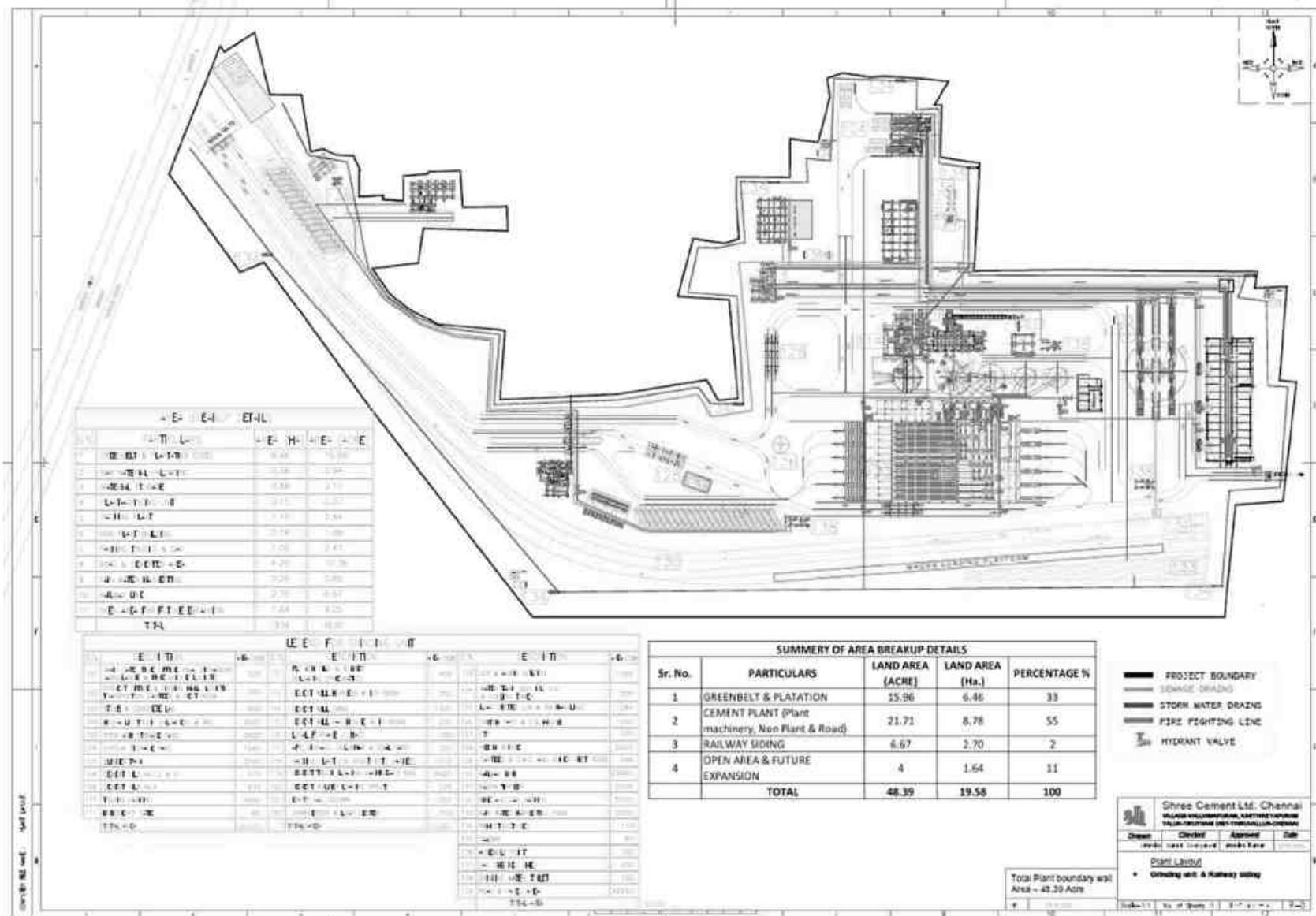


Fig. : 2.2 Green Belt Layout

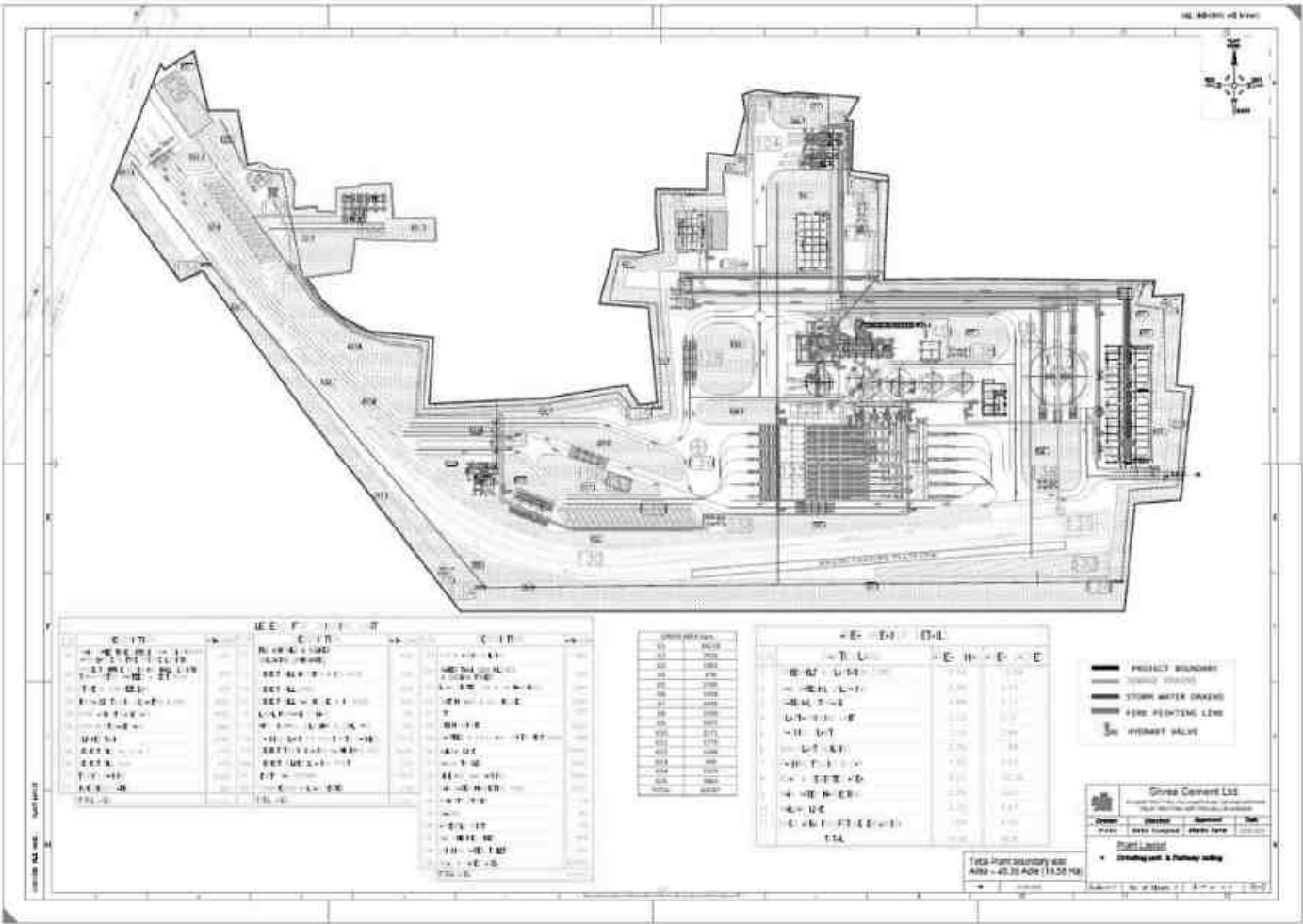


Table : 2.3 Proposed Land Use

Sl. No.	Land Use	Area, Ha	Coverage, %
1	Plant Area	4.08	20.8
2	Paved Areas & Roads	4.20	21.5
3	Truck & Car Parking	0.50	2.6
4	Railway Siding	2.70	13.8
5	Greenbelt & Plantation	6.46	33.0
6	Vacant Area	1.64	8.4
Total		19.58	100

Action Plan for developing Connecting and Internal Roads : Tiruttani Bypass from NH-716 will be the transportation route for the TCGU. Road Over Bridge on Railway Line near the Site will have Service Road of 12 m width on either side for to & fro traffic meant for the Grinding Unit. **All internal roads** are designed for minimum **6 m width and 9 m turning radius** for smooth traffic flow inside the Unit including fire tender, as per NBC Norms. Road network is connecting all service areas. Design traffic on project corridor is estimated to be about 5 MSA for 20 years. As on IRC manual, minimum 10 MSA of design traffic is considered for Pavement design.

2.4 Green Belt Development

Green Belt, preferably native Tree species, will be developed in 3-Tiers along the boundaries as well as inside the Plant over an extent of **6.46 Ha @ 1,500 trees/Ha**, thus a total of **9,690 Trees (Table 2.4)** with about **90% Survival Rate**. Green Belt area coverage, as shown in Fig. 1.2, is appended.

Table : 2.4 Proposed Tree Species

Sl. No.	Species Name	Common Name	Nos.
1	Albizia lebbeck	Siris tree	500
2	Azadirachta indica	Neem tree	2000
3	Cassia fistula	Golden shower tree	500
4	Inga dulce	Manila tamarind	500
5	Mimosops elengii	Bullet wood tree	250
6	Peltophorum pterocarpum	Copper pod tree	1000
7	Pongamia pinnata	Pongam	2000
8	Syzygium cumini	Jamun	500
9	Terminalia arjuna	Arjun tree	1000
10	Terminalia catappa	Indian almond tree	900
11	Tetona grandis	Teak	200
12	Transplanted Trees	Neem, Palmyra, Date Palm, Teak, Nuna	72
13	Ornamental palms	Palms	268
Total		-	9,690

Area-wise Green Belt Area within the Plant

GREEN AREA Sqm.		G8	2250
G1	34218	G9	2475
G2	7926	G10	2171
G3	1465	G11	1770
G4	476	G12	1148
G5	2185	G13	566
G6	1058	G14	1374
G7	1640	G15	3865

2.5 Plant Contour Levels & Drainage Pattern

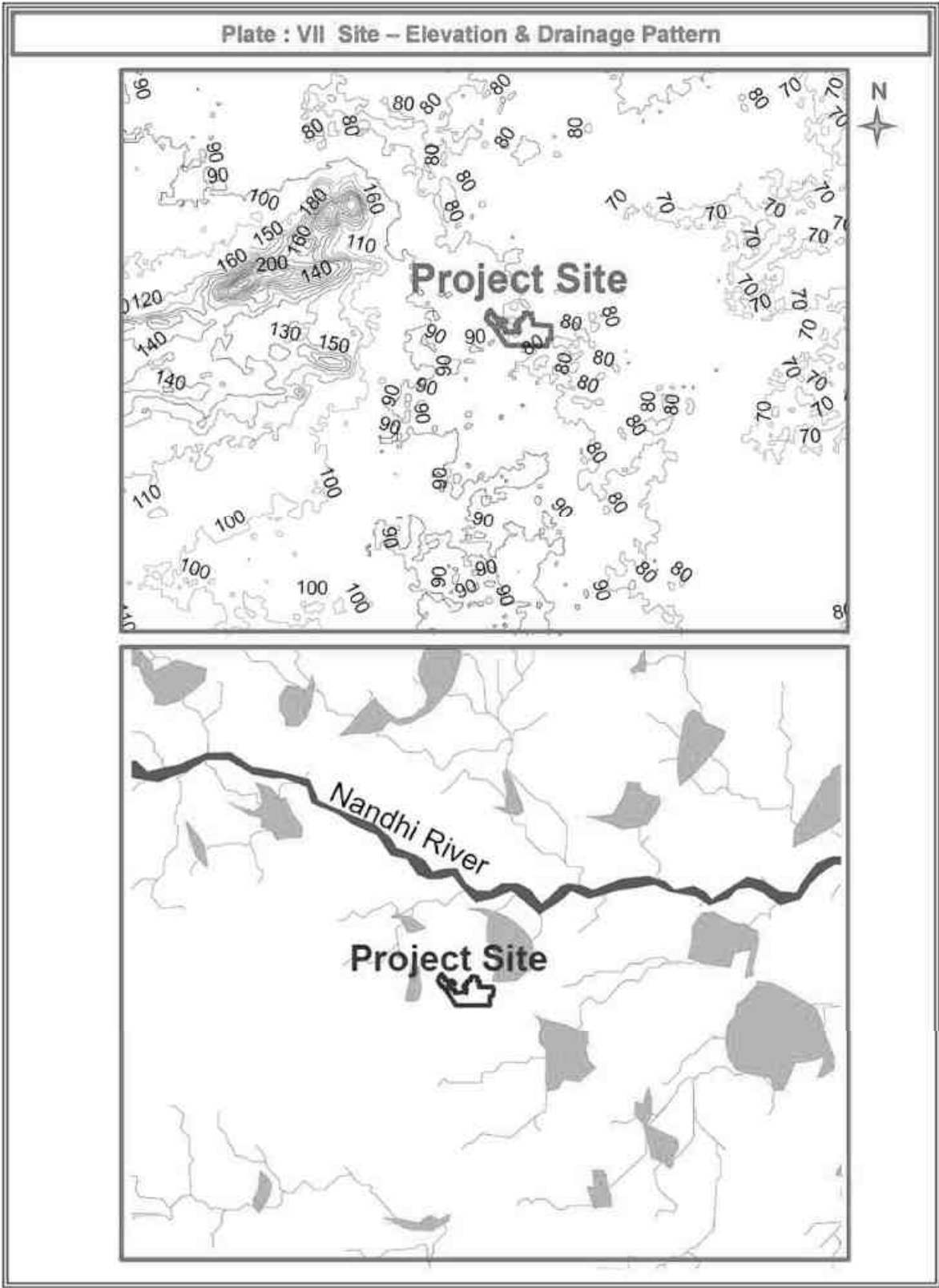
The hard rock formations begins with top sandy soil to a depth of 1.5 to 3 metres followed by highly weathered formation of granites and granitic gneisses upto 7.5 metres and then well fractured formation to a depth of 30 metres from ground level. The elevation of the Plant area ranges from 85 m to 94 m above MSL with sloping towards east. Seasonal Nandi River drains the area. The overflow from 'Pandari Cherivu' in the west is channelized in the north of the Site to Kilandur Lake in the northeast. There is **no nalla crossing** at the Site. Elevation and Drainage Pattern of the Site are shown in **Plate VII**. Based on the Slope, Surface Drainage Network has been developed so as to harvest the Rainwater effectively.

The District enjoys a **tropical climate**. Most of the precipitation occurs in the form of cyclonic storms caused due to the depressions in Bay of Bengal chiefly during Northeast monsoon period. The southwest monsoon rainfall is highly erratic and summer rains are negligible. The normal annual rainfall varies from 950 mm to 1150 mm. Annual Normal rainfall of the Site area is **950 mm**. Pre-Project & Post Project Surface Runoffs from Plant Area is estimated as per '**Manual of Artificial Recharge of Ground Water (CGWB, 2007)**' and given in **Table 2.5**.

Table : 2.5 Estimation of Quantum of Runoff available through RWH

Sl. No.	Land Use	Area, sq.m	Rainfall, m	Runoff Coefficient*	Quantum of Runoff Available, KL/Annum
I	Pre-Project Runoff				
1	Total Area	195800	0.950	0.20	37,202
II	Post-Project Runoff				
1	Roof Top of 40,800 sq,m	12240	0.95	0.85	9,883
2	Road/Paved area	47000	0.95	0.65	29,022
3	Open Land	16400	0.95	0.20	3,116
4	Green Belt	64600	0.95	0.15	9,206
5	Railway Siding	27000	0.95	0.90	23,085
	Post-Project Runoff Total				74,312

* Ref: Manual of Artificial Recharge of Ground Water (CGWB, 2007).



Pre-Project Runoff	:	37,202 KL/ Annum
Post Project Runoff	:	74,312 KL/ Annum

The entire Roof Top Collection (RTC) of 9,883 KL/Annum will be harvested and stored in 3 Nos. 150 KL (10x5x3 m) capacity sumps and will be fully utilised for **Raw Water demand @ 120 KLD for 82.4 days**. Surface Runoffs of 64,429 KL/Annum will be collected in the RWH Pond of 10,000 KL capacity, **32,214 KL/Annum @ 88.3 KLD** will be used for Green Belt and Dust Control Measures. Balance 32,215 KL/Annum Surface Runoffs will be sent to the natural drains as it is. Thus, about 87% of natural drain from the Site will be maintained after effective Rain Water Harvesting (RWH) measures (**65%**) and there will not be any significant impact on the receiving water bodies in the vicinity. As Tiruttani Block falls in 'Semi Critical' Area, the **ground water tapping will be permitted** with the proposed RWH Measures.

2.6 Raw Materials Demand, Source & Mode of Transportation

The sources of raw materials i.e. Clinker; Fly ash, Gypsum & Slag and their approximate distances with mode of transportation from proposed project site separately for OPC, PPC, PSC, RHPC, SRC & Composite Cement are given in **Table 2.6**.

Table : 2.6 Raw Materials Quantity, Source & Mode of Transportation

Raw Material	Requirement, MTPA				Source	Road Distance & Mode of Transportation
	OPC/ RHPC/ SRC	PPC	PSC	CC		
Clinker	3.255	2.03	1.33	1.33	SCL's Plant in Karnataka, Andhra Pradesh and Chhattisgarh	By Road & Rail Karnataka-660 km, Andhra Pradesh-447 km & Chhattisgarh-1267 km
Gypsum	0.245	0.245	0.245	0.245	Chemical Gypsum (Vizag); Synthetic Gypsum from sister unit of SCL at Kodla (Karnataka), Imported Gypsum from Iran via Ennore Port	By Road & Rail Vizag, A.P-800 km Karnataka-660 km Ennore Port- 80 km
Fly ash	-	1.225	-	1.225	NTPC and nearby Thermal power plants	By Road & Rail 80 km
Slag	-	-	1.925	0.7	Salem & Vizag Steel,	By Road & Rail: 275 – 300 Km & 800 km – 850 Km
Total	3.50	3.50	3.50	3.50	-	-

*Cement production will be done 3.5 Million TPA only either from various options as OPC, RHPC, SRC, PPC, PSC & Composite Cement.

Clinker will be transported from SCL sister Plants at Guntur in Andhra Pradesh, Kodla in Karnataka & Balodabazar (Chhattisgarh) by Railway Wagons. Fly Ash will be sourced from Thermal Power Plants in Chennai.

Linkage/MOU Documents of SCL for existing Cement Plants in AP & Karnataka will be extended to this Project also.

There will be **no generation of fly ash** from the Grinding Unit. However, fly ash will be utilized as a raw material in manufacturing of PPC & Composite Cement.

2.7 Raw Materials Characteristics

The Chemical composition of the Raw materials will likely to be as given in **Table 2.7**.

Table : 2.7 Raw Materials Characteristics

Parameter	Clinker	Slag	Fly Ash	Gypsum
Moisture %	0	10.7	0.53	18.5
LOI	0.93	-0.03	0.50	22
SiO ₂ %	20.96	34.89	64.2	7.4
Al ₂ O ₃ %	5.14	18.64	23.86	0.103
Fe ₂ O ₃ %	4.93	0.58	4.64	0.08
CaO %	63.00	36.87	2.30	27.00
MgO %	1.11	7.21	2.12	1.33
SO ₃ %	1.19	0.021	0.10	41.20
Na ₂ O%	0.53	0.36	0.41	0.35
K ₂ O%	0.77	0.77	1.47	0.13
Cl%	0.04	0.008	0.00	0.08
SM	2.08	1.82	2.25	40.44
AM	1.04	32.14	5.14	1.29
LSF	92.70	30.71	1.09	129.23

2.8 Machineries & Storages

Fully covered Storage Facilities (Covered Sheds, RCC Silos) are proposed for Raw Materials and Products. **Table 2.8** gives the details of Main Machineries and proposed Storage Facilities in the Unit.

Table : 2.8 Main Machineries & Storage Facilities

Sl. No.	Section	Unit	Specifications
1	Clinker Storage & Handling		
1.1	Clinker tank Capacity	MT	75,000
1.2	Clinker Unloader (100 MT)	No.	2
2	VRM circuit		VRM Mill - 435 TPH
2.1	Bag house	m ³ /hr	10,75,500
2.2	Cement Mill Feed Hoppers		
a	Clinker hopper	MT	2x500 T
b	Gypsum hopper	MT	1x425 T
c	Pond ash/ Slag hopper	MT	1x 400 T
d	Gitty Hopper	MT	1x 425 T
3	Fly ash Handling System		
3.1	Fly Ash Silo	MT	5,000
3.2	Fly Ash Unloading	No.	Pneumatically
4	Gypsum Unloader (100 MT)	No.	1
4.1	Gypsum Stacking		Tripper belt conv.
4.2	Gypsum reclaiming		Through Pay Loader
5	Pond Ash		
5.1	Pond Ash Unloader (100 MT) (Common with Gypsum Unloader)	No.	0
5.2	Pond Ash Stacking		Tripper belt conv.
5.3	Pond Ash reclaiming		Through Pay Loader
6	Slag Unloader (100 MT)		
6.1	Slag Unloader	No.	1
6.2	Slag Stacking		Tripper belt conveyor
6.3	Slag reclaiming		Through Pay Loader
7	Hot Air Generator & coal handling		HAG Capacity 8.5 M Kcal/Hr.
7.1	Coal Unloader (100 MT) *Common Truck unloader for Gypsum / Coal / Dolochar/ Biomass	No.	0
8	Cement Silos	No.	
8.1	Portland Pozzolana Cement (PPC) Silo	No.	1x10,000 T
8.2	Ordinary Portland cement (OPC) Silo	No.	1x10,000 T
8.3	Rapid Hardening Portland Cement (RHPC) Silo	No.	1x10,000 T
	Sulphate Resistant Cement (SRC) Silo		
8.4	Portland Slag Cement (PSC) Silo	No.	1x10,000 T
	Composite Cement Silo		
9	Packing plant (16 Spout)	No.	4
9.1	Truck loader	No.	16
10	Storage Capacity (Covered Yard/ Hopper)		
10.1	Pond ash	MT	10000
10.2	Gypsum (Sy. Gypsum/Chemical Gypsum)	MT	10000

Sl. No.	Section	Unit	Specifications
10.3	Slag	MT	15000
10.4	Coal Hopper/ Dolochar/ Biomass	MT	150
11	Wagon tippler		
11.1	Wagon tippler	-	1 Set (Capacity 25 tips/ hr.)
12	Cement Bags Wagon Loading		
12.1	Cement bags wagon loading	-	12 Nos. x 120 TPH wagon loading machines connected with 4 Nos. packers

2.9 Action Plan for Stock Piles

Storage Facilities will be positioned on an **impervious RCC bed** with graded elevations (0.3-0.6 m above) relative to nearby surface. This gradient is suitably designed for efficient runoff management. The **garland drainage and catch pit systems** are tailored for the facilities. Constructed with gravel linings and perforated pipes, they efficiently manage both surface and subsurface runoff.

2.10 Process

The product mix will comprise of different Raw Materials for different Cement varieties as detailed below :

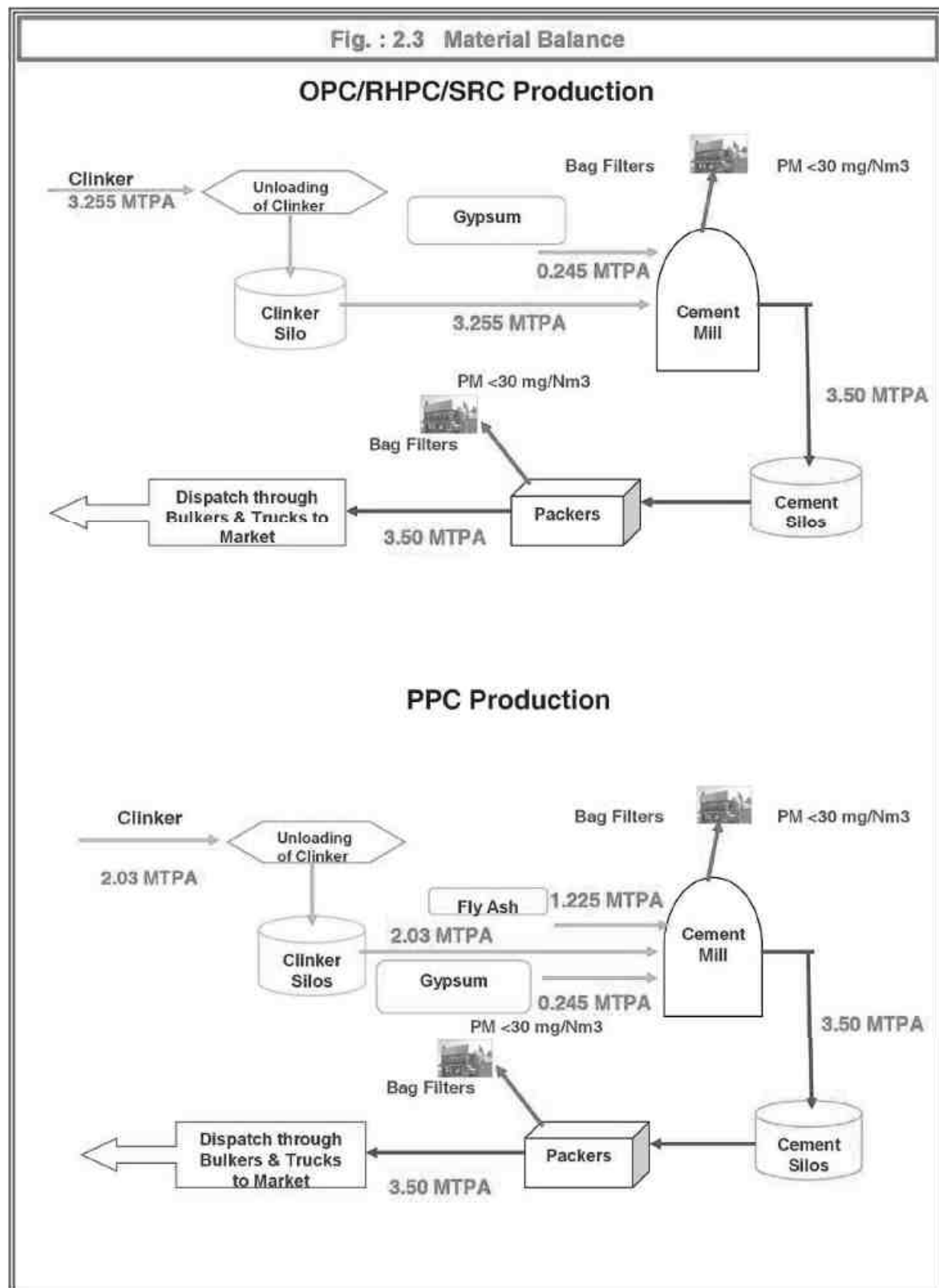
Ordinary Portland Cement (OPC): OPC is manufactured by inter-grinding of ordinary Clinker with gypsum only. No other additives are mixed with the cement. RHPC/SRC are also manufactured by inter-grinding of ordinary Clinker with gypsum only.

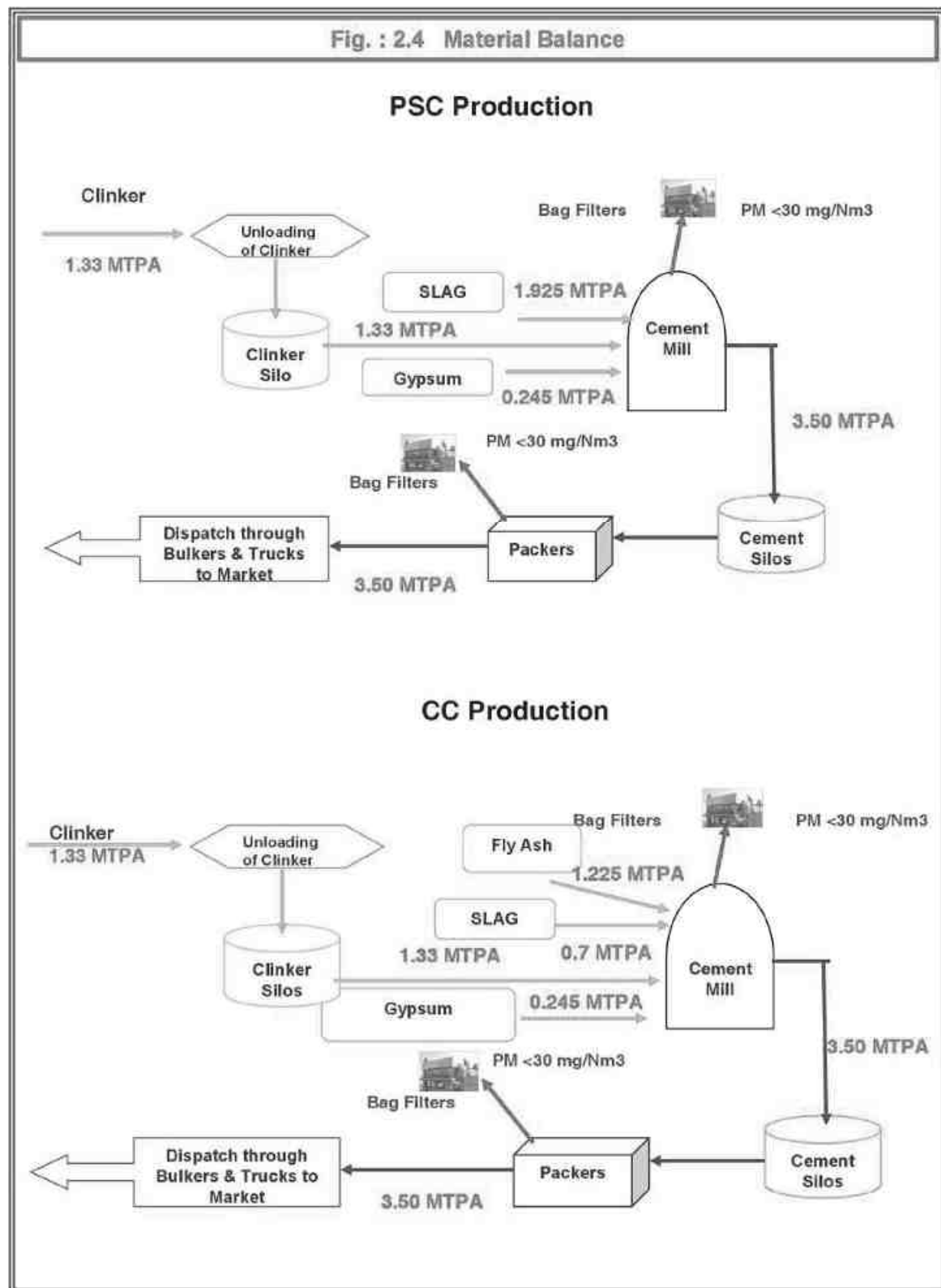
Pozzolana Portland Cement (PPC): PPC is manufactured by inter-grinding of Clinker with gypsum and pozzolanic materials like fly ash, etc.

Portland Slag Cement (PSC): PSC is manufactured by either inter-grinding the clinker, Gypsum & Granulated Slag (or GGBS) with Ordinary Portland Cement by means of mechanical blenders.

Portland Composite Cement (PCC): Provides moderate sulphate resistance, and gives off less heat during hydration. This type of cement costs about the same as PPC. Composite Cement is covered under IS: 16415-2015 and presents a good opportunity to produce high strength concrete which is highly durable. Composite cement is a mixture of high quality clinker (IS:16353-2015), fly ash (IS:3812 (Part 1) - 2013), granulated slag (IS:12089-1987) and gypsum

Material Balance diagrams are given as **Figs. 2.3-2.4.**





Clinker Storage & Handling : Clinker will be sourced from sister units of Shree Cement Limited located in state at Kodla (Karnataka), Guntur (Andhra Pradesh), Balodabazar (Chhattisgarh) and Ras & Beawar (Rajasthan). Clinker will be received at plant site by road & railway and unloaded & transported by a belt conveyor to the clinker silo. From the silo, clinker will be conveyed to the mill hopper by a combination of extraction equipment and belt conveyors.

Gypsum Storage & Handling : Gypsum will be received by road/rail through trucks and will be unloaded by truck tippler and transported to storage yard by a belt conveyor. Gypsum will be reclaimed by pay loader / dozer and fed to hopper for further conveying to mill hoppers. Indian, imported, chemical and synthetic gypsum will be utilised.

Fly Ash & Pond Ash Storage & Handling : Fly ash will be sourced from nearby Thermal power stations and will be received through closed bulkers & fed into silo through pneumatic system. However, closed trucks will also be used to transport the dry fly ash and it will be unloaded through covered unloading hopper. Wet fly ash will be transported by bulker/covered trucks and stored at the site. After adequate drying, it will be used in cement manufacturing.

Slag storage & handling : Slag will be received by road through trucks and unloaded by truck tippler and transported to storage yard by a belt conveyor. Slag will be reclaimed by reclaimer for further conveying to Mill hoppers by conveyors.

Coal & Dolochar Storage, Handling, Grinding and drying with Hot Air Generator : To remove moisture from raw materials Hot Air is required. Hot air generated from hot air generator (HAG) having capacity of 8.5 M Kcal/hr. will be installed and Coal (Indian and imported coal), HSD, Dolochar & Biomass will be used as fuel in HAG.

Cement Production & Storage : Total Cement Production Capacity will be 3.5 Million TPA. Installation of VRM/Ball Mill/Roller Press is proposed with capacity of 10,500 TPD (435 TPH). For OPC/ RHPC/ SRC production, clinker with gypsum will be ground in mill. In PPC production, clinker with gypsum and fly ash will be ground in mill. In PSC production, clinker with gypsum and slag will be ground in mill. In Composite production, clinker with gypsum, slag and fly ash will be ground in mill.

Cement Packing and Dispatch : Rotary electronic packing machines will be used for packing of cement. Loading of packed bags onto the trucks will be done by truck loading machines. Bags will be of 50 kgs. each. Loose cement would also be dispatched through closed bulkers to bulk consumers. Cement will be dispatched by road & rail network. Railway siding will be established at project site. Railway siding along with wagon tippler will be established at project site for rail transportation.

2.11 Power Demand & Source

Total power requirement will be around 22 MW (**Table 2.9**) which will be sourced from TN State Electricity Grid and DG Sets for back-up.

Table : 2.9 Specific Power Requirement

Description of Cement	Capacity/ Annum (TPA)	Working Day	TPD	Running Hours	TPH	Specific Power (Kwh per Ton)	Power Requirement in MW
OPC Cement	3500000	335	10448	24	435	30.0	13.1
PPC Cement	3500000	335	10448	24	435	28.0	12.2
PSC Cement	3500000	335	10448	24	435	51.0	22.2
RHPC Cement	3500000	335	10448	24	435	30.0	13.1
SRC Cement	3500000	335	10448	24	435	30.0	13.1
Composite Cement	3500000	335	10448	24	435	36.0	15.7

2.12 Fuel Storages

A small quantity of coal is required for HAG operation to remove the moisture from the raw material. **Coal having Sulphur content <0.5%** will be utilised. Further, **Dolochar and Biomass** will also be utilised as alternatives for Coal. HSD will be utilised for standby DG Set operations. Fuel requirement is given in **Table 2.10**. Fuel Characteristics is given in **Table 2.11**.

Table : 2.10 Fuel Demand

Sl. No.	Fuel	Quantity	Calorific value (kcal/kg)	Ash Content, %	Sulphur Content, %	Source	Road Distance & Mode of Transport
1	Coal	0.015 MTPA	Indian Coal: 3700	35	0.4	Local Market Indian and Imported & other sources	100 to 200 km by Road Ennore Port ~ 120 Km
			Imported Coal: 3942	33.8	0.5		
2	HSD	300 LPD	9900 - 10500	0.01	0.20	Local Market	50 km by Road
3	Dolochar	25 TPD	2500 - 2700	68.18	0.32	Local Market	100 km by Road
4	Biomass	25 TPD	2300 - 2500	5 - 29	0.15 – 0.22	Nearby Agriculture Fields	100 km by Road

Table : 2.11 Fuel Characteristics (Avg.)

Parameter	Imported Coal	Indian Coal
Surface Moisture, %	8.57	8.66
Inherent Moisture, %	0.75	3.75
Volatile Matters, %	12.25	24.76
Fixed Carbon, %	85.95	21.49
Ash Content, %	33.80	35.00
Sulphur Content, %	0.50	0.40
GCV, kcal/kg	8273	3161
NCV, kcal/kg	8077	2978

2.13 Electrical Energy and Heat Energy Consumption

Since this is a Clinker Grinding Unit, energy consumption per ton of clinker is not applicable. Energy consumption per ton of cement will be as below, for:

OPC, RHPC & SRC Cement :	30 Kwh
PPC Cement :	28 Kwh
PSC Cement :	51 Kwh
Composite Cement :	36 Kwh.

2.14 Solar Power Harnessing

Solar Street Lights, LED Bulbs utilisation & Energy Management System will be in place. SCL plans to have a 10 MWp Solar Plant nearby in future.

2.15 Water Demand & Source

As this is only a grinding unit, water is mainly required for equipment cooling (100 KLD in addition to 3 KLD RO Rejects), domestic consumption (15 KLD) and Green Belt. etc. (5 KLD). Total fresh water requirement for the Grinding Unit will be **120 KLD (Table 2.12)**. With recycled water, total Water Demand will be 134 KLD. The area falls in '**Semi Critical Area**' and Ground Water drawl for industrial purpose is permitted with Rain Water Harvesting measures. Existing Dugwells and Borewells at the Site will be the source for initial Phase. Required **NOC** will be obtained from State PWD and submitted. Surface water from an intake well in Nandi River will be utilised to meet the fresh water demand of 120 KLD after obtaining prior permission from PWD. Alternatively, Desalination Plant supply will also be utilised (purchase water).

Table : 2.12 Fresh Water Demand

Purpose	Fresh Water Demand, KLD	Source
Process (Mill Spray & Cooling)	100	The area falls in 'Semi Critical Area' and Ground Water drawl for industrial purpose is permitted with Rain Water Harvesting measures. Existing Dugwells and Borewells at the Site will be the source.
Domestic Consumption & Utilities	15	
Greenbelt / Plantation, dust suppression & others (in addition to Treated Sewage (11 KLD)	5	
Total	120*	-
* - With recycled water, total water demand will be 134 KLD.		

2.16 Wastewater Generation, Treatment & Disposal

A 5 KLD RO Plant is proposed to treat the Ground water for drinking purpose. RO Rejects of 3 KLD will be fully utilized for equipment cooling in the Unit. Domestic Sewage to the tune of 12 KLD will be treated in a 15 KLD Sewage Treatment Plant (STP) based on MBBR Technology (Fig. 2.5) and Treated Sewage of 11 KLD, in compliance with TNPCB Norms for On-land irrigation, will be fully utilized for Green Belt development & maintenance. Thus, 'Zero Effluent Discharge' will be adopted/practiced. Water Balance Diagram is given as Fig. 2.6.

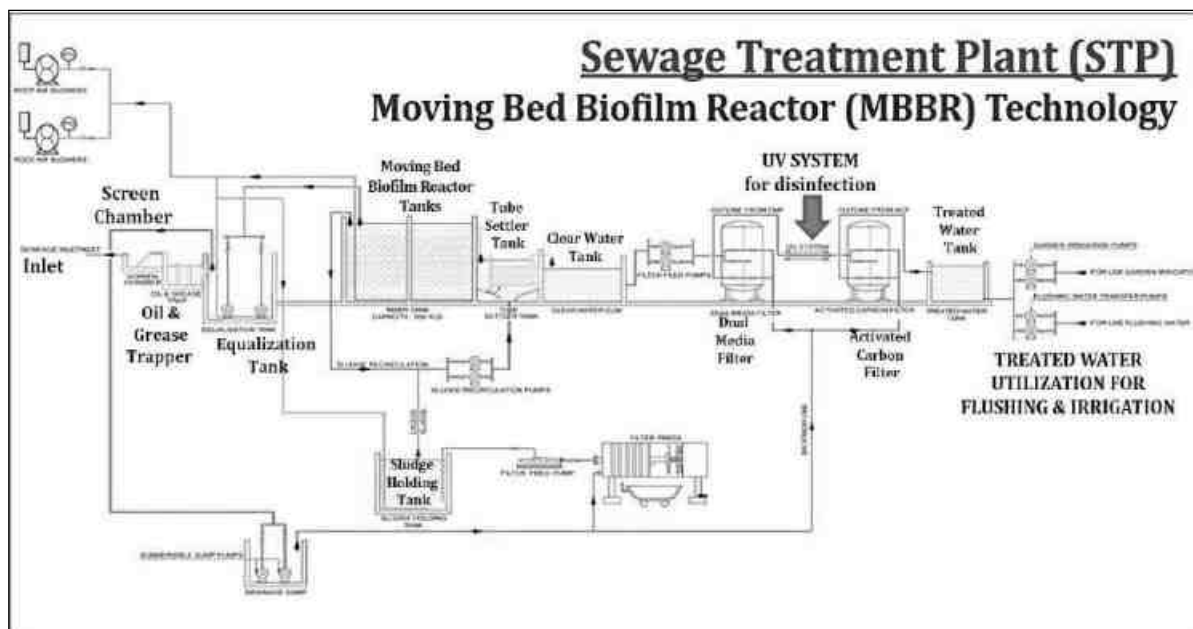
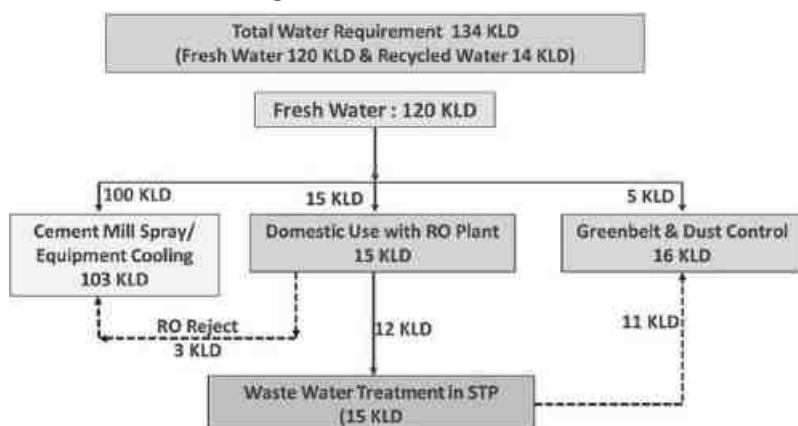
Fig. : 2.5 STP Scheme

Fig. : 2.6 Water Balance

2.17 Action Plan to Limit PM Emission from all Stacks below 30 mg/Nm³

The main pollutant expected from the Cement Grinding Unit will be Particulate Matter (PM). The identified sources of dust/PM are : Wagon Tippler, Truck unloading (Tippler), Hoppers, Storage Silos, Weigh feeders, Cement Mills, and Packers. Emissions from these sources, other than Cement Mills & Packers, would be fugitive in nature. **Bag Filters are proposed** to control PM emission <30 mg/Nm³. Dust collected from the Bag Filters will be recycled in the Cement manufacturing process. DG stacks will be with **acoustic enclosures and stack height** as per TNPCB/CPCB Norms.

In total, **61 Nos.** Bag Filters proposed for both Process Stacks & Fugitive Sources with the specifications in **Table 2.13**.

Table : 2.13 Bag Filters Specifications

Fabric	100% Homopolymer polyacrylonitrile with water replant finish for Cement Mill Bag House Polyester needfelt with micro fiber for other Bag Filters
Designed Air Cloth Ratio, m ³ /min/m ²	1.5
DP across the Bag Filter	150 mm of wc
Efficiency (Guaranteed) :	99.9%
Outlet PM emission	<30 mg/NM³

The stack characteristics of the Unit are given in **Tables 2.14-2.15**.

Table : 2.14 Process Stack Characteristics

Stack Attached To	Stack Height, m	Stack Dia., m	Stack Temp., °C	Exit Velocity, m/s	Design Discharge, m ³ /hr.	Outlet PM Conc., mg/Nm ³
Cement Mill (VRM) - Bag House	55	3.5	100	25	1075000	<30
Packer 1 - Bag Filter	30	1.0	50	15	40000	<30
Packer 2 - Bag Filter	30	1.0	50	15	40000	<30
Packer 3 - Bag Filter	30	1.0	50	15	40000	<30
Packer 4 - Bag Filter	30	1.0	50	15	40000	<30
Wagon Tippler - Bag Filter	20	2.0	50	12	185000	<30

Other gaseous Pollutants like SO₂, NO_x, etc. emission will be insignificant from the Unit.

Table : 2.15 Standby DG Sets - Stack Characteristics

Stack Attached To	Stack Height, m	Stack Dia., m	Stack Temp., °C	Exit Velocity, m/s	Discharge, Nm ³ /hr.	Outlet PM Conc., mg/Nm ³
Standby DG Set-1 500 KVA-1	15	0.5	100	12	6800	<100
Standby DG Set-2 500 KVA-1	15	0.5	100	12	6800	<100
Standby DG Set-3 250 KVA-1	10	0.3	150	15	3000	<100

2.18 Action Plan to Control Fugitive Emissions

All sources of Fugitive dust generation in the Plant will be provided with high efficiency Bag Filters to control the Fugitive Emissions (Table 2.16).

Table : 2.16 Bag Filters Proposed for Fugitive Emission Sources

Sl. No.	Application		Material	Nos.	Capacity (m ³ /hr)	Outlet Dust Load (mg/m ³)
a	Clinker Transport & Grinding					
1	Clinker dump hopper	At Clinker dump hopper	Clinker Dust	2	25000	<30
2	Clinker elevator bottom	Clinker elevator	Clinker Dust	1	10000	<30

3	Clinker tank elevator top	Clinker elevator	Clinker Dust	1	15000	<30
4	Clinker tank top	Clinker tank	Clinker Dust	1	60000	<30
5	Clinker tank extraction belt conveyors tail end	Clinker tank bottom	Clinker Dust	4	15000	<30
6	Clinker tank extraction belt conveyors head end	Clinker tank bottom	Clinker Dust	3	15000	<30
7	Clinker tank extraction belt conveyors head end	Clinker tank extraction TT	Clinker Dust	3	10000	<30
8	Transfer tower	Clinker belt conveyor	Clinker Dust	1	10000	<30
9	Clinker hopper	Bag Filter for Clinker Hopper 1 & 2	Clinker Dust	1	20000	<30
10	Mill hopper extraction	For Hopper Extraction Weigh Feeders	Clinker Dust	1	20000	<30
11	Transfer tower	Cement Mill Hopper Ext. Belt Conveyor	Clinker Dust	1	7500	<30
12	Mill Recirculation	Mill Recirculation	Clinker Dust	1	15000	<30
13	Mill Reject circuit	Mill Reject circuit	Clinker Dust	1	15000	<30
b	Coal					
14	Coal hopper	Coal hopper Bottom	Coal dust	1	5000	<30
15	Coal hopper	Coal hopper Top	Coal dust	1	5000	<30
16	HAG Coal Bin & Crusher	At 100 T bin top	Coal dust	1	5000	<30
c	Dry Fly ash Handling					
17	Fly ash silo top	Dry Fly ash Silo venting	Fly ash	1	15000	<30
18	Fly ash extraction elevator	Dry Fly ash Silo Extraction	Fly ash	1	7500	<30
d	Gypsum Handling					
19	Dump hopper	Bag filter at Gypsum Dump Hopper	Gypsum Dust	1	15000	<30
20	Transfer tower	Bag filter at Gypsum/ Laterite crusher/direct feed	Gypsum Dust	1	7500	<30
21	Cement mill-Gypsum Hopper	Gypsum feed hopper	Gypsum Dust	1	10000	<30
d	Pond ash Handling					
19	Dump hopper	Bag filter at Pond ash Dump Hopper	Dust	1	15000	<30
20	Transfer tower	Bag filter at Pond ash	Dust	1	7500	<30
21	Cement mill-Pond ash Hopper	Pond ash feed hopper	Dust	1	10000	<30

d	Slag Handling					
19	Dump hopper	Bag filter at Slag Dump Hopper	Dust	1	15000	<30
20	Transfer tower	Bag filter at Slag	Dust	1	7500	<30
21	Cement mill-Slag Hopper	Slag feed hopper	Dust	1	10000	<30
e	Cement transport, storage & Packing					
22	BH Transport	Bag House Transport Air slide	Cement Dust	1	10000	<30
23	Elevator boot	airside & elevator bottom	Cement Dust	1	10000	<30
24	Silo-1	PPC Silo Top	Cement Dust	1	15000	<30
25	Silo-2	OPC Silo Top	Cement Dust	1	10000	<30
26	Silo-3	PSC/Composite Silo Top	Cement Dust	1	10000	<30
27	Silo-4	SRC / RHPC Silo Top	Cement Dust	1	10000	<30
28	Silo-1	PPC Silo Extraction	Cement Dust	1	5000	<30
29	Silo-2	OPC Silo Extraction	Cement Dust	1	5000	<30
30	Silo-3	PSC/Composite Silo Extraction	Cement Dust	1	5000	<30
31	Silo-4	SRC / RHPC Silo Extraction	Cement Dust	1	5000	<30
32-35	Packers 1-4	Airslide and Elevator Boot	Cement Dust	1x4	7500 (each)	<30
36-39	Packers 1-4	Roto packer aux. dedusting	Cement Dust	1x4	20000 (each)	<30
40	Bulk Loading	Cement Bulk Loading	Cement Dust	1	5000	<30
41	Wagon Tippler Transfer tower	Clinker belt conveyors	Clinker Dust	3	12500	<30

2.19 CREP Compliance

A series of industry specific guidelines are formulated in the Charter on Corporate Responsibility for Environmental Protection (**CREP**) and action points are also enlisted for the Cement Industry. Plant activities will be in compliance with the **CREP Guidelines (Table 2.17)**.

Table : 2.17 Compliance to CREP Guidelines

No.	Action Points in CREP	Compliance Status
1	Implementation of standards in non-complying units.	The Plant operations will be in compliance with the latest notified norms.
2	Plants in critically polluted or urban area (5 km distance outside urban boundary) will meet 100 mg/Nm ³ SPM emission and continue working to reduce the emission of particulate matter to 50 mg/ Nm ³ .	SCL will be operating the Unit for PM emission <30 mg/Nm ³ .

No.	Action Points in CREP	Compliance Status
3	The new cement kilns to be accorded NOC/EC for complying 50 mg/Nm ³ emission limit.	SCL will be operating the Unit for PM emissions <30 mg/Nm ³ .
4	CPCB will evolve load based standards by June 2004.	MoEF&CC has evolved the Load Based Emission Norm of 0.125 kg/Tonne of Clinker for the Rotary Kiln Cement Plants with Co-processing & without Co-processing and 0.5 kg/Tonne of Clinker for the Vertical Shift Kiln Cement Plants. This is a Cement Grinding Unit and no Clinker will be manufactured.
5	CPCB and NCBM will evolve SO ₂ and NOx emission standards by June 2004.	This is a Cement Grinding Unit. The Plant operations will be in compliance with the latest notified norms.
6	Control fugitive emissions from all the raw material and products storage and transfer points by December 2003. The feasibility for the control of fugitive emissions from limestone and coal storage areas will be decided by the NTF. The NTF shall submit its recommendations within three months.	❖ All sources of dust generation in the Plant will be well designed for producing minimum dust and provided with high efficiency Bag Filters. ❖ Providing Bag Filters for Truck Tippler and Wagon Tippler Areas. ❖ Fully covered sheds for Gypsum & Coal storages. ❖ Silos will be provided for Clinker, Fly Ash & Cement storages. ❖ All the Material conveyors will be fully covered and provided with Bag Filters at Transfer Points.
7	CPCB, NCBM, BIS and oil refineries will jointly prepare the policy on use of pet coke as fuel by July 2003.	-
8	NTF will decide feasible unit operations/ sections for installation of continuous monitoring equipment. The industry will install the continuous monitoring systems (CMS) by December 2003.	Will be complied.
9	Tripping in Kiln ESP to be minimized by July 2003.	Not applicable.
10	Industries will submit the target date to enhance utilization of waste materials.	Waste material like fly ash, Gypsum, Slag, etc. will be utilised in the Plant.
11	NCBM will carryout a study on hazardous waste utilization in cement kiln by December 2003.	Not applicable.
12	Cement industry will carry out feasibility study and submit target date to CPCB for cogeneration of power by July 2003.	Not applicable.

2.20 Solid Wastes

The dust collected from the various Air Pollution Control (APC) Measures viz. Bag Filters will be totally recycled in the process for cement manufacturing. Thus, there will not be any process wastes generation from the Unit. STP Sludge (1.0 kg/day) generated from STP will be used as manure for greenbelt. Municipal (organic) solid wastes @ 40 kg/day from the Unit will be composted and used as manure for the Green belt. Inorganic wastes (Non-biodegradable) @ 10 kg/day will be sold to local Vendors. Solid waste such as road dust comprises of a mixture of dust, clay and soil will be generated from regular sweeping of roads @ 0.5 TPA which will be utilised for filling the low lying areas within the Plant Site.

2.21 Hazardous Wastes

Used oil / Spent oil @ 25 KL/Annum, Grease & Waste residue (contaminated cotton rags) containing oil @ 2.0 Tonnes/Annum and Empty Barrels @ 100 Nos./ Annum will be generated as per Schedule- I of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016; which will be sold to CPCB/ TNPCB authorized recyclers.

Used Lead acid batteries of about 150 Nos./Annum will be generated which will be stored in the designated storage area and will be disposed-off / sold to registered vendors as per Battery waste Management Rules 2020.

E-Wastes @ 0.15 Tonnes/Annum will be generated after 2 years of start of operation in the form of used electrical equipment, Cables, CFL/ LED Lights, which will be sold to registered vendors as per E- Waste Management Rules, 2016.

Construction residues will be utilised for leveling and landscaping works and no demolition waste.

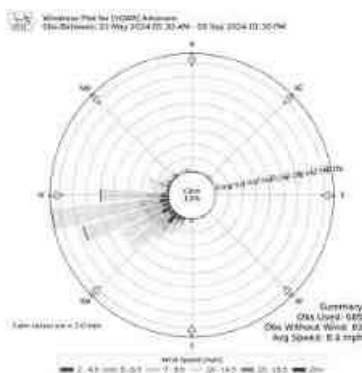
2.22 Occupational Health

An industrial worker may be exposed to Physical, Chemical, Biological, Mechanical and Psychosocial hazards. All efforts will be taken and followed to avoid the accidents and have a good 'Occupational Environment'. Entry Level and Periodical Medical Examinations of the Employees will be undertaken by the Unit. The Medical Reports will be reviewed and evaluated for Occupational Health related problems.

3.0 Description of the Environment (Baseline Status)

3.1 Study Area

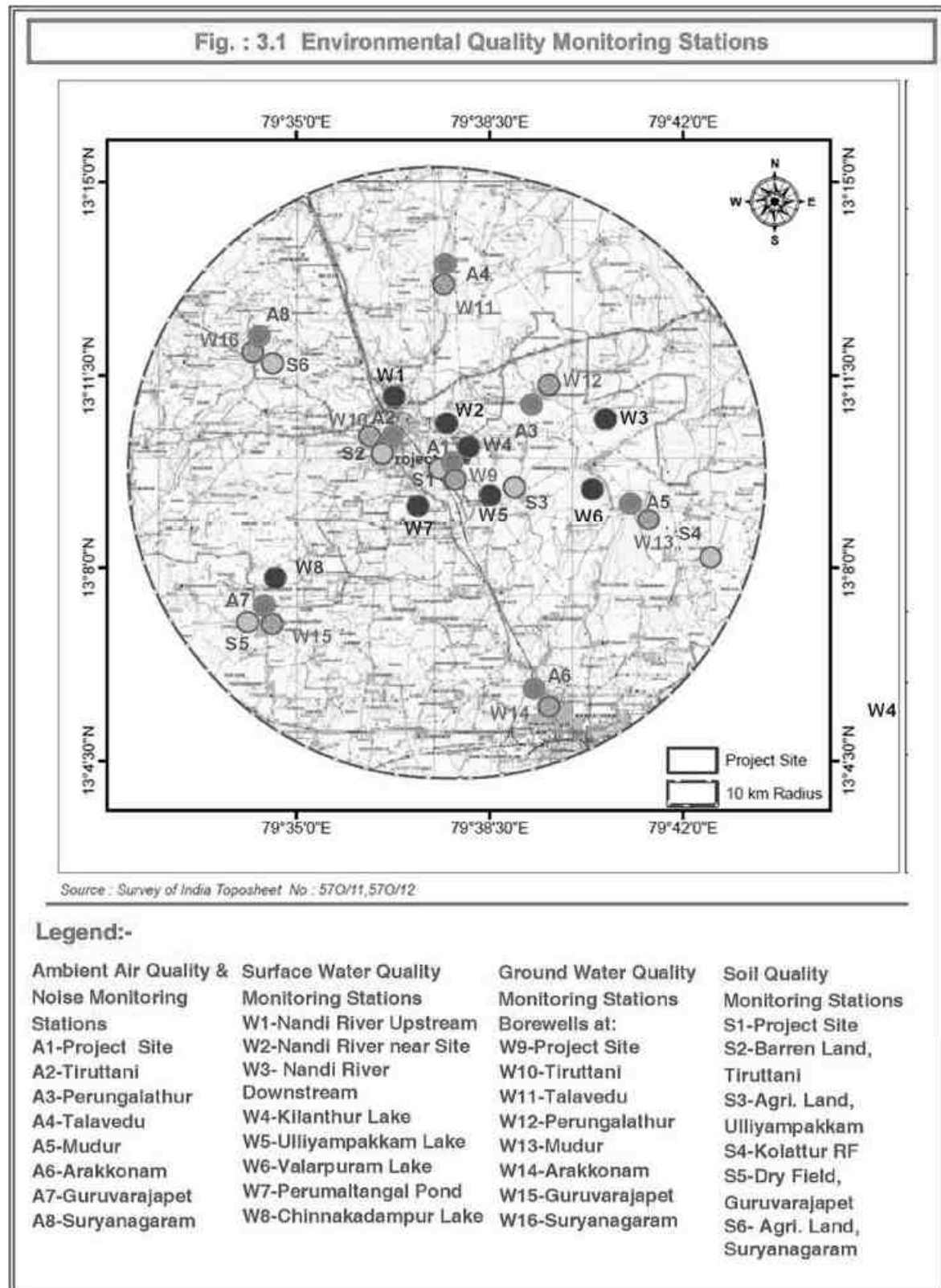
The study area of **10 km radius (from boundary of the Site)** has been considered for assessing the baseline environmental status. **Project area does not fall in Critically Polluted Industrial Clusters** listed by CPCB. As Bay of Bengal is at 70 km from the Site, Coastal Regulation Zone (**CRZ**) **applicability is not there**. The nearest Meteorological Station is at INS Rajali-Arakkonam. The Appended Wind Rose of Arakkonam (Source IEM Website) is referred for fixing the Monitoring Stations (**Fig. 3.1**). Baseline Data (BLD) will be collected during **Jun.-Aug. 2025 (Premonsoon Season)** for the EIA Study as the area experiences NE Monsoon during Oct.-Dec. months.

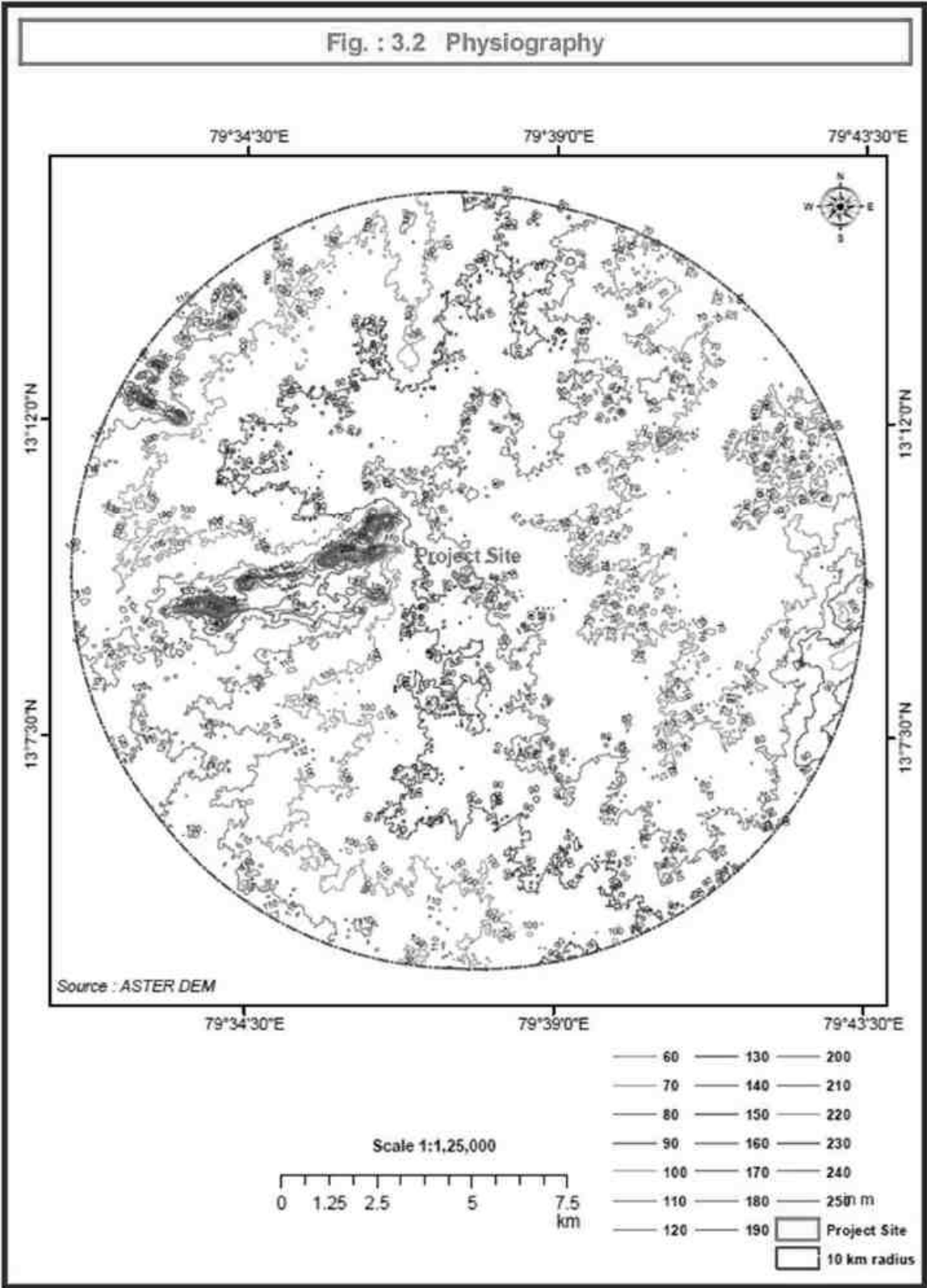


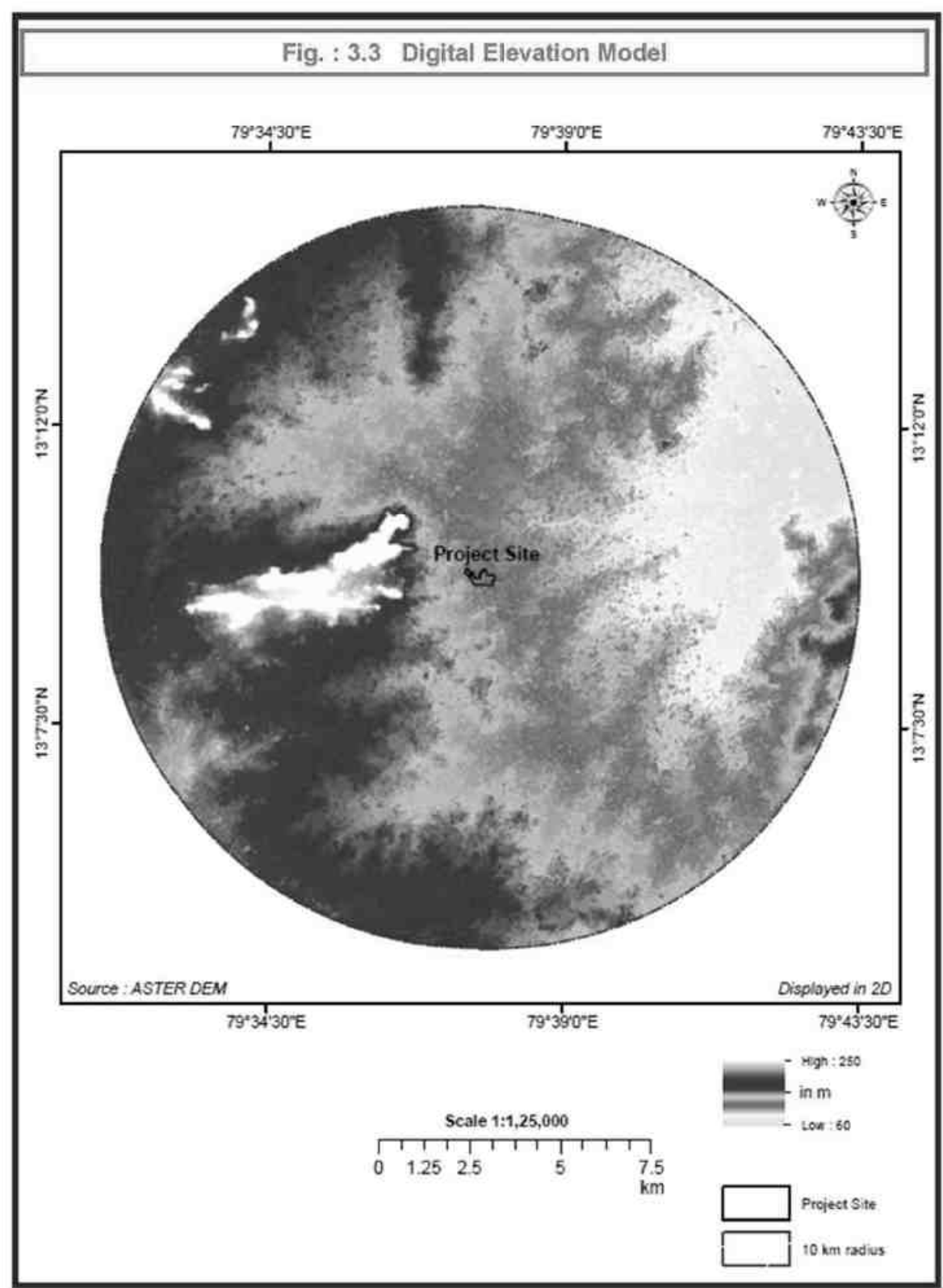
Physiography : The general elevation of the Study Area ranges from 60 m to 250 m above MSL (aMSL) with sloping towards east. Hillocks are located in the western parts of the Study Area (**Fig. 3.2**). Digital Elevation Model map is given as **Fig. 3.3**. The elevation of the Plant area ranges from 85 m to 94 m above MSL with sloping towards east.

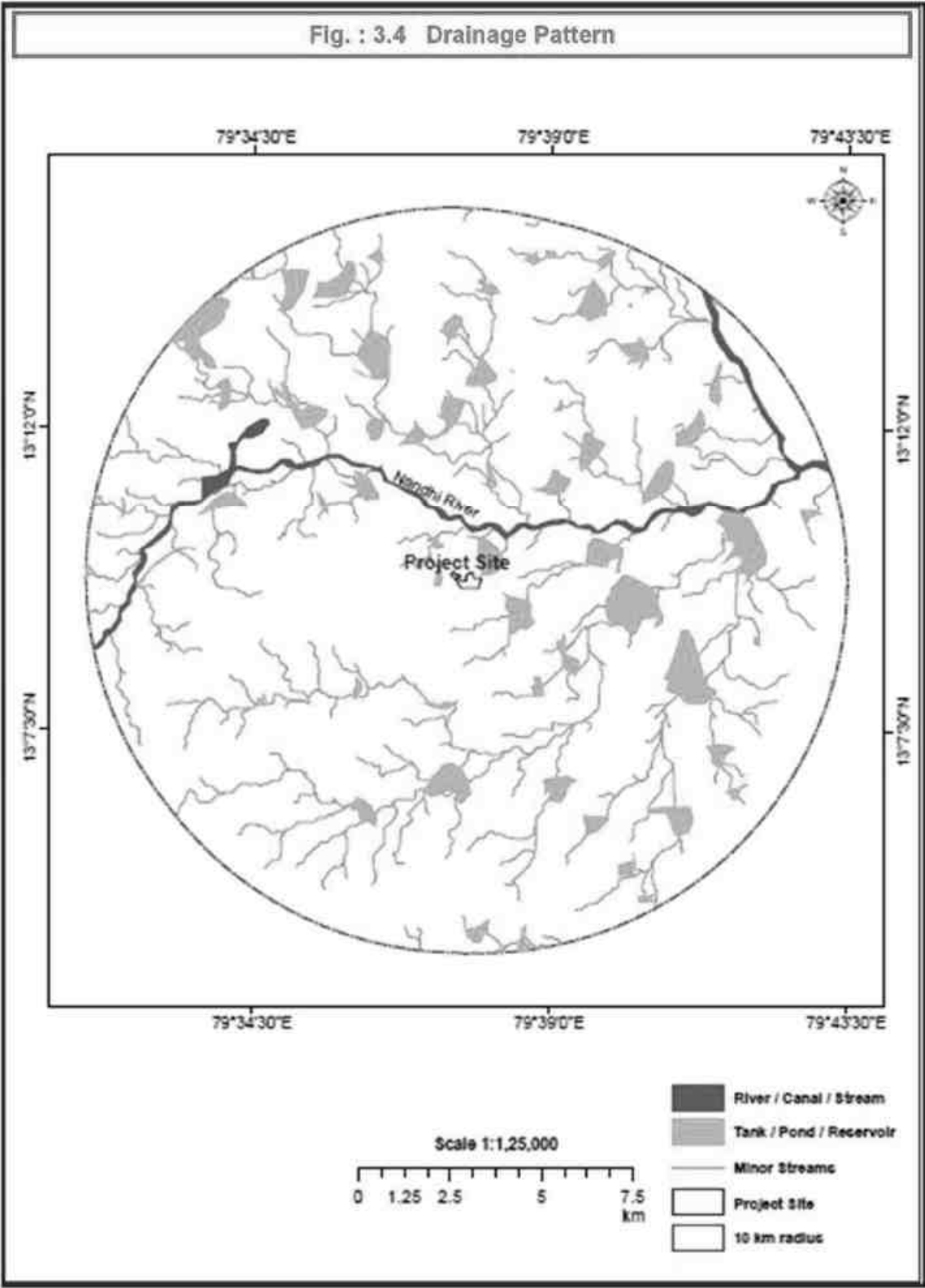
Drainage Pattern : There is **no perennial river** in the study area. Seasonal **Nandi River** drains the area and flowing west to east. The overall drainage pattern of the region appears to be dendritic (**Fig. 3.4**). There are also rainfed irrigation tanks and ponds in the study area. The overflow from ‘**Pandari Cherivu**’ in the west is channelized in north of the Site to Kilandur Lake in the northeast.

Geology : Tiruvallur District can be geologically classified into hard rock and sedimentary (alluvial) formation. Granites and gneisses of Archaean age are mainly seen in Tiruttani Taluk. These crystalline rocks have under gone weathering to variable extent. Hard rock formations begins with **top sandy soil to a depth of 1.5 to 3 m** followed by highly weathered formation of granites and granitic gneisses upto 7.5 m and then well fractured formation to a depth of 30 m from ground level.









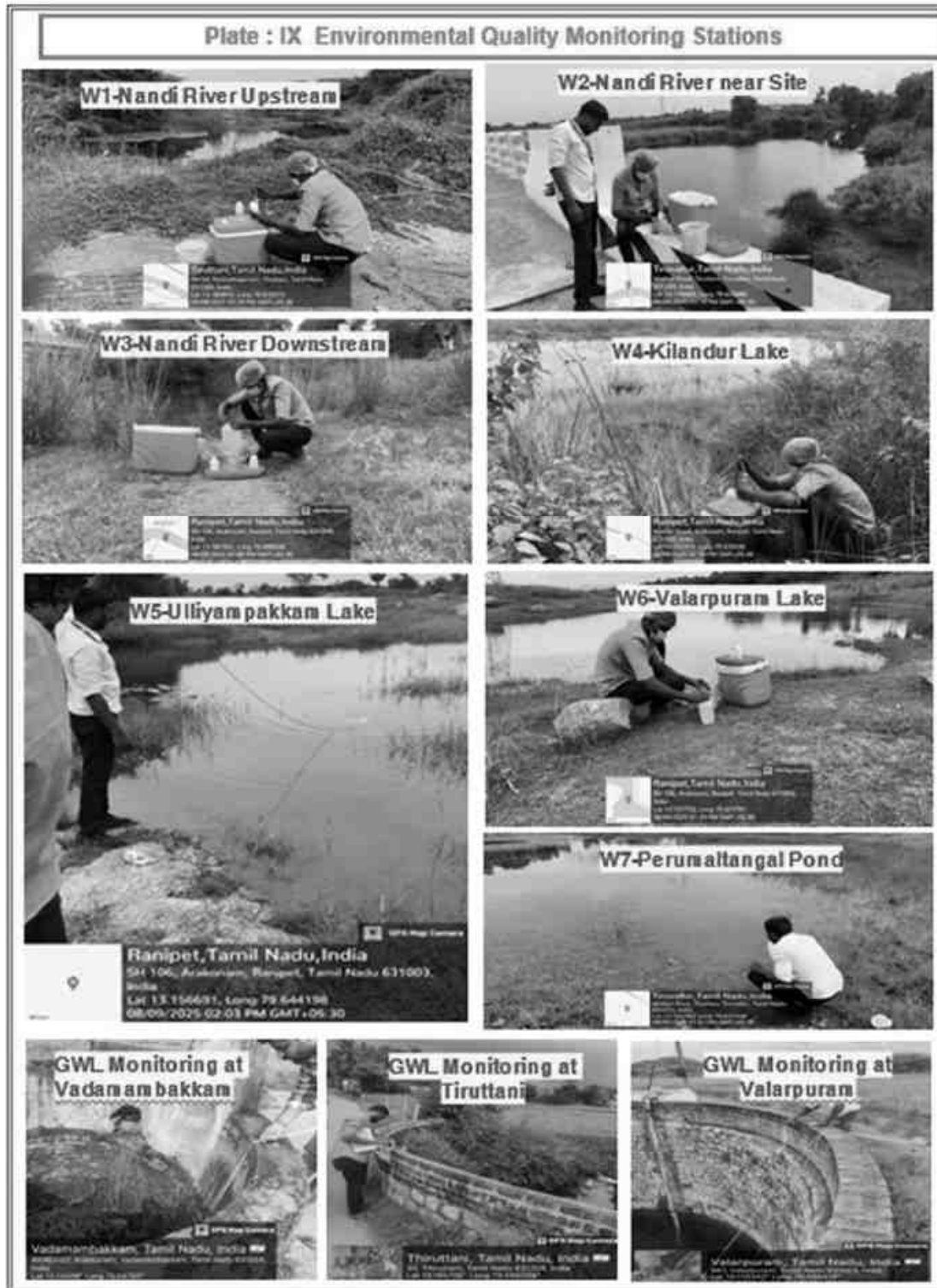
3.2 Environmental Components

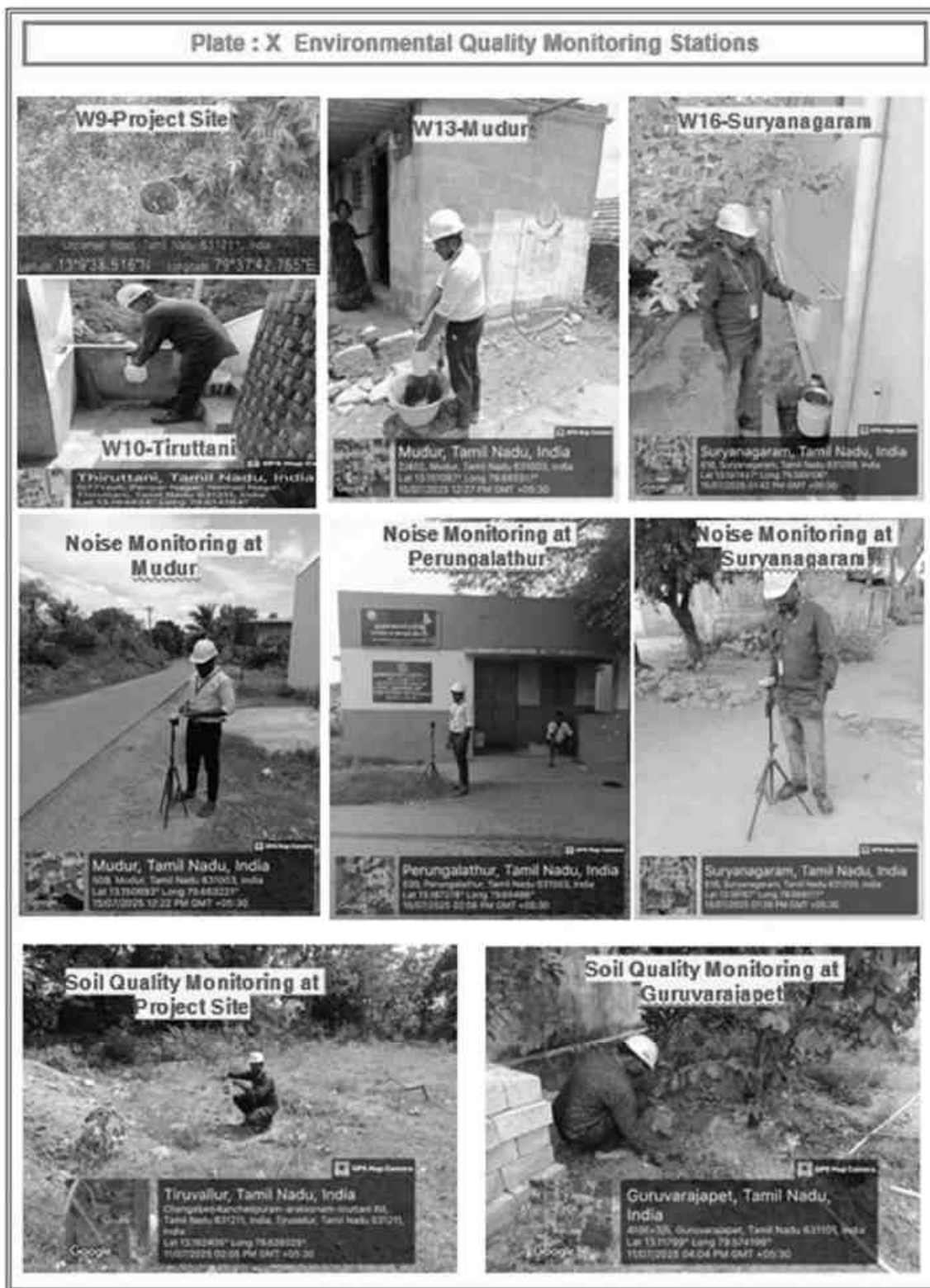
Considering the Environmental setting of the project, project activities and their interaction, environmental regulations and Standards, Environmental Attributes considered for the EIA Study are given in **Table 3.1**. Monitoring Stations are shown in **Plates VIII-X**.

Table : 3.1 Baseline Data Collection – Monitoring Locations

Attributes		Sampling		Remarks
		No. of Locations	Frequency	
Air	Meteorological Parameters at Core Zone	1	For a Season	Wind speed, wind direction (wind rose), temperature, humidity, cloud cover, atmospheric pressure, rainfall, etc.
	AAQ Parameters	8	24-hourly basis, continuously for 2 days in a week for 4 weeks in a month for a season	For the parameters as per Revised NAAQ Norms
Noise	Leq Levels	8	Once in the season	For Leq, Lday and Lnight values
Water	Surface Water Quality Parameters	8	Once in the Season	As per CPCB Norms
	Ground Water Quality Parameters	8		As per IS:10500 Norms
	Ground Water Levels	8		-
Land	Soil Quality	6	Once in the Season	Season for Textural & Physical Parameters & Nutrients.
	Land Use	Study Area	Once during the Study Period	Based on recent available Satellite Imagery
Biological (Flora & Fauna)	Aquatic	Study Area	Once during the Study Period	Flora & Fauna in Core & Buffer Zones
	Terrestrial			
Socio-economic Parameters		Study Area	Once during the Study Period	Based on 2011-Census and Need Based Assessment







- ❖ **Site specific Micro-meteorological Data** from Study Area for the Season on wind speed, wind direction (wind roses), temperature, humidity, cloud cover, atmospheric pressure, rainfall, etc.
- ❖ **Ambient Air Quality Monitoring at 8 locations** on 24-hourly basis, continuously for 2 days in a week for 4 weeks in a month for 3 months in the season for all 12 parameters as per Revised NAAQ Norms.
- ❖ Noise Level Measurements at **8 locations** (air quality monitoring stations) for Leq, Lday and Lnight values once in the season.
- ❖ Water Quality Monitoring – grab sampling of Surface Water (**8 locations**) and Ground Water (**8 Locations**) - once in the Season.
- ❖ Soil Quality Monitoring at **6 locations** once in the Season for Textural & Physical Parameters, Nutrients, etc.
- ❖ **Land Use Pattern** based on recent available Satellite Imagery.
- ❖ Biotic Attributes for : **Flora & Fauna** in Core & Buffer Zones.
- ❖ **Socio-Economic Profile**, based on 2011-Census and **Need Based Assessment**, once in the study period for: Total Population / Household Size, Gender Composition, SC / ST Population, Literacy Levels, Occupational Structure, etc.

3.3 Methodology Adopted

Micrometeorology : As a part of the study, the micrometeorology and microclimatic parameters were recorded by installing a weather monitoring station (Envirotech WM 200) near the Site at 10 m height. Data of wind velocity, wind direction, ambient temperature, relative humidity, cloud cover and atmospheric pressure were recorded at hourly intervals along with rainfall during the monitoring period.

Ambient Air Quality : The study area represents the Industrial, Residential, Rural and other Areas with respect to Revised National Ambient Air Quality (NAAQ) Norms stipulated by CPCB. Calibrated Fine Particulate Samplers (Envirotech APM 550) & Respirable Dust Samplers (Envirotech APM 460) were used for monitoring of PM_{2.5} & PM₁₀. Gaseous samples are collected by integrated gas sampling assembly (Envirotech APM 411). A tapping provided in the hopper of the sampler is utilised for gaseous sampling. with proper flow controller and a flow of 1.0 l/min.

PM_{2.5} & PM₁₀ : APM 550 system is a manual method for sampling fine particles and is based on impactor designs standardized by EPA for Ambient Air Quality Monitoring. Ambient Air enters the APM 550 system through an omni-directional inlet designed to provide a clean aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and the fine particulates existing from the PM_{2.5} impactor is passed through a 47 mm dia filter. Teflon filter membrane that retains the FPM. The APM 550 system allows removal of the PM_{2.5} impactor from the sample stream so that the same system may be optionally used as a PM₁₀ sampler also.

SO₂ : Modified West & Gaeke method (spectrophotometric) was adopted. SO₂ was collected in a scrubbing solution of sodium tetrachloro mercurate (TCM) and was allowed to react with sulphamic acid, formaldehyde and then with pararosaniline hydrochloride. The absorbance of product red-violet dye was measured using UV Visible Spectrophotometer at a wavelength of 560 nm. Concentration of SO₂ was calculated by multiplying the absorbance with calibration factor and dividing by volume of air sampled.

NO_x : Jacob and Hocheiser modified method was adopted. Nitrogen oxides as nitrogen dioxide were collected by bubbling air through sodium hydroxide-sodium arsenite solution to form a stable solution of sodium nitrite. The nitrite ion produced during sampling was determined spectrophotometrically (at 540 nm) by reacting the exposed absorbing reagent with phosphoric acid, sulphanilamide and N (1-naphthyl) ethylamine dihydrochloride. Concentration of NO_x was calculated as described in SO₂ measurement.

Ozone : IS:5182 Part IX (Methods for Measurement of Air Pollution - Oxidants)/ APHA Method 410 was adopted. Micro amounts of ozone and the oxidants liberate iodine when absorbed in a 1% solution of potassium iodine buffered at pH 6.8 ±0.2. The iodine is determined spectrophotometrically by measuring the absorption of tri-iodide ion at 352 nm. Dräger Multiwarn Detector was also used for real time value.

Ammonia : Indophenols method (APHA Method 401, Air Sampling and Analysis, 3rd Edition) was adopted. Ammonia in the atmosphere is collected by bubbling a measured volume of air through a dilute solution of sulphuric acid to form ammonium sulphate. The ammonium sulphate formed in the sample is analysed colorimetrically by reaction with phenol and alkaline sodium hypochlorite to produce indophenols. The reaction is accelerated by addition of Sodium nitroprusside as catalyst.

CO : Envirotech APM 850 Organic Vapour Samplers are used for CO monitoring. Standard MSA tubes are used for monitoring carbon monoxide. A measured volume of air is passed at the flow rate of 100 to 200 ml/min for 1 to 8 hours and the colour change (yellow to green) in indicating gel filled in the detector tubes and is matched with the colour chart provided with detector tubes for finding out CO concentration. Dräger Multiwarn Detector was also used for real time value.

Particulate Lead : The exposed glass fibre filter papers were cut into small pieces and to it 100 ml distilled water and 10 ml nitric acid were added and heated on a hot plate for 4-6 hours. The clear solution obtained after digestion was filtered and made upto 25 ml and were analysed on a Analytic Jena Atomic Absorption Spectrophotometer (AAS) employing Lead Hollow Cathode Lamp. Concentration of lead was calculated by taking the result obtained from AAS analysis and dividing it with the volume of air sampled.

Benzene : The charcoal tubes are available in different sizes and contain varying amount of activated charcoal. The ambient air was sucked through the tube using a low flow sampler used for collection of BTX sample in a way that results in an enrichment of the relevant substances in the

activated charcoal. Desorption of the adsorbed benzene was done using Carbon disulphide (CS₂). The substances desorbed in CS₂ were analyzed by capillary Gas Chromatography.

Benzo (a) Pyrene (BaP) is one of the most important constituent of PAH compounds and also one of the most potent carcinogens. This can be measured in both particulate phase and vapour phase. In the vapour phase the concentration of B(a)P is significantly less than the particulate phase. Therefore, more care to be taken for the measurement of Benzo(a) Pyrene in the particulate phase. It is based on BIS method IS 5182 (Part XII). This method is designed to collect particulate phase PAHs in ambient air and fugitive emissions and to determine individual PAH compounds using capillary Gas Chromatography equipped with flame ionization detector.

Nickel and Arsenic : The Atomic Absorption Spectroscopy (AAS) technique makes use of absorption spectrometry to assess the concentration of an analyte in the sample. The method is based on active sampling using PM10 High Volume Sampler and then sample analysis is done by atomic absorption spectroscopy.

The **detectable range** of the Air Pollutants are given in **Table 3.2**.

Table : 3.2 AAQ Parameters– Detectable Range

Parameter	Method	Range
Respirable Particulate Matter (less than 10 µm or PM10)	IS 5182: (Part 23) : 2006 RA: 2017	5-1000 µg/m ³
Particulate matter (less than 2.5 µm or PM2.5)	USEPA Quality Assurance Handbook Vol II Part II - Guidance Documents 2.12 issue year: Nov-1998	10-1000 µg/m ³
Sulphur Dioxide	IS 5182: (Part 2), 2001 RA: 2017	5-1000 µg/m ³
Nitrogen Dioxide	IS 5182: (Part 6), 2006 RA: 2017	6-750 µg/m ³
Carbon Monoxide	IS 5182: (Part 10), 1999 RA: 2014	1-200 mg/m ³
Ammonia	Indophenol Method (Method of Air sampling and analysis 3 rd edition method 401)	5-700 µg/m ³
Ozone	IS 5182: (Part 9), 1974, RA 2014	10-19000 µg/m ³
Benzene (C ₆ H ₆)	IS 5182 (Part 11), 2006 RA: 2017	0.01-1000 µg/m ³
Banzo (α) Pyrene Particulate Phase only	IS 5182: (Part 12): 2004, RA: 2014	0.1-10,000 ng/ m ³
Nickel	IS 5182: (Part 22), 2004, RA: 2014 /NAAQS Monitoring & Analysis Guidelines Volume-I	1.0 -50 ng/m ³
Arsenic		1.0-10 ng/ m ³
Lead		0.1-50 µg/m ³

Noise Levels : Noise levels were monitored at all air monitoring locations during day time as well as night time in a day. A totally portable measurement systems, Lutron SL 4001 with an internal calibrator and wind screen was used. The built-in internal oscillation system 1 KHz sine wave generator is used for on the spot calibration at 94.0 dB(A) at 1000 Hz. The basic unit of measurement is A-weighted sound level.

Water Quality : Water samples of both surface and ground waters were collected during the survey period and analysed for physico-chemical and bacteriological parameters (**Table 3.3**).

Table : 3.3 Methodology Adopted for Water Analysis

Sl. No.	Parameter	Unit	Reference	Method
1	Taste & Odour	-	IS:3025 (5/7)*	As perceived
2	pH	-	IS:3025 (11)	Digital pH meter
3	Colour	Hazen units	IS:3025 (4)	Comparison with Standards
4	Turbidity	NTU	IS:3025 (10)	Nephelometric
5	Total Dissolved Solids	mg/l	IS:3025 (16)	Gravimetric
6	Total Hardness	mg/l	IS:3025 (21)	Titrimetric (EDTA)
7	Iron (as Fe)	mg/l	32 of IS3025	Colorimetric (Phenonthroline)
8	Chlorides (as Cl)	mg/l	IS:3025 (32)	Titrimetric (Argentometric)
9	Residual Chlorine	mg/l	IS:3025 (26)	Titrimetric
10	Calcium (as Ca)	mg/l	IS:3025 (40)	Titrimetric (EDTA)
11	Magnesium (as Mg)	mg/l	IS:3025 (46)	Titrimetric (by difference between Total Hardness and Calcium Hardness)
12	Alkalinity (as CaCO ₃)	mg/l	IS:3025 (23)	Colour indicator titration
13	Dissolved Oxygen	mg/l	IS:3025 (38)	Winkler titrimetric-azide modification
14	Sulphate (as SO ₄)	mg/l	IS:3025 (24)	Turbidimetric/Gravimetric
15	Fluoride (as F)	mg/l	IS:2488 (II)*	Distillation followed by Colorimetric (SPADNS)
16	Nitrate (as NO ₃)	mg/l	IS:3025 (34)	Colorimetric (PDA)
17	Cyanide (as CN)	mg/l	IS:3025 (27)	Colorimetric (Pyridine-Bispyrazolone)
18	Pesticides	mg/	IS:2488 (III)	Gas chromatograph
19	Phenols (as C ₆ H ₅ OH)	mg/l	IS:3025 (43)	Distillation followed by colorimetric (4-Aminoantipyrine)
20	Manganese (as Mn)	mg/l	35 of IS3025	Colorimetric (Persulpahte)
21	Chromium (as Cr ⁶⁺)	mg/l	IS:2488 (II)	Colorimetric (Diphenyl carbazide)
22	Copper (as Cu)	mg/l	IS:3025 (42)	Atomic Absorption Spectrophotometric
23	Selenium (as Se)	mg/l	IS:2488 (II)	Atomic Absorption Spectrophotometric
24	Cadmium (as Cd)	mg/l	IS:3025 (41)	Atomic Absorption Spectrophotometric
25	Arsenic (as As)	mg/l	IS:3025 (37)	Atomic Absorption Spectrophotometric
26	Boron (as B)	mg/l	IS:2488 (III)	Colorimetric (Curcumin)
27	Mercury (as Hg)	mg/l	IS:3025 (48)	Mercury analyser
28	Lead (as Pb)	mg/l	IS:3025 (47)	Atomic Absorption Spectrophotometric
29	Zinc (as Zn)	mg/l	IS:3025 (49)	Colorimetric (Dithizone)
30	Percent sodium	%	IS:2488 (V)	From Na, K, Ca & Mg values
31	BOD-3 days @ 27 °C	mg/l	IS:3025 (44)	3 days @ 27°C
32	COD	mg/l	IS:2488 (V)	Dichromate reflux
33	Oil & Grease	mg/l	IS:3025 (39)	Gravimetric
34	Coliforms	MPN/100 ml	IS:1622	Multiple tube fermentation (5 tubes)
35	Plate Counts	No. of Colonies/ml	IS:1622	Colony count in Agar-agar medium

* : IS:3025 (Parts)-Methods of Sampling and Test (Physical and Chemical) for Water and Wastewater;

+ : IS:2488 (Parts)-Methods of Sampling and Test for Industrial Effluents.

Parameters like pH, conductivity, temperature, DO, etc. were measured in the field itself while collecting the samples using a microprocessor based Portable Water Analysis Kit (Elico Model PE136). Samples for chemical analysis were collected as per IS:2488. Sterilised bottles were used for collection of bacteriological samples.

Soil Quality : Samples at 3 depths viz. 0-30 cm, 30-60 cm and 60-90 cm were collected using sampling augers and field capacity apparatus. Soil extraction (10%) were used for analysis.

Calibration : The monitoring and analytical instruments are being calibrated periodically. The correction factors, if any, are being used in computation of the data.

Flora & Fauna : A general ecological survey covering an area of 10 km radius area were conducted and reported. Faunal survey covers the Terrestrial and Avian Fauna.

Based on the **Wildlife Protection Act, 1972 (as amended in 2022)**, species were short-listed as Schedule II or I and considered as endangered species. The study included the identification of endangered and rare species as per Red Book.

Socio-Economic profile of population in study area is based on Census 2011 data. FGD was also done for Need Based Assessment.

3.4 Micrometeorological Status

3.4.1 Regional Status

The district enjoys a tropical climate. The period from April to June is generally hot and dry. The annual mean minimum and maximum temperature are 24.3 °C and 32.9 °C respectively. The day time heat is oppressive and the temperature is as high as 41.2 °C. The lowest temperature recorded is of the order of 18.1 °C. Usually mornings are more humid than afternoons. The relative humidity varies between 65-85% in the mornings while in the afternoon it varies between 40-70%.

Most of the precipitation occurs in the form of cyclonic storms caused due to the depressions in Bay of Bengal chiefly during Northeast monsoon period. The southwest monsoon rainfall is highly erratic and summer rains are negligible. Rainfall data analysis shows that the normal annual rainfall varies from 950 mm to 1150 mm.

3.4.2 Site Specific Status

The abstract of collected hourly meteorological data are presented in **Tables 3.4-3.6**. Based on the wind parameters, wind rose is drawn and presented as **Fig. 3.5**.

Table : 3.4 Micrometeorological Data – June 2025

Location : Project Site

Date	Mean Wind Velocity, kmph	Pred. Wind Direction, Deg. (from)	Temperature, °C			Relative Humidity (Mean), %	Cloud Cover, oktas	Atm. Pressure (Mean), mm of Hg	Rain-fall, mm
			Min.	Max.	Mean				
01.06.2025	5.8	201.9	25.0	34.3	28.9	65	1.3	756.2	0
02.06.2025	6.8	187.0	24.6	35.3	29.5	65	1.5	756.7	0
03.06.2025	7.6	227.6	24.0	32.8	28.7	64	1.3	756.6	0
04.06.2025	6.6	249.0	25.0	35.5	29.3	66	1.4	758.0	0
05.06.2025	5.9	151.5	24.8	36.0	29.8	63	0.8	757.4	0
06.06.2025	7.6	226.6	26.3	37.5	31.0	68	1.0	757.3	0
07.06.2025	5.0	183.1	26.6	36.4	30.7	65	1.3	756.7	0
08.06.2025	5.9	33.0	26.1	37.5	31.3	68	1.1	757.4	0
09.06.2025	7.3	237.3	25.0	36.2	30.3	66	1.5	758.6	0
10.06.2025	6.3	171.7	25.5	36.9	31.0	67	1.1	758.9	0
11.06.2025	7.2	221.1	27.8	37.3	31.7	71	1.5	758.5	0
12.06.2025	6.2	173.2	27.8	37.6	32.1	74	1.1	757.7	0
13.06.2025	3.6	206.5	27.8	38.1	31.5	70	0.9	757.1	0
14.06.2025	5.2	207.6	27.5	36.2	31.2	69	1.0	757.9	0
15.06.2025	5.5	206.5	27.2	37.0	30.9	67	0.8	757.9	0
16.06.2025	14.3	184.0	26.7	36.5	30.0	62	1.4	757.7	0
17.06.2025	15.1	243.5	26.7	36.5	31.5	60	1.2	757.0	0
18.06.2025	14.9	229.6	27.4	37.3	31.6	62	1.0	756.3	0
19.06.2025	13.9	275.9	29.0	39.3	33.9	63	0.8	755.7	0
20.06.2025	8.0	282.2	28.2	38.2	32.3	65	0.9	756.2	0
21.06.2025	5.1	281.7	27.9	38.5	32.2	71	1.1	756.1	0
22.06.2025	4.8	215.4	26.8	37.0	31.6	73	1.3	756.8	0
23.06.2025	4.8	290.8	27.1	37.8	31.5	73	1.0	756.5	0
24.06.2025	3.6	297.5	27.6	38.1	32.3	58	1.2	756.4	0
25.06.2025	3.9	209.9	27.6	39.1	32.4	63	1.3	756.8	0
26.06.2025	14.7	237.9	27.9	36.7	31.4	65	1.2	757.4	0
27.06.2025	3.9	210.4	27.2	30.3	30.5	65	1.7	757.9	0
28.06.2025	3.6	203.1	27.1	35.3	30.0	62	1.5	757.3	0
29.06.2025	3.6	200.5	26.7	37.2	31.2	59	1.3	756.8	0
30.06.2025	3.7	197.5	27.0	36.0	30.8	58	1.0	757.1	0
Monthly Abstract	7.0	214.8	24.0	39.3	31.0	65.6	1.2	757.2	0

Note : Abstract values are taken from the hourly readings (00:00-24:00 hrs.) recorded continuously during the monitoring period.

Table : 3.5 Micrometeorological Data – July 2025

Location : Project Site

Date	Mean Wind Velocity, kmph	Pred. Wind Direction, Deg. (from)	Temperature, °C			Relative Humidity (Mean), %	Cloud Cover, oktas	Atm. Pressure (Mean), mm of Hg	Rain-fall, mm
			Min.	Max.	Mean				
01.07.2025	5.1	211.4	27.5	36.5	31.0	61	1.4	757.2	0
02.07.2025	5.2	214.6	27.1	37.0	31.8	60	1.3	756.7	0
03.07.2025	7.9	235.3	27.2	36.5	32.6	64	1.7	755.6	0
04.07.2025	9.1	253.4	26.5	36.9	31.9	64	1.7	756.7	0
05.07.2025	8.8	256.2	26.1	37.5	31.4	61	2.1	756.0	0
06.07.2025	10.9	257.9	25.0	37.7	31.4	57	2.6	756.4	0
07.07.2025	4.0	201.3	25.9	36.9	30.8	60	1.8	756.8	0
08.07.2025	3.8	209.3	25.0	36.7	30.6	63	1.8	757.0	0
09.07.2025	6.7	276.0	25.4	37.2	31.2	61	1.6	756.2	0
10.07.2025	7.6	287.1	26.2	37.8	32.0	58	1.0	756.9	0
11.07.2025	6.4	295.2	26.0	38.4	32.1	63	1.8	757.2	0
12.07.2025	3.7	301.5	25.9	39.1	32.3	60	1.7	757.5	0
13.07.2025	3.8	305.4	26.0	39.1	32.4	59	1.3	756.4	0
14.07.2025	3.9	309.4	25.2	38.7	31.7	54	1.7	756.6	0
15.07.2025	4.6	303.5	25.9	38.5	30.9	60	2.3	756.9	0
16.07.2025	15.3	293.4	25.8	38.5	30.4	60	2.3	757.2	0
17.07.2025	5.7	289.4	26.6	37.0	30.0	63	1.9	757.8	0
18.07.2025	7.4	239.8	26.2	36.8	30.7	60	2.1	757.9	0
19.07.2025	6.2	256.5	25.0	37.4	30.9	62	2.3	757.4	0
20.07.2025	9.7	247.1	25.3	37.6	30.5	63	2.0	757.7	0
21.07.2025	7.3	270.2	26.1	36.5	30.7	69	1.7	758.0	0
22.07.2025	9.3	244.6	25.7	36.2	31.1	66	1.9	757.9	0
23.07.2025	7.8	231.9	25.6	36.3	31.6	63	1.4	757.9	0
24.07.2025	8.1	261.7	25.7	36.0	30.3	61	1.9	757.4	0
25.07.2025	8.8	234.2	25.9	37.1	30.8	62	1.9	757.9	0
26.07.2025	10.4	241.8	26.2	36.5	30.3	55	2.0	758.1	0
27.07.2025	10.0	252.4	26.1	36.9	30.0	58	1.6	757.8	0
28.07.2025	9.4	269.9	25.2	36.5	30.5	56	2.2	757.1	0
29.07.2025	11.3	281.3	25.0	36.9	30.2	55	2.1	757.9	0
30.07.2025	10.9	251.5	26.1	36.0	30.8	57	2.4	757.4	0
31.07.2025	8.6	219.2	25.2	35.5	30.6	56	2.3	757.8	0
Monthly Abstract	7.7	258.1	25.0	39.1	31.1	60.4	1.9	757.2	0

Note : Abstract values are taken from the hourly readings (00:00-24:00 hrs.) recorded continuously during the monitoring period.

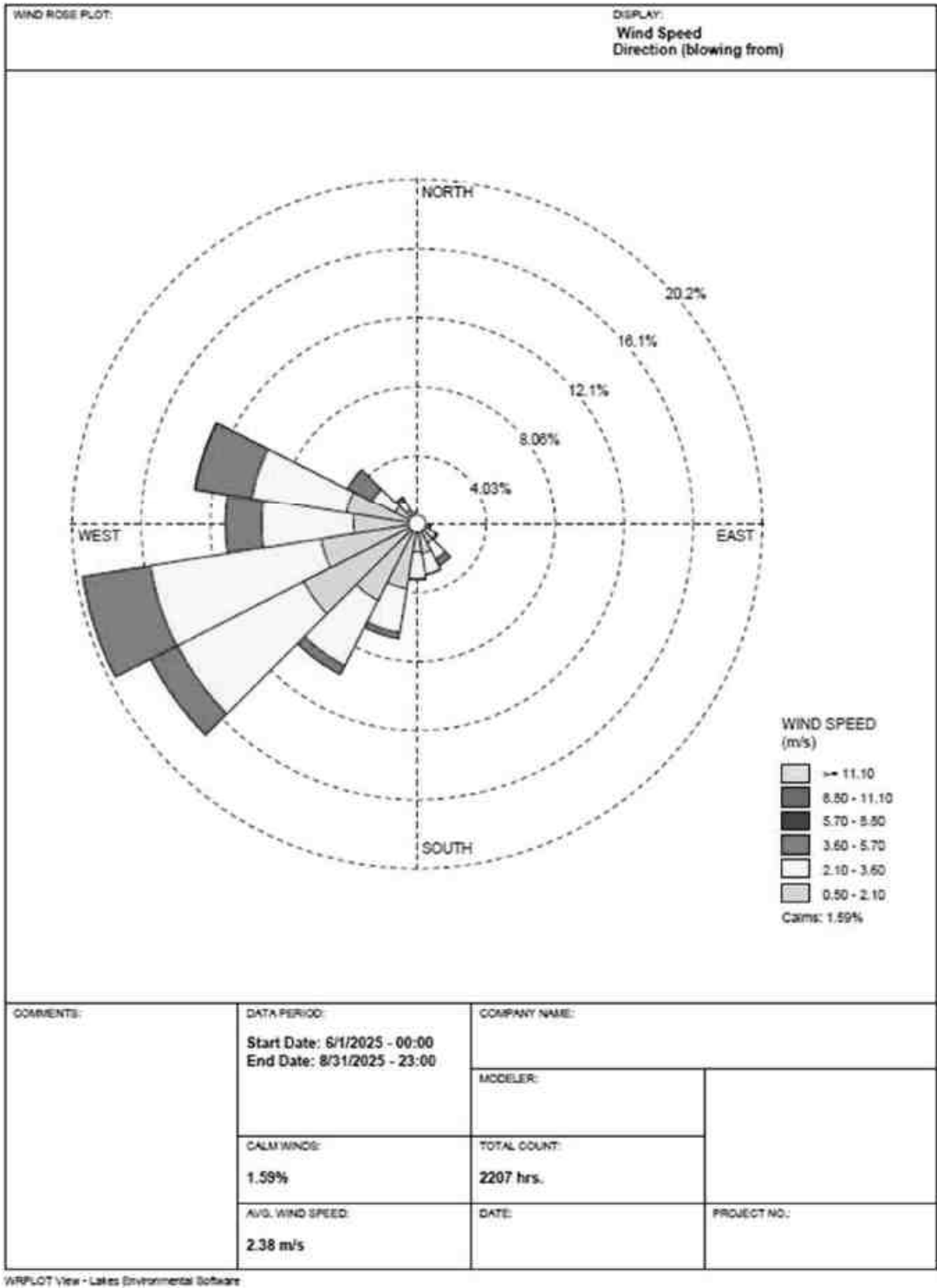
Table : 3.6 Micrometeorological Data – August 2025

Location : Project Site

Date	Mean Wind Velocity, kmph	Pred. Wind Direction, Deg. (from)	Temperature, °C			Relative Humidity (Mean), %	Cloud Cover, oktas	Atm. Pressure (Mean), mm of Hg	Rain-fall, mm
			Min.	Max.	Mean				
01.08.2025	7.4	230.8	25.1	36.0	30.8	57	2.5	758.0	0
02.08.2025	8.0	213.8	24.5	36.9	30.1	64	2.9	758.2	0
03.08.2025	7.2	235.0	24.6	37.8	30.3	67	2.2	758.5	0
04.08.2025	8.5	270.7	24.7	37.0	30.5	68	2.0	759.0	0
05.08.2025	5.8	226.0	24.9	35.7	29.6	59	1.6	758.5	0
06.08.2025	9.8	246.3	25.2	37.2	29.2	54	2.1	759.0	0
07.08.2025	8.5	234.9	25.0	36.5	29.7	52	2.0	758.3	0
08.08.2025	6.7	243.7	25.0	37.9	30.3	59	1.8	758.5	0
09.08.2025	6.8	255.4	25.3	36.5	29.9	65	1.6	757.8	0
10.08.2025	7.4	254.8	25.9	36.4	29.2	66	1.3	757.5	0
11.08.2025	5.5	244.9	26.9	37.0	30.2	66	1.5	757.5	0
12.08.2025	5.1	247.3	27.0	36.4	29.6	70	1.7	758.0	0
13.08.2025	5.9	257.9	25.4	35.2	29.8	64	2.0	758.0	0
14.08.2025	7.2	268.0	25.0	35.9	29.1	67	1.8	758.5	0
15.08.2025	7.2	258.9	25.9	33.7	29.2	68	2.2	758.5	0
16.08.2025	5.8	251.9	24.9	34.5	29.4	67	2.0	758.5	0
17.08.2025	6.0	254.3	24.8	35.3	29.6	77	2.7	759.0	0
18.08.2025	6.3	251.9	25.7	35.2	29.6	77	1.7	759.2	0
19.08.2025	9.2	246.8	24.8	34.5	29.0	74	2.4	759.0	0
20.08.2025	7.4	260.8	24.5	34.9	29.0	72	2.6	758.8	0
21.08.2025	7.5	252.4	25.3	34.9	30.0	77	1.6	758.5	0
22.08.2025	5.6	222.9	25.6	34.7	29.5	73	1.9	759.0	0
23.08.2025	7.9	236.5	25.4	34.2	29.3	74	1.8	759.0	0
24.08.2025	7.6	271.5	25.5	35.2	29.5	73	2.4	758.5	0
25.08.2025	6.1	228.4	25.5	34.5	29.8	68	2.2	758.7	0
26.08.2025	6.2	263.8	25.5	35.4	30.2	61	1.8	759.0	0
27.08.2025	7.1	248.6	23.9	36.0	29.9	62	2.7	758.4	0
28.08.2025	7.2	251.0	24.8	35.7	29.4	59	2.0	758.0	0
29.08.2025	5.9	249.1	24.0	35.3	29.2	56	2.7	758.0	0
30.08.2025	7.3	236.0	23.7	35.6	28.5	59	2.3	758.5	0
31.08.2025	5.8	262.7	23.5	35.0	28.8	68	2.2	759.3	0
Monthly Abstract	7.0	247.6	23.5	37.9	29.6	65.9	2.1	758.5	0

Note : Abstract values are taken from the hourly readings (00:00-24:00 hrs.) recorded continuously during the monitoring period.

Fig. : 3.5 Seasonal Wind Rose



June 2025 : Predominant winds were from SW/WSW direction. Mean Wind velocity was 7.0 kmph. Temperature values were ranging from 24.0 °C to 39.3 °C with mean value of 31.0 °C. Mean maximum relative humidity value was 65.6%. Mean atmospheric pressure value was computed as 757.2 mm of mercury. Clear sky prevailed predominantly. There was no rainy day in the month.

July 2025 : Predominant winds were from WSW/SW direction. Mean Wind velocity was 7.7 kmph. Temperature values were ranging from 25.0 °C to 39.1 °C with mean value of 31.1 °C. Mean maximum relative humidity value was 60.4%. Mean atmospheric pressure value was computed as 757.2 mm of mercury. Clear sky prevailed predominantly. There was no rainy day in the month.

August 2025 : Predominant winds were from SW directions. Mean Wind velocity was 7.0 kmph. Temperature values were ranging from 23.5 °C to 37.9 °C with mean value of 29.5 °C. Mean maximum relative humidity value was 65.9%. Mean atmospheric pressure value was computed as 758.5 mm of mercury. Clear sky prevailed predominantly. There was no rainy day in the month.

Premonsoon Season 2025 :

- ❖ Predominant winds were from WSW/SW directions (215° – 259°).
- ❖ Mean Wind velocity was 7.2 kmph with Calm condition 1.6%.
- ❖ Temperature values were ranging from 23.5 °C to 39.3 °C with mean value of 30.6 °C.
- ❖ Mean maximum relative humidity value was 64.0%.
- ❖ Mean atmospheric pressure value was computed as 757.6 mm of mercury.
- ❖ Clear sky prevailed predominantly.
- ❖ There was no rainy day in the Season.

The monitored meteorological data were found to be **in compliance with local weather phenomena**.

3.5 Ambient Air Quality

3.5.1 Monitoring Locations

There is no major industries in the Study Area. AAQ Monitoring Stations were selected based on the **Upwind & Downwind directions** for that Season and also considering the Annual Wind Rose (**Table 3.7**). **Mobile Monitoring Stations** were also established for the monitoring.

Table : 3.7 Ambient Air Quality Monitoring Stations - Location & Bearing

Sl. No.	Location	North Latitude	East Longitude	Direction from Site	Distance from Site, km	Location Scenario
1	A1-Project Site	13° 09' 45.93"	79° 37' 37.42"	-	-	-
2	A2-Tiruttani	13° 09' 52.54"	79° 36' 51.49"	W	1.1	Upwind
3	A3-Perungalathur	13° 11' 19.50"	79° 39' 17.00"	NE	3.7	Downwind
4	A4-Talavedu	13° 13' 31.17"	79° 37' 41.24"	NNE	6.8	Downwind
5	A5-Mudur	13° 09' 07.89"	79° 40' 60.00"	ESE	5.7	Downwind
6	A6-Arakkonam	13° 05' 18.53"	79° 40' 19.31"	SSE	8.0	Crosswind
7	A7-Guruvarajapet	13° 07' 04.35"	79° 34' 27.3"	SW	7.5	Upwind
8	A8-Suryanagaram	13° 11' 54.47"	79° 34' 3.10"	NW	7.0	Upwind

3.5.2 AAQ Status

All **12 AAQ parameters (24/8/1 hourly basis)** were monitored in compliance with NAAQ Norms. The monitored ambient air quality data are presented in **Tables 3.8-3.15**. The abstract of those monitored data is given in **Table 3.16** and ambient air quality status in **Table 3.17**.

During the study, each **192 samples** were collected, analysed and reported. On the synthesized data, the following observations are made :

PM_{2.5} values (24 hours Time Weighted) were monitored in the range between 15-29 microgram/cu.m ($\mu\text{g}/\text{m}^3$) in the Study Area with a **mean value of 22.0 $\mu\text{g}/\text{m}^3$** against NAAQ Norm value of **60 $\mu\text{g}/\text{m}^3$** (24 hours Time Weighted).

PM₁₀ values were monitored in the range between 31-61 $\mu\text{g}/\text{m}^3$ with a **mean value of 46.0 $\mu\text{g}/\text{m}^3$** against NAAQ Norm value of **100 $\mu\text{g}/\text{m}^3$** (24 hours Time Weighted).

SO₂ values were monitored in the range between 5-11 $\mu\text{g}/\text{m}^3$ with a **mean value of 6.9 $\mu\text{g}/\text{m}^3$** against NAAQ limit value of **80 $\mu\text{g}/\text{m}^3$** (24 hours Time Weighted).

NO_x values were monitored in the range between 11-20 $\mu\text{g}/\text{m}^3$ with a **mean value of 14.7 $\mu\text{g}/\text{m}^3$** against NAAQ limit value of **80 $\mu\text{g}/\text{m}^3$** (24 hours Time Weighted).

O₃ concentrations (**hourly samples reported for 8-hour average**) were monitored in the range between <10-17.1 $\mu\text{g}/\text{m}^3$ with a **mean value of 13.2 $\mu\text{g}/\text{m}^3$** against NAAQ limit value of 100 $\mu\text{g}/\text{m}^3$ (8 hours Time Weighted).

Table : 3.8 Ambient Air Quality Data at A1-Project Site

Season : Premonsoon 2025

Sample Size : 24 hly. (otherwise mentioned)

Monitoring		Particulates, µg/m ³		Gaseous Pollutants, µg/m ³					Other Pollutants (Particulate Phase)				
Date	Period, hrs.	PM2.5	PM10	SO ₂	NO _x	O ₃ (8-hly Avg.)	NH ₃	CO (8-hly Avg.)	Pb, ug/m ³	As, ng/m ³	Ni, ng/m ³	C ₆ H ₆ , ug/m ³	BaP, ng/m ³
02-03.06.2025	06:00-06:00	17	35	6.9	10.9	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
03-04.06.2025	06:00-06:00	15	31	5.5	13.2	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
10-11.06.2025	06:00-06:00	19	41	5.9	12.5	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
11-12.06.2025	06:00-06:00	18	39	6.1	11.9	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
18-19.06.2025	06:00-06:00	16	33	6.8	10.8	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
19-20.06.2025	06:00-06:00	17	38	5.2	13.6	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
26-27.06.2025	06:00-06:00	19	40	6.3	14.1	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
27-28.06.2025	06:00-06:00	17	37	6.6	12.8	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
01-02.07.2025	06:00-06:00	19	41	5.7	13.3	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
02-03.07.2025	06:00-06:00	18	36	5.2	12.5	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
10-11.07.2025	06:00-06:00	15	32	5.9	11.9	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
11-12.07.2025	06:00-06:00	18	39	7.1	13.0	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
17-18.07.2025	06:00-06:00	20	41	6.6	12.2	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
18-19.07.2025	06:00-06:00	17	35	6.2	11.4	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
25-26.07.2025	06:00-06:00	19	42	6.9	13.4	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
26-27.07.2025	06:00-06:00	16	33	6.3	12.8	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
01-02.08.2025	06:00-06:00	18	39	6.7	13.1	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
02-03.08.2025	06:00-06:00	16	34	6.1	11.7	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
08-09.08.2025	06:00-06:00	19	38	6.9	13.1	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
09-10.08.2025	06:00-06:00	15	32	6.4	12.8	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
13-14.08.2025	06:00-06:00	17	34	5.5	12.9	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
14-15.08.2025	06:00-06:00	16	33	5.9	13.1	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
21-22.08.2025	06:00-06:00	20	41	7.1	12.2	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
22-23.08.2025	06:00-06:00	18	35	6.3	11.7	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
Range (Minimum-Maximum)		15-20	31-42	5.2-7.1	10.8-14.1	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
Mean Value		17.5	36.6	6.3	12.5	<10	<5	<1000	<0.1	<1	<1	<0.01	<0.1
NAAQ Norms*		60 (24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	100 (8 hrs.)	400 (24 hrs.)	2,000 (8 hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)

Legend : **PM2.5**-Particulate Matter size less than 2.5 µm; **PM10**-Respirable Particulate Matter size less than 10 µm; **SO₂**-Sulphur dioxide; **NO_x**-Oxides of Nitrogen; **O₃**-Ozone; **NH₃**-Ammonia; **CO**-Carbon monoxide; **Pb**-Particulate Lead; **As**-Particulate Arsenic; **Ni**-Particulate Nickel; **C₆H₆**-Benzene & **BaP**- Benzo (a) pyrene in particulate phase. ug-microgram & ng-nanogram. *: **NAAQ Norms**-National Ambient Air Quality Norms-**Revised as per GSR 826(E) dated 16.11.2009** for Industrial, Residential, Rural and other Areas.

Table : 3.9 Ambient Air Quality Data at A2-Tiruttani

Monitoring		Particulates, µg/m ³		Gaseous Pollutants, µg/m ³					Other Pollutants (Particulate Phase)				
Date	Period, hrs.	PM2.5	PM10	SO ₂	NO _x	O ₃ (8-hly Avg.)	NH ₃	CO (8-hly Avg.)	Pb, ug/m ³	As, ng/m ³	Ni, ng/m ³	C ₆ H ₆ , ug/m ³	BaP, ng/m ³
02-03.06.2025	06:00-06:00	26	58	8.9	17.7	16.2	<5	<1000	<0.1	<1	<1	<0.01	<0.1
03-04.06.2025	06:00-06:00	23	51	9.3	16.3	15.4	<5	<1000	<0.1	<1	<1	<0.01	<0.1
10-11.06.2025	06:00-06:00	22	46	7.5	19.5	17.1	<5	<1000	<0.1	<1	<1	<0.01	<0.1
11-12.06.2025	06:00-06:00	26	55	8.1	18.2	16.1	<5	<1000	<0.1	<1	<1	<0.01	<0.1
18-19.06.2025	06:00-06:00	25	53	6.9	14.9	12.9	<5	<1000	<0.1	<1	<1	<0.01	<0.1
19-20.06.2025	06:00-06:00	27	57	8.2	16.6	14.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
26-27.06.2025	06:00-06:00	29	61	7.1	15.1	13.7	<5	<1000	<0.1	<1	<1	<0.01	<0.1
27-28.06.2025	06:00-06:00	24	52	6.3	17.3	15.2	<5	<1000	<0.1	<1	<1	<0.01	<0.1
01-02.07.2025	06:00-06:00	23	48	8.5	13.8	12.3	<5	<1000	<0.1	<1	<1	<0.01	<0.1
02-03.07.2025	06:00-06:00	26	56	9.4	18.6	15.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
10-11.07.2025	06:00-06:00	24	48	7.7	14.9	12.9	<5	<1000	<0.1	<1	<1	<0.01	<0.1
11-12.07.2025	06:00-06:00	22	47	7.8	16.6	14.1	<5	<1000	<0.1	<1	<1	<0.01	<0.1
17-18.07.2025	06:00-06:00	28	59	6.2	17.2	15.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
18-19.07.2025	06:00-06:00	25	53	8.1	18.9	16.3	<5	<1000	<0.1	<1	<1	<0.01	<0.1
25-26.07.2025	06:00-06:00	23	48	9.3	16.3	15.1	<5	<1000	<0.1	<1	<1	<0.01	<0.1
26-27.07.2025	06:00-06:00	28	57	8.4	18.1	14.7	<5	<1000	<0.1	<1	<1	<0.01	<0.1
01-02.08.2025	06:00-06:00	24	51	7.1	16.7	15.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
02-03.08.2025	06:00-06:00	28	60	10.7	15.3	13.3	<5	<1000	<0.1	<1	<1	<0.01	<0.1
08-09.08.2025	06:00-06:00	27	54	9.4	18.3	14.8	<5	<1000	<0.1	<1	<1	<0.01	<0.1
09-10.08.2025	06:00-06:00	25	53	7.6	17.9	15.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
13-14.08.2025	06:00-06:00	27	57	8.4	18.4	15.9	<5	<1000	<0.1	<1	<1	<0.01	<0.1
14-15.08.2025	06:00-06:00	29	59	6.9	16.1	14.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
21-22.08.2025	06:00-06:00	23	47	7.7	17.5	13.9	<5	<1000	<0.1	<1	<1	<0.01	<0.1
22-23.08.2025	06:00-06:00	28	61	8.6	19.2	15.8	<5	<1000	<0.1	<1	<1	<0.01	<0.1
Range (Minimum-Maximum)		22-29	46-61	6.2-10.7	13.8-19.5	12.3-17.1	<5	<1000	<0.1	<1	<1	<0.01	<0.1
Mean Value		25.5	53.8	8.1	17.1	14.9	<5	<1000	<0.1	<1	<1	<0.01	<0.1
NAAQ Norms*		60 (24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	100 (8 hrs.)	400 (24 hrs.)	2,000 (8 hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)

Legend : **PM2.5**-Particulate Matter size less than 2.5 µm; **PM10**-Respirable Particulate Matter size less than 10 µm; **SO₂**-Sulphur dioxide; **NO_x**-Oxides of Nitrogen; **O₃**-Ozone; **NH₃**-Ammonia; **CO**-Carbon monoxide; **Pb**-Particulate Lead; **As**-Particulate Arsenic; **Ni**-Particulate Nickel; **C₆H₆**-Benzene & **BaP**- Benzo (a) pyrene in particulate phase. ug-microgram & ng-nanogram. *: **NAAQ Norms**-National Ambient Air Quality Norms-Revised as per GSR 826(E) dated 16.11.2009 for Industrial, Residential, Rural and other Areas.

Table : 3.10 Ambient Air Quality Data at A3-Perungalathur

Monitoring		Particulates, µg/m ³		Gaseous Pollutants, µg/m ³					Other Pollutants (Particulate Phase)				
Date	Period, hrs.	PM2.5	PM10	SO ₂	NO _x	O ₃ (8-hly Avg.)	NH ₃	CO (8-hly Avg.)	Pb, ug/m ³	As, ng/m ³	Ni, ng/m ³	C ₆ H ₆ , ug/m ³	BaP, ng/m ³
02-03.06.2025	06:00-06:00	21	45	6.3	13.3	11.4	<5	<1000	<0.1	<1	<1	<0.01	<0.1
03-04.06.2025	06:00-06:00	20	41	6.9	14.7	12.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
10-11.06.2025	06:00-06:00	23	48	5.8	12.8	10.9	<5	<1000	<0.1	<1	<1	<0.01	<0.1
11-12.06.2025	06:00-06:00	19	39	5.1	12.1	11.3	<5	<1000	<0.1	<1	<1	<0.01	<0.1
18-19.06.2025	06:00-06:00	21	44	6.7	13.6	12.3	<5	<1000	<0.1	<1	<1	<0.01	<0.1
19-20.06.2025	06:00-06:00	25	51	5.3	14.4	12.9	<5	<1000	<0.1	<1	<1	<0.01	<0.1
26-27.06.2025	06:00-06:00	19	38	6.8	13.6	10.9	<5	<1000	<0.1	<1	<1	<0.01	<0.1
27-28.06.2025	06:00-06:00	21	46	6.4	15.1	13.3	<5	<1000	<0.1	<1	<1	<0.01	<0.1
01-02.07.2025	06:00-06:00	23	49	5.3	12.9	11.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
02-03.07.2025	06:00-06:00	20	41	6.9	13.4	12.3	<5	<1000	<0.1	<1	<1	<0.01	<0.1
10-11.07.2025	06:00-06:00	18	38	7.2	14.6	12.9	<5	<1000	<0.1	<1	<1	<0.01	<0.1
11-12.07.2025	06:00-06:00	21	44	6.5	12.8	11.2	<5	<1000	<0.1	<1	<1	<0.01	<0.1
17-18.07.2025	06:00-06:00	19	41	7.3	14.1	12.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
18-19.07.2025	06:00-06:00	23	49	5.8	15.3	13.7	<5	<1000	<0.1	<1	<1	<0.01	<0.1
25-26.07.2025	06:00-06:00	21	43	6.7	12.9	11.8	<5	<1000	<0.1	<1	<1	<0.01	<0.1
26-27.07.2025	06:00-06:00	19	39	5.1	13.7	12.3	<5	<1000	<0.1	<1	<1	<0.01	<0.1
01-02.08.2025	06:00-06:00	23	47	5.9	15.4	13.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
02-03.08.2025	06:00-06:00	18	40	6.4	13.3	11.8	<5	<1000	<0.1	<1	<1	<0.01	<0.1
08-09.08.2025	06:00-06:00	22	46	7.7	14.6	12.5	<5	<1000	<0.1	<1	<1	<0.01	<0.1
09-10.08.2025	06:00-06:00	19	41	7.1	13.1	12.3	<5	<1000	<0.1	<1	<1	<0.01	<0.1
13-14.08.2025	06:00-06:00	18	38	6.9	12.6	10.8	<5	<1000	<0.1	<1	<1	<0.01	<0.1
14-15.08.2025	06:00-06:00	23	49	5.5	13.9	11.7	<5	<1000	<0.1	<1	<1	<0.01	<0.1
21-22.08.2025	06:00-06:00	20	42	7.2	14.3	12.8	<5	<1000	<0.1	<1	<1	<0.01	<0.1
22-23.08.2025	06:00-06:00	18	38	6.9	12.4	11.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
Range (Minimum-Maximum)		18-25	38-51	5.1-7.7	12.1-15.4	10.8-13.7	<5	<1000	<0.1	<1	<1	<0.01	<0.1
Mean Value		20.6	43.2	6.4	13.7	12.1	<5	<1000	<0.1	<1	<1	<0.01	<0.1
NAAQ Norms*		60 (24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	100 (8 hrs.)	400 (24 hrs.)	2,000 (8 hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)

Legend : **PM2.5**-Particulate Matter size less than 2.5 µm; **PM10**-Respirable Particulate Matter size less than 10 µm; **SO₂**-Sulphur dioxide; **NO_x**-Oxides of Nitrogen; **O₃**-Ozone; **NH₃**-Ammonia; **CO**-Carbon monoxide; **Pb**-Particulate Lead; **As**-Particulate Arsenic; **Ni**-Particulate Nickel; **C₆H₆**-Benzene & **BaP**- Benzo (a) pyrene in particulate phase. ug-microgram & ng-nanogram. *: **NAAQ Norms**-National Ambient Air Quality Norms-**Revised as per GSR 826(E) dated 16.11.2009** for Industrial, Residential, Rural and other Areas.

Table : 3.11 Ambient Air Quality Data at A4-Talavedu

Monitoring		Particulates, µg/m ³		Gaseous Pollutants, µg/m ³					Other Pollutants (Particulate Phase)				
Date	Period, hrs.	PM2.5	PM10	SO ₂	NO _x	O ₃ (8-hly Avg.)	NH ₃	CO (8-hly Avg.)	Pb, ug/m ³	As, ng/m ³	Ni, ng/m ³	C ₆ H ₆ , ug/m ³	BaP, ng/m ³
02-03.06.2025	06:00-06:00	22	46	7.4	14.6	12.9	<5	<1000	<0.1	<1	<1	<0.01	<0.1
03-04.06.2025	06:00-06:00	25	51	7.8	13.9	12.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
10-11.06.2025	06:00-06:00	20	42	8.6	15.8	13.5	<5	<1000	<0.1	<1	<1	<0.01	<0.1
11-12.06.2025	06:00-06:00	22	48	7.3	14.7	12.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
18-19.06.2025	06:00-06:00	24	49	6.4	13.3	12.1	<5	<1000	<0.1	<1	<1	<0.01	<0.1
19-20.06.2025	06:00-06:00	26	53	5.9	16.8	14.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
26-27.06.2025	06:00-06:00	23	47	8.1	14.2	13.1	<5	<1000	<0.1	<1	<1	<0.01	<0.1
27-28.06.2025	06:00-06:00	24	50	7.6	12.8	10.9	<5	<1000	<0.1	<1	<1	<0.01	<0.1
01-02.07.2025	06:00-06:00	21	42	6.9	13.6	12.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
02-03.07.2025	06:00-06:00	23	47	8.2	15.5	13.3	<5	<1000	<0.1	<1	<1	<0.01	<0.1
10-11.07.2025	06:00-06:00	20	43	7.4	14.7	13.2	<5	<1000	<0.1	<1	<1	<0.01	<0.1
11-12.07.2025	06:00-06:00	24	49	6.6	16.3	14.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
17-18.07.2025	06:00-06:00	21	45	7.2	12.6	11.2	<5	<1000	<0.1	<1	<1	<0.01	<0.1
18-19.07.2025	06:00-06:00	25	51	6.9	13.9	12.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
25-26.07.2025	06:00-06:00	22	47	8.1	15.8	13.7	<5	<1000	<0.1	<1	<1	<0.01	<0.1
26-27.07.2025	06:00-06:00	21	44	7.7	12.2	10.9	<5	<1000	<0.1	<1	<1	<0.01	<0.1
01-02.08.2025	06:00-06:00	19	40	7.3	14.7	12.7	<5	<1000	<0.1	<1	<1	<0.01	<0.1
02-03.08.2025	06:00-06:00	24	49	6.5	16.8	14.8	<5	<1000	<0.1	<1	<1	<0.01	<0.1
08-09.08.2025	06:00-06:00	20	41	6.9	15.3	13.7	<5	<1000	<0.1	<1	<1	<0.01	<0.1
09-10.08.2025	06:00-06:00	21	43	8.4	17.4	15.1	<5	<1000	<0.1	<1	<1	<0.01	<0.1
13-14.08.2025	06:00-06:00	25	50	7.3	15.6	13.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
14-15.08.2025	06:00-06:00	20	40	6.9	13.6	12.2	<5	<1000	<0.1	<1	<1	<0.01	<0.1
21-22.08.2025	06:00-06:00	23	47	8.1	14.7	13.5	<5	<1000	<0.1	<1	<1	<0.01	<0.1
22-23.08.2025	06:00-06:00	22	48	7.2	13.1	12.2	<5	<1000	<0.1	<1	<1	<0.01	<0.1
Range (Minimum-Maximum)		19-26	40-53	5.9-8.6	12.2-17.4	10.9-15.1	<5	<1000	<0.1	<1	<1	<0.01	<0.1
Mean Value		22.4	46.3	7.4	14.7	13.0	<5	<1000	<0.1	<1	<1	<0.01	<0.1
NAAQ Norms*		60 (24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	100 (8 hrs.)	400 (24 hrs.)	2,000 (8 hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)

Legend : **PM2.5**-Particulate Matter size less than 2.5 µm; **PM10**-Respirable Particulate Matter size less than 10 µm; **SO₂**-Sulphur dioxide; **NO_x**-Oxides of Nitrogen; **O₃**-Ozone; **NH₃**-Ammonia; **CO**-Carbon monoxide; **Pb**-Particulate Lead; **As**-Particulate Arsenic; **Ni**-Particulate Nickel; **C₆H₆**-Benzene & **BaP**- Benzo (a) pyrene in particulate phase. ug-microgram & ng-nanogram. *: **NAAQ Norms**-National Ambient Air Quality Norms-Revised as per GSR 826(E) dated 16.11.2009 for Industrial, Residential, Rural and other Areas.

Table : 3.12 Ambient Air Quality Data at A5-Mudur

Monitoring		Particulates, µg/m ³		Gaseous Pollutants, µg/m ³					Other Pollutants (Particulate Phase)				
Date	Period, hrs.	PM2.5	PM10	SO ₂	NO _x	O ₃ (8-hly Avg.)	NH ₃	CO (8-hly Avg.)	Pb, ug/m ³	As, ng/m ³	Ni, ng/m ³	C ₆ H ₆ , ug/m ³	BaP, ng/m ³
02-03.06.2025	06:00-06:00	21	43	6.3	12.8	11.5	<5	<1000	<0.1	<1	<1	<0.01	<0.1
03-04.06.2025	06:00-06:00	23	49	5.9	13.9	12.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
10-11.06.2025	06:00-06:00	25	52	5.1	15.1	13.3	<5	<1000	<0.1	<1	<1	<0.01	<0.1
11-12.06.2025	06:00-06:00	20	41	6.3	14.4	12.7	<5	<1000	<0.1	<1	<1	<0.01	<0.1
18-19.06.2025	06:00-06:00	19	39	5.8	12.2	11.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
19-20.06.2025	06:00-06:00	23	48	7.1	12.9	11.8	<5	<1000	<0.1	<1	<1	<0.01	<0.1
26-27.06.2025	06:00-06:00	20	44	6.9	13.5	12.8	<5	<1000	<0.1	<1	<1	<0.01	<0.1
27-28.06.2025	06:00-06:00	23	48	7.5	13.1	12.1	<5	<1000	<0.1	<1	<1	<0.01	<0.1
01-02.07.2025	06:00-06:00	20	42	6.3	14.6	13.3	<5	<1000	<0.1	<1	<1	<0.01	<0.1
02-03.07.2025	06:00-06:00	24	50	5.5	15.3	12.9	<5	<1000	<0.1	<1	<1	<0.01	<0.1
10-11.07.2025	06:00-06:00	21	43	7.8	15.9	13.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
11-12.07.2025	06:00-06:00	24	49	6.1	14.4	12.9	<5	<1000	<0.1	<1	<1	<0.01	<0.1
17-18.07.2025	06:00-06:00	20	41	5.9	12.9	12.0	<5	<1000	<0.1	<1	<1	<0.01	<0.1
18-19.07.2025	06:00-06:00	23	47	6.8	13.7	11.9	<5	<1000	<0.1	<1	<1	<0.01	<0.1
25-26.07.2025	06:00-06:00	21	43	5.9	14.6	12.8	<5	<1000	<0.1	<1	<1	<0.01	<0.1
26-27.07.2025	06:00-06:00	25	50	6.3	15.1	13.5	<5	<1000	<0.1	<1	<1	<0.01	<0.1
01-02.08.2025	06:00-06:00	21	44	5.4	12.3	11.8	<5	<1000	<0.1	<1	<1	<0.01	<0.1
02-03.08.2025	06:00-06:00	19	41	7.3	13.7	12.1	<5	<1000	<0.1	<1	<1	<0.01	<0.1
08-09.08.2025	06:00-06:00	23	49	6.6	14.6	12.9	<5	<1000	<0.1	<1	<1	<0.01	<0.1
09-10.08.2025	06:00-06:00	19	40	6.8	12.9	11.8	<5	<1000	<0.1	<1	<1	<0.01	<0.1
13-14.08.2025	06:00-06:00	23	48	5.9	13.7	12.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
14-15.08.2025	06:00-06:00	22	45	6.1	14.9	13.1	<5	<1000	<0.1	<1	<1	<0.01	<0.1
21-22.08.2025	06:00-06:00	20	42	5.9	15.3	13.5	<5	<1000	<0.1	<1	<1	<0.01	<0.1
22-23.08.2025	06:00-06:00	19	40	6.7	12.7	11.8	<5	<1000	<0.1	<1	<1	<0.01	<0.1
Range (Minimum-Maximum)		19-25	39-52	5.1-7.8	12.2-15.9	11.5-13.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
Mean Value		21.6	44.9	6.3	13.9	12.5	<5	<1000	<0.1	<1	<1	<0.01	<0.1
NAAQ Norms*		60 (24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	100 (8 hrs.)	400 (24 hrs.)	2,000 (8 hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)

Legend : **PM2.5**-Particulate Matter size less than 2.5 µm; **PM10**-Respirable Particulate Matter size less than 10 µm; **SO₂**-Sulphur dioxide; **NO_x**-Oxides of Nitrogen; **O₃**-Ozone; **NH₃**-Ammonia; **CO**-Carbon monoxide; **Pb**-Particulate Lead; **As**-Particulate Arsenic; **Ni**-Particulate Nickel; **C₆H₆**-Benzene & **BaP**- Benzo (a) pyrene in particulate phase. ug-microgram & ng-nanogram. *: **NAAQ Norms**-National Ambient Air Quality Norms-**Revised as per GSR 826(E) dated 16.11.2009** for Industrial, Residential, Rural and other Areas.

Table : 3.13 Ambient Air Quality Data at A6-Arakkonam

Monitoring		Particulates, µg/m ³		Gaseous Pollutants, µg/m ³					Other Pollutants (Particulate Phase)				
Date	Period, hrs.	PM2.5	PM10	SO ₂	NO _x	O ₃ (8-hly Avg.)	NH ₃	CO (8-hly Avg.)	Pb, ug/m ³	As, ng/m ³	Ni, ng/m ³	C ₆ H ₆ , ug/m ³	BaP, ng/m ³
02-03.06.2025	06:00-06:00	22	46	8.1	16.9	14.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
03-04.06.2025	06:00-06:00	25	53	7.9	18.4	15.9	<5	<1000	<0.1	<1	<1	<0.01	<0.1
10-11.06.2025	06:00-06:00	27	57	8.3	15.7	13.2	<5	<1000	<0.1	<1	<1	<0.01	<0.1
11-12.06.2025	06:00-06:00	24	51	7.7	16.3	13.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
18-19.06.2025	06:00-06:00	23	49	8.6	19.4	15.9	<5	<1000	<0.1	<1	<1	<0.01	<0.1
19-20.06.2025	06:00-06:00	27	56	8.1	17.2	14.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
26-27.06.2025	06:00-06:00	24	50	8.9	15.4	13.7	<5	<1000	<0.1	<1	<1	<0.01	<0.1
27-28.06.2025	06:00-06:00	28	57	6.9	13.6	12.2	<5	<1000	<0.1	<1	<1	<0.01	<0.1
01-02.07.2025	06:00-06:00	22	46	7.4	15.9	13.5	<5	<1000	<0.1	<1	<1	<0.01	<0.1
02-03.07.2025	06:00-06:00	24	48	8.6	16.6	14.8	<5	<1000	<0.1	<1	<1	<0.01	<0.1
10-11.07.2025	06:00-06:00	21	46	8.1	18.2	15.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
11-12.07.2025	06:00-06:00	25	52	8.9	19.5	16.4	<5	<1000	<0.1	<1	<1	<0.01	<0.1
17-18.07.2025	06:00-06:00	27	57	7.3	16.4	14.3	<5	<1000	<0.1	<1	<1	<0.01	<0.1
18-19.07.2025	06:00-06:00	24	50	6.9	17.1	15.1	<5	<1000	<0.1	<1	<1	<0.01	<0.1
25-26.07.2025	06:00-06:00	22	46	8.4	15.5	13.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
26-27.07.2025	06:00-06:00	23	49	7.2	14.6	12.8	<5	<1000	<0.1	<1	<1	<0.01	<0.1
01-02.08.2025	06:00-06:00	21	43	8.8	18.4	15.5	<5	<1000	<0.1	<1	<1	<0.01	<0.1
02-03.08.2025	06:00-06:00	25	52	8.4	15.9	13.3	<5	<1000	<0.1	<1	<1	<0.01	<0.1
08-09.08.2025	06:00-06:00	27	57	7.9	17.2	14.9	<5	<1000	<0.1	<1	<1	<0.01	<0.1
09-10.08.2025	06:00-06:00	22	46	6.9	16.6	13.5	<5	<1000	<0.1	<1	<1	<0.01	<0.1
13-14.08.2025	06:00-06:00	25	51	8.1	17.9	15.4	<5	<1000	<0.1	<1	<1	<0.01	<0.1
14-15.08.2025	06:00-06:00	22	45	7.8	18.4	16.5	<5	<1000	<0.1	<1	<1	<0.01	<0.1
21-22.08.2025	06:00-06:00	25	53	6.3	16.1	13.8	<5	<1000	<0.1	<1	<1	<0.01	<0.1
22-23.08.2025	06:00-06:00	27	56	8.4	15.3	12.8	<5	<1000	<0.1	<1	<1	<0.01	<0.1
Range (Minimum-Maximum)		21-28	49-57	6.3-8.9	13.6-19.5	12.2-16.5	<5	<1000	<0.1	<1	<1	<0.01	<0.1
Mean Value		24.3	50.7	7.9	16.8	14.4	<5	<1000	<0.1	<1	<1	<0.01	<0.1
NAAQ Norms*		60 (24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	100 (8 hrs.)	400 (24 hrs.)	2,000 (8 hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)

Legend : **PM2.5**-Particulate Matter size less than 2.5 µm; **PM10**-Respirable Particulate Matter size less than 10 µm; **SO₂**-Sulphur dioxide; **NO_x**-Oxides of Nitrogen; **O₃**-Ozone; **NH₃**-Ammonia; **CO**-Carbon monoxide; **Pb**-Particulate Lead; **As**-Particulate Arsenic; **Ni**-Particulate Nickel; **C₆H₆**-Benzene & **BaP**- Benzo (a) pyrene in particulate phase. ug-microgram & ng-nanogram. *: **NAAQ Norms**-National Ambient Air Quality Norms-**Revised as per GSR 826(E) dated 16.11.2009** for Industrial, Residential, Rural and other Areas.

Table : 3.14 Ambient Air Quality Data at A7-Guruvarajapet

Monitoring		Particulates, µg/m ³		Gaseous Pollutants, µg/m ³					Other Pollutants (Particulate Phase)				
Date	Period, hrs.	PM2.5	PM10	SO ₂	NO _x	O ₃ (8-hly Avg.)	NH ₃	CO (8-hly Avg.)	Pb, ug/m ³	As, ng/m ³	Ni, ng/m ³	C ₆ H ₆ , ug/m ³	BaP, ng/m ³
02-03.06.2025	06:00-06:00	23	47	7.7	14.8	12.9	<5	<1000	<0.1	<1	<1	<0.01	<0.1
03-04.06.2025	06:00-06:00	26	53	6.9	17.1	14.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
10-11.06.2025	06:00-06:00	21	42	8.2	16.6	13.8	<5	<1000	<0.1	<1	<1	<0.01	<0.1
11-12.06.2025	06:00-06:00	23	48	7.7	13.5	12.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
18-19.06.2025	06:00-06:00	27	56	5.6	14.8	13.3	<5	<1000	<0.1	<1	<1	<0.01	<0.1
19-20.06.2025	06:00-06:00	20	41	6.7	14.1	12.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
26-27.06.2025	06:00-06:00	23	47	8.1	15.9	14.5	<5	<1000	<0.1	<1	<1	<0.01	<0.1
27-28.06.2025	06:00-06:00	24	49	5.9	14.7	12.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
01-02.07.2025	06:00-06:00	26	53	7.3	16.6	14.9	<5	<1000	<0.1	<1	<1	<0.01	<0.1
02-03.07.2025	06:00-06:00	24	50	7.7	14.2	13.3	<5	<1000	<0.1	<1	<1	<0.01	<0.1
10-11.07.2025	06:00-06:00	27	56	7.1	16.6	14.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
11-12.07.2025	06:00-06:00	22	45	6.5	15.5	12.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
17-18.07.2025	06:00-06:00	24	49	6.6	14.3	13.1	<5	<1000	<0.1	<1	<1	<0.01	<0.1
18-19.07.2025	06:00-06:00	25	51	8.6	13.2	12.2	<5	<1000	<0.1	<1	<1	<0.01	<0.1
25-26.07.2025	06:00-06:00	26	53	7.7	15.8	14.3	<5	<1000	<0.1	<1	<1	<0.01	<0.1
26-27.07.2025	06:00-06:00	21	44	7.1	14.7	13.3	<5	<1000	<0.1	<1	<1	<0.01	<0.1
01-02.08.2025	06:00-06:00	23	49	6.3	13.9	12.0	<5	<1000	<0.1	<1	<1	<0.01	<0.1
02-03.08.2025	06:00-06:00	25	52	5.8	15.1	13.7	<5	<1000	<0.1	<1	<1	<0.01	<0.1
08-09.08.2025	06:00-06:00	22	47	6.7	14.6	12.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
09-10.08.2025	06:00-06:00	20	41	7.4	13.9	12.1	<5	<1000	<0.1	<1	<1	<0.01	<0.1
13-14.08.2025	06:00-06:00	24	49	6.6	13.1	12.1	<5	<1000	<0.1	<1	<1	<0.01	<0.1
14-15.08.2025	06:00-06:00	21	43	6.1	14.6	12.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
21-22.08.2025	06:00-06:00	25	51	7.9	15.9	13.3	<5	<1000	<0.1	<1	<1	<0.01	<0.1
22-23.08.2025	06:00-06:00	21	44	5.5	16.7	14.2	<5	<1000	<0.1	<1	<1	<0.01	<0.1
Range (Minimum-Maximum)		20-27	41-56	5.5-8.6	13.1-17.1	12.0-14.9	<5	<1000	<0.1	<1	<1	<0.01	<0.1
Mean Value		23.5	48.3	7.0	15.0	13.2	<5	<1000	<0.1	<1	<1	<0.01	<0.1
NAAQ Norms*		60 (24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	100 (8 hrs.)	400 (24 hrs.)	2,000 (8 hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)

Legend : **PM2.5**-Particulate Matter size less than 2.5 µm; **PM10**-Respirable Particulate Matter size less than 10 µm; **SO₂**-Sulphur dioxide; **NO_x**-Oxides of Nitrogen; **O₃**-Ozone; **NH₃**-Ammonia; **CO**-Carbon monoxide; **Pb**-Particulate Lead; **As**-Particulate Arsenic; **Ni**-Particulate Nickel; **C₆H₆**-Benzene & **BaP**- Benzo (a) pyrene in particulate phase. ug-microgram & ng-nanogram. *: **NAAQ Norms**-National Ambient Air Quality Norms-Revised as per GSR 826(E) dated 16.11.2009 for Industrial, Residential, Rural and other Areas.

Table : 3.15 Ambient Air Quality Data at A8-Suryanagaram

Monitoring		Particulates, µg/m ³		Gaseous Pollutants, µg/m ³					Other Pollutants (Particulate Phase)				
Date	Period, hrs.	PM2.5	PM10	SO ₂	NO _x	O ₃ (8-hly Avg.)	NH ₃	CO (8-hly Avg.)	Pb, ug/m ³	As, ng/m ³	Ni, ng/m ³	C ₆ H ₆ , ug/m ³	BaP, ng/m ³
02-03.06.2025	06:00-06:00	19	41	5.9	13.3	12.1	<5	<1000	<0.1	<1	<1	<0.01	<0.1
03-04.06.2025	06:00-06:00	22	46	6.3	12.4	11.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
10-11.06.2025	06:00-06:00	18	39	5.7	13.9	12.7	<5	<1000	<0.1	<1	<1	<0.01	<0.1
11-12.06.2025	06:00-06:00	23	48	5.1	14.2	12.2	<5	<1000	<0.1	<1	<1	<0.01	<0.1
18-19.06.2025	06:00-06:00	21	44	6.4	12.8	11.1	<5	<1000	<0.1	<1	<1	<0.01	<0.1
19-20.06.2025	06:00-06:00	20	42	6.1	14.4	12.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
26-27.06.2025	06:00-06:00	23	47	5.9	13.6	11.7	<5	<1000	<0.1	<1	<1	<0.01	<0.1
27-28.06.2025	06:00-06:00	19	41	7.1	13.7	12.1	<5	<1000	<0.1	<1	<1	<0.01	<0.1
01-02.07.2025	06:00-06:00	22	48	5.5	13.9	11.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
02-03.07.2025	06:00-06:00	19	38	5.9	14.7	12.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
10-11.07.2025	06:00-06:00	21	43	6.2	12.9	11.2	<5	<1000	<0.1	<1	<1	<0.01	<0.1
11-12.07.2025	06:00-06:00	23	47	6.7	13.4	10.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
17-18.07.2025	06:00-06:00	18	40	5.5	14.7	12.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
18-19.07.2025	06:00-06:00	22	49	6.1	13.9	11.3	<5	<1000	<0.1	<1	<1	<0.01	<0.1
25-26.07.2025	06:00-06:00	21	45	6.9	15.2	13.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
26-27.07.2025	06:00-06:00	19	39	7.2	14.6	12.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
01-02.08.2025	06:00-06:00	21	43	6.6	13.9	11.8	<5	<1000	<0.1	<1	<1	<0.01	<0.1
02-03.08.2025	06:00-06:00	23	48	5.8	12.8	10.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
08-09.08.2025	06:00-06:00	19	40	5.1	15.5	13.2	<5	<1000	<0.1	<1	<1	<0.01	<0.1
09-10.08.2025	06:00-06:00	21	43	6.6	16.7	14.2	<5	<1000	<0.1	<1	<1	<0.01	<0.1
13-14.08.2025	06:00-06:00	23	49	5.9	14.3	13.1	<5	<1000	<0.1	<1	<1	<0.01	<0.1
14-15.08.2025	06:00-06:00	25	51	6.1	13.2	12.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
21-22.08.2025	06:00-06:00	20	42	5.8	12.9	11.8	<5	<1000	<0.1	<1	<1	<0.01	<0.1
22-23.08.2025	06:00-06:00	19	39	6.8	15.1	13.6	<5	<1000	<0.1	<1	<1	<0.01	<0.1
Range (Minimum-Maximum)		18-25	38-51	6.1-7.2	12.4-16.7	10.6-14.2	<5	<1000	<0.1	<1	<1	<0.01	<0.1
Mean Value		20.9	43.8	6.1	14.0	12.2	<5	<1000	<0.1	<1	<1	<0.01	<0.1
NAAQ Norms*		60 (24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	100 (8 hrs.)	400 (24 hrs.)	2,000 (8 hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)

Legend : **PM2.5**-Particulate Matter size less than 2.5 µm; **PM10**-Respirable Particulate Matter size less than 10 µm; **SO₂**-Sulphur dioxide; **NO_x**-Oxides of Nitrogen; **O₃**-Ozone; **NH₃**-Ammonia; **CO**-Carbon monoxide; **Pb**-Particulate Lead; **As**-Particulate Arsenic; **Ni**-Particulate Nickel; **C₆H₆**-Benzene & **BaP**- Benzo (a) pyrene in particulate phase. ug-microgram & ng-nanogram. *: **NAAQ Norms**-National Ambient Air Quality Norms-Revised as per GSR 826(E) dated 16.11.2009 for Industrial, Residential, Rural and other Areas.

Table : 3.16 Abstract of Ambient Air Quality Data

Sl. No.	Parameter	Pollutant Concentration, µg/m ³							
		PM2.5	PM10	SO ₂	NO _x	PM2.5	PM10	SO ₂	NO _x
		A1-Project Site				A2-Tiruttani			
1	No. of Observations	24	24	24	24	24	24	24	24
2	Minimum	15	31	5	11	22	46	6	14
3	10 th Percentile Value	15	32	6	11	23	47	7	15
4	20 th Percentile Value	16	33	6	12	23	48	7	16
5	30 th Percentile Value	17	34	6	12	24	51	8	16
6	40 th Percentile Value	17	35	6	13	25	53	8	17
7	50 th Percentile Value	18	37	6	13	26	54	8	17
8	60 th Percentile Value	18	38	6	13	26	56	8	18
9	70 th Percentile Value	18	39	7	13	27	57	9	18
10	80 th Percentile Value	19	40	7	13	28	58	9	18
11	90 th Percentile Value	19	41	7	13	28	60	9	19
12	95 th Percentile Value	20	41	7	14	29	61	9	19
13	98 th Percentile Value	20	42	7	14	29	61	10	19
14	Maximum	20	42	7	14	29	61	11	20
15	Arithmetic Mean	17.5	36.6	6.3	12.5	25.5	53.8	8.1	17.1
16	Geometric Mean	17.4	36.5	6.2	12.5	25.4	53.6	8.0	17.0
17	Standard Deviation	1.5	3.4	0.6	0.8	2.2	4.8	1.1	1.5
18	NAAQ Norms*	60	100	80	80	60	100	80	80
19	% Values exceeding Norms*	0	0	0	0	0	0	0	0
		A3-Perungalathur				A4-Talavedu			
1	No. of Observations	24	24	24	24	24	24	24	24
2	Minimum	18	38	5	12	19	40	6	12
3	10 th Percentile Value	18	38	5	13	20	41	7	13
4	20 th Percentile Value	19	39	6	13	21	43	7	13
5	30 th Percentile Value	19	41	6	13	21	44	7	14
6	40 th Percentile Value	20	41	6	13	22	46	7	14
7	50 th Percentile Value	21	43	7	14	22	47	7	15
8	60 th Percentile Value	21	44	7	14	23	48	7	15
9	70 th Percentile Value	21	46	7	14	24	49	8	16
10	80 th Percentile Value	23	47	7	15	24	49	8	16
11	90 th Percentile Value	23	49	7	15	25	51	8	17
12	95 th Percentile Value	23	49	7	15	25	51	8	17
13	98 th Percentile Value	24	50	8	15	26	52	9	17
14	Maximum	25	51	8	15	26	53	9	17
15	Arithmetic Mean	20.6	43.2	6.4	13.7	22.4	46.3	7.4	14.7
16	Geometric Mean	20.5	43.0	6.4	13.7	22.3	46.2	7.3	14.6
17	Standard Deviation	2.0	4.1	0.8	0.9	2.0	3.7	0.7	1.4
18	NAAQ Norms*	60	100	80	80	60	100	80	80
19	% Values exceeding Norms*	0	0	0	0	0	0	0	0

Legend : PM2.5-Particulate Matter size less than 2.5 µm; PM10-Respirable Particulate Matter size less than 10 µm; SO₂-Sulphur dioxide; NO_x-Oxides of Nitrogen. O₃-Ozone values are reported locationwise. µg-microgram.

NH₃-Ammonia; CO-Carbon monoxide; Pb-Particulate Lead; As-Particulate Arsenic; Ni-Particulate Nickel; C₆H₆-Benzene and BaP-Benzo (a) pyrene in particulate phase levels were monitored below respective detectable limits.

* : NAAQ Norms-National Ambient Air Quality Norms-Revised as per GSR 826(E) dated 16.11.2009 for Industrial, Residential, Rural and other Areas.

Table : 3.16 (Contn.) Abstract of Ambient Air Quality Data

Sl. No.	Parameter	Pollutant Concentration, $\mu\text{g}/\text{m}^3$							
		PM2.5	PM10	SO ₂	NOx	PM2.5	PM10	SO ₂	NOx
		A5-Mudur				A6-Arakkonam			
1	No. of Observations	24	24	24	24	24	24	24	24
2	Minimum	19	39	5	12	21	43	6	14
3	10 th Percentile Value	19	40	6	13	22	46	7	15
4	20 th Percentile Value	20	41	6	13	22	46	7	16
5	30 th Percentile Value	20	42	6	13	23	48	8	16
6	40 th Percentile Value	21	43	6	14	24	49	8	16
7	50 th Percentile Value	21	44	6	14	24	51	8	17
8	60 th Percentile Value	23	47	6	14	25	52	8	17
9	70 th Percentile Value	23	48	7	15	25	53	8	17
10	80 th Percentile Value	23	49	7	15	27	56	8	18
11	90 th Percentile Value	24	50	7	15	27	57	9	18
12	95 th Percentile Value	25	50	7	15	27	57	9	19
13	98 th Percentile Value	25	51	8	16	28	57	9	19
14	Maximum	25	52	8	16	28	57	9	20
15	Arithmetic Mean	21.6	44.9	6.3	13.9	24.3	50.7	7.9	16.8
16	Geometric Mean	21.5	44.8	6.3	13.9	24.2	50.5	7.9	16.7
17	Standard Deviation	2.0	3.9	0.7	1.1	2.1	4.4	0.7	1.5
18	NAAQ Norms*	60	100	80	80	60	100	80	80
19	% Values exceeding Norms*	0	0	0	0	0	0	0	0
		A7-Guruvarajapet				A8-Suryanagaram			
1	No. of Observations	24	24	24	24	24	24	24	24
2	Minimum	20	41	6	13	18	38	5	12
3	10 th Percentile Value	21	42	6	14	19	39	6	13
4	20 th Percentile Value	21	44	6	14	19	40	6	13
5	30 th Percentile Value	22	47	7	14	19	41	6	13
6	40 th Percentile Value	23	47	7	15	20	42	6	14
7	50 th Percentile Value	24	49	7	15	21	43	6	14
8	60 th Percentile Value	24	49	7	15	21	45	6	14
9	70 th Percentile Value	25	51	8	16	22	47	6	14
10	80 th Percentile Value	25	52	8	16	23	48	7	15
11	90 th Percentile Value	26	53	8	17	23	49	7	15
12	95 th Percentile Value	27	56	8	17	23	49	7	15
13	98 th Percentile Value	27	56	8	17	24	50	7	16
14	Maximum	27	56	9	17	25	51	7	17
15	Arithmetic Mean	23.5	48.3	7.0	15.0	20.9	43.8	6.1	14.0
16	Geometric Mean	23.4	48.1	6.9	15.0	20.8	43.7	6.1	14.0
17	Standard Deviation	2.1	4.4	0.9	1.2	1.9	3.9	0.6	1.0
18	NAAQ Norms*	60	100	80	80	60	100	80	80
19	% Values exceeding Norms*	0	0	0	0	0	0	0	0

Legend : PM2.5-Particulate Matter size less than 2.5 μm ; PM10-Respirable Particulate Matter size less than 10 μm ; SO₂-Sulphur dioxide; NOx-Oxides of Nitrogen. O₃-Ozone values are reported locationwise. μg -microgram.

NH₃-Ammonia; CO-Carbon monoxide; Pb-Particulate Lead; As-Particulate Arsenic; Ni-Particulate Nickel; C₆H₆-Benzene and BaP-Benzo (a) pyrene in particulate phase levels were monitored below respective detectable limits.

* : NAAQ Norms-National Ambient Air Quality Norms-Revised as per GSR 826(E) dated 16.11.2009 for Industrial, Residential, Rural and other Areas.

Table : 3.17 Ambient Air Quality Status

Season : Premonsoon (Jun.-Aug. 2025)
No. of Locations : 8 ; Sample Size : 24-Hourly

Sl. No.	Parameter	Pollutant Concentration, $\mu\text{g}/\text{m}^3$			
		PM2.5	PM10	SO ₂	NO _x
1	No. of Observations	192	192	192	192
2	Minimum	15	31	5	11
3	10 th Percentile Value	18	38	6	13
4	20 th Percentile Value	19	41	6	13
5	30 th Percentile Value	20	42	6	14
6	40 th Percentile Value	21	44	7	14
7	50 th Percentile Value	22	46	7	15
8	60 th Percentile Value	23	48	7	15
9	70 th Percentile Value	24	49	7	16
10	80 th Percentile Value	25	51	8	16
11	90 th Percentile Value	26	54	8	17
12	95 th Percentile Value	27	57	9	18
13	98 th Percentile Value	28	59	9	19
14	Maximum	29	61	11	20
15	Arithmetic Mean	22.0	46.0	6.9	14.7
16	Geometric Mean	21.8	45.5	6.9	14.6
17	Standard Deviation	3.0	6.3	1.0	1.9
18	NAAQ Norms*	60	100	80	80
19	% Values exceeding NAAQ Norms	0	0	0	0

Legend : PM2.5-Particulate Matter size less than 2.5 μm ; PM10-Respirable Particulate Matter size less than 10 μm ; SO₂-Sulphur dioxide; NO_x-Oxides of Nitrogen. O₃-Ozone values are reported locationwise. μg -microgram.

NH₃-Ammonia; CO-Carbon monoxide; Pb-Particulate Lead; As-Particulate Arsenic; Ni-Particulate Nickel; C₆H₆-Benzene and BaP-Benzo (a) pyrene in particulate phase levels were monitored below respective detectable limits.

* : NAAQ Norms-National Ambient Air Quality Norms-Revised as per GSR 826(E) dated 16.11.2009 for Industrial, Residential, Rural and other Areas.

The levels of air quality with an adequate margin of safety, to protect the public health, vegetation and property. Whenever and wherever two consecutive values exceed the limit specified above for the respective category, it would be considered adequate reason to institute regular/continuous monitoring and further investigations.

1. 24-hly./8-hly. values should be met 98% of the time in a year; however, 2% of the time it may exceed but not on two consecutive days.

2. Annual arithmetic mean of minimum 104 measurements in a year taken twice a week 24-hourly at uniform interval.

Ammonia (NH₃) concentrations were monitored **less than 5 µg/m³** at all monitoring locations against NAAQ limit value of 400 µg/m³ (24 hours Time Weighted).

CO : Monitored values were **less than 1000 µg/m³** during the study period against NAAQ limit value of 2 mg/m³ (2,000 ug/m³) (8 hours Time Weighted).

Particulate Lead (Pb) concentrations were monitored **less than 0.1 µg/m³** at all monitoring locations against NAAQ limit value of 1.0 µg/m³ (24 hours Time Weighted).

Arsenic (As) concentrations were monitored **less than 1 nanogram/cu.m (ng/m³)** at all monitoring locations against NAAQ limit value of 6 ng/m³ (annual mean).

Nickel (Ni) concentrations were monitored **less than 1 ng/m³** at all monitoring locations against NAAQ limit value of 20 ng/m³ (annual mean).

Benzene (C₆H₆) concentrations were monitored **less than 0.01 µg/m³** at all monitoring locations against NAAQ limit value of 5 µg/m³ (annual mean).

Benzo(a) Pyrene (BaP) concentrations were monitored **less than 0.1 ng/m³** at all monitoring locations against NAAQ limit value of 1.0 ng/m³ (annual mean).

While comparing with the National Ambient Air Quality (NAAQ) Standards revised as per GSR 826(E) dated 16.11.2009, **all monitored values were found to be well within the respective limit values for 24-hourly periods** for Industrial, Residential, Rural and other Areas.

Exceedance Factor (EF) : (Monitored Avg. Value of criteria Pollutant/NAAQ Norm of the Pollutant) : Critical Pollution if EF is 1.5; High Pollution if EF is between 1.0-<1.5, Moderate Pollution if EF is between 0.5-<1.0 and Low Pollution if EF is <0.5. **Study Area is falling under Low Pollution Level (Table 3.18).**

Table : 3.18 AAQ Pollution Level

Pollutant	Mean Concentration	NAAQ Norm	Exceedance Factor (EF)	Pollution Category
PM2.5, µg/m ³	22.0	60	0.37	Low
PM10, µg/m ³	46.0	100	0.46	Low
SO ₂ , µg/m ³	6.9	80	0.09	Low
NO ₂ , µg/m ³	14.7	80	0.18	Low

3.5.3 RSPM Analysis

With the samples of Respirable Suspended Particulate Matter (RSPM or PM_{10}) monitored, the main focus is on characterization and apportionment of PM_{10} to have a better understanding and correlation between the RSPM fraction at source and receptor. The results are tabulated in **Table 3.19**. There was no significant variation in the characteristics of RSPM values in the upwind and downwind direction locations. Free Respirable Silica in RSPM was also monitored using Personal Sampler and FTIR Method of Analysis. The Silica Content was found to be 2.3% of RSPM that monitored in the Study Area.

Free Respirable Silica Content : 2.3%.

Table : 3.19 RSPM Analytical Data

Parameter	Percentage in RSPM Content	
	Upwind Direction (Location A2)	Downwind Direction (Location A3)
Loss on Ignition	10.8	11.1
Iron oxides (Fe_2O_3)	8.2	7.9
Calcium oxide (CaO)	18.0	17.5
Magnesium oxide (MgO)	13.3	13.0
Sodium oxide (Na_2O)	0.3	0.3
Potassium oxide (K_2O)	0.2	0.2
Aluminium oxide (Al_2O_3)	17.8	17.4
Titanium oxide (TiO_2)	0.03	0.03

3.6 Noise Levels

Study area represents Commercial & Residential Areas to compare with the MoEF&CC Ambient Noise Norms. The abstract of monitored noise data are presented in **Tables 3.20-3.21**.

Ambient Noise Levels were ranging from 28.0 dB(A) to 101.7 dB(A) during day times and from 27.4 dB(A) to 101.2 dB(A) during night times on the monitoring days. Noise Levels monitored at the Site had the influence of Traffic in Tiruttani Bypass and Railway Line round the clock.

Ambient Equivalent Noise Levels (L_{eq}) were ranging from 43.8 dB(A) to 53.3 dB(A) during day times and from 40.8 dB(A) to 48.0 dB(A) during night times on the monitoring day. Day Equivalent Noise (L_{day}) level was found to be 48.9 dB(A) and Night Equivalent Noise (L_{night}) level was 43.3 dB(A).

While comparing with the MoEF&CC L_{eq} Norms for day and night times, the monitored **ambient noise levels were well within the limit values** for their respective Category Area.

Table : 3.20 Ambient Noise Level Data

Monitoring Date : 15-16.07.2025

Monitoring Period, hrs.	Leq Noise Levels, dB(A)							
	A1	A2	A3	A4	A5	A6	A7	A8
06:00-07:00	43.8	46.8	44.5	45.0	44.1	46.9	45.2	43.8
07:00-08:00	44.9	49.8	46.1	45.9	45.6	50.3	47.8	45.3
08:00-09:00	45.5	50.6	46.8	47.2	47.5	50.8	49.8	45.9
09:00-10:00	46.7	52.1	47.4	48.6	47.9	51.7	50.3	47.4
10:00-11:00	48.5	53.3	49.5	49.8	48.7	52.6	49.7	48.6
11:00-12:00	47.8	51.6	50.3	50.3	49.2	52.9	49.1	49.2
12:00-13:00	46.7	50.7	49.7	50.9	49.9	51.1	50.6	50.2
13:00-14:00	48.1	49.9	48.8	51.1	48.7	51.8	50.1	48.6
14:00-15:00	46.6	50.1	49.2	50.3	49.6	50.6	49.9	50.3
15:00-16:00	46.7	51.6	48.6	49.8	48.9	51.8	50.1	49.4
16:00-17:00	48.4	51.9	50.7	50.7	50.3	52.7	51.1	50.5
17:00-18:00	49.6	52.6	51.0	51.8	50.9	53.3	51.6	50.9
18:00-19:00	50.7	53.1	50.3	50.6	48.1	50.7	49.8	48.9
19:00-20:00	47.7	51.3	48.4	50.1	46.6	49.1	48.1	47.6
20:00-21:00	45.9	50.7	46.5	47.7	44.9	48.9	47.9	45.1
21:00-22:00	45.7	49.1	46.0	46.8	44.0	47.9	47.5	44.9
Day Time	47.1	51.0	48.4	49.2	47.8	50.8	49.3	47.9
Lday Norm*	55	55	55	55	55	55	55	55
22:00-23:00	45.5	48.0	45.9	45.9	43.6	47.7	46.3	44.6
23:00-24:00	44.7	47.0	44.3	44.9	43.1	45.3	44.6	42.5
00:00-01:00	43.7	46.2	43.6	43.7	42.8	44.4	43.7	41.8
01:00-02:00	42.2	44.7	41.5	42.5	42.1	43.3	43.1	41.5
02:00-03:00	42.2	43.8	41.7	42.2	41.9	43.0	42.2	41.1
03:00-04:00	41.9	42.5	42.9	41.9	41.1	42.7	41.7	40.8
04:00-05:00	42.3	42.0	41.5	41.3	42.1	42.3	41.6	41.9
05:00-06:00	42.9	44.5	43.1	43.6	42.9	44.0	42.8	42.7
Night Time	43.2	44.8	43.1	43.3	42.5	44.1	43.3	42.1
Lnight Norm*	45	45	45	45	45	45	45	45

Legend : A1-Project Site; A2-Tiruttani; A3-Perungalathur; A4-Talavedu; A5-Mudur; A6-Arakkonam; A7-Guruvarajapet & A8- Suryanagaram.

Lday- Equivalent Noise Level during Day Times & Lnight- Equivalent Noise Level during Night Times.
Day time is reckoned in-between 6 a.m & 10 p.m and Night time is reckoned in between 10 p.m & 6 a.m.

* MoEF&CC Ambient Noise Norms (Leq) for Residential Areas.

Table : 3.21 Ambient Noise Level Data (Abstract)

Monitoring Date : 15-16.07.2025

Sl. No.	Location	Area	Leq Noise Levels, dB(A)					
			Day Time (06:00-22:00 hrs.)			Night Time (22:00-06:00 hrs.)		
			Min.	Max.	Leq	Min.	Max.	Leq
1	A1-Project Site	Industrial	28.0	96.4	47.1	27.4	90.8	43.2
2	A2-Tiruttani	Commercial	30.7	101.7	51.0	28.9	100.5	44.8
3	A3-Perungalathur	Residential	29.8	92.5	48.4	28.5	90.1	43.1
4	A4-Talavedu	Residential	29.5	90.1	49.2	28.2	88.4	43.3
5	A5-Mudur	Residential	29.0	93.1	47.8	28.7	89.8	42.5
6	A6-Arakkonam	Commercial	30.7	100.8	50.8	29.2	101.2	44.1
7	A7-Guruvarajapet	Residential	29.9	90.7	49.3	28.5	88.6	43.3
8	A8-Suryanagaram	Residential	29.5	98.2	47.9	28.3	90.1	42.1
Study Area			28.0	101.7	48.9	27.4	101.2	43.3
MoEF&CC Norms* for Residential Areas			-		55	-		45
MoEF&CC Norms for Commercial Areas			-		65	-		55
MoEF&CC Norms for Industrial Areas			-		75	-		70

* : MoEF&CC Norms-Ministry of Environment, Forest & Climate Change Ambient Noise Norms (Leq).

Day time is reckoned in between 6 a.m & 10 p.m and Night time is reckoned in between 10 p.m & 6 a.m.

3.7 Water Environment

3.7.1 Hydrology & Hydrogeology

Tiruvallur District is the northern most coastal district of Tamil Nadu. The District is part of the composite east flowing river basin having Arniar, Korataliar and Cooum sub basins. Araniyar, Korattalayar, Cooum, Nagari and Nandi are the important rivers. The drainage pattern, in general, is dendritic. All the rivers are seasonal and carry substantial flows during monsoon period. The chief irrigation sources in the area are the **tanks, wells and tube wells**.

Nandi River that flows through Tiruttani is a local name for the Kosasthalaiyar River. The river originates from Nandi Hills in Karnataka. After flowing through Tiruttani, the river eventually merges with the Kosasthalaiyar River. Nandi River irrigates a substantial amount of agricultural land (744.48 acres) in the Tiruttani region. Nagari River flows in the north and northeastern part of the Study Area and confluences into the Kosasthalaiyar River.

Tiruvallur District can be geologically classified into hard rock and sedimentary (alluvial) formation. This district is principally made up of Archaean, upper Gondwana and the tertiary formations. These are overlaid by laterites and alluvium. Granites and gneisses of Archaean age are mainly seen in Tiruttani Taluk. These crystalline rocks have undergone weathering to variable extent. Hard rock formations begin with top sandy soil to a depth of 1.5 to 3 m followed by highly

weathered formation of granites and granitic gneisses upto 7.5 m and then well fractured formation to a depth of 30 m from ground level.

Ground water generally occurs under phreatic conditions in the weathered mantle and under semi-confined conditions in the fissured and fractured zones at deeper levels. The thickness of weathered zone in the district is in the range of 2 to 12 m. The depth of the wells ranged from 8.0 to 15.0 m below ground level (BGL). The yield of large diameter wells tapping the weathered mantle of crystalline rocks ranges from 100 lpm to 500 lpm and are able to sustain pumping for 2 - 6 hours per day. The yield of bore wells drilled down to a depth of 50 to 60 m ranges from 20 lpm to 400 lpm. The yield of successful bore wells drilled down to a depth of 150 m BGL ranged from 1.2 lpm to 7.6 lpm (CGWB Data).

As per Tamil Nadu Water Supply and Drainage Board (TWAD) Data, the depth to water level in the District varied between 5.77 – 15.3 m BGL during Pre-monsoon (May months) and 5.76 – 10.44 m BGL during Post-monsoon (Jan.) during the past 5 years (**Table 3.22**). During the Study Period, Water Level in shallow Dugwells were monitored and data given in **Table 3.23**. Monitored water levels in the Dugwells were found to be in the range 0.2-5.4 m BGL.

Table : 3.22 Ground Water Level Data (TWAD)

Monitored Month & Ground Water Level, m BGL											
Jan. 2019	May 2019	Jan. 2020	May 2020	Jan. 2021	May 2021	Jan. 2022	May 2022	Jan. 2023	May 2023	Jan. 2024	May 2024
9.52	12.75	6.52	15.30	5.93	14.72	10.44	12.29	5.76	5.77	5.94	6.42
Premonsoon Average : 11.51 m BGL Postmonsoon Average : 7.35 m BGL											
(Source : TWAD Data for Tiruvallur District)											

Table : 3.23 Monitored Ground Water Levels in Dugwells
Monitoring Date : 15.07.2025

Sl. No.	Dugwell Location	North Latitude	East Longitude	Well Depth, m BGL	Water Level at, m BGL
1	Project Site	13° 9'47.55"	79°37'31.49"	6.0	0.2
2	Tiruttani	13° 9'39.34"	79°36'58.25"	18.0	1.0
3	Perungalathur	13°11'19.46"	79°39'29.29"	8.0	2.0
4	Talavedu Velanjeri	13°12'24.97"	79°37'42.15"	12.0	1.0
5	Mudur	13° 9'20.03"	79°40'40.35"	6.0	1.0
6	Arakkonam	13° 5'35.91"	79°39'41.58"	16.0	4.7
7	Guruvarajapet-Mottur	13° 7'55.59"	79°34'19.01"	12.0	5.4
8	Suryanagaram	13°11'28.06"	79°34'31.40"	15.0	2.0

3.7.2 Aquifer Characteristics & Stage of Development

In order to find the aquifer characteristics, **Pumping Test** has been conducted in the Borewell near the Site. The depth of the borewell is 90 m and is pumped with a 5 HP submersible pump. The average discharge of the pump was set for 13.4 cu.m per hour. Pumping was done for a total duration of 66 minutes and the recovery was monitored for about 93 minutes. The water level in the pumping well was monitored at regular intervals along with discharge. The static water level was at 11.54 m before the starting of the test and went down upto 60.47m. The plot of Drawdown Vs Time and the plot of Residual Drawdown Vs t/t' was done using the pump test data and the draw down per log cycle was estimated in each plot. The transmissivity value is estimated using the formula :

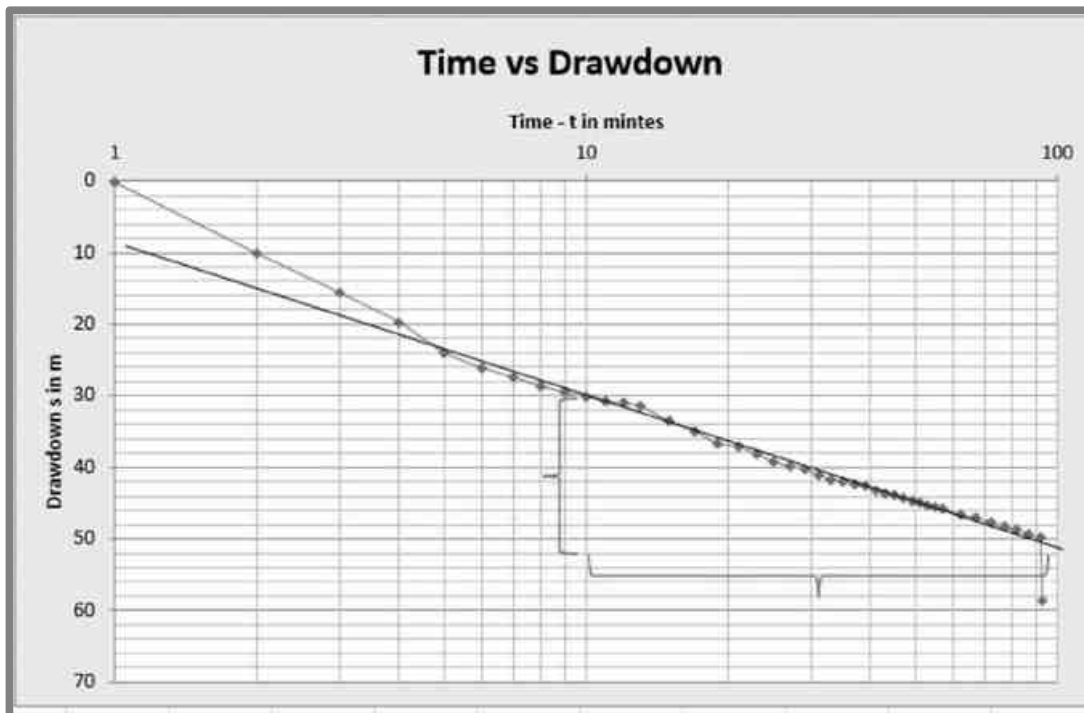
$$T = \frac{2.30 \times Q}{4\pi \times \Delta S}$$

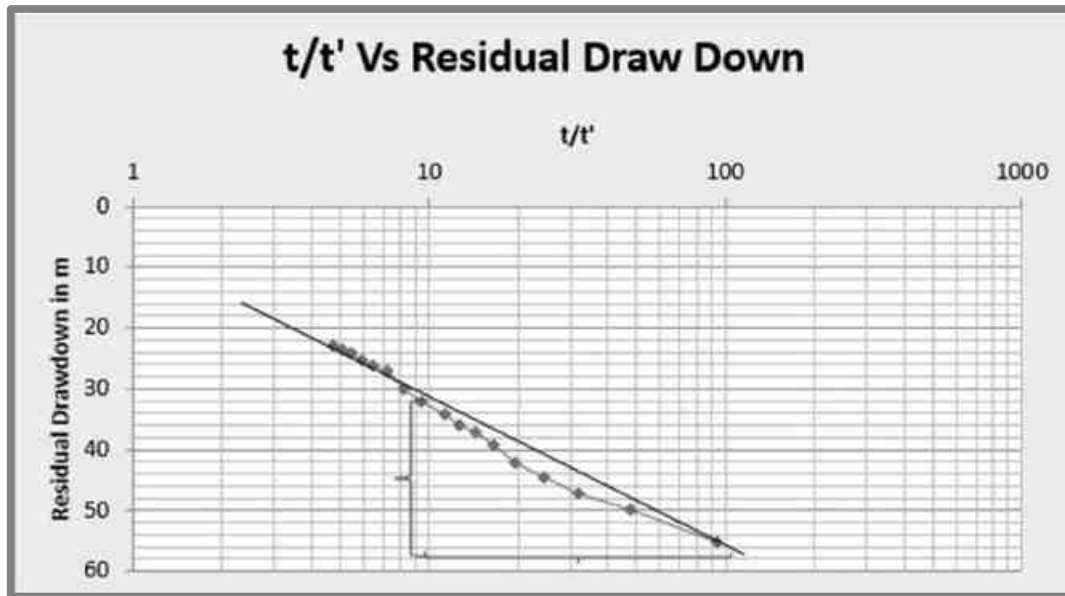
Where T is Transmissivity in m²/day

Q is the pumping rate in m³/day

π is a 3.14 & ΔS is drawdown per log cycle.

Drawdown Curve of the Aquifer



Recovery Curve of the Aquifer

The drawdown per log cycle estimated from drawdown data i.e., $\Delta S = 22$ m. The estimated transmissivity value is

$$T = \frac{2.30 \times 312}{4 \times 3.14 \times 22} = 2.59 \text{ m}^2/\text{day}$$

The drawdown per log cycle estimated from recovery data i.e., $\Delta S = 26$ m. the estimated transmissivity value is

$$T = \frac{2.30 \times 312}{4 \times 3.14 \times 26} = 2.19 \text{ m}^2/\text{day}$$

Average 'T' value of the Aquifer is estimated as **2.39 m²/day**.

The Pumping Test Data in the Study Area are given in **Table 3.24**.

Table : 3.24 Aquifer Characteristics

Aquifer Parameters	Pumping Test Data
Well Yield, lpm	225
Transmissivity (T), m ² /day	2.39
Permeability (K), m/day	0.2

Stage of Development : The State Ground and Surface Water Resources Data Centre has estimated the ground water resources of Tamil Nadu periodically in co-ordination with the Central Ground Water Board, Government of India, Ministry of Water Resources, based on the Methodology evolved by the Ground Water Resources Estimation Committee, 1997 (**GEC 97**). Two approaches are recommended viz. water level fluctuation method and norms of rainfall infiltration method. The units of assessment are categorized for ground water development based on two criteria viz. stage of ground water development and long-term trend of pre and post monsoon water levels. The long term ground water level data should preferably be for a period of 10 years. The significant water level decline may be taken in consideration between 10 - 20 cm/year depending upon the local hydro geological conditions. The long term water level fluctuation for the District indicates rise in water level in the area 0.0564 - 0.0984 m/year. The fall in water level ranging between 0.0277 - 0.2748 m/year.

Four categories are - **Safe** areas which have ground water potential for development; **Semi-critical** areas where cautious ground water development is recommended; **Critical** areas; **Over -exploited** areas where there should be intensive monitoring and evaluation and future ground water development be linked with water conservation measures. The ground water **Stage of Development of Tiruttani Block is Semi-Critical (75%) Category (Table 3.25)**.

Table : 3.25 Ground Water - Stage of Development

Net Groundwater Availability, Million Cu. M (MCM)	1,203.29
Existing Gross Groundwater Draft for All Users, MCM	904.75
Stage of Groundwater Development	75 %
Categorization of the Block	Semi Critical

3.7.3 Water Quality

The Central Pollution Control Board (**CPCB**) has identified Five **Designated Best Use of Surface Waters** viz. **Class A** (Drinking Water Source without Conventional Treatment but after Disinfection), **B** (Out Door Bathing-Organised), **C** (Drinking Water Source after Conventional Treatment and Disinfection), **D** (Propagation of Wild life and Fisheries) & **E** (Irrigation, Industrial Cooling, Controlled Waste Disposal) and stipulated the Norms for the Classes; for few Parameters (**Table 3.26**).

Further, Bureau of Indian Standards (**BIS**) had also recommended Tolerance Limits for Inland Surface Waters for the different uses (**IS 2296:1982**). Even though, IS 2296:1982 has been withdrawn, the analysed data are compared with this Standard to have better understanding about the Surface Water Quality in the Study Area.

Table : 3.26 CPCB Criteria for Designated Best Use of Water

Parameter	Designated Best Use Class & Required Criteria				
	A	B	C	D	E
pH	6.5-8.5	6.5-8.5	6.5-9.0	6.5-8.5	6.5-8.5
EC, umhos/cm (max.)	-	-	-	-	2,250
DO, mg/l	6 or more	5 or more	4 or more	4 or more	6 or more
BOD-3 days @ 27 °C	2 or less	3 or less	3 or less	-	2 or less
Total Coliforms, MPN/100 ml	50 or less	500 or less	5000 or less	-	50 or less
Free Ammonia (as N), mg/l	-	-	-	1.2 or less	-
Boron, mg/l (max.)	-	-	-	-	2
Sodium Absorption Ratio (max.)	-	-	-	-	26

- : Not included/Not specified.

The Ground Water Quality Parameters were compared with **BIS 10500:2012 Standards** of Acceptable and Permissible Limits for Drinking purpose with Ground Water as source.

The monitored water quality data are presented in **Tables 3.27-3.28** and the abstract of those data is given as **Table 3.29**.

The **surface water** samples were monitored with pH in the range 6.98-7.89 against the Limit value of 6.5-8.5. DO levels were in the range 4.5-5.9 mg/l against the minimum requirement value of 4.0-6.0 mg/l for Surface Waters. While EC values were in the range 580-970, TDS values were monitored in the range of 370-650 mg/l against the Limit values of 500/2100 mg/l. Chloride values ranging from 87 mg/l to 145 mg/l. Iron content was found to be in the range 0.21-0.91 mg/l. Oil and grease, phenolic compounds, cyanides, sulphides and insecticides were found to be absent. Trace metals were found to be in traceable levels. BOD and COD values were found to be <2-8.4 mg/l and 18-46 mg/l respectively.

The surface water quality were found to be within the prescribed CPCB Norms for Class-C.

The pH of the **ground water** samples were ranging from 7.18-8.17 against the BIS Norm of 6.5-8.5. While EC values were in the range 640-1580, TDS values were monitored in the range 410-1050 mg/l (Norm 500 mg/l or 2,000 mg/l in the absence of alternate source). Chloride values were found to be in the range 108-287 mg/l (Norm 250/1000 mg/l). Iron content was found to be in the range BDL-0.41 mg/l. Oil & Grease, Cyanides, Phenols, Pesticides, etc. were found to be absent. Most of the trace metals were monitored to be below their detectable limits.

In general, the water quality of ground waters were found to be within the prescribed IS:10500-2012 Norms for Drinking in the absence of an alternative source.

Table : 3.27 Surface Water Quality Data

Monitoring Date : 09.08.2025

Sl. No.	Parameter	W1-Nandi River Upstream	W2- Nandi River near Site	W3- Nandi River Downstream	W4-Kilanthur Lake	CPCB Norms*
i.	Location Co-ordinates	13°11'1.71" 79°36'54.76"	13°10'41.04" 79°37'33.17"	13°10' 52.70" 79°41'26.35"	13°10'20.5" 79°37'59.28"	
1	pH	7.18	7.75	7.71	6.98	6.5-8.5
2	Colour, Hazen units	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:5.0)	10-30
3	Temperature, °C	27.5	27.3	26.5	27.3	-
4	Turbidity, NTU	9.8	7.1	12.4	11.2	-
5	Residual Chlorine, mg/l	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	-
6	Dissolved Oxygen, mg/l	5.1	5.4	4.9	4.5	4.0-6.0
7	Total Suspended Solids, mg/l	12	9	15	17	-
8	Electrical Conductivity, umhos/cm	900	810	970	850	-
9	Total Dissolved Solids, mg/l	580	530	650	550	500-2100
10	Total Hardness (as CaCO ₃), mg/l	180	152	240	170	-
11	Calcium Hardness, mg/l	110	90	140	102	-
12	Magnesium Hardness, mg/l	70	62	100	68	-
13	Calcium (as Ca), mg/l	44	36	56	41	-
14	Magnesium (as Mg), mg/l	17	15	24	16	-
15	Sodium (as Na), mg/l	98	79	91	83	-
16	Potassium (as K), mg/l	8.9	6	12	8.6	-
17	Chlorides (as Cl), mg/l	145	107	145	125	250-600
18	Sulphates (as SO ₄), mg/l	46	34	49	40	400-1000
19	Total Alkalinity (as CaCO ₃), mg/l	130	148	160	136	-
20	BOD-3 days @ 27°C, mg/l	2.8	2.8	2.3	8.4	<3
21	COD, mg/l	32	24	38	46	-
22	Oil & Grease, mg/l	BDL(DL:1)	BDL(DL:1)	BDL(DL:1)	BDL(DL:1)	-
23	Iron (as Fe), mg/l	0.30	0.65	0.41	0.26	0.3-5.0
24	Fluorides (as F), mg/l	0.36	0.25	0.16	0.15	1.5
25	Nitrates (as NO ₃), mg/l	13	11	15	19	20-50
26	Phosphates (as PO ₄), mg/l	0.96	0.51	0.81	1.02	-
27	Cyanides (as CN), mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	-
28	Pesticides (as Malathion), mg/l	Absent	Absent	Absent	Absent	-
29	Phenols (as C ₆ H ₅ OH), mg/l	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	-
30	Manganese (as Mn), mg/l	0.13	0.09	0.10	0.17	-
31	Chromium (as Cr), mg/l	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	-
32	Copper (as Cu), mg/l	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	1.5
33	Selenium (as Se), mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	-
34	Aluminium (as Al), mg/l	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	-
35	Cadmium (as Cd), mg/l	BDL(DL:0.003)	BDL(DL:0.003)	BDL(DL:0.003)	BDL(DL:0.003)	-
36	Arsenic (as As), mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	0.05-0.2
37	Boron (as B), mg/l	0.14	0.12	0.21	0.17	2
38	Mercury (as Hg), mg/l	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	-
39	Lead (as Pb), mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	0.1
40	Zinc (as Zn), mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	1.5-15
41	Percent Sodium, %	52.7	51.9	43.7	49.9	-
42	Total Coliforms, MPN/100 ml	>1600	>1600	>1600	>1600	50-5000
43	Faecal Coliforms, MPN/100 ml	>1600	900	>1600	>1600	-
44	E. Coli, MPN/100 ml	>1600	280	>1600	>1600	-

* : CPCB Norms-Central Pollution Control Board Norms for Surface Waters-**Class C**; - : Not included/Not available.

Table : 3.27 (Contn.) Surface Water Quality Data

Monitoring Date : 09.08.2025

Sl. No.	Parameter	W5 Ulliyam-pakkam Lake	W6 Valarapuram Lake	W7 Perumal-tangal Pond	W8 Chinna-kadampur Lake	CPCB Norms*
i.	Location Co-ordinates	13°9'24.09" 79°38'39.11"	13°9'6.24" 79°40'40.11"	13°9'20.84" 79°37'17.16"	13°7'46.75" 79°34'41.50"	
1	pH	7.21	7.89	7.48	7.54	6.5-8.5
2	Colour, Hazen units	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:5.0)	10-30
3	Temperature, °C	27.7	27.5	26.6	26.8	-
4	Turbidity, NTU	5.3	4.7	2.9	10.1	-
5	Residual Chlorine, mg/l	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	-
6	Dissolved Oxygen, mg/l	5.5	5.7	5.9	4.8	4.0-6.0
7	Total Suspended Solids, mg/l	8	6	4	15	-
8	Electrical Conductivity, umhos/cm	680	800	580	680	-
9	Total Dissolved Solids, mg/l	450	530	370	440	500-2100
10	Total Hardness (as CaCO ₃), mg/l	160	170	110	148	-
11	Calcium Hardness, mg/l	92	88	72	100	-
12	Magnesium Hardness, mg/l	68	82	38	48	-
13	Calcium (as Ca), mg/l	37	35	29	40	-
14	Magnesium (as Mg), mg/l	16	20	9	12	-
15	Sodium (as Na), mg/l	51	68	55	63	-
16	Potassium (as K), mg/l	6.5	2.5	3.1	7	-
17	Chlorides (as Cl), mg/l	98	114	87	96	250-600
18	Sulphates (as SO ₄), mg/l	37	32	28	28	400-1000
19	Total Alkalinity (as CaCO ₃), mg/l	98	142	88	122	-
20	BOD-3 days @ 27°C, mg/l	3.7	2.9	2.0	6.8	<3
21	COD, mg/l	24	18	18	40	-
22	Oil & Grease, mg/l	BDL(DL:1)	BDL(DL:1)	BDL(DL:1)	BDL(DL:1)	-
23	Iron (as Fe), mg/l	0.78	0.32	0.21	0.91	0.3-5.0
24	Fluorides (as F), mg/l	0.18	0.11	0.11	0.2	1.5
25	Nitrates (as NO ₃), mg/l	12	7	3	17	20-50
26	Phosphates (as PO ₄), mg/l	0.68	0.36	0.31	0.86	-
27	Cyanides (as CN), mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	-
28	Pesticides (as Malathion), mg/l	Absent	Absent	Absent	Absent	-
29	Phenols (as C ₆ H ₅ OH), mg/l	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	-
30	Manganese (as Mn), mg/l	0.14	0.05	0.03	0.18	-
31	Chromium (as Cr), mg/l	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	-
32	Copper (as Cu), mg/l	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	1.5
33	Selenium (as Se), mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	-
34	Aluminium (as Al), mg/l	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	-
35	Cadmium (as Cd), mg/l	BDL(DL:0.003)	BDL(DL:0.003)	BDL(DL:0.003)	BDL(DL:0.003)	-
36	Arsenic (as As), mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	0.05-0.2
37	Boron (as B), mg/l	0.17	0.10	0.11	0.16	2
38	Mercury (as Hg), mg/l	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	-
39	Lead (as Pb), mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	0.1
40	Zinc (as Zn), mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	1.5-15
41	Percent Sodium, %	39.7	45.7	51.1	46.6	-
42	Total Coliforms, MPN/100 ml	>1600	1600	1100	>1600	50-5000
43	Faecal Coliforms, MPN/100 ml	>1600	350	280	>1600	-
44	E. Coli, MPN/100 ml	700	110	80	>1600	-

* : CPCB Norms-Central Pollution Control Board Norms for Surface Waters-**Class C**; - : Not included/Not available.

Table : 3.28 Ground Water Quality Data

Monitoring Date : 15.07.2025

Sl. No.	Parameter	Borewells at				IS:10500 Norms*
		W9 Project Site	W10 Tiruttani	W11 Talavedu	W12 Perungalathur	
i.	Location Co-ordinates	13° 9'38.51" 79°37'42.76"	13° 9'52.79" 79°36'51.10"	13°13'30.25" 79°37'40.98"	13°11'10.48" 79°39'24.85"	-
1	pH	7.29	7.62	7.26	7.38	6.5-8.5
2	Colour, Hazen units	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:5.0)	5/15*
3	Temperature, °C	25.9	25.3	26.1	25.8	-
4	Turbidity, NTU	BDL(DL:0.5)	BDL(DL:0.5)	0.8	BDL(DL:0.5)	1/5
5	Residual Chlorine, mg/l	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	0.2/1.0
6	Dissolved Oxygen, mg/l	5.8	5.5	5.4	5.7	-
7	Total Suspended Solids, mg/l	BDL(DL:1)	BDL(DL:1)	BDL(DL:1)	BDL(DL:1)	-
8	Electrical Conductivity, umhos/cm	1100	1580	980	1480	-
9	Total Dissolved Solids, mg/l	720	1050	650	950	500/2000
10	Total Hardness (as CaCO ₃), mg/l	222	314	260	365	200/600
11	Calcium Hardness, mg/l	155	195	157	230	-
12	Magnesium Hardness, mg/l	67	119	103	135	-
13	Calcium (as Ca), mg/l	62	78	63	92	75/200
14	Magnesium (as Mg), mg/l	16	29	25	32	30/100
15	Sodium (as Na), mg/l	102	184	84	149	-
16	Potassium (as K), mg/l	4.7	9.7	4.7	7.8	-
17	Chlorides (as Cl), mg/l	136	287	129	212	250/1000
18	Sulphates (as SO ₄), mg/l	67	110	60	82	200/400
19	Total Alkalinity (as CaCO ₃), mg/l	208	231	180	282	200/600
20	BOD-3 days @ 27°C, mg/l	BDL(DL:1)	BDL(DL:1)	BDL(DL:1)	BDL(DL:1)	-
21	COD, mg/l	4	12	8	10	-
22	Oil & Grease, mg/l	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	-
23	Iron (as Fe), mg/l	0.29	0.41	0.13	BDL(DL:0.05)	0.3
24	Fluorides (as F), mg/l	0.29	0.41	0.19	0.32	1.0/1.5
25	Nitrates (as NO ₃), mg/l	3	7	2	4	45
26	Phosphates (as PO ₄), mg/l	0.18	0.32	0.15	0.28	-
27	Cyanides (as CN), mg/l	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	0.05
28	Pesticides (as Malathion), mg/l	Absent	Absent	Absent	Absent	Abs./0.001
29	Phenols (as C ₆ H ₅ OH), mg/l	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	0.001/0.002
30	Manganese (as Mn), mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	0.1/0.3
31	Chromium (as Cr), mg/l	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	0.05
32	Copper (as Cu), mg/l	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	0.05/1.5
33	Selenium (as Se), mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	0.01
34	Aluminium (as Al), mg/l	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	0.03/0.2
35	Cadmium (as Cd), mg/l	BDL(DL:0.003)	BDL(DL:0.003)	BDL(DL:0.003)	BDL(DL:0.003)	0.003
36	Arsenic (as As), mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	0.01/0.05
37	Boron (as B), mg/l	BDL(DL:0.1)	0.15	BDL(DL:0.1)	0.12	0.5/1.0
38	Mercury (as Hg), mg/l	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	0.001
39	Lead (as Pb), mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	0.01
40	Zinc (as Zn), mg/l	0.03	0.07	0.06	0.02	5/15
41	Percent Sodium, %	49.3	55.0	40.7	46.3	-
42	Total Coliforms, MPN/100 ml	<2	<2	<2	<2	Absent
43	Faecal Coliforms, MPN/100 ml	<2	<2	<2	<2	Absent
44	E. Coli, MPN/100 ml	<2	<2	<2	<2	Absent

* : IS:10500 :2012-Drinking Water Standards; # : Requirement/Permissible Limit in the absence of alternate source.

Table : 3.28 (Contn.) Ground Water Quality Data

Monitoring Date : 15.07.2025

Sl. No.	Parameter	Borewells at				IS:10500 Norms*
		W13 Mudur	W14 Arakkonam	W15 Guruva-rajapet	W16 Surya-nagaram	
i.	Location Co-ordinates	13° 9'3.95" 79°41'7.25"	13° 4'3.59" 79°40'22.02"	13° 7'4.58" 79°34'27.01"	13°11'50.98" 79°34'8.66"	-
1	pH	7.42	7.31	7.18	8.17	6.5-8.5
2	Colour, Hazen units	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:5.0)	5/15*
3	Temperature, °C	26.3	25.9	26.4	26.1	-
4	Turbidity, NTU	BDL(DL:0.5)	BDL(DL:0.5)	BDL(DL:0.5)	BDL(DL:0.5)	1/5
5	Residual Chlorine, mg/l	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	0.2/1.0
6	Dissolved Oxygen, mg/l	5.6	5.3	5.7	5.3	-
7	Total Suspended Solids, mg/l	BDL(DL:1)	BDL(DL:1)	BDL(DL:1)	BDL(DL:1)	-
8	Electrical Conductivity, umhos/cm	1140	1550	640	1340	-
9	Total Dissolved Solids, mg/l	750	1010	410	880	500/2000
10	Total Hardness (as CaCO ₃), mg/l	252	354	134	240	200/600
11	Calcium Hardness, mg/l	145	219	85	140	-
12	Magnesium Hardness, mg/l	107	135	49	100	-
13	Calcium (as Ca), mg/l	58	88	34	56	75/200
14	Magnesium (as Mg), mg/l	26	32	12	24	30/100
15	Sodium (as Na), mg/l	108	165	61	146	-
16	Potassium (as K), mg/l	4.4	8.7	3	8.5	-
17	Chlorides (as Cl), mg/l	147	212	108	190	250/1000
18	Sulphates (as SO ₄), mg/l	51	108	36	82	200/400
19	Total Alkalinity (as CaCO ₃), mg/l	240	271	70	251	200/600
20	BOD-3 days @ 27°C, mg/l	BDL(DL:1)	BDL(DL:1)	BDL(DL:1)	BDL(DL:1)	-
21	COD, mg/l	4	12	4	8	-
22	Oil & Grease, mg/l	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	-
23	Iron (as Fe), mg/l	BDL(DL:0.05)	0.16	BDL(DL:0.05)	BDL(DL:0.05)	0.3
24	Fluorides (as F), mg/l	0.21	0.36	0.22	0.26	1.0/1.5
25	Nitrates (as NO ₃), mg/l	1	5	1	3	45
26	Phosphates (as PO ₄), mg/l	0.24	0.23	0.19	0.27	-
27	Cyanides (as CN), mg/l	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	0.05
28	Pesticides (as Malathion), mg/l	Absent	Absent	Absent	Absent	Abs./0.001
29	Phenols (as C ₆ H ₅ OH), mg/l	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	0.001/0.002
30	Manganese (as Mn), mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	0.1/0.3
31	Chromium (as Cr), mg/l	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	0.05
32	Copper (as Cu), mg/l	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	0.05/1.5
33	Selenium (as Se), mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	0.01
34	Aluminium (as Al), mg/l	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	0.03/0.2
35	Cadmium (as Cd), mg/l	BDL(DL:0.003)	BDL(DL:0.003)	BDL(DL:0.003)	BDL(DL:0.003)	0.003
36	Arsenic (as As), mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	0.01/0.05
37	Boron (as B), mg/l	BDL(DL:0.1)	0.17	BDL(DL:0.1)	0.14	0.5/1.0
38	Mercury (as Hg), mg/l	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	0.001
39	Lead (as Pb), mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	0.01
40	Zinc (as Zn), mg/l	0.03	0.06	0.02	0.03	5/15
41	Percent Sodium, %	47.7	49.5	49.0	55.9	-
42	Total Coliforms, MPN/100 ml	<2	4	<2	<2	Absent
43	Faecal Coliforms, MPN/100 ml	<2	<2	<2	<2	Absent
44	E. Coli, MPN/100 ml	<2	<2	<2	<2	Absent

* : IS:10500 :2012-Drinking Water Standards; # : Requirement/Permissible Limit in the absence of alternate source.

Table : 3.29 Water Quality Status

Sl. No.	Parameter	Concentration Range & Norms			
		Surface Waters	CPCB Norms* for Surface Waters	Ground Waters	IS:10500 Norms** for Drinking Waters
1	pH	6.98-7.89	6.5-8.5	7.18-8.17	6.5-8.5
2	Total Dissolved Solids, mg/l	370-650	-	410-1050	500-2000*
3	Dissolved Oxygen, mg/l	4.5-5.9	4.0-6.0	5.3-5.8	-
4	BOD (3 days @ 27 °C), mg/l	2.0-8.4	<3	BDL(DL:2.0)	-
5	COD, mg/l	18-46	-	4-12	-
6	Oil & Grease, mg/l	BDL(DL:1.0)	-	BDL(DL:1.0)	-
7	Chlorides (as Cl), mg/l	87-145	250-600	108-287	250-1000
8	Iron (as Fe), mg/l	0.21-0.91	0.3-5.0	BDL-0.41	0.3
9	Trace Metals, mg/l	<0.01	-	BDL-0.07	<0.001-<0.01
10	Total Coliforms, MPN/100 ml	1100->1600	50-5000	<2	Absent

* : CPCB Norms-Central Pollution Control Board Norms for Surface Waters-**Class C**. - : Not included/Not available.

** : * : IS:10500 :2012-Drinking Water Standards; # : Requirement/Permissible Limit in the absence of alternate source.

3.8 Land Environment

3.8.1 Soil Status

The major soil types encountered in the district are black cotton soils, red sandy to loamy soils and alluvial soils. The major part is covered by Red soil of red sandy/clay loam type. Black soils are deep to very deep and generally occurs in the depressions adjacent to hilly areas, in the western part. Alluvial soils occur along the river courses and eastern part of the coastal areas. Sandy coastal alluvium (arenaceous soil) are seen all along the sea coast as a narrow belt.

The monitored soil quality data are given as **Table 3.30**.

Soils with medium compaction and Loam/Clay Loam texture are dominant in the study area. Soil pH values were found to be in alkaline range (7.46-8.11) and Electrical Conductivity values were in the range 124-207 uS/cm. There was low moisture content at the monitoring locations. Significant levels of Nitrogen, Phosphorous and Potassium (NPK) values were monitored at all locations. Sodium Absorption Ratio was in the range 0.84-1.10 (desirable value being <5). There was **no heavy metals intrusion/leaching** into the ground strata. The soils would support the vegetation, if amended suitably.

Table : 3.30 Soil Status

Monitoring Date : 11.07.2025

Sl. No.	Parameter	S1 Project Site	S2 Barren Land, Tiruttani	S3 Agri. Land, Ulliyam pakkam	S4 Kolattur RF	S5 Dry Field, Guruvajapet	S6 Agri. Land, Suryana garam	Desirable Range*
i.	Location Co-ordinates	13°9'44" 79°37'33"	13° 9' 52" 79°36'52"	13° 9'19" 79°38'57"	13° 7'35" 79°43'11"	13° 7'4" 79°34'27"	13°11'39" 79°34'15"	-
ii.	Colour	Red	Brown	Grey	Grey	Grey	Grey	-
iii.	Compaction	Medium	Medium	Medium	Medium	Medium	Medium	-
1	pH (10% Solution)	7.54	7.69	8.11	7.79	7.46	7.81	5.5-9.0
2	Electrical Conductivity, uS/cm	124	174	207	178	156	187	0.2-0.5
3	Natural Moisture Content, %	9.84	7.68	11.1	12.6	8.45	9.78	-
4	Organic Carbon, %	0.64	0.54	0.71	0.49	0.68	0.71	>0.75
5	Nitrogen (as N), mg/kg	248	171	312	202	196	154	0.01-0.02
6	Phosphorus (as P), mg/kg	35.8	51.4	42.8	47.2	38.4	61.4	0.002-0.004
7	Potassium (as K), mg/kg	334	284	394	402	342	294	>0.01
8	Sodium (as Na), m.eq/100g	1.14	0.98	1.21	1.15	1.06	1.32	-
9	Calcium (as Ca), m.eq/100g	23.6	21.7	25.9	26.6	24.1	22.8	-
10	Magnesium (as Mg), m.eq/100g	6.78	5.31	5.95	6.11	6.38	6.74	-
11	Chlorides (as Cl), ppm	132	174	191	135	117	166	-
12	Sulphates (as SO ₄), ppm	274	312	182	219	241	198	-
13	Cation Exchange Capacity, meq/100 g	17.9	16.8	19.1	20.1	18.7	17.5	10-30
14.i	Grain Size Distribution :- Sand, %	35.3	38.4	28.4	27.7	25.6	36.5	-
ii.	Silt	33.8	27.1	59.7	15.9	12.6	28.8	-
iii.	Clay	30.9	34.5	11.9	56.4	61.8	34.7	-
15	Textural Class	Clay Loam	Loam	Clay	Clay	Clay	Clay Loam	Loam
16	Bulk Density, g/cc	1.31	1.35	1.24	1.35	1.31	1.24	-
17	Infiltration Rate, cm/hr	3.4	4.8	2.5	2.9	2.1	3.7	-
18	Sodium Absorbing Ratio	0.96	0.84	0.96	0.90	0.89	1.10	<5

*:Desirable Range for High Production Soil.

3.8.2 Land Use

For Land Use study of the Study Area, IRS P6 LIS-IV **Satellite Imagery**/data dated 05.05.2025 of Satellite Digital Data of NRSA, Hyderabad was used (**Fig. 3.6**). Level-3 Classification with 1:50,000 scale was made for the preparation of land use mapping (**Fig. 3.7**). Land Use Pattern of the Study Area is given in **Table 3.31**.

Table : 3.31 Land Use Pattern

Land Use	Area, sq.km	Percentage, %
Agricultural Land	199.02	59.26
Plantation	6.32	1.88
Forest	4.08	1.03
Barren Land	56.19	16.91
Scrub Land	7.71	2.30
Industrial Land	1.79	0.53
Built-up Land	34.57	10.29
Water Body	26.14	7.80
Total	335.82	100

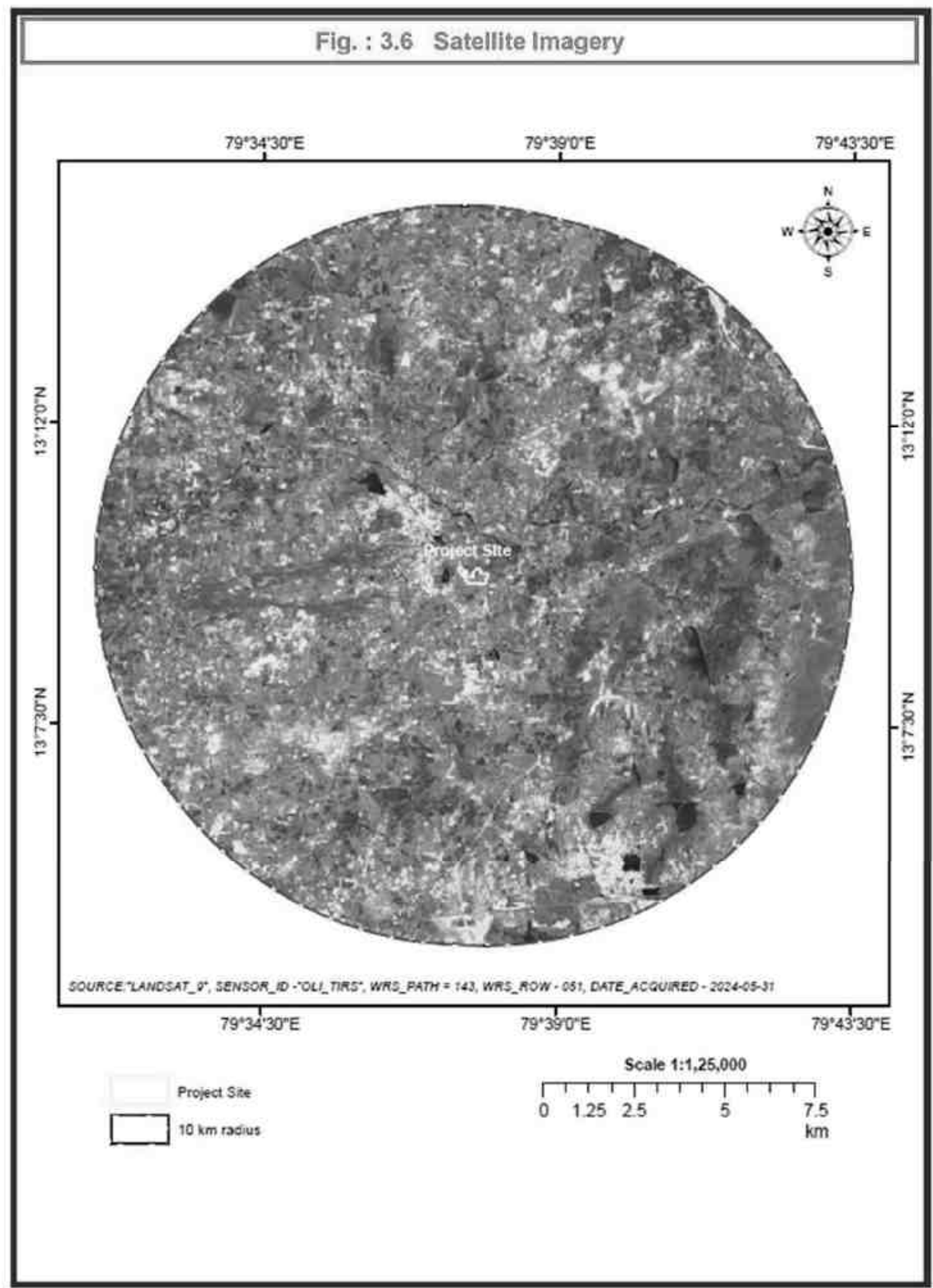
Agricultural Land occupies the majority of the study area with about 59.26% of area. Plantation occupies 1.88% and Forest area occupies 1.03%. Barren Land occupies about 16.91% and Scrub Land occupies 2.30%. Industry Land occupies 0.53% of the study area only. Built-up Land occupies 10.29% and Water body occupies about 7.80% of the study area.

3.9 Flora and Fauna

3.9.1 Flora

Under the biogeographical provinces, the study area falls under the category of 6E-Deccan Peninsula-Deccan South. A general ecological survey was carried out in the study area of 10 km radius area. **Study Area is not part of any National Park, Sanctuary, Biosphere Reserve, Wildlife Corridors, Migratory Path, Ramsar Site, etc.**

A nested quadrates technique was used for sampling the vegetation. All the plots sampled were representative of most common types, sampling 30 x 30 m for trees and 5 x 5 m for shrubs, 1 x 1 m for herbs square meter quadrates were laid. Selection of sites for sampling of vegetation is done by random sampling procedure (**Table 3.32 & Plate XI**). However, quadrates of 30 m x 30 m size for tree species are randomly laid out at each site at different elevations. The primary data was generated through preparing a general checklist of all plants encountered in the study area. The species of vegetation found were identified and listed according to their families. The list of plant species in the study area is presented in **Table 3.33**.



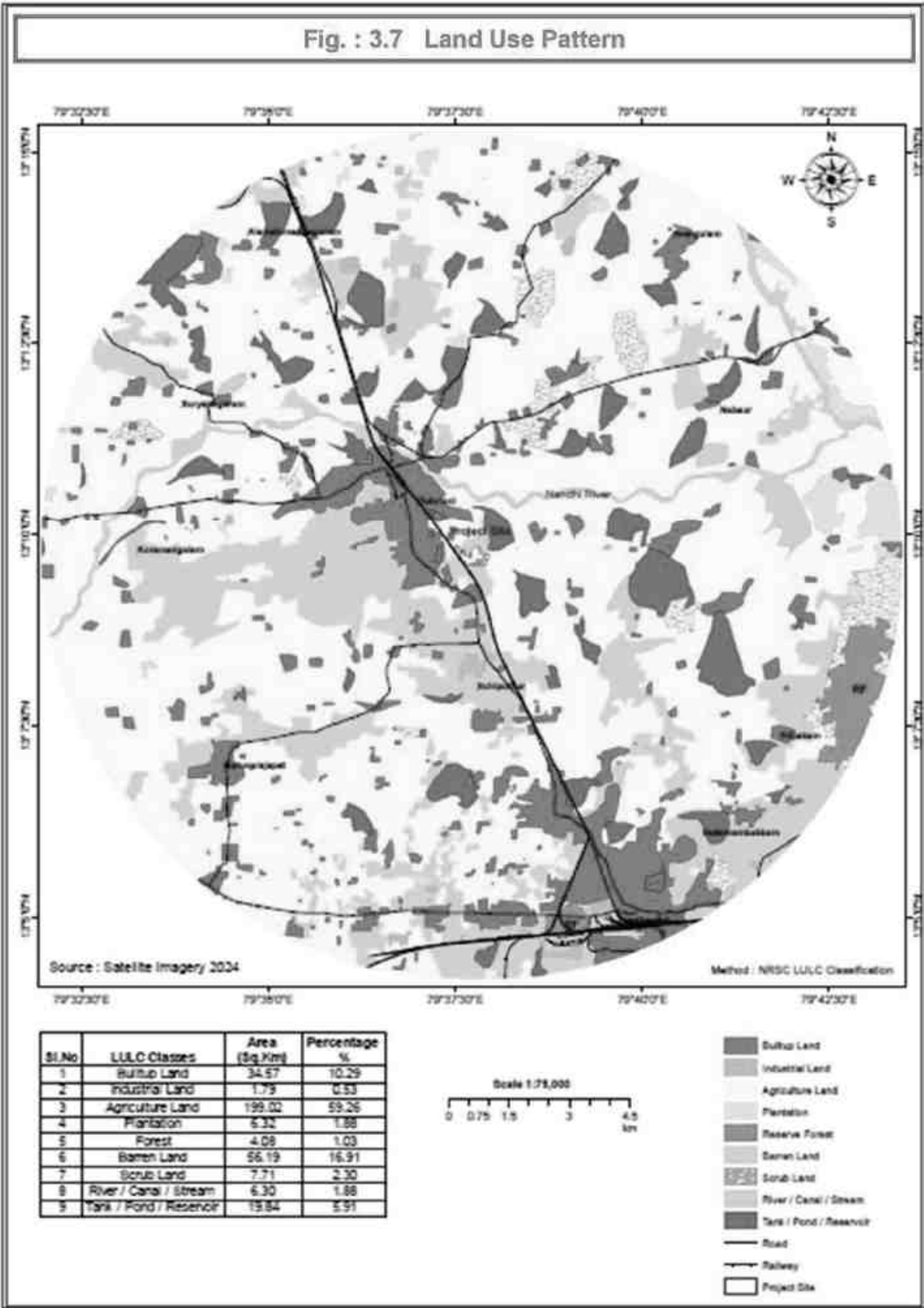


Table : 3.32 Flora - Sampling Locations

Sl. No.	Name of village	ID	Latitude	Longitude
1	Near Project Site (North)	EB1	13° 9'57.99"N	79°37'47.42"E
2	Near Project Site (SW)	EB2	13° 9'24.63"N	79°37'31.30"E
3	Near Project Site (SE)	EB3	13° 9'25.26"N	79°37'59.46"E
4	Near Veerananarayanapuram	EB4	13° 8'20.75"N	79°39'52.25"E
5	Near Kollatur RF	EB5	13° 7'7.26"N	79°42'27.36"E
6	Near Velarpuram	EB6	13°10'38.82"N	79°40'58.60"E
7	Near Velanjeri	EB7	13°12'13.54"N	79°37'45.04"E
8	Near Agoor	EB8	13°10'42.23"N	79°34'26.41"E
9	Near Sembedu	EB9	13° 6'39.33"N	79°35'37.10"E
10	Near Ammanur RF	EB10	13° 5'3.33"N	79°38'50.90"E

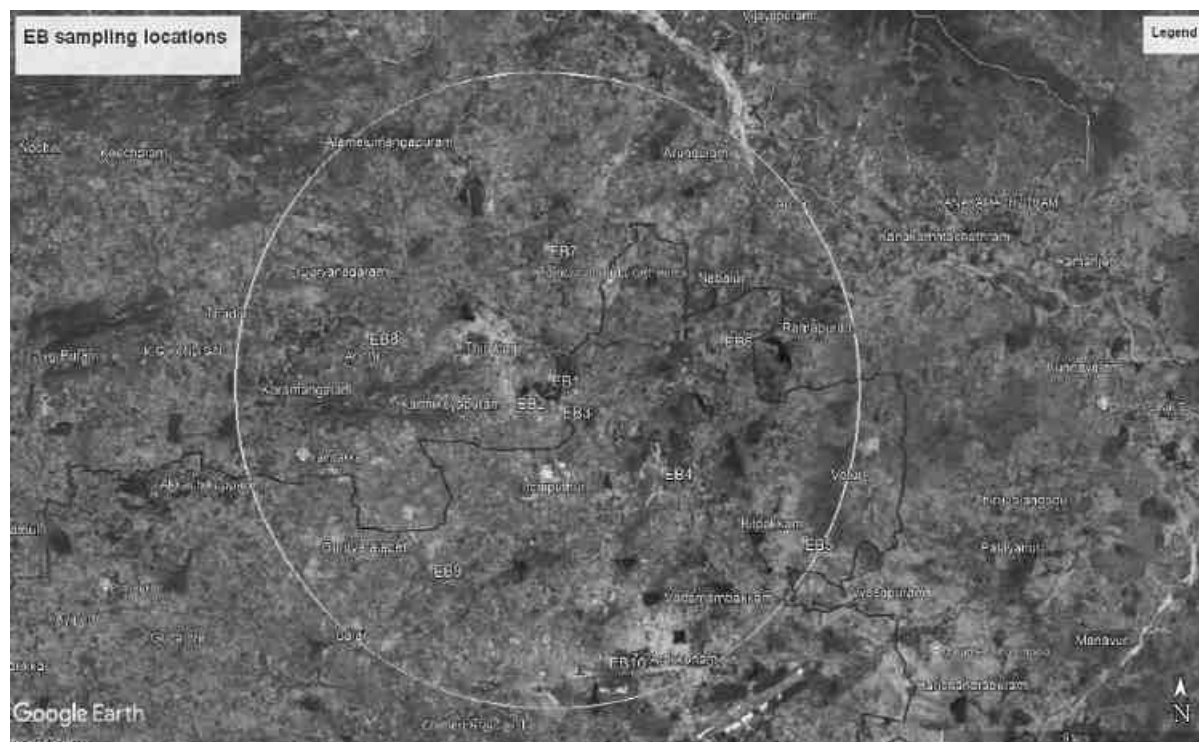
Plate : XI Flora - Sampling Locations

Table : 3.33 List of Flora

Sl. No.	Scientific Name	Common name	Family	IUCN Conservation Status
Tree				
1	<i>Acacia nilotica</i>	Karuvel	Fabaceae	Least Concern
2	<i>Azadirachta indica</i>	Veppai	Meliaceae	Not assessed
3	<i>Tamarindus indica</i>	Puli	Caesalpiniaceae	Not assessed
4	<i>Pongamia pinnata</i>	Pungai	Fabaceae	Least Concern
5	<i>Cocos nucifera</i>	Thenai	Arecaceae	Not assessed
6	<i>Borassus flabellifer</i>	Panai	Arecaceae	Least Concern
7	<i>Syzygium cumini</i>	Naval	Myrtaceae	Not assessed
8	<i>Tectona grandis</i>	Tekku	Lamiaceae	Endangered
9	<i>Ficus religiosa</i>	Arasa-maram	Moraceae	Not assessed
10	<i>Acacia auriculiformis</i>	Pencil maram	Fabaceae	Least Concern
11	<i>Ficus benghalensis</i>	Alai	Moraceae	Not assessed
12	<i>Moringa oleifera</i>	Moringa	Moringaceae	Least Concern
13	<i>Mangifera indica</i>	Mamaram	Anacardiaceae	Data Deficient
14	<i>Diospyros melanoxylon</i>	Karundumbi	Ebenaceae	Not assessed
15	<i>Bauhinia racemosa</i>	Tataki	Fabaceae	Not assessed
16	<i>Delonix regia</i>	Cemmayir-konrai	Fabaceae	Least Concern
17	<i>Saraca asoca</i>	Asogam	Fabaceae	Vulnerable
18	<i>Melia azadirachta</i>	Kattu vembhu	Meliaceae	Least Concern
19	<i>Polyalthia longifolia</i>	Nettilinkam	Annonaceae	Not assessed
20	<i>Ziziphus mauritiana</i>	Elandhai	Rhamnaceae	Least Concern
21	<i>Emblica officinalis</i>	Nelli	Euphorbiaceae	Not assessed
22	<i>Annona squamosa</i>	Sitapalam	Annonaceae	Not assessed
23	<i>Casuarina equisetifolia</i>	Savukku	Fabaceae	Not assessed
24	<i>Odina wodier</i>	Oti	Anacardiaceae	Not assessed
25	<i>Phoenix sylvestris</i>	Paereecham	Arecaceae	Not assessed
26	<i>Psidium guajava</i>	Segappu koyyaa	Myrtaceae	Not assessed
27	<i>Musa paradisiaca</i>	Vaazha	Musaceae	Not assessed
28	<i>Carica papaya</i>	Pappali	Caricaceae	Data Deficient
29	<i>Terminalia catappa</i>	Nattuvadumai	Combretaceae	Not assessed
30	<i>Gmelina arborea</i>	Kumalaamaram	Lamiaceae	Least Concern
31	<i>Manilkara zapota</i>	Sapota	Sapotaceae	Least Concern
32	<i>Murraya koenigii</i>	Karivepillai	Rutaceae	Least Concern
33	<i>Butea monosperma</i>	Palasam	Fabaceae	Least Concern
34	<i>Citrus medica</i>	Elumiccai	Rutaceae	Not assessed
35	<i>Aegle marmelos</i>	Vilvam	Rutaceae	Not assessed
36	<i>Vitex negundo</i>	Nocchi	Lamiaceae	Not assessed
37	<i>Albizia lebbeck</i>	Siridam	Fabaceae	Least Concern
38	<i>Cassia fistula</i>	Appai	Fabaceae	Least Concern
Shrubs				
1	<i>Leucaena leucocephala</i>	Peruntakarai	Fabaceae	Not assessed
2	<i>Lantana camara</i>	Unnichedi	Verbenaceae	Not assessed

3	<i>Calotropis gigantea</i>	Erukku	Apocynaceae	Not assessed
4	<i>Sida cordifolia</i>	Mayir-manikham	Malvaceae	Not assessed
5	<i>Calotropis procera</i>	Vellai Erukku	Apocynaceae	Not assessed
6	<i>Jasminum sessiliflorum</i>	Kuruvilaangkodi	Oleaceae	Not assessed
7	<i>Datura metel</i>	Ummattangani	Solanaceae	Not assessed
8	<i>Morinda pubescens</i>	Mannanunai	Rubiaceae	Not assessed
9	<i>Ziziphus nummularia</i>	Narielandai	Rhamnaceae	Not assessed
10	<i>Solanum pubescens</i>	Sundaikkai	Solanaceae	Not assessed
11	<i>Hibiscus rosa-sinensis</i>	Ampurukam	Malvaceae	Not assessed
12	<i>Agave tomentosa</i>	Malai-k-koyya	Agavaceae	Not assessed
13	<i>Prosopis juliflora</i>	Vaelikaruvai	Fabaceae	Not assessed
14	<i>Tecoma stans</i>	Manjarali	Bignoniaceae	Least Concern
15	<i>Lawsonia inermis</i>	Maruthani	Lythraceae	Least Concern
16	<i>Tarenna asiatica</i>	Tharani	Rubiaceae	Not assessed
17	<i>Euphorbia tirucalli</i>	Cakkalavi	Euphorbiaceae	Least Concern
18	<i>Phyllanthus reticulatus</i>	Civappu-p-pula	Phyllanthaceae	Not assessed
Herbs				
1	<i>Amaranthus viridis</i>	Kuppaikkirai	Amaranthaceae	Not assessed
2	<i>Cynodon dactylon</i>	Arugu	Poaceae	Not assessed
3	<i>Cassia tora</i>	Taghrai	Fabaceae	Not assessed
4	<i>Ageratum conyzoides</i>	Aappakkoti	Asteraceae	Not assessed
5	<i>Euphorbia heterophylla</i>	Palperukki	Euphorbiaceae	Not assessed
6	<i>Vernonia cinerea</i>	Puvamkuruntal	Asteraceae	Not assessed
7	<i>Parthenium hysterophorus</i>	Parthenium	Asteraceae	Not assessed
8	<i>Achyranthes aspera</i>	Akatam	Amaranthaceae	Not assessed
9	<i>Ocimum sanctum</i>	Thulasi	Lamiaceae	Not assessed
10	<i>Alternanthera pungens</i>	Thevadiyalmul	Amaranthaceae	Not assessed
11	<i>Commelina benghalensis</i>	Kanang-karai	Commelinaceae	Least Concern
12	<i>Plumbago zeylanica</i>	Chittiramoolam	Plumbaginaceae	Not assessed
13	<i>Mimosa pudica</i>	Thottaccurungi	Fabaceae	Least Concern
14	<i>Hyptis suaveolens</i>	Vilatti thulasi	Lamiaceae	Not assessed
15	<i>Tridax procumbens</i>	Vettukkaaya-thalai	Asteraceae	Not assessed
16	<i>Helicteres isora</i>	Valampuri	Sterculiaceae	Not assessed
17	<i>Eclipta prostrate</i>	Karisalanganni	Asteraceae	Least Concern
18	<i>Cyperus rotundus</i>	Panni-korai	Cyperaceae	Least Concern
19	<i>Sida rhombifolia</i>	Chitramutti	Malvaceae	Not assessed
20	<i>Tribulus lanuginosus</i>	Nerungi	Zygophyllaceae	Least Concern
21	<i>Aerva lanata</i>	ciru-pulai	Amaranthaceae	Not assessed
22	<i>Boerhavia diffusa</i>	Mukaratte kirai	Nyctaginaceae	Not assessed
23	<i>Sporobolus fertilis</i>	Giant Parramatta Grass	Poaceae	Not assessed
24	<i>Euphorbia hirta</i>	Ammam Paccharisi	Euphorbiaceae	Not assessed
25	<i>Ipomoea dissecta</i>	Kakkattan	Convolvulaceae	Not assessed
26	<i>Bambusa arundinacea</i>	Lulay-munkil	Poaceae	Not assessed
27	<i>Sida cordifolia</i>	Mayir-manikham	Malvaceae	Not assessed

Climbers				
1	<i>Bougainvillea spectabilis</i>	Kakitha poo	Nyctaginaceae	Not assessed
2	<i>Ichnocarpus frutescens</i>	Utar-koti	Apocynaceae	Not assessed
3	<i>Basella rubra</i>	Pasalakkirai	Basellaceae	Not assessed
4	<i>Luffa cylindrical</i>	Peerkankai	Cucurbitaceae	Not assessed
5	<i>Ipomoea nil</i>	Kotikkakkattan	Convolvulaceae	Not assessed
6	<i>Cardiospermum halicacabum</i>	Balloon Vine	Sapindaceae	Not assessed
7	<i>Coccinia grandis</i>	Kovaikkaai	Cucurbitaceae	Not assessed
8	<i>Abrus precatorius</i>	Kundumani	Fabaceae	Not assessed
9	<i>Clitoria ternatea</i>	Kannikkodi	Fabaceae	Not assessed
10	<i>Coccinia indica</i>	Kundru	Cucurbitaceae	Not assessed
11	<i>Pergularia daemia</i>	Velipparuthi	Apocynaceae	Least Concern
12	<i>Pueraria tuberosa</i>	Nilapoosani	Fabaceae	Not assessed
13	<i>Cissampelos pareira</i>	Abutua	Menispermaceae	Not assessed
14	<i>Cissus quadrangularis</i>	Perandai	Vitaceae	Not assessed
15	<i>Trichosanthes cucumerina</i>	Pudalankaai	Cucurbitaceae	Not assessed
16	<i>Tylophora asthmatica</i>	Kalutai-p-palai	Asclepidaceae	Not assessed
17	<i>Solena amplexicaulis</i>	Pulivanci	Cucurbitaceae	Not assessed

The detailed study revealed dominance of *Cocos nucifera*, *Azadirachta indica*, *Acacia auriculiformis*, *Acacia nilotica* etc. Totally 38 species of trees found in the study area along with 18 shrub species, 27 herb species and 17 climber species.

Phytosociological parameters, such as, density, frequency and importance value index of individual species were determined in randomly placed quadrats of different sizes in the study area. Relative frequency and relative density were calculated and the sum of these three represented Importance Value Index (IVI) for various species. For shrubs, herbs and seedlings, the IVI was calculated by summing up relative frequency, relative density and relative abundance. Sample plots were selected in such a way to get maximum representation of different types of vegetation and plots were laid out in different part of the study area. Analysis of the vegetation will help in determining the relative importance of each species in the study area and to reveal if any economically valuable species is threatened in the process. Phytosociological analysis of tree species is shown in **Table 3.34**.

The interpretation vegetation study results of the study area are presented in the **Tables 3.35-3.36**.

Table : 3.34 Phytosociological Analysis of Tree Species

Sl. No.	Scientific name	Local name	Total No.	Total no. of quad with sp.	Total No. of quad	Density	Relative Density	Frequency %	Relative Frequency	Abundance	Relative Abundance	IVI
1	Acacia nilotica	Karuvai	7	7	10	0.700	7.53	70.0	7.4	1.00	7.53	22.50
2	Azadirachta indica	Veppai	5	5	10	0.500	5.38	50.0	5.3	1.00	5.38	16.07
3	Tamarindus indica	Puli	2	2	10	0.200	2.15	20.0	2.1	1.00	2.15	6.43
4	Pongamia pinnata	Pungai	3	3	10	0.300	3.23	30.0	3.2	1.00	3.23	9.64
5	Cocos nucifera	Tennai	9	7	10	0.900	9.68	70.0	7.4	1.29	9.68	26.80
6	Borassus flaberrif	Panai	6	6	10	0.600	6.45	60.0	6.4	1.00	6.45	19.29
7	Syzygium cumini	Navai	2	2	10	0.200	2.15	20.0	2.1	1.00	2.15	6.43
8	Tectonia grandis	Tekku	3	3	10	0.300	3.23	30.0	3.2	1.00	3.23	9.64
9	Ficus religiosa	Arasa-garam	2	2	10	0.200	2.15	20.0	2.1	1.00	2.15	6.43
10	Acacia auriculiformis	Pencil garaga	2	2	10	0.200	2.15	20.0	2.1	1.00	2.15	6.43
11	Ficus benghalensis	Alai	1	1	10	0.100	1.08	10.0	1.1	1.00	1.08	3.21
12	Moringa oleifera	Moringa	4	3	10	0.400	4.30	30.0	3.2	1.33	4.30	11.79
13	Mangifera indica	Maagaram	3	3	10	0.300	3.23	30.0	3.2	1.00	3.23	9.64
14	Diospyros melanoxylon	Karundubi	2	2	10	0.200	2.15	20.0	2.1	1.00	2.15	6.43
15	Bauhinia racemosa	Tataai	1	1	10	0.100	1.08	10.0	1.1	1.00	1.08	3.21
16	Delonix regia	Demquyic-korai	1	1	10	0.100	1.08	10.0	1.1	1.00	1.08	3.21
17	Salapa asoca	Asogam	2	2	10	0.200	2.15	20.0	2.1	1.00	2.15	6.43
18	Melia azadirachta	Kattu vembu	2	2	10	0.200	2.15	20.0	2.1	1.00	2.15	6.43
19	Polyalthia longifolia	Nettutokani	2	2	10	0.200	2.15	20.0	2.1	1.00	2.15	6.43
20	Ziziphus mauritiana	Elendhal	2	2	10	0.200	2.15	20.0	2.1	1.00	2.15	6.43
21	Emblica officinalis	Nelli	2	2	10	0.200	2.15	20.0	2.1	1.00	2.15	6.43
22	Annona squarrosa	Sitapala	1	1	10	0.100	1.08	10.0	1.1	1.00	1.08	3.21
23	Casuarina equisetifolia	Savukku	2	2	10	0.200	2.15	20.0	2.1	1.00	2.15	6.43
24	Odina indica	Oti	1	1	10	0.100	1.08	10.0	1.1	1.00	1.08	3.21
25	Phoenix sylvestris	Pareecham	3	3	10	0.300	3.23	30.0	3.2	1.00	3.23	9.64

Sl. No.	Scientific name	Local name	Total No.	Total no. of quad with sp.	Total No. of quad	Density	Relative Density	Frequency %	Relative Frequency	Abundance	Relative Abundance	IVI
26	Psidium guajava	Sagappu toayai	1	1	10	0.100	1.08	10.0	1.1	1.00	1.08	3.21
27	Musa paradisiaca	Vaazha	3	3	10	0.300	3.23	30.0	3.2	1.00	3.23	9.64
28	Carica papaya	Pappai	2	2	10	0.200	2.15	20.0	2.1	1.00	2.15	6.43
29	Terminalia catappa	Nattuvadunai	2	2	10	0.200	2.15	20.0	2.1	1.00	2.15	6.43
30	Gmelina arborea	Kunalaanaram	1	1	10	0.100	1.08	10.0	1.1	1.00	1.08	3.21
31	Manilkara zapota	Sapota	2	2	10	0.200	2.15	20.0	2.1	1.00	2.15	6.43
32	Murraya koenigii	Kadivepillai	2	6	10	0.200	2.15	60.0	6.4	0.33	2.15	10.68
33	Butea monosperma	Palasam	2	2	10	0.200	2.15	20.0	2.1	1.00	2.15	6.43
34	Citrus medica	Erumppai	1	1	10	0.100	1.08	10.0	1.1	1.00	1.08	3.21
35	Aegle marmelos	Vilvam	2	2	10	0.200	2.15	20.0	2.1	1.00	2.15	6.43
36	Vitex negundo	Ninnchi	1	1	10	0.100	1.08	10.0	1.1	1.00	1.08	3.21
37	Albizia lebbek	Siddai	2	2	10	0.200	2.15	20.0	2.1	1.00	2.15	6.43
38	Cassia fistula	Appai	2	2	10	0.200	2.15	20.0	2.1	1.00	2.15	6.43
Total			93	94	380							

Table : 3.35 Interpretation of Vegetation Results

Relative density	Relative density is found to be maximum for <i>Cocos nucifera</i> about 9.68	Density of the primary species is found to be much higher in comparison with the other species.
Relative frequency	Maximum RF found to be 7.4 in case of <i>Cocos nucifera</i>	Vegetation community is heterogenous in nature
Relative Abundance	Maximum value observed in case of <i>Cocos nucifera</i> about 9.68	<i>Cocos nucifera</i> the most common species found in the area.
Importance Value Index (IVI)	The maximum IVI value observed in case of <i>Cocos nucifera</i> is about 26.8	The dominant species is <i>Cocos nucifera</i>

Table : 3.36 Biodiversity Indices

Community	Biodiversity indices		
	Shannon-Wiener Index (H)	Simpson Diversity Index (1/D)	Species Evenness
Tree	3.45	0.97	0.35
Shrub	2.79	0.95	0.52
Herb	3.03	0.94	0.39

It can be interpreted that tree community has higher diversity. While the shrub community shows less diversity. It is also observed that most of the quadrates have controlled generation of plant species with older strands.

Agricultural crops: The major crops cultivated in Tiruvallur District are Paddy, Maize, Black gram and green gram. In canal fed areas paddy occupies the largest area of cultivation followed by green gram and black gram. Other crops grown in the region are pulses, groundnut and coconut. Different fruits like banana, papaya, mangoes, sapota, guava and vegetables like brinjal, tomato, lady's finger, drumsticks, coriander and chilies also grown by the local people.

Medicinal plant species: The nearby area is also endowed with the several medicinal plants which are commonly available in the shrub forest and waste lands. The common medicinal plants of the region is *Azadirachta indica* (Neem).

Fuel wood plant species: Local villagers use to collect dry leaves, stems and log to fulfill their daily need for fuel wood requirement. *Azadirachta indica* (Neem), *Mangifera indica* etc. are the species used for fuel wood collection from the surrounding forest area.

Rare and endangered floral species: During the vegetation survey in the study area, *Tectona grandis* (Teku) were categorized as endangered species under IUCN (International Union for Conservation of Nature and Natural resources) guidelines.

3.9.2 Fauna

Both direct (sighting) and indirect (evidences) observations methods were used to survey the faunal species around the study area. List of Fauna is given in Table 3.37.

Table : 3.37 List of Fauna in Core & Buffer Zones

Sl. No.	Scientific Name	English Name	Schedule of Wildlife Protection Act	IUCN Conservation Status	Method
Mammals					
1	<i>Bandicota bengalensis</i>	Indian mole rat	--	Least Concern	DS
2	<i>Rattus rattus</i>	Indian rat	--	Least Concern	DS
3	<i>Bandicota indica</i>	Rat	--	Least Concern	DS
4	<i>Lepus nigricollis</i>	Indian Hare	II	Least Concern	DS
5	<i>Felis catus</i>	Cat	--	Not assessed	DS
6	<i>Funambulus pennanti</i>	Palm-Squirrel	--	Least Concern	DS
7	<i>Mus musculus</i>	Common Mouse	--	Least Concern	DS
8	<i>Rattus norvegicus</i>	Field mouse	--	Least Concern	DS
Birds					
1	<i>Argya striata</i>	Jungle Babbler	II	Least Concern	DS
2	<i>Merops orientalis</i>	Green bee eater	II	Least Concern	DS
3	<i>Hydrophasianus chirurgus</i>	Pheasant-tailed Jacana	II	Least Concern	DS
4	<i>Ceryle rudis</i>	Pied Kingfisher	II	Least Concern	DS
5	<i>Nectarinia asiatica</i>	Purple sunbird	II	Least Concern	DS
6	<i>Coracias benghalensis</i>	Indian roller	II	Least Concern	DS
7	<i>Corvus macrorhynchos</i>	Indian jungle crow	II	Least Concern	DS
8	<i>Eudynamis scolopaceus</i>	Indian koel	II	Least Concern	DS
9	<i>Gallinula chloropus</i>	Common Moorhen	II	Least Concern	DS
10	<i>Nycticorax nycticorax</i>	Night heron	II	Least Concern	DS
11	<i>Oriolus oriolus</i>	Golden oriole	II	Least Concern	DS
12	<i>Pitta brachyura</i>	Indian pitta	II	Least Concern	DS
13	<i>Ardea alba</i>	Large egret	II	Least Concern	DS
14	<i>Ardeola grayii</i>	Pond heron	II	Least Concern	DS
15	<i>Saxicoloides fulicata</i>	Indian robin	II	Least Concern	DS
16	<i>Athene brama</i>	Spotted owlet	II	Least Concern	DS
17	<i>Apus apus</i>	Common swift	II	Least Concern	DS
18	<i>Phalacrocorax niger</i>	Little cormorant	II	Least Concern	DS
19	<i>Perdica asiatica</i>	Bush Quail	II	Least Concern	DS
20	<i>Alcedo atthis</i>	Small Blue Kingfisher	II	Least Concern	DS
21	<i>Dicrurus macrocercus</i>	Black drongo	II	Least Concern	DS
22	<i>Milvus migrans</i>	Black kite	II	Least Concern	DS
23	<i>Dendrocitta leucogastra</i>	Southern tree pie	II	Least Concern	DS
24	<i>Acridotheres tristis</i>	Common Myna	II	Least Concern	DS

Sl. No.	Scientific Name	English Name	Schedule of Wildlife Protection Act	IUCN Conservation Status	Method
25	<i>Halcyon smyrnensis</i>	White-breasted kingfisher	II	Least Concern	DS
26	<i>Psittacula krameri</i>	Rose ringed parakeet	II	Least Concern	DS
27	<i>Centropus sinensis</i>	Greater coucal	II	Least Concern	DS
28	<i>Columba livia</i>	Rock pigeon	--	Least Concern	DS
29	<i>Corvus splendens</i>	House crow	--	Least Concern	DS
30	<i>Cuculus canorus</i>	Common cuckoo	II	Least Concern	DS
31	<i>Pycnonotus cafer</i>	Red Vented Bulbul	II	Least Concern	DS
32	<i>Vanellus indicus</i>	Red-wattled lapwing	II	Least Concern	DS
33	<i>Ardeola grayii</i>	Pond Heron	II	Least Concern	DS
34	<i>Bubulcus ibis</i>	Cattle Egret	II	Least Concern	DS
35	<i>Egretta garzetta</i>	Little Egret	II	Least Concern	DS
36	<i>Tringa hypoleucos</i>	Common sandpiper	II	Least Concern	DS
37	<i>Turdoides caudatus</i>	Common babbler	II	Least Concern	DS
38	<i>Elanus caeruleus</i>	Black-winged Kite	II	Least Concern	DS
Reptiles & Amphibians					
1	<i>Hemidactylus frenatus</i>	House lizard	--	Least Concern	DS
2	<i>Eutropis macularia</i>	Common skink	--	Least Concern	DS
3	<i>Bungarus caeruleus</i>	Common Krait	--	Least Concern	NS
4	<i>Rana tigrina</i>	Common yellow frog	--	Least Concern	DS
5	<i>Calotes versicolor</i>	Common Garden Lizard	--	Least Concern	DS
6	<i>Polypedates maculatus</i>	Tree frog	--	Least Concern	DS
7	<i>Euphyctis cyanophlyctis</i>	Indian Skipper Frog	II	Least Concern	DS
8	<i>Bufo melanostictus</i>	Toad	--	Least Concern	DS
Butterflies					
1	<i>Euploea core</i>	Common crow	--	Least Concern	DS
2	<i>Papilio demoleus</i>	Common lime	--	Not assessed	DS
3	<i>Papilio polytes</i>	Common mormon	--	Not assessed	DS
4	<i>Troides minos</i>	Southern birdwing	--	Least Concern	DS
5	<i>Papilio demoleus</i>	Lime butterfly	--	Not assessed	DS
6	<i>Mycalesis perseus</i>	Common bushbrown	--	Not assessed	DS
7	<i>Pachliopta hector</i>	Crimson rose	--	Not assessed	DS
8	<i>Eurema brigitta</i>	Small Grass Yellow	--	Least Concern	DS
9	<i>Neptis hylas</i>	Common sailor	--	Least Concern	DS
10	<i>Danaus genutia</i>	Common tiger	--	Not assessed	DS
11	<i>Danaus chrysippus</i>	Plain Tiger	--	Not assessed	DS
12	<i>Hypolimnas bolina</i>	Great Eggfly	--	Not assessed	DS

Mammals: No wild mammalian species was directly sighted during the field survey. Common Indian hare, Palm squirrel, House mouse, etc. were observed during primary survey.

Avifauna: From the primary survey, a total of 38 species of avifauna were identified and recorded in the study area. The diversity of avifauna from this region was found to be quite high and encouraging.

Variety of butterflies (like Common crow, Common lime, Common Mormon, Southern birdwing, Lime butterfly, Common bushbrown, Crimson rose, Small Grass Yellow, Common sailor, Common tiger, Plain Tiger, Great Eggfly are spotted in abundance in the study zone.

Livestock like cattle, goat, poultry, duck are reared for dairy products, meat, egg and for agriculture purpose. Majority of cattle are of local variety. Backyard poultry farms are mostly common. However, some commercial poultry farms are also recorded in the study area.

Endangered species	:	None
Threatened species	:	None
Near Threatened species	:	None
Vulnerable species	:	None

To assess the planktonic profile of Phytoplankton and Zooplankton, 3 water samples from Nandi river, Coouam Lake were collected at sub surface level. The most commonly accepted index in past few decades has been Shannon and Wiener equation which is based on both the number of taxon present and the relative abundance of each taxon. The Shannon Wiener diversity index is usually used to calculate species diversity but comparisons are also made using the different taxonomic levels (**Table 3.38**). This index (H) is a useful measure of community diversity.

$$H = \text{Sum} [(P_i) \times \ln (P_i)]$$

Sum: Summation

Pi: proportion of total samples represented by species- i

ln: Log of Pi.

Table 3.38 Diversity Indices of Plankton

Community	Biodiversity indices		
	Shannon-Wiener Index (H)	Simpson Diversity Index (1/D)	Species Evenness
Phytoplankton	2.698	0.992	0.886
Zooplankton	2.573	0.978	0.950

In general, it may be mentioned that the values of the Index <1.0, 1.0-2.0 and > 2.0 indicate maximum impact of pollution, medium impact of pollution and lowest impact of pollution respectively.

3.10 Socioeconomics

Tiruvallur District is the northern most coastal district of Tamil Nadu. The District is bounded by the Bay of Bengal in the east, Ranipettai District of Tamil Nadu & Chittoor District of Andhra Pradesh in the west, Nellore district of Andhra Pradesh in the North and Kancheepuram district in the South. Of Lord Murugan's six Padaiveedus, Tiruttani (Tirutanikai) ranks prominent. The beautiful temple of Lord Muruga at Tiruttani crowns a single rock 700 feet above sea level. It is situated amidst a range of hills with a dramatic panoramic view.

3.10.1 Study Area of 0-2 km

The area within a 0-2 km radius includes both rural and urban settlements, represented by Kilandur village and Tiruttani Town (**Table 3.39**). Together, they account for 18,904 households with a total population of 77,175 persons. The gender distribution is nearly equal, with 38,558 males and 38,617 females, reflecting a balanced sex ratio.

Table : 3.39. Population Details within 0-2 km

Area	Urban/ Rural	Household	Total Population	Male	Female	0-6 Yrs. Total Population	Male	Female	Scheduled Caste	Male	Female	Scheduled Tribe	Male	Female
Kilandur	Rural	725	2945	1434	1511	303	147	156	363	175	188	0	0	0
Tiruttani	Urban	18179	74230	37124	37106	8442	4324	4118	20241	10093	10148	2236	1101	1135
Total		18904	77175	38558	38617	8745	4471	4274	20604	10268	10336	2236	1101	1135

Note: Census Hand book of 2011

Area	Urban/ Rural	Literates	Male	Female	Total Workers	Male	Female	Total Non-Workers	Male	Female
Kilandur	Rural	1766	1031	735	1573	889	684	1372	545	827
Tiruttani	Urban	45493	26017	19476	36934	21836	15098	37296	15288	22008
Total		47259	27048	20211	38507	22725	15782	38668	15833	22835

Note: Census Hand book of 2011

Kilandur (Rural) village has 725 households with a total population of 2,945 persons (1,434 males and 1,511 females). Children in the 0-6 age group form a population of 303, comprising 147 boys and 156 girls. The Scheduled Caste (SC) population stands at 363 persons (175 males and 188 females). No Scheduled Tribe (ST) members are reported here.

Tiruttani (Urban) is the larger settlement in the Study Area. Tiruttani accommodates 18,179 households with a Total Population of 74,230 persons. The population is evenly split between 37,124 males and 37,106 females. The 0-6 year age group accounts for 8,442 children (4,324 boys and 4,118 girls). The town also has a sizeable Scheduled Caste population of 20,241 persons (10,093 males and 10,148 females) and a Scheduled Tribe population of 2,236 persons (1,101 males and 1,135 females).

In total, the area of 0-2 km hosts 8,745 children under six years, a Scheduled Caste population of 20,604 persons, and a Scheduled Tribe population of 2,236 persons. Literate Population in the area is 47,259 persons, with 27,048 males and 20,211 females, reflecting higher access to education in urban areas compared to rural settings.

Kilandur recorded 1,573 total workers, with 889 males and 684 females and the non-working population is 1,372 persons (545 males and 827 females). Tiruttani, being a town, had 36,934 workers, comprising 21,836 males and 15,098 females. The non-working population is slightly higher at 37,296 persons, including 15,288 males and 22,008 females. Altogether, the area recorded 38,507 total workers and 38,668 non-workers, showing a near-equal split between the working and non-working populations.

The project area is surrounded by several schools within a short distance, ensuring easy access to primary and secondary education (**Table 3.40**).

Table : 3.40. Social Institutions within 0-2 km

Sl. No.	Educational Institutions - Schools	Distance	Direction
1	Vivekananda Vidyalaya Nursery and Primary School	0.82 km	W
2	CSI School	0.85 km	NW
3	Sudandira School	1.57 km	NW
4	Thalapathy K.Vinayakam School	1.83 km	NW
5	Kilandur Village School	1.26 km	ENE
6	Keelanthur - Middle School	1.28 km	ENE
7	Government Primary School	0.79 km	NNW
8	The Phoenix Beacon School	0.62 km	W
9	Balagurukulam Matriculation School	0.75 km	WSW
Educational Institutions – Colleges			
1	Saais College Of Commerce	1.42 km	NW
2	Tiruttani AITC Tamil Nadu- College	1.89 km	NW
Hospital Institutions			
1	Peacock Hospitals Private Limited	1.12 km	WNW
2	Govt Hospital	1.29 km	NNW
Industries			
	Not Available		
Religious Institutions			
1	Arulmigu Subramanyaswamy Temple	2.4 km	WNW

Within the 0–2 km radius, no major industries have been reported. This absence of industrial establishments indicates that the immediate surroundings are largely residential and institutional in nature, with limited industrial activity. The establishment of the project will not cause any impact on the cultural site within the 0-2 km radius away from the project site.

3.10.2 Study Area of 2-5 km

The settlements located within a 2-5 km radius are entirely rural in nature, comprising 8,860 households with a total population of 36,384 persons (**Table 3.41**). The gender distribution is nearly equal, with 18,111 males and 18,273 females. Among them, 4,190 children belong to the 0-6 year's age group (2,183 boys and 2,007 girls), highlighting the presence of a young dependent population. Scheduled Caste (SC) population is significant with 9,885 persons (4,921 males and 4,964 females), while Scheduled Tribe (ST) population is relatively small at 718 persons (364 males and 354 females).

Table : 3.41 Population Details within 2-5 km

Area	Urban/ Rural	Household	Total Population	Male	Female	0-6 Yrs. Total Population	Male	Female	Scheduled Caste	Male	Female	Scheduled Tribe	Male	Female
Sathurajayapuram	Rural	713	3051	1537	1524	452	244	208	148	80	68	43	20	23
Dharanvargapuram	Rural	619	2486	1231	1255	304	163	141	288	142	146	0	0	0
Panabirapuram	Rural	974	3874	1941	1933	445	235	210	797	403	394	161	77	84
Periyakadambur	Rural	486	1983	985	998	225	106	119	1272	652	620	59	25	34
Velaeri	Rural	715	2923	1419	1504	299	143	156	1435	699	736	0	0	0
Polur	Rural	1811	7429	3700	3729	791	399	392	1773	885	888	316	165	151
Perungalathur	Rural	847	3490	1723	1767	430	241	189	760	381	379	0	0	0
Itchiputhur	Rural	1384	5755	2891	2864	580	308	272	2532	1252	1280	123	70	53
Padmapuram	Rural	244	1033	526	507	118	62	56	22	10	12	0	0	0
Kivaram	Rural	448	1864	927	937	242	119	123	570	275	295	16	7	9
Total		8560	36384	18111	18273	4190	2183	2007	9855	4921	4954	718	364	354

Area	Urban/ Rural	Literates	Male	Female	Total Workers	Male	Female	Total Non-Workers	Male	Female
Sathurajayapuram	Rural	1515	889	626	1574	848	726	1487	689	798
Dharanvargapuram	Rural	1479	856	623	1073	636	437	1413	595	818
Pottabirapuram	Rural	2506	1434	1075	1972	1180	792	1902	781	1141
Periyakadambur	Rural	1174	685	489	977	588	389	1006	397	609
Velaeri	Rural	1841	1032	809	1550	899	651	1373	520	853
Polur	Rural	4962	2812	2150	3308	2202	1106	4121	1498	2623
Perungalathur	Rural	2059	1174	885	1822	1013	809	1666	710	956
Itchiputhur	Rural	3893	2200	1693	2311	1669	842	3444	1222	2222
Padmapuram	Rural	747	404	343	328	283	45	705	243	462
Kivaram	Rural	1140	657	483	603	536	267	1061	391	670
Total		22798	12999	9799	16791	10490	6301	19593	7621	11972

Note: Census Hand book of 2011

Literate Population in the 2-5 km settlements show 22,798 literates, including 12,999 males and 9,799 females. The total workforce in this zone is 16,791 persons, of which 10,490 are males and 6,301 are females. The largest number of workers are in Polur (3,308 workers) and Itchiputhur (2,311 workers), while Padmapuram has the lowest with just 328 workers. On the other hand, the non-working population is higher, at 19,593 persons (7,621 males and 11,972 females). This pattern shows that while men dominate the working population, a large proportion of women are engaged in non-income generating roles, possibly in domestic and informal activities.

The 2-5 km surrounding region is predominantly rural, with a balanced gender ratio, a considerable child population, and a strong presence of Scheduled Castes, while Scheduled Tribes remain a small minority. Literacy levels are improving, especially in larger settlements, but gender gaps persist. The majority of workers are men, while women are more concentrated in the non-working category, reflecting traditional rural socio-economic patterns.

The 2-5 km zone around the project site is rich in educational infrastructure, covering all levels from preschool to higher secondary (**Table 3.42**).

The 2-5 km zone is characterized by a dense educational ecosystem with numerous schools and colleges, including specialized institutions for pharmacy, nursing, education, and women's studies. The healthcare network is well-established, with both government and private hospitals ensuring accessibility. Industrial activity is sparse, with only one glass industry identified in this range. Overall, the area reflects a socially supportive environment with strong educational and healthcare facilities, complemented by a predominantly non-industrial landscape.

Local people are frequently suffering from fever, asthma, diarrhea, etc. and no occupational related disease recorded.

Table : 3.42 Social Institutions within 2-5 km

Sl. No.	Educational Institutions - Schools	Distance	Direction
1	New Eden School	2.39 km	NW
2	GRT Mahalakshmi Vidyalaya CBSE School	3.11 km	NE
3	Govt. High School	3.99 km	NE
4	Adhi Dravidar Welfare School	4.10 km	NE
5	Government Higher Secondary School	4.62 km	E
6	KP Pre School	2.75 km	SSE
7	Kalvikkottai Christian Higher Secondary School	3.36 km	SSE
8	Don Bosco School	3.42 km	S
9	Government High School	4.05 km	SSE
10	Government High School	4.14 km	SSE
11	GG International School Arakkonam	4.68 km	SSE
12	Jayam Nursery & Primary School	4.59 km	E
13	PUP School	2.38 km	ENE
14	Suriya Home - Kindergarten School	2.19 km	ENE
15	Govt Elementary School -Educational Institution	3.96 km	SSW
16	Govt Baalwadi School	3.97 km	SW
17	Adi Dravida Welfare Primary School	3.23 km	SW
18	Government School	3.33 km	SW
19	DSM Sree Hayagreeva School	2.46 km	WNW
20	Panchayat Union Primary School	3.88 km	WNW
Educational Institutions – Colleges			
1	GRT Institute Of Pharmaceutical Education & Research College	3.51 km	NNE
2	GRT College Of Education - College	3.54 km	NNE
3	GRT College Of Nursing	3.51 km	NNE
4	Thalapathy K Vinayagam Women Arts and Science College	3.47 km	NNE
5	Arulmigu Sri Subramaniya Swamy Govt. Arts College	3.49 km	NNE
6	Ambari College of Arts and Science For Women	4.16 km	SSE
7	Jaya Law College	2.97 km	SSE
Hospital Institutions			
1	B.R. Hospital	2.11 km	NW
2	Srinivasa Medicals -Hospital	2.22 km	NW
3	Tiruthani Sub District Hospital	2.25 km	NW
4	Dr.Annamalai Hospital	2.33 km	NW
5	TI Medical Outreach Center - Hospital	3.52 km	NNW
Industries			
1	AJ Glass Desaing Work -Glass Industry	2.73 km	NW

3.10.3 Study Area of 5-10 km

The settlements within the 5-10 km radius around the project area accommodate a sizeable population of 1,57,241 people residing in 38,778 households (**Table 3.43**). The gender distribution is with 78,500 males and 78,741 females, indicating no major gender disparity. Children in the age group of 0-6 years constituted 17,278 individuals (8,813 males and 8,465 females). Socially, the region has a significant representation of Scheduled Castes (SCs), accounting for 51,745 persons (25,689 males and 26,056 females). In contrast, the Scheduled Tribe (ST) population is relatively small, with 4,125 individuals (2,040 males and 2,085 females).

Table : 3.43 Population Details within 5-10 km

Village	Urban/ Rural	Household	Total Population	Male	Female	0-6 Yrs. Total Population	Male	Female	Scheduled Caste	Male	Female	Scheduled Tribe	Male	Female
Velur	Rural	451	1498	743	755	147	72	75	910	446	464	29	19	10
Kinakkam	Rural	600	2448	1224	1224	286	142	144	961	481	480	129	62	67
Ramapuram	Rural	504	1758	881	877	184	102	82	844	340	304	2	1	1
Konalam	Rural	254	955	470	485	104	55	48	78	39	39	0	0	0
Agood	Rural	615	2589	1300	1289	308	162	146	1102	541	561	88	44	44
Arpod	Rural	265	1178	577	601	123	64	59	546	250	296	0	0	0
Anupulam	Rural	1021	3908	1906	2002	447	224	223	1148	557	591	150	73	77
Chinnakadambur	Rural	347	1299	636	663	125	64	61	282	139	143	152	68	84
Murukkanbattu	Rural	711	2706	1309	1397	324	156	168	803	296	307	11	7	4
Ponpadi	Rural	550	2145	1086	1079	253	118	135	1209	601	608	141	69	72
Nabalur	Rural	414	1554	763	791	164	83	81	684	337	347	0	0	0
Arakonam	Urban	19396	78938	39565	39373	8500	4314	4186	25816	12779	13037	1812	892	920
Mudur	Rural	924	3772	1842	1930	400	195	205	798	395	403	244	119	125
Vadamanabakkam	Rural	1537	6240	3080	3160	672	335	337	1377	671	706	192	96	96
Kainoor	Rural	977	4155	2055	2100	465	238	227	1446	728	718	171	82	89
Thandalam	Rural	732	3350	1756	1594	370	200	170	1448	753	695	55	28	27
Ammanur	Urban	1890	7731	3808	3923	911	398	413	4159	2084	2075	105	50	55
Verol	Rural	691	2781	1369	1412	352	177	175	374	188	186	85	44	41
Chithambadi	Rural	256	1057	542	515	118	63	55	792	407	385	0	0	0
Sembudu	Urban	2999	12548	6283	6265	1409	737	672	2271	1130	1141	320	153	167
Nandi	Rural	443	1746	895	851	202	103	99	669	348	321	62	29	33
Veruthangal	Rural	1091	4396	2234	2162	511	270	241	1411	700	711	212	118	94
Golakuppan	Rural	527	2325	1161	1164	256	147	109	947	478	469	0	0	0
Santhana gopalapuram	Rural	447	1798	872	926	188	101	87	527	247	280	0	0	0
Thalavedu	Rural	1116	4366	2163	2203	559	292	267	1543	754	789	165	86	79
Total		36778	157241	78500	78741	17276	8613	8465	51745	25669	26056	4125	2040	2085

Area	Urban/ Rural	Literates	Male	Female	Total Workers	Male	Female	Total Non-Workers	Male	Female
Velur	Rural	939	524	415	699	464	235	799	279	520
Kinakkam	Rural	1734	976	758	1231	728	503	1217	496	721
Ramapuram	Rural	988	564	424	1111	574	537	647	307	340
Konalam	Rural	616	356	260	512	296	216	443	174	269
Agood	Rural	1647	924	723	1400	795	605	1189	505	684
Arpod	Rural	766	439	327	769	373	396	409	204	205
Anupulam	Rural	2273	1282	991	1842	1126	716	2066	780	1286
Chinnakadambur	Rural	842	466	376	509	376	133	790	260	530
Murukkanbattu	Rural	1473	832	641	1533	808	725	1173	501	672
Ponpadi	Rural	1352	826	526	1179	660	499	966	386	580
Nabalur	Rural	939	538	401	940	484	456	614	279	335
Arakonam	Urban	55438	30865	24573	35488	23468	12020	43450	16097	27353
Mudur	Rural	2357	1354	1003	1983	1149	834	1789	693	1096
Vadamanabakkam	Rural	4459	2416	2043	2337	1772	565	3903	1308	2595
Kainoor	Rural	3127	1675	1452	1475	1084	391	2680	971	1709
Thandalam	Rural	2232	1308	924	1228	893	335	2122	863	1259
Ammanur	Urban	6210	3241	2969	2705	2064	641	5026	1744	3282
Verol	Rural	1588	913	675	1553	837	716	1228	532	696
Chithambadi	Rural	694	403	291	504	331	173	553	211	342
Sembudu	Urban	8099	4658	3441	5714	3582	2132	6834	2701	4133
Nandi	Rural	1060	601	459	989	610	379	757	285	472
Veruthangal	Rural	2504	1432	1072	2384	1402	982	2012	832	1180
Golakuppan	Rural	1493	824	669	1148	681	467	1177	480	697
Santhanagopalapuram	Rural	1287	660	627	1171	586	585	627	286	341
Thalavedu	Rural	2550	1421	1129	2457	1341	1116	1909	822	1087
Total		106667	59498	47169	72861	46504	26357	84380	31996	52384

Note: Census Hand book of 2011

Education levels in the region reflect a fair spread of literacy, with 1,06,667 literates in total. Of this, 59,498 are males and 47,169 are females, which shows a gender gap in literacy where male literacy is comparatively higher. Urban areas like Arakkonam and Sembodu contribute significantly to the literate population, with 55,438 and 8,099 literates respectively. In rural pockets, villages like Vadamambakkam (4,459 literates), Suryanagaram (2,504 literates), and Arungulam (2,273 literates) stand out with higher literacy rates, while smaller settlements such as Konalam (616 literates) and Chithambadi (694 literates) reflect lower educational attainment.

The total workforce within this 5-10 km belt is 72,861 persons, comprising 46,504 males and 26,357 females. This indicates a relatively high male participation rate in economic activities compared to females. Urban areas again dominate with Arakkonam reporting 35,488 workers, followed by Sembodu with 5,714 workers. In rural areas, villages like Vadamambakkam (2,337 workers) and Thalavedu (2,457 workers) contribute significantly.

Non-workers constitute 84,380 individuals, which is slightly higher than the total workers. Out of these, 31,996 are males and 52,384 are females, showing that a majority of women remain outside the workforce, likely engaged in household responsibilities or informal work not captured in census classifications.

Overall, the 5-10 km population zone presents a mixed socio-economic profile with strong urban influence (Arakkonam and nearby towns) surrounded by rural settlements that are moderately developed, socially diverse, and heavily reliant on primary livelihoods.

The 5-10 km Area is enriched with a diverse network of schools, ensuring accessibility to primary, middle, and higher secondary education. The presence of reputed institutions like Shakthi Public School CBSE (5.76 km, NNW), Parampara Academy CBSE Senior Secondary School (7.09 km, SSE), Ambari Vidya Mandir CBSE School (8.55 km, SE), and Kings and Queens Residential School (8.15 km, SSW) indicates strong private educational infrastructure offering modern, English-medium education. Alongside these, traditional government-run schools such as Government Higher Secondary School (5.80 km, E), Government Girls Higher Secondary School (7.47 km, SW), and several Panchayat Union and Elementary Schools located across different directions cater to rural and semi-urban communities. These institutions provide affordable education for local children, particularly from socially and economically weaker households.

In total, nearly 40 schools are distributed across all directions within this belt (**Table 3.44**), ensuring that both rural and urban populations have access to quality educational opportunities at varying levels. The mix of matriculation, CBSE, and government schools highlights a balanced educational ecosystem.

This combination of educational, health, and industrial institutions indicates a socially supportive environment with balanced access to learning, medical services, and livelihoods.

Table : 3.44 Social Institutions within 5-10 km

Sl. No.	Institutions	Distance	Direction
Educational Institutions - Schools			
1	Shakthi Public School CBSE	5.76 km	NNW
2	Vasanth Middle School	5.19 km	N
3	Thumbikulam High School	8.38 km	N
4	CSI Primary School	9.70 km	N
5	Evergreen Matriculation School	9.74 km	N
6	Panchayat Union School	8.93 km	NNE
7	T.E.L.C Primary School	6.34 km	E
8	Government Higher Secondary School	5.80 km	E
9	Government Elementary School	7.56 km	E
10	Elementary School	6.64 km	ENE
11	Valluvar Mat.Hr.Sec.School	7.35 km	SE
12	Parampara Academy CBSE Sr.Sec. School	7.09 km	SSE
13	Selvam Matric. Hr. Sec. School	7.23 km	SSE
14	Vivekananda Vidyalaya Matric. Hr. Sec. School	8.47 km	SE
15	Ambari Vidya Mandir - CBSE School	8.55 km	SE
16	Palvadi School	9.12 km	SE
17	Little Champs K School	9.13 km	SE
18	Bharathidasanar Matriculation Higher Sec School	8.44 km	SSE
19	Viby International School	8.26 km	SSE
20	Government School	7.97 km	SE
21	Dr V.G.N Matric Hr Sec School	6.40 km	SSE
22	Sri Krishna Matric Hr.sec School	6.62 km	SSE
23	Kainoor Governmet Elementary School	7.24 km	S
24	Balakrishnapuram - Primary School	6.43 km	S
25	Jeeva Matriculation Higher Secondary School	9.03 km	SSE
26	Thandalam School	7.28 km	SSW
27	Kings and Queens Residential School- CBSE School	8.15 km	SSW
28	SNV Matric Hr Sec School	9.09 km	SSW
29	St.Xavier's Matric School	8.56 km	SW
30	Government Girls Higher Secondary School	7.47 km	SW
31	Sri Raja Rajeswari Matriculation School	5.73 km	SW
32	Govt School	7.37 km	WSW
33	Panchayat Union Middle School	7.80 km	WSW
34	Primary School	6.75 km	WSW
35	Govt Primary School	8.03 km	W
36	TRS Global Public School	5.63 km	W
37	CSI Middle School	5.72 km	WNW
38	Netteri Kandigai Elementary School	9.01 km	WNW
Colleges			
1	Sri Krishna College of Engineering	6.83 km	SSE
2	Tiruttani Polytechnic College	7.28 km	NE

Sl. No.	Institutions	Distance	Direction
3	Swami's Business College	8.14 km	SSW
Hospital Institutions			
1	Kumaran Nursing Home Arakkonam -General Hospital	8.93 km	SSE
2	Arakkonam Government General Hospital	9.15 km	SSE
3	Divisional Railway Hospital - General Hospital	9.93 km	SSE
Industries			
1	USHA Industry	5.99 km	NE
2	SM Industry - Manufacturer	9.11 km	S
3	DP Construction	8.07 km	NNW
4	KL Lubricant Oil Manufacturer	9.50 km	SSE

3.11 Interpretation of Baseline Status

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

- ❖ Study Area is not falling in Critically Polluted Industrial Clusters listed by CPCB and also not falling in Coastal Regulation Zone (CRZ).
- ❖ There is no Ecologically Sensitive Area/Zone within 10 km Radius Area.
- ❖ The collected meteorological data represented the local weather phenomena.
- ❖ The monitored ambient air quality in the study area was found to be in compliance with the National Ambient Air Quality (NAAQ) 24-hourly Norms for Industrial, Residential, Rural and other areas.
- ❖ Study Area is falling under Low Pollution Category as monitored Pollutant Levels were <0.5 Exceedance Factor.
- ❖ Ambient equivalent Noise Levels (Leq) during day and night times were found to be well within the MoEF&CC Norms for respective Category.
- ❖ The water quality of surface waters were found to be in compliance with CPCB/BIS 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.
- ❖ In the study area only domesticated animals exist.
- ❖ Other than Tiruttani Town, 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.

4.0 Anticipated Environmental Impact and Mitigation Measures

4.1 Identification of Impacts

Environmental Impacts are categorized as primary or secondary impacts. Primary impacts are those which are attributed directly to the project and secondary impacts are those which are indirectly induced by the proposed Project. Any Project would create impact on the environment in two distinct phases viz. **Construction Phase** which may be regarded as Temporary & Short Term and **Operation Phase** which would have Long Term effects. Identification of all potential environmental impacts due to the Proposal are critically examined and major impacts (**both beneficial & adverse**) are assessed.

The impacts have been divided into two categories, viz. **Localised and Cumulative**. Localised Impact is confined to the area of influence of the Project and is not transmitted beyond its area. Cumulative Impact is the aggregate impact of a number of projects on any component. **Cumulative impacts** can result from individually minor but collectively significant actions taking place over a period of time.

There is **no major Industry** in the Study Area. The impacts have been assessed for the Project assuming that the **Cumulative Impact of existing industrial activities has already been covered under baseline environmental status** and continue to remain same till the operation of the project.

4.2 Construction Phase

No buildings/structures in the site and no demolition works is required. Proposed Grinding Unit construction will be for : Clinker storage & handling, Gypsum storage & handling, Fly Ash, Pond Ash and slag storage, handling and drying with Hot Air Generator, Coal, Dolochar & Biomass storage, grinding & handling, Cement production and storage & Cement packing and dispatch.

Site is having uniform terrain and no levelling is required as such. **Top Soil @ 26,240 cu.m** will be scrapped, stored and utilised for Green Belt development.

Local labourers will be engaged and provided with all Personal Protective Equipments (PPEs) like Mask, Gloves, Ear plugs/muffs, etc. Water, electricity, toilet facilities, etc. will be provided during Construction Phase.

The widely adopted **Matrix Method** for identifying and evaluating potential Impacts due to the Proposal is used. Impact Matrix for Construction Phase is given as **Table 4.1**.

Table : 4.1 Impact Matrix - Construction Phase

Environmental Components & Parameters		Project Activity during Construction Phase								
		Site Development	Transportation	Air Pollution	Machinery Noise	Water Demand	Water Mgmt.	Solid Wastes	Green Belt	Social Measure
Land	Land Use									
	Soil Quality									
	Agricultural Resources									
Air	Meteorology									
	Air Quality									
Noise	Intensity									
	Duration / Frequency									
Water	Surface Water Quality									
	Ground Water Quality									
	Water-table									
Biological (Flora & Fauna)	Species									
	Population									
	Habitat									
Socio-Economics	Population									
	Employment									
	Infrastructures									
	Economy									
	Public Health									
	Occupational Health									

Legend :

	Positive Impact
	Insignificant Negative Impact
	Significant Negative Impact

4.2.1 Impact on Land & Soil Quality

Conversion of predominant **Waste Land into Industrial Use** is a Positive Impact. Plant area will be established over an extent of 4.08 Ha out of 19.58 Ha (20.80% coverage) with Railway Siding over an extent of 2.70 Ha. Greenbelt & plantation will be developed in 6.46 Ha (33% coverage) and maintained. No Township is proposed other than a small Guest House. Being located under the Bypass and adjacent to Railway Line, developments at the Site will have relatively low impact on Land Use/Soil Quality of the Area. Construction residues will be utilised for leveling and landscaping works and no demolition waste envisaged.

4.2.2 Impact on Road & Traffic

On an average, 2-3 Truck loads/day will be visiting the site and will not have any adverse impact to the existing traffic volume in Tiruttani Bypass.

4.2.3 Impact on Ambient Air Quality

The main sources of emission during the construction period are the movement of materials & equipments at site and dust emitted during the installation related activities. However, the impact will be for short duration and confined locally at the Site.

4.2.4 Impact on Noise Levels

There will be very less impact on the existing noise levels due to construction, traffic for loading and unloading, construction, fabrication and handling of equipments & materials, etc. The likely increase of about 1-2 dB(A) in Leq Noise Levels will be confined locally.

4.2.5 Impact on Surface & Ground Water Quality

The District enjoys a **tropical climate**. Annual Normal rainfall of the Site area is **950 mm**. Pre-Project Runoff is 37,202 KL/ Annum and Post Project Runoff is 74,312 KL/ Annum. About 87% of natural drain from the Site 32,215 KL/Annum will be maintained after effective Rain Water Harvesting (RWH) measures and thus, there will not be any significant impact on the receiving water bodies in the vicinity.

There are 3 Nos. Dugwells (irrigation wells) & 2 Borewells at the Site About 50 KLD fresh water demand will be there during Construction Phase which will be tapped from permitted Dugwells and Borewells within the premises. As Tiruttani Block falls in 'Semi Critical' Area, the **ground water tapping will be permitted** with the proposed RWH Measures.

4.2.6 Impact on Biological Environment

There are 12 Neem, 37 Palmyra, 15 Date Palm, 8 Teak, 10 Nuna (total 72) Trees along with 18 Coconut Trees and Plantain plantation in the Site. Well grown trees including Palmyra trees **will be numbered and transplanted** as such to the boundaries of Site for Green Belt development. Other than 2 Reserved Forests at 8 km distance, there are **no Eco Sensitive Areas** like National Parks, Wildlife Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar Sites, Tiger/Elephant Reserves, etc. (existing as well as proposed), within 10 km from the Site.

4.2.7 Impact on Socioeconomic Environment

There is no rehabilitation and resettlement (R&R) involved in the project. The Project will give Direct Employment to 50 persons and Indirect Employment to 200 persons, thus, total 250 employment during Construction Phase. Local labourers will be pooled for the Construction and provided with all Personal Protective Equipments (PPEs) like Mask, Gloves, etc.

4.2.8 Public & Occupational Health

Sanitization will be ensured at the all workplaces. Water, electricity, toilet facilities, etc. will be provided to Construction Labours during the Construction Phase. Hygienic conditions and all Preventive Measures will be strictly in-place/implemented as Occupational Health measures.

Thus, the Construction Phase activities will not cause any significant adverse impact on the environment.

Mitigating Measures : The following EMP measures shall be undertaken during Construction Phase :

- ❖ It shall be ensured that no change to the hydrology/natural drainage of the area due to the constructions.
- ❖ All the topsoil excavated shall be stored and maintained for use for Green Belt development.
- ❖ The construction materials like sand, stone chips, etc. shall be obtained from approved quarries only.
- ❖ Proper placement of construction machineries shall be ensured to eliminate vibrations and noise.
- ❖ All construction machinery items shall be well lubricated to reduce noise.
- ❖ High Speed Diesel with low sulphur content shall be used for running the construction machineries.
- ❖ The labourers for the construction works shall be pooled from the local public.
- ❖ Adequate drinking water and sanitary facilities shall be provided for construction workers.

- ❖ PPEs shall be provided to the construction workers. Protection devices viz. ear plugs/ear muffs shall be provided to the workers during welding works.
- ❖ The safe disposal of wastewater and solid wastes generated during Construction Phase shall be ensured.
- ❖ On completion of construction, all debris and extraneous materials shall be cleared off and no residuals should be left at the site.
- ❖ EMP Cell ensure the periodical monitoring of Environmental Parameters during the Construction Period and ensure its compliance with Norms.

4.3 Impacts during Operation Phase

The Impact Matrix for Operation Phase is given as **Table 4.2**.

Table : 4.2 Impact Matrix - Operation Phase

Environmental Components & Parameters		Project Activity during Operation Phase								
		Builtup Land	Traffic Volume	Air Pollution	Industrial Noise	Water Demand	Water Mgmnt.	Solid Waste	Green Belt	Social Measure
Land	Land Use									
	Soil Quality									
	Agricultural Resources									
Air	Meteorology									
	Air Quality									
Noise	Intensity									
	Duration / Frequency									
Water	Surface Water Quality									
	Ground Water Quality									
	Water-table									
Biological (Flora & Fauna)	Species									
	Population									
	Habitat									
Socio-Economics	Population									
	Employment									
	Infrastructures									
	Economy									
	Public Health									
	Occupational Health									

Legend :

	Positive Impact
	Insignificant Negative Impact
	Significant Negative Impact

4.3.1 Impact on Land & Soil Quality

TCGU Builtup Area will be 4.08 Ha, Paved Area 4.70 Ha, Railway Sidings 2.70 Ha, Green Belt 6.46 Ha and Vacant Land 1.64 Ha. Thus, the Site of 19.58 Ha Waste/Dry Land will be permanently changed to Industrial Land Use. Proposed Green Belt will have positive impacts on Soil Quality and Land Use. Solid waste storage and disposal will have temporary negative impacts which will be mitigated with EMP measures.

4.3.2 Impact on Traffic Volume

Raw and Finished Materials will be transported by **both Rail and Road Modes**. Available Traffic Networks are shown in **Fig. 4.1**. Tiruttani Bypass from NH-716 will be the transportation route for the TCGU. Road Over Bridge on Railway Line near the Site will have Service Road of 12 m width on either side for to & fro traffic meant for the Grinding Unit. Railway Sidings are proposed from Icchiputhur Railway or Tiruttani Railway Station in north. About 1,694 Truck movements will be there for transportation of Raw Material & finished Product Cement as shown in **Table 4.3**.

Table : 4.3 Traffic Volume due to the Unit

Material	Max. Quantity, TPD	Mode of Transport	No. of Trucks (2-ways) per day
Clinker	9716	Railway Wagons & Road	162
Gypsum	731	Covered Trucks (20 Tons)	73
Fly Ash	3657	Browsers (40 Tons)	183
Slag	5746	Covered Trucks (20 Tons)	575
Coal	45	Covered Trucks (20 Tons)	4
Cement	10448	Covered Trucks (20 Tons)	697
Total			1,694

Baseline Status : For assessing the baseline status, the Traffic Survey based on Indian Road Congress-IRC: 64/106 Norms were carried out at Tiruttani Bypass - Muthur Road Junction during a Week Day (Wednesday; 16.07.2025) and also during the Week end (Sunday; 20.07.2025). Based on the Survey, existing Traffic Volumes at the Junction is computed in **Passenger Car Units (PCUs)** and given in **Table 4.4**. The existing traffic volume in the Project vicinity was found to be **5,491.9 PCU/day**.

In the Post-Project Scenario, there will be an addition of **2,428 Vehicles** (in 2 ways) i.e. 5,943 PCU/Day to the existing traffic volume. Cumulatively, the traffic volume in the Project vicinity will be **11,170.4 PCU/day (Table 4.5)**. **The net increase (cumulative) will be 5,679 PCU/day**. The existing Bypass, Service Roads and NHs are adequate to handle the proposed traffic volume due to the Project.

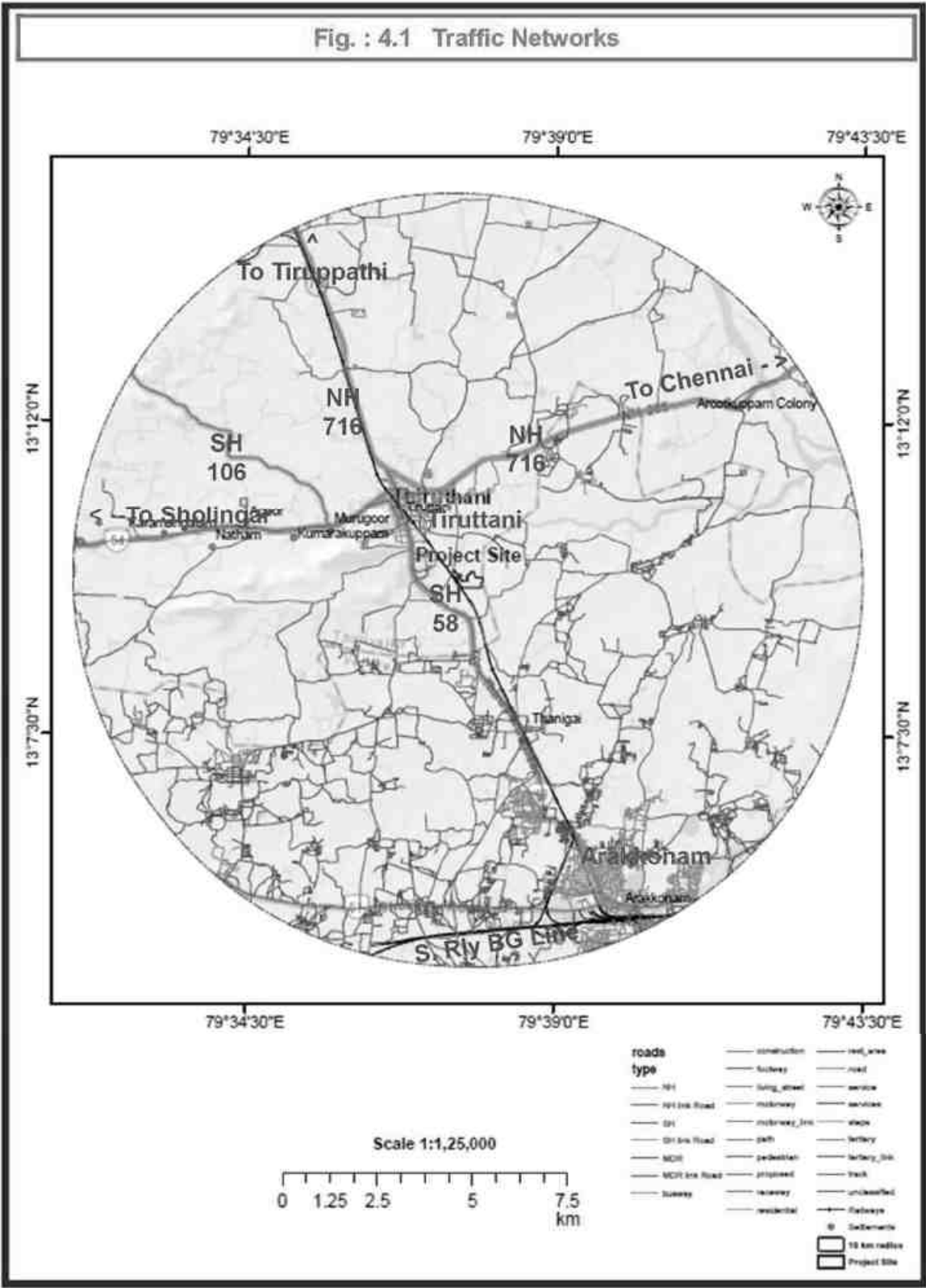


Table : 4.4 Existing Traffic Volume - Baseline Status

Type of Vehicle	No. of Vehicles/day			PCU Factor as per IRC:106	Average Traffic at the Site Vicinity, PCU/day
	Week Day 16.07.2025 (Wednesday)	Week End 20.07.2025 (Sunday)	Avg. Traffic		
Two Wheelers	480	658	505.4	0.5	252.7
Autos	66	108	72.0	1.0	72.0
Vans/Tempo	122	206	134.0	1.0	134.0
Cars	188	412	220.0	1.0	220.0
Buses	38	52	40.0	3.0	120.0
Trucks	1518	1386	1499.1	3.0	4497.4
Trailers	48	17	43.5	4.5	195.8
Total	2460	2839	2514.1	-	5491.9

Table : 4.5 Projected Traffic Volume in the Vicinity

Type of Vehicle	Avg. Traffic, No. of Vehicles/day	Proposed Addition, No. of Vehicles/day	Cumulative Volume, No. of Vehicles/day	PCU Factor as per IRC:106	Post Project, No. of Vehicles in PCU/day
Two Wheelers	505.4	320	825	0.5	412.7
Autos	72.0	192	264	1.0	0.0
Vans/Tempo	134.0	96	230	1.0	230.0
Cars	220.0	120	340	1.0	340.0
Buses	40.0	6	46	3.0	138.0
Trucks	1499.1	1511	3010	3.0	9030.4
Trailers	43.5	183	227	4.5	1019.3
Total	2514.1	2266	4780	-	11170.4

Level of Service (LOS) : Capacity Standards of Roads are fixed in relation with the LOS which is commonly designated from A (best operating condition) to F (forced or breakdown flow). Normally LOS-C will be adopted for smooth traffic flow in Urban/Rural Areas. At this Level, traffic volume will be 0.7 times of the maximum capacity. Capacity/Design Service Volume is the maximum hourly volume at which a vehicle can be expected to transfer a point/section of a road at a given time period.

Ratio of existing Volume of PCU on road (V) and its Capacity (C) with corresponding LOS and their performance are given in Tables 4.6-4.7. Thus, there will not be any significant impact on the existing baseline traffic volume due to the Proposal.

Table : 4.6 Level of Service & Performance of a Road (IRC:64-1990 Norms)

Volume/Capacity Ratio	Level of Service	Performance of the Road
0-0.2	A	Excellent
0.2-0.4	B	Very Good
0.4-0.6	C	Good/Average/Fair
0.6-0.8	D	Poor
0.8-1.0	E	Very Poor

Table : 4.7 Predicted Traffic Scenario at Tiruttani Bypass

Road	Volume, PCU/hr.	Capacity of the Road, PCU/hr.	V/C Ratio	Level of Service	Performance of the Bypass
Existing	228.8	3600	0.06	A	Excellent
Proposed	465.4	3600	0.13	A	Excellent

Mitigating Measures : Adequate parking areas will be provided in the Unit. Facilities for **drivers (rest room, toilet, etc.)** will also be provided. Other measures to be implemented are :

- ❖ Adequate measures shall be taken to avoid any traffic congestion near the entry and exit points.
- ❖ Security Guards will be posted at the Road Junction to handle the inward and outward vehicles from the Plant to the Bypass/Highway.
- ❖ Adequate parkings will be provided in the Plant.
- ❖ Facilities for **drivers (rest room, toilet, etc.)** will also be provided.
- ❖ All Trucks will be fully covered with Tarpaulin to avoid any spillage on transportation.
- ❖ Restriction of over loading of Trucks/Tippers and Speed restrictions will be imposed.
- ❖ Restriction of Truck parking in the Highway and Public Roads will be ensured.
- ❖ Regular and preventive maintenance of transport vehicles has to be ensured.
- ❖ Compliance to 'Pollution under Control' Certification has to be checked periodically.

4.3.3 Impact on Air Quality

Emissions from sources, other than Cement Mills & Packers, would be fugitive in nature. Bag Filters are proposed to control **PM emission <30 mg/Nm³**. Other stack emissions will not have significant contribution. All material conveyors are fully covered and provided with Bagfilters at Transfer Points. The Plant operations will be in compliance with new Emission Standards issued by MoEF&CC for Cement Industry vide Notifications dated 25.08.2014 and amended on 09.05.2016 & 10.05.2016. Standby DG sets will be with in-built acoustic enclosures and required stack height as per TNPCB Norms. Anticipated emission of Pollutants from the Unit, in **worst case scenario of operating all Standby DG Sets**, will be as detailed in **Table 4.8**. Emission Rate of Pollutants are given in **Table 4.9**.

Table : 4.8 Anticipated Emission Levels from the Unit

Sl. No.	Pollutant & Stack Attached to	Discharge, Nm ³ /hr.	Pollutant Conc., mg/Nm ³	Emission, g/sec.
I	Particulate Matter			
1	Cement Mill	8,65,900	30	7.216
2	Packer 1	40,500	30	0.338
3	Packer 2	40,500	30	0.338
4	Packer 3	40,500	30	0.338
5	Packer 4	40,500	30	0.338
6	Wagon Tippler	1,25,380	50	1.741
7	500 KVA DG1	6,800	100	0.189
8	500 KVA DG2	6,800	100	0.189
9	250 KVA DG3	3,000	100	0.083
II	Sulphur dioxide (SO₂)			
1	500 KVA DG1	6,800	100	0.189
2	500 KVA DG2	6,800	100	0.189
3	250 KVA DG3	3,000	100	0.083
III	Oxides of Nitrogen (NO_x)			
1	500 KVA DG1	6,800	150	0.283
2	500 KVA DG2	6,800	150	0.283
3	250 KVA DG3	3,000	150	0.125

Table : 4.9 Anticipated Pollutant Emission Rate from the Unit

Sl. No.	Pollutant	Emission, g/sec.
1	PM2.5	0.32
2	PM10	1.08
3	SO ₂	0.46
4	NO _x	0.69

AERMOD View (9.6.5 Version) is used for Prediction Modelling for applicable Parameters **PM2.5, PM10, SO₂ & NO_x** (CO levels were below BDL). The Model has been run for proposed Plant operations. The **Model Inputs and Outputs** are appended. The predicted GLCs are given in **Table 4.10**. The predicted values are spatially distributed and given as **Figs. 4.2-4.4**.

The **maximum incremental GLC** for PM2.5 is 0.22 µg/m³, PM10 - 0.75 µg/m³, SO₂ – 1.95 µg/m³ & NO_x 2.92 µg/m³. There will be **adequate Buffer (53.25% to 77.98%)** in the Air Environment for proposed activities. The cumulative impacts were found to be confined locally i.e. within **0.9 km** radius from the Plant boundaries.

PM2.5 – Input Data

Source Pathway - Source Inputs

AERMOD

Point Sources

Source Type	Source ID	X Coordinate (m)	Y Coordinate (m)	Base Elevation (Optional)	Release Height (m)	Emission Rate (g/s)	Gas Exit Temp. (K)	Gas Exit Velocity (m/s)	Stack Inside Diameter (m)
POINT	STCK1	351561.00 Cement Mill BH	1455460.00	88.00	55.00	0.21600	373.15	25.00	3.50
POINT	STCK2	351534.00 Packer1 BF	1455400.00	90.00	30.00	0.01000	323.15	15.00	1.00
POINT	STCK3	351547.00 Packer2 BF	1455399.00	90.00	30.00	0.01000	323.15	15.00	1.00
POINT	STCK4	351550.00 Packer3 BF	1455401.00	90.00	30.00	0.01000	323.15	15.00	1.00
POINT	STCK5	351570.00 Packer4 BF	1455399.00	90.00	30.00	0.01000	323.15	15.00	1.00
POINT	STCK6	351037.45 Wagon Tippler BF	1455324.56	87.00	20.00	0.05200	323.15	12.00	2.00
POINT	STCK7	351047.02 500 KVA DG1	1455652.48	90.00	15.00	0.00600	373.15	12.00	0.50
POINT	STCK8	351047.98 500 KVA DG2	1455650.00	90.00	15.00	0.00600	373.15	12.00	0.50
POINT	STCK9	351050.20 250 KVA DG	1455647.90	90.00	10.00	0.00300	373.15	15.00	0.30

PM2.5 – Output Data

Results Summary

PM10 - Concentration - Source Group: ALL									
Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
24-HR	1ST	0.22462	ug/m ³	352460.17	1455295.05	92.00	0.00	92.00	30-07-2025, 24
24-HR	2ND	0.21343	ug/m ³	352460.17	1455295.05	92.00	0.00	92.00	02-07-2025, 24
24-HR	3RD	0.20960	ug/m ³	352460.17	1455295.05	92.00	0.00	92.00	13-08-2025, 24
24-HR	4TH	0.19757	ug/m ³	352460.17	1455295.05	92.00	0.00	92.00	17-07-2025, 24
24-HR	5TH	0.19570	ug/m ³	352460.17	1455295.05	92.00	0.00	92.00	29-07-2025, 24
24-HR	6TH	0.19121	ug/m ³	352460.17	1455295.05	92.00	0.00	92.00	06-07-2025, 24
24-HR	7TH	0.18055	ug/m ³	352460.17	1455295.05	92.00	0.00	92.00	14-07-2025, 24
24-HR	8TH	0.17941	ug/m ³	352460.17	1455295.05	92.00	0.00	92.00	28-07-2025, 24
24-HR	9TH	0.17490	ug/m ³	352460.17	1455295.05	92.00	0.00	92.00	05-07-2025, 24
24-HR	10TH	0.16899	ug/m ³	352460.17	1455295.05	92.00	0.00	92.00	20-07-2025, 24
PERIOD		0.10086	ug/m ³	351462.23	1455295.05	92.00	0.00	92.00	

PM10 – Input Data

Source Pathway - Source Inputs

AERMOD

Point Sources

Source Type	Source ID	X Coordinate (m)	Y Coordinate (m)	Base Elevation (Optional)	Release Height (m)	Emission Rate (g/h)	Gas Exit Temp. (K)	Gas Exit Velocity (m/s)	Stack Inside Diameter (m)
POINT	STCK1	351561.00 Cement Mill BH	1455460.00	88.00	55.00	0.71600	373.15	25.00	3.50
POINT	STCK2	351534.00 Packer1 BF	1455400.00	90.00	30.00	0.03400	323.15	15.00	1.00
POINT	STCK3	351547.00 Packer2 BF	1455399.00	90.00	30.00	0.03400	323.15	15.00	1.00
POINT	STCK4	351559.00 Packer3 BF	1455401.00	90.00	30.00	0.03400	323.15	15.00	1.00
POINT	STCK5	351570.00 Packer4 BF	1455399.00	90.00	30.00	0.03400	323.15	15.00	1.00
POINT	STCK6	351637.45 Wagon Tippler BF	1455324.56	87.00	20.00	0.17400	323.15	12.00	2.00
POINT	STCK7	351047.02 500 KVA DG1	1455652.48	90.00	15.00	0.01900	373.15	12.00	0.50
POINT	STCK8	351047.88 500 KVA DG2	1455650.00	90.00	15.00	0.01900	373.15	12.00	0.50
POINT	STCK9	351050.25 250 KVA DG	1455647.90	90.00	10.00	0.00800	373.15	15.00	0.30

PM10 – Output Data

Results Summary

PM2.5 - Concentration - Source Group: ALL

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
24-HR	1ST	0.75212	ug/m ³	352460.17	1455295.05	92.00	0.00	92.00	30-07-2025, 24
24-HR	2ND	0.71029	ug/m ³	352460.17	1455295.05	92.00	0.00	92.00	02-07-2025, 24
24-HR	3RD	0.69517	ug/m ³	352460.17	1455295.05	92.00	0.00	92.00	13-08-2025, 24
24-HR	4TH	0.65968	ug/m ³	352460.17	1455295.05	92.00	0.00	92.00	17-07-2025, 24
24-HR	5TH	0.65447	ug/m ³	352460.17	1455295.05	92.00	0.00	92.00	29-07-2025, 24
24-HR	6TH	0.64018	ug/m ³	352460.17	1455295.05	92.00	0.00	92.00	06-07-2025, 24
24-HR	7TH	0.59948	ug/m ³	352460.17	1455295.05	92.00	0.00	92.00	28-07-2025, 24
24-HR	8TH	0.59880	ug/m ³	352460.17	1455295.05	92.00	0.00	92.00	14-07-2025, 24
24-HR	9TH	0.58024	ug/m ³	352460.17	1455295.05	92.00	0.00	92.00	05-07-2025, 24
24-HR	10TH	0.56458	ug/m ³	352460.17	1455295.05	92.00	0.00	92.00	20-07-2025, 24
PERIOD		0.33557	ug/m ³	351462.23	1455295.05	92.00	0.00	92.00	

SO₂ – Input Data**Source Pathway - Source Inputs**

AERMOD

Point Sources

Source Type	Source ID	X Coordinate (m)	Y Coordinate (m)	Base Elevation (Optional)	Release Height (m)	Emission Rate (g/h)	Gas Exit Temp. (K)	Gas Exit Velocity (m/s)	Stack Inside Diameter (m)
POINT	STCK1	351561.00 Cement Mill BH	1455460.00	88.00	55.00	0.00E+0	373.15	25.00	3.50
POINT	STCK2	351534.00 Packer1 BF	1455400.00	90.00	30.00	0.00E+0	323.15	15.00	1.00
POINT	STCK3	351547.00 Packer2 BF	1455399.00	90.00	30.00	0.00E+0	323.15	15.00	1.00
POINT	STCK4	351559.00 Packer3 BF	1455401.00	90.00	30.00	0.00E+0	323.15	15.00	1.00
POINT	STCK5	351570.00 Packer4 BF	1455399.00	90.00	30.00	0.00E+0	323.15	15.00	1.00
POINT	STCK6	351637.45 Wagon Tippler BF	1455324.56	87.00	20.00	0.00E+0	323.15	12.00	2.00
POINT	STCK7	351047.02 500 KVA DG1	1455652.48	90.00	15.00	0.18900	373.15	12.00	0.50
POINT	STCK8	351047.88 500 KVA DG2	1455650.00	90.00	15.00	0.18900	373.15	12.00	0.50
POINT	STCK9	351050.26 250 KVA DG	1455647.90	90.00	10.00	0.09300	373.15	15.00	0.30

SO₂ – Output Data**Results Summary**

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SO2 - Concentration - Source Group: ALL

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
24-HR	1ST	1.94973	ug/m ³	352460.17	1456297.11	92.00	0.00	92.00	03-07-2025, 24
24-HR	2ND	1.37881	ug/m ³	352460.17	1456297.11	92.00	0.00	92.00	10-08-2025, 24
24-HR	3RD	1.01139	ug/m ³	352460.17	1456297.11	92.00	0.00	92.00	24-07-2025, 24
24-HR	4TH	0.98664	ug/m ³	352460.17	1456297.11	92.00	0.00	92.00	20-08-2025, 24
24-HR	5TH	0.95408	ug/m ³	352460.17	1456297.11	92.00	0.00	92.00	12-08-2025, 24
24-HR	6TH	0.94046	ug/m ³	352460.17	1456297.11	92.00	0.00	92.00	19-08-2025, 24
24-HR	7TH	0.88514	ug/m ³	352460.17	1456297.11	92.00	0.00	92.00	01-06-2025, 24
24-HR	8TH	0.87118	ug/m ³	352460.17	1456297.11	92.00	0.00	92.00	11-06-2025, 24
24-HR	9TH	0.85031	ug/m ³	352460.17	1456297.11	92.00	0.00	92.00	25-06-2025, 24
24-HR	10TH	0.84852	ug/m ³	352460.17	1456297.11	92.00	0.00	92.00	26-07-2025, 24
PERIOD		0.43983	ug/m ³	352460.17	1456297.11	92.00	0.00	92.00	

NOx – Input Data

Source Pathway - Source Inputs

AERMOD

Point Sources

Source Type	Source ID	X Coordinate (m)	Y Coordinate (m)	Base Elevation (Optional) (m)	Release Height (m)	Emission Rate (g/s)	Gas Exit Temp (K)	Gas Exit Velocity (m/s)	Stack Inside Diameter (m)
POINT	STCK1	351561.00 Cement Mill SH	1455460.00	88.00	55.00	0.00E+0	373.15	25.00	3.50
POINT	STCK2	351534.00 Packer1 BF	1455400.00	90.00	30.00	0.00E+0	323.15	15.00	1.00
POINT	STCK3	351547.00 Packer2 BF	1455399.00	90.00	30.00	0.00E+0	323.15	15.00	1.00
POINT	STCK4	351559.00 Packer3 BF	1455401.00	90.00	30.00	0.00E+0	323.15	15.00	1.00
POINT	STCK5	351570.00 Packer4 BF	1455399.00	90.00	30.00	0.00E+0	323.15	15.00	1.00
POINT	STCK6	351637.45 Wagon Tippler BF	1455324.56	87.00	20.00	0.00E+0	323.15	12.00	2.00
POINT	STCK7	351047.02 500 KVA DG1	1455652.48	90.00	15.00	0.28300	373.15	12.00	0.50
POINT	STCK8	351047.88 500 KVA DG2	1455650.00	90.00	15.00	0.28300	373.15	12.00	0.50
POINT	STCK9	351050.28 250 KVA DG	1455647.90	90.00	10.00	0.12500	373.15	15.00	0.30

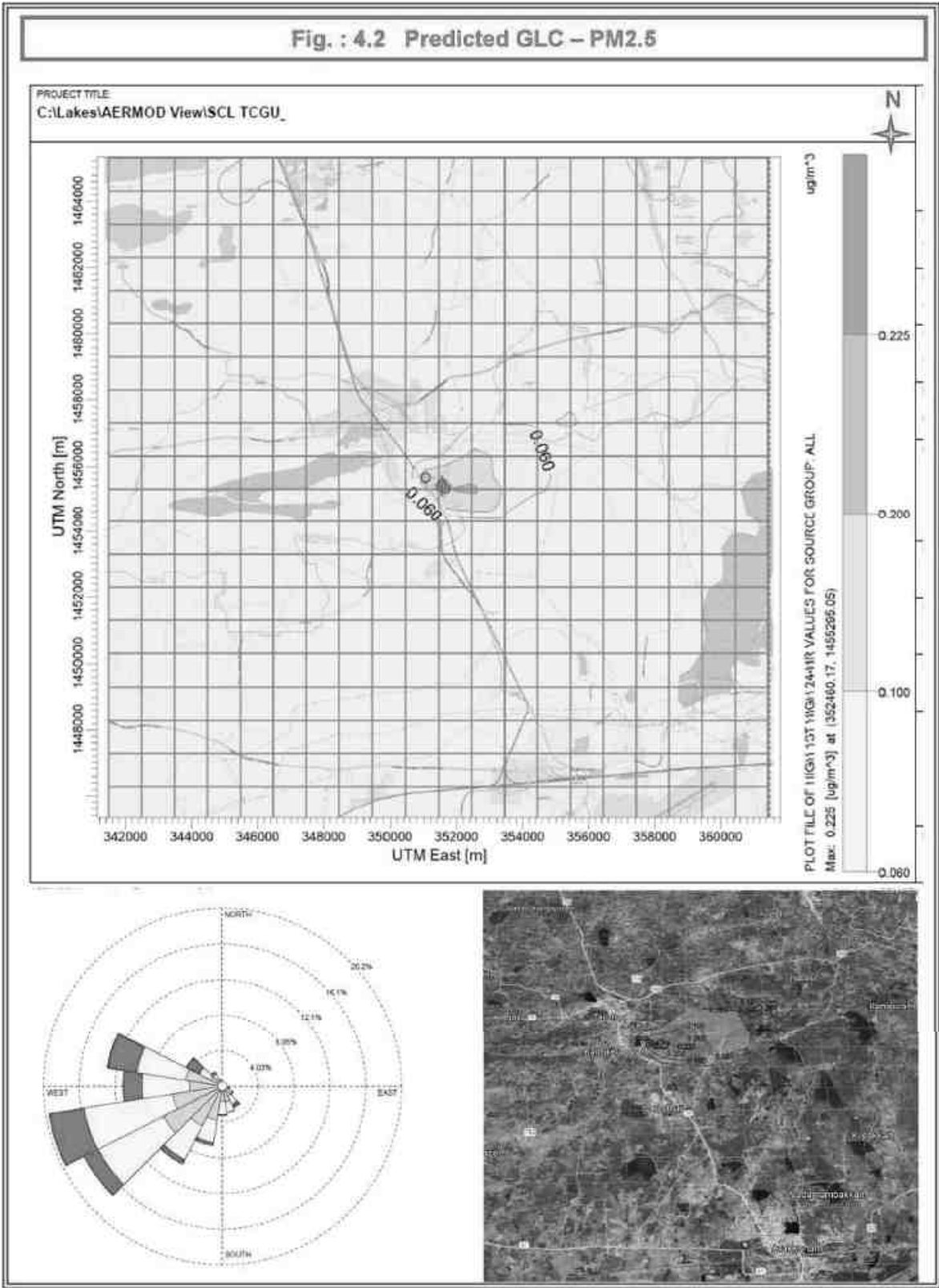
NOx – Output Data

Results Summary

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NOx - Concentration - Source Group: ALL

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
24-HR	1ST	2.92390	ug/m ³	352460.17	1456297.11	92.00	0.00	92.00	03-07-2025, 24
24-HR	2ND	2.06767	ug/m ³	352460.17	1456297.11	92.00	0.00	92.00	10-08-2025, 24
24-HR	3RD	1.51780	ug/m ³	352460.17	1456297.11	92.00	0.00	92.00	24-07-2025, 24
24-HR	4TH	1.47914	ug/m ³	352460.17	1456297.11	92.00	0.00	92.00	20-08-2025, 24
24-HR	5TH	1.43135	ug/m ³	352460.17	1456297.11	92.00	0.00	92.00	12-09-2025, 24
24-HR	6TH	1.40997	ug/m ³	352460.17	1456297.11	92.00	0.00	92.00	19-08-2025, 24
24-HR	7TH	1.32727	ug/m ³	352460.17	1456297.11	92.00	0.00	92.00	01-06-2025, 24
24-HR	8TH	1.30543	ug/m ³	352460.17	1456297.11	92.00	0.00	92.00	11-06-2025, 24
24-HR	9TH	1.27560	ug/m ³	352460.17	1456297.11	92.00	0.00	92.00	25-06-2025, 24
24-HR	10TH	1.27219	ug/m ³	352460.17	1456297.11	92.00	0.00	92.00	26-07-2025, 24
PERIOD		0.65958	ug/m ³	352460.17	1456297.11	92.00	0.00	92.00	





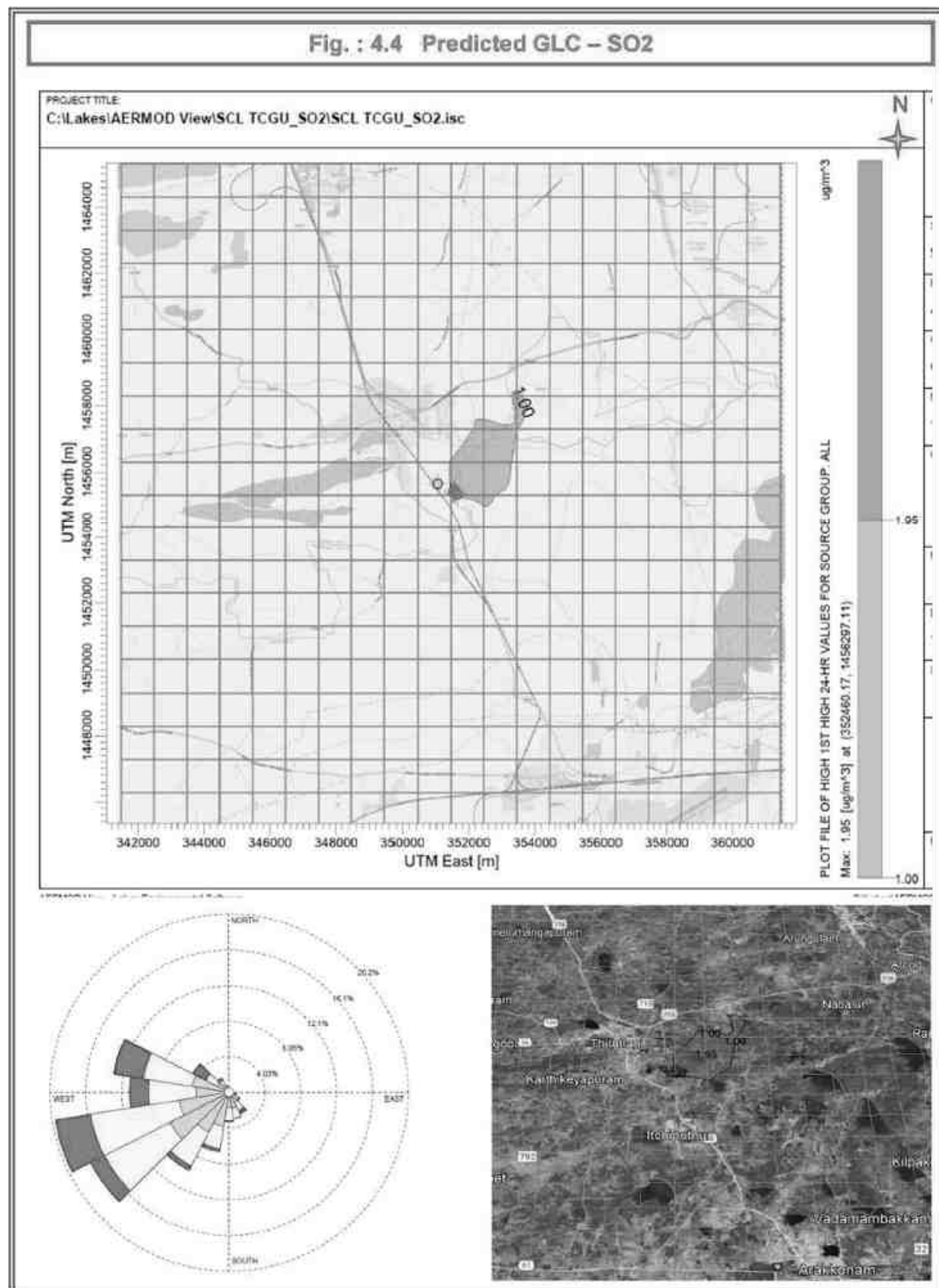




Table : 4.10 Predicted GLCs

Sl. No.	Pollutant	Background Concentration (24-hly.), $\mu\text{g}/\text{m}^3$		Predicted Ground Level Concentration, $\mu\text{g}/\text{m}^3$	Distance from Plant (max.), km	Total on Avg. Concentration, $\mu\text{g}/\text{m}^3$	NAAQ Norms, $\mu\text{g}/\text{m}^3$
		Max.	Avg.				
1	PM _{2.5}	29	22.0	0.22	0.9	22.22	60
2	PM ₁₀	61	46.0	0.75	0.9	46.75	100
3	SO ₂	11	6.9	1.95	0.9	8.85	80
4	NO _x	20	14.7	2.92	0.9	17.62	80

Mitigating Measures :

- ❖ Adequate air pollution control systems viz. Bag Filters, etc. shall be installed in the Cement Mills & Packers to control PM emissions <30 mg/Nm³.
- ❖ Inside the Plant, all materials transfer shall be through closed conveyor belts.
- ❖ Adequate dust extraction systems shall be installed at various transfer points.
- ❖ Fully covered sheds shall be provided for Gypsum & Coal storages.
- ❖ RCC Silos shall be provided for Clinker, Fly Ash & Cement storages.
- ❖ Suction arrangements with suitably designed Bag Filters shall be provided at Silos to arrest the fugitive emissions.
- ❖ Dense Phase Pneumatic Handling System for receiving and conveying Fly Ash.
- ❖ Charter on Corporate Responsibility for Environmental Protection (CREP) Guidelines for Fugitive Emission Control in Cement Industries shall be fully complied.
- ❖ The periodical evaluation for the efficiency performance of Bag Filters shall be carried out.
- ❖ Periodical Ambient Air Quality and Stack Emissions shall be undertaken and the Status Reports shall be submitted to the Authorities as required.

4.3.4 Impact on Ambient Noise Quality

Grinding Mill be the main source of noise. The noise level within the plant at a distance of one meter from the source will be maintained at <85 db(A) level for 8-hours exposure. **Workzone Noise (Leq) Levels** in the Plant Area during will be well within the **OSHA Standard of 85 dB(A) for 8-hours exposure**. However, Leq Noise level at nearest plant boundary will be <55 dB(A) during day times and <45 dB(A) during night times. Thus, the noise levels will be well within the permissible MoEF&CC Norms for Residential Areas.

Mitigating Measures :

- ❖ Noise generating sources would be maintained properly to minimise noise and vibrations.
- ❖ For all fans, compressors etc. vibration isolators shall be provided to reduce noise.
- ❖ Provision of silencers shall be made wherever possible.

- ❖ The operators shall be provided with necessary safety and protection equipment like ear plugs, ear muffs etc.

4.3.5 Impact on Surface Waters Resource and Quality

Nandi River originates from Nandi Hills in Karnataka and flows through Tiruttani. Nandi River irrigates a substantial amount of agricultural land (744.48 acres) in the Tiruttani region. Surface water from an intake well in Nandi River, that flows 1.3 km north of the Site, will be utilised to meet the fresh water demand of 120 KLD after obtaining prior permission from PWD.

4.3.6 Impact on Ground Waters Resource and Quality

The area falls in '**Semi Critical Area**' and Ground Water drawl for industrial purpose is permitted with Rain Water Harvesting measures. Existing Dugwells and Borewells at the Site will be the source for initial Phase. Required **NOC** will be obtained from State PWD and submitted. Alternatively, Desalination Plant supply will also be utilised (purchase water). Domestic Sewage to the tune of 12 KLD will be treated in a 15 KLD Sewage Treatment Plant (STP) based on MBBR Technology (**Fig. 2.5**) and Treated Sewage of 11 KLD, in compliance with **TNPCB Norms for On-land irrigation**, will be fully utilized for Green Belt development & maintenance. Thus, '**Zero Effluent Discharge**' will be adopted/practiced.

Mitigating Measures :

- ❖ Water consumption shall not be more than the consented quantity.
- ❖ No trade effluent shall be discharged from the Plant.
- ❖ The domestic sewages from the Plant shall be treated effectively in the Sewage Treatment Plant so as to meet the TNPCB Discharge Norms and the treated sewage shall be used for Green Belt.
- ❖ '**Zero Effluent Discharge**' shall be practiced.
- ❖ Effective Rain Water Harvesting Systems shall be adopted and harvested water shall be utilized for the industrial needs so as to conserve the fresh water demand.
- ❖ Periodical monitoring for specific parameters shall be done regularly.

4.3.7 Impact on Solid Wastes

The dust collected from the various Air Pollution Control (APC) Measures viz. Bag Filters will be totally recycled in the process for cement manufacturing. Thus, there will not be any process wastes generation from the Unit. STP Sludge (1.0 kg/day) generated from STP will be used as manure for greenbelt. Municipal (organic) solid wastes @ 40 kg/day from the Unit will be composted and used as manure for the Green belt. Inorganic wastes (Non-biodegradable) @ 10 kg/day will be sold to local Vendors.

Used oil / Spent oil @ 25 KL/Annum, Grease & Waste residue (contaminated cotton rags) containing oil @ 2.0 Tonnes/Annum and Empty Barrels @ 100 Nos./ Annum will be generated as per Schedule- I of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016; which will be sold to CPCB/ TNPCB authorized recyclers.

Used Lead acid batteries of about 150 Nos./Annum will be generated which will be stored in the designated storage area and will be disposed-off / sold to registered vendors as per Battery waste Management Rules 2020.

E-Wastes @ 0.15 Tonnes/Annum will be generated after 2 years of start of operation in the form of used electrical equipment, Cables, CFL/ LED Lights, which will be sold to registered vendors as per E- Waste Management Rules, 2016.

Mitigating Measures :

- ❖ It should be ensured that there is no industrial solid waste from the Plant.
- ❖ The dust collected from APC Measures will be consumed in the Plant fully.
- ❖ Solid wastes from STP Plant shall be vermi composted and used as manure for Green Belt.
- ❖ Waste Oil shall be collected and sold to the CPCB/TNPCB Authorised Agency for further treatment & disposal.
- ❖ The municipal wastes shall be collected, transported, treated in a landfill (composting) within the Plant vicinity to make use of it as manure for Green Belt.
- ❖ Used Lead acid batteries will be generated which will be stored in the designated storage area and will be disposed off / sold to registered vendors as per prevalent rules.

4.3.8 Impact on Terrestrial and Aquatic Habitat

The plant will not have any significant impact on surrounding ecology and biodiversity. About 33% green belt has been developed and maintained. No waste water will be discharged outside Plant boundary as well as no natural water course will be disturbed. Therefore, impact on aquatic habitat is not envisaged.

Green Belt, preferably native Tree species, will be developed in 3-Tiers along the boundaries as well as inside the Plant over an extent of **6.46 Ha @ 1,500 trees/Ha**, thus a total of **9,690 Trees** with about **90% Survival Rate**.

Mitigating Measures :

- ❖ Green Belt (33% Coverage) shall be developed and maintained effectively.
- ❖ Local species and fruit bearing trees may also be developed to have a thick canopy cover.
- ❖ The treated sewage shall be used fully for the Green Belt development.

- ❖ There will be **ban on one time use and throw away Plastic usage** in the Plant in compliance with Tamil Nadu, Environment and Forests (EC-2) Department, G.O.(D) No. 84 dated 25.06.2018. SCL will encourage the use of eco friendly alternative such as banana leaf, areca nut palm plate, stainless steel glass, porcelain plates / cups, cloth bag, jute bag etc.

4.3.9 Impact on Socio-economic Environment

About 200 persons will get employment (50 Direct & 150 Contractual) during Operation Phase of the Project. The Project will bring Rs. 838 Crores investment to the Region. There will be a huge positive impact due to the proposal, by way of employment, better socioeconomic conditions, improved local and regional economy, etc. This would be a positive long term impact due to the Project.

As per the Companies Act 2013, Companies should spend at least 2% of the Profit after Tax of the previous year for CSR activities but not lower than 2% of average of previous three years Profit after Tax. SCL will carry out various Social Measures for the local as well as regional populations as per CSR Norms.

As per OM dated 30th Sept., 2020, & OM dated 20th Oct., 2020 Socio-Economic Developmental activities will be formulated on the basis of the issues raised during Public hearing which will be addressed in EMP and implemented in a time bound manner with the start of the industrial activities.

4.3.10 Impact on Occupational Health

An industrial worker may be exposed to Physical, Chemical, Biological, Mechanical and Psychosocial hazards. All efforts will be taken and followed to avoid the accidents and have a good 'Occupational Environment'. Entry Level and Periodical Medical Examinations of the Employees will be undertaken by the Unit. The Medical Reports will be reviewed and evaluated for Occupational Health related problems.

Mitigating Measures :

- ❖ SCL shall provide a safety & healthy working conditions and continually improve the occupational health and safety performance.
- ❖ Its objectives shall be to achieve zero accident and safe work environment, to improve moral and health of all employees and to maintain the emission levels below the norms.
- ❖ SCL shall provide ergonomic support in work comfortness with periodical review.

4.4 Impact Quantification

To quantify the assessed impacts which are qualitatively described in the EIA Matrix, they are assigned certain arbitrary weightages (**Table 4.11**), with (+) for **Positive Impacts** and (-) for **Negative Impacts**.

Table : 4.11 Coefficient Values

Sl. No.	Coefficient Criteria	Coefficient of Impact
1	No Impact	0
2	Insignificant impact-Short Term (I)	1
3	Significant impact-Short Term (S)	2
4	Significant Impact but Control Measures incorporated (P)	3
5	Significant Impact, Long Term & Permanent (R)	4
6	Significant Benefit (Z)	5

To sum up impact source, the coefficients impacts, ranging from 0 to 5 are used in quantification of total impact value for the proposed project (**Table 4.12**). The 'Plus' and 'Minus' values reported are cumulative value of the impact assigned for a particular Parameter under a particular Environmental Component as per EIA Matrix.

Table : 4.12 Impact Quantification – Operation Phase

Envl. Component	Import-ance Value	Project Activity & Coefficient Values									Impact Value
		Built-up Land	Traffic Volume	Air Pollution	Indus-trial Noise	Water Demand	Water Mgmnt.	Solid Waste	Green Belt	Social Measures CSR/CER	
Land Environment	150	-4	-	-1	-	-1	-	-2	+10	-	+300
Air Environment	200	-	-2	-4	-	-	-	-	+4	-	-400
Noise Levels	100	-	-2	-	-2	-	-	-	+2	-	-200
Water Environment	200	-	-	-	-	-2	+3	-	-	-	200
Biological Environment	150	-	-	-	-	-	-	+1	+6	-	+1050
Socio-economics	200	+1	-1	-3	-3	-	-	-	+2	+10	+2800
Total	1000	-									+3750

Notes : - denotes 'No Impact/Impact Not Applicable'.

* : Positive impact due to Backfilling of mined out voids and Reclamation by Afforestation.

The total impact value is **+3,750** favours the implementation of the Proposal. The total impact source is an assertive, positive score. In other words, the **Spatial Impacts due to the Proposal will be low/insignificant and the Project can be implemented**. Also, all indicated mitigative measures for pollution control in **EMP shall be implemented in the Post-Project scenario by the Project Proponent to enhance the positive impacts**.

5.0 Analysis of Alternatives (Technology & Site)

5.1 Technology

5.1.1 Process

There will be **no Clinker manufacturing in this Grinding Unit**. Main process of manufacturing of Cement involves **established process** of inter-grinding of Clinker, Gypsum and other Pozzolana materials in the specified ratio in the Cement Mill for Cement manufacturing of different varieties.

There will be no Kiln operation for Clinker manufacturing in the Unit and thus, there will be **no Waste Heat Recovery Boiler (WHRB)** so as to utilise the hot gases generated from Kiln. Also, with no Kiln operation, **Co-Processing of Hazardous Wastes** or **Alternative Fuel utilisation** are **not possible** in the Unit.

A small quantity of Coal @ 45 TPD will be utilised for Hot Air Generator (HAG) operation to remove the moisture from raw material. **To avoid the usage of Coal, Dolochar** (a carbon-rich solid waste byproduct from the sponge iron industry) @ 25 TPD and **Biomass** @ 25 TPD will be utilised alternatively for HAG.

There will be **no generation of fly ash** from the Grinding Unit. However, fly ash will be utilized as a raw material in manufacturing of PPC & Composite Cement.

5.1.2 Pollution Control

Various cleaner production practices will be in place to control air emissions as well as fugitive emissions from various sources as detailed below :

- ❖ Clinker required for the Unit will be received through railway wagons and the Rail Transportation will be given importance.
- ❖ Waste material Fly ash from thermal power plants will be utilized for cement manufacturing.
- ❖ Adequate Bag Filters for Cement Mills, Packing Plants, Materials handling & storage areas, Materials transportation conveyors, etc.
- ❖ Fully covered Storage Facilities (Covered Sheds, RCC Silos) are proposed for Raw Materials and Products.
- ❖ Road sweepers, vacuum cleaners and water sprinklers will be in operation to maintain better housekeeping and clean environment in the Unit.
- ❖ Internal roads will be paved with concrete to arrest fugitive dusts.
- ❖ Telescopic chute and hatch for the wagon loading spout will be there for truck loading and wagon loading areas respectively to reduce the fugitive emissions.

- ❖ Ground water utilisation will be reduced for possible extent. Alternatively, **Surface Water from nearby Nandi River** or Desalination Plant supply water will be preferred.
- ❖ Usage of treated Sewage from STP will be gainfully utilized and '**zero effluent discharge**' will be maintained.

5.1.3 Energy Conservation

- ❖ LED bulbs will be utilised instead of ordinary electrical bulbs.
- ❖ Solar Street Lights will also be provided for internal Roads.
- ❖ Energy Management System (EnMS) will be in place.
- ❖ SCL plans to have a 10 MWp Solar Plant nearby in future.

5.2 Alternative Sites Considered

Keeping in view the proximity to major markets in Northern Tamil Nadu and Andhra Pradesh States, **as committed to the State Government and in compliance to MoU signed**, the Clinker Grinding Unit has been proposed near Tiruttani. Initially, 3 Locations were identified viz. Tiruttani, Chitteri & Mosur in Tiruvallur District and Ranipet Districts in Tamil Nadu (**Fig. 5.1 & Table 5.1**).

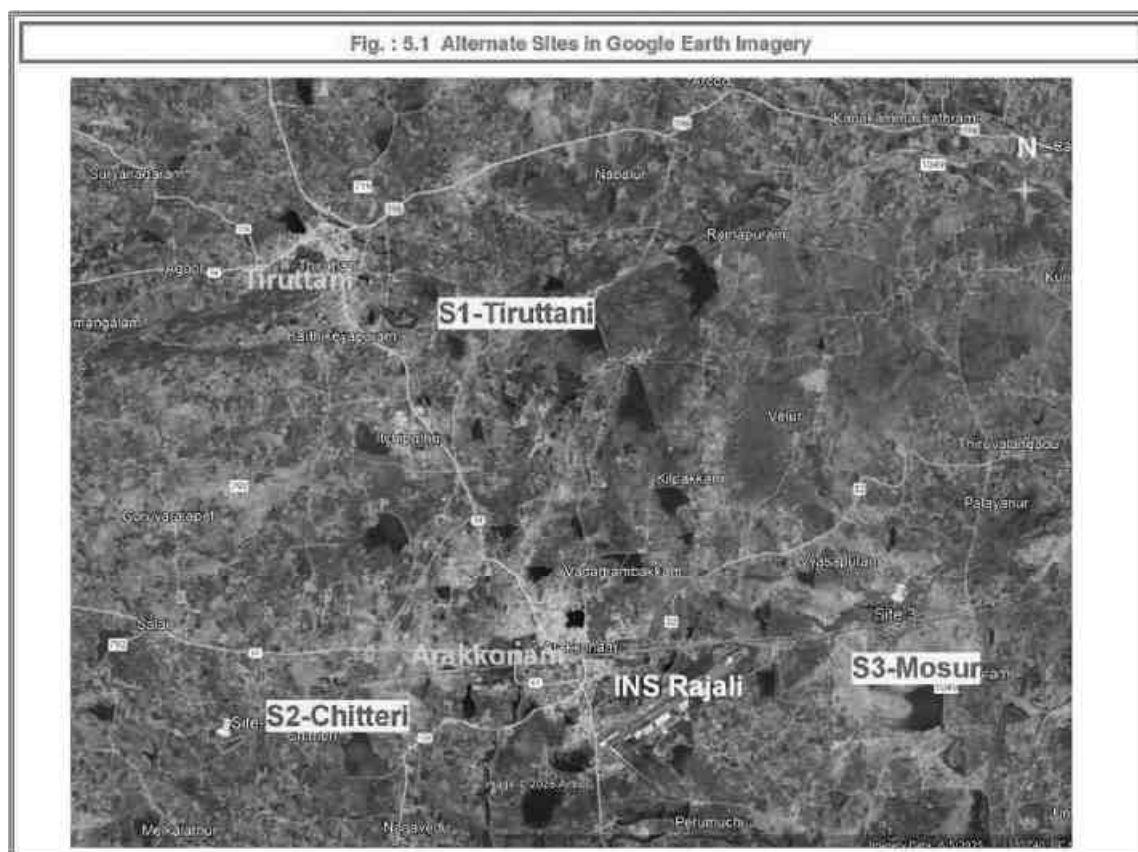


Table : 5.1 Alternative Site Considered for the Project

Sl. No.	Particulars	Site-1 (Option-1)	Site-2 (Option-2)	Site-3 (Option-3)
1.	Location Name	Tiruttani	Chitteri	Mosur
2.	Geographical Coordinates	13°9'36.54" - 13°9'51.65" N & 79°37'29.42" - 79°37'56.66" E	13° 3'47.51"N 79°35'2.13"E	13° 5'30.26"N 79°44'45.17"E
3.	Area (Ha)	19.58	14.00	20.00
4.	Lead distance from Clinker Plants	450 km (min.)	480 km	470 km
5.1	Accessibility:- Road -Ease of Approach to a Highway	Chennai-Tirupati NH-716 runs at 2.6 km connected with Tiruttani Bypass to the Site	Sholingur SH-61 @ 2.5 km	Thiruvallur MDR @ 3.0 km
5.2	Rail -Distance from the nearest Railhead to connect with railway siding	S Rly. Arakkonam-Tirupati Section BG line adj. in west. Railway siding Take-off can be from Icchiputur (3 km)	S.Rly. Chennai-Katpadi Section main BG line is 1 km from the Chitteri station and situated next to UltraTech Arakkonam GU.	S.Rly. Chennai-Katpadi Section main BG line at Mosur. Take-off can be planned from Trivalangadu Rly. Stn (1.5 km)
5.3	Airport / Defence Installation	INS Rajali (11.4 km in SSE)	INS Rajali (9.1 km in E)	INS Rajali (3.8 km in SW)
6	Forest Land	No Forest land	No Forest land	No Forest land
7	Waterbody	Seasonal Nandi River @ 1.3 km in N	Kallar River @ 0.3 km in w	Lake at a distance of 80 m in N

Site selected for the Project shall be environmentally and techno-economically feasible. The major criteria considered for locating the proposed Grinding Unit are :

- ✓ Contiguous site of 15-20 Ha having good load bearing capacity for accommodating plant, railway siding, developing of greenbelt with all amenities for the proposed project.
- ✓ Site with minimum clearance of vegetation, water bodies, non-involvement of any forest area, minimum or no disturbance to habitation, etc.
- ✓ Site with very good Road and Railway networks.
- ✓ Area free from environmental sensitive areas.
- ✓ Nearest Railway Line for raw materials and finished product transport.
- ✓ Availability of adequate ground water and / or perennial source of water in the vicinity.
- ✓ Social infrastructure viz. banks, post office, schools, markets, community centre, housing, local transport and communication facilities, etc.

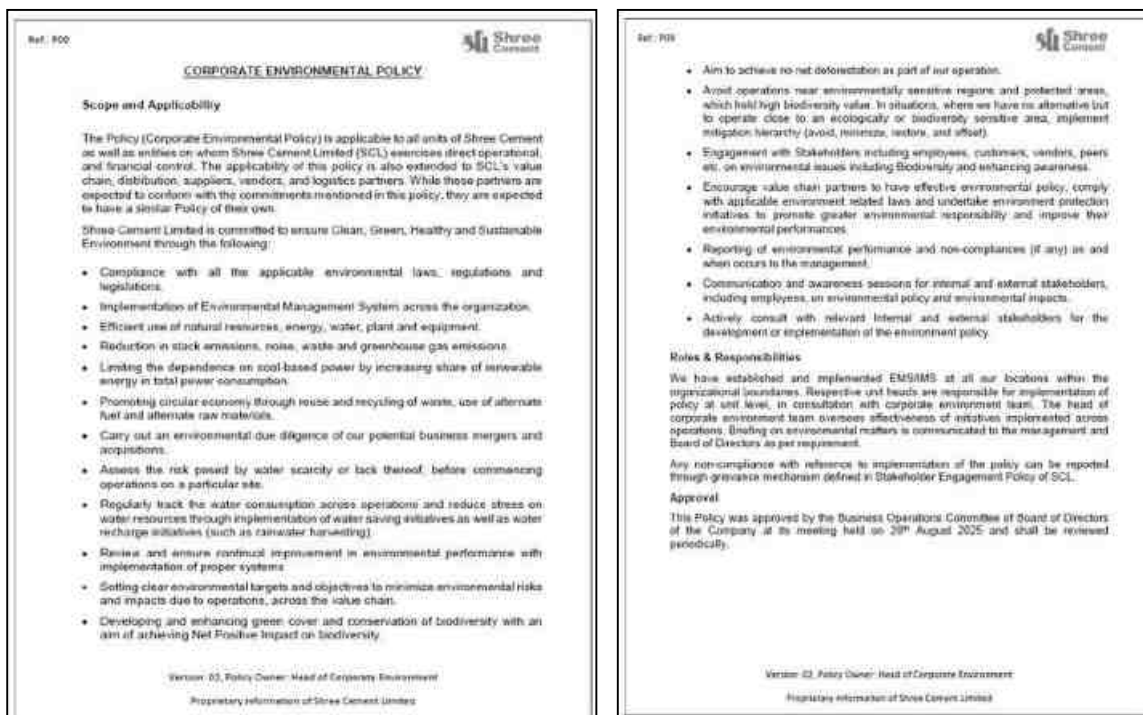
The identified **Site-1 is environmentally and techno-economically feasible Site** for the Project.

6.0 Environmental Monitoring Programme

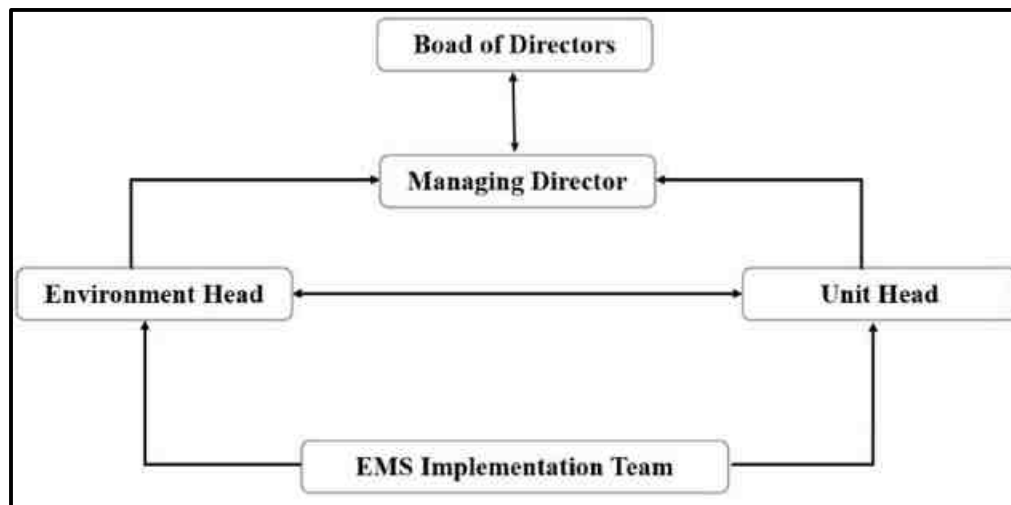
6.1 Environment Cell and Compliances

To achieve the goals of EMP and compliance to Environmental Norms, it is necessary to formulate Corporate Environment Policy and Environmental Management Cell (EMC) in the Unit. SCL has well laid Corporate Environmental Policy adopted by the Board of Directors indicating clear framework to become Environmentally Sustainable organization. There is a **Hierarchical System** in the company to deal with the environmental issues and for ensuring compliance with the environmental clearance conditions. Any non-compliance/violations of environmental norms and corrective actions taken will be reported by the Unit Head to MD and to the Board & Shareholders and corrective actions will be taken. The **Corporate Environment Policy** of SCL is given in **Plate XII**.

Plate : XII Environment Policy of SCL



SCL TCGU will have a full-fledged Environmental Management Cell (EMC) for environmental monitoring and management. EMC team will take care of pollution monitoring aspects and implementation of control measures. A group of qualified and efficient engineers with technicians will be part of the EMC. Structure of EMC is given as **Plate XIII**.

Plate : XIII Proposed EMC**Structure of EMC**

The responsibilities of the EMC include the following:

- Implementation of the mitigation measures as suggested in EIA / EMP Report.
- Compliance with guidelines and statutory requirements.
- Coordination with statutory bodies, functional groups of the unit, Corporate
- Procurement and commissioning of Pollution Control/Monitoring Equipment.
- Environmental monitoring and evaluation of results.
- Keeping of records environmental monitoring for quality check.
- Ensuring that prescribed standards are maintained.
- Timely Calibration of Pollution Control Equipment and facilities.
- Specification and regulation of maintenance schedules for Pollution Control Equipment.
- Ensuring greenbelt development, plantation & its maintenance.
- Organizing meetings of the Environmental Management Committee.
- Regular environmental review and performance appraisal (Internal).
- Organizing Environmental, Energy and Water Audits by independent agencies.
- Coordination with the vendors dealing in waste supplies and disposal.
- Ensuring that the waste handling and disposal is carried out as per prescribed conditions.
- Conducting regular training programmes on various environmental requirements especially sustainable development, climate change, environmental monitoring etc.
- Reporting of compliances and non-compliances (if any) to management and other stakeholders.

6.2 Performance Monitoring Schedule of APC Equipments

Pollution control equipment maintenance includes regular inspections, preventative maintenance and shutdown maintenance activities. Bag filters are one such air pollution control equipment. The efficiency of the systems is affected by various factors like.

- Air to cloth ratio
- Air flow
- Air suction
- Velocity of air.
- Correct filter media.

Bag filter inspection will be carried out in well planned and scheduled manner with a dedicated Team. The following check list (**Table 6.1**) will be followed for inspection and routine maintenance of the bag filters. Records will be maintained according to the activities carried out in various sections and bag filters.

Table : 6.1 Bag Filters Maintenance – Check List

Sl. No.	Check Points	Daily	Weekly	Monthly	Annually
1	Visually inspect baghouse /Bag filter.	✓			
2	Check the stack /visually inspect dust.	✓			
3	Check Differential pressure.	✓			
4	Check Hopper discharge/Level indication.	✓			
5	Check bag filter bags		✓		
6	Check Purging sequence.		✓		
7	Check fan running condition.		✓		
8	Inspect all purge valves and connecting hoses.			✓	
9	Check bag filter discharge RAL.			✓	
10	Check Bag filter tube sheets.				✓
11	Check Bag filter casing welding condition.				✓
12	Check connecting ducts				✓
13	Check for hopper and casing wear.				✓
14	Check drive condition.				✓
15	Check cages and purging pipe condition				✓

6.3 Post Project Environmental Monitoring

Post-project monitoring will be carried out as per conditions stipulated in Environmental Clearance by SEIAA-TN and Consents issued by TNPCB. **Continuous online stack monitoring equipment/system** for PM will be installed at Cement Mill stack and the online real time monitoring data will be transmitted to TNPCB Care Air Centre & CPCB servers continuously. **Three (3 Nos.) Continuous Ambient Air Quality Monitoring Stations (CAAQMS)** will be installed in the Plant for transmission of real time monitoring data to to TNPCB Care Air Centre & CPCB servers round-the-clock. Data on Stack Emissions and Ambient Levels of PM_{2.5}, PM₁₀, SO₂ & NO_x will also be displayed at the Main Gate for general public view. Further Online Continuous Effluent Monitoring (CEM) System is installed in the STP and it is connected to the TNPCB Water Watch Centre.

Ambient Air, Noise, Water & Soil Quality : Periodical monitoring of the ambient air quality as per NAAQ Norms, fugitive emissions, stack emissions, noise levels (at boundaries), water (once in a season) and soil quality (once in a season) by an accredited Lab/Third Party shall be undertaken. The periodical status reports shall be submitted to TNPCB monthly and SEIAA-TN & Integrated Regional Office, MoEF&CC-Chennai as Half Yearly Status Reports.

Green Belt has to be developed with 33% coverage @2500 Trees/Ha. Survival rate of green belt developed shall be monitored on periodic basis to ensure that damaged plants are replaced with new plants in the subsequent years.

Social Parameters : SCL will estimate the demand of infrastructure (Physical & Social) in the nearby area of the Unit and appropriate developmental activities will be undertaken under for various rural developmental programmes and initiatives for the up-liftment of the nearby communities from time to time.

The frequency of monitoring is given in **Table 6.2**.

Table : 6.2 Post-Project Monitoring

Activity	Aspect	Monitoring Parameter	Location	Frequency	Responsibility
Construction Phase					
Construction Activity	Ambient Air quality Monitoring	PM ₁₀ , PM _{2.5} , SO ₂ and NO _x / 12 parameters as per NAAQS, 2009	At the Site	Quarterly	Third Party
	Ambient Noise Levels	Leq Day & Night	Boundaries	Quarterly	Third Party

Activity	Aspect	Monitoring Parameter	Location	Frequency	Responsibility
Operation Phase					
Manufacturing process, Storage, Handling, Loading-Unloading, Transportation activities	Ambient Air quality Monitoring	PM10, PM2.5, SO ₂ and NO _x / 12 parameters as per NAAQS, 2009	Plant Area 3 Locations	Continuous Online Monitoring Systems	Environmental Engineer
			Around the plant in 120° angle at dominant and predominant locations	24-hourly continuously for 2 days/week for 4 weeks in a month for whole year	Third Party
Stack Emission Monitoring	Cement Mill Stack	PM	Stack Bag House	Online Continuous Emission Monitoring	Unit Head & Environmental Engineer
	Cement Mill & Packer Stacks	PM	Bag Filters	Once in a Month	Third Party
	APC Equipment Efficiency	Performance of APC Equipments	All Main Stacks	Once in a Year	Environmental Engineer
Storage, Handling, Loading-Unloading Areas	Fugitive emission	PM	Upwind & Downwind locations of Raw Materials Storages	Quarterly and as per CPCB Guideline	Third Party
Water Quality	Water Quality	Potability Parameters	Raw Water	Quarterly	Third Party
Wastewater Quality	Waste Water Quality Monitoring – Raw & Treated Sewage	pH, BOD, COD, Oil & Grease, Cl, TSS, Fecal coliforms, Free Ammonia	Sewage Treatment Plant	Monthly	Third Party
RO/ WHRS	Neutralisation tank	pH, TDS, TSS, BOD, COD, Oil and Grease, etc.	Neutralisation Tank	Monthly - as per CTO	Third Party
Noise Level	Operation of machineries	Day & Night dB (A)	Work zones & Plant Boundaries	Monthly	Third Party
Medical Checkup	Employees /workers	Spirometry, Audiometry, Biochemical Parameter (Urine, Blood), ECG, Vision Test and Chest X-ray	Health Centre / Dispensary	Yearly / Six Monthly or as per Factories Act	OHC

7.0 Additional Studies

7.1 Decarbonisation Programme

Cognizant of our nation's commitment and the sectoral requirements, SCL is striving to decarbonize its operations by improving resource efficiency and by setting carbon intensive targets. SCL aims to make processes across its value chain more sustainable and is diligently working to achieve sectoral roadmap for 'Net Zero Concrete' by 2050.

SCL is meeting around 56% of power requirement through green energy sources. With the new investment in renewable energy, company aim to enhance the share of green energy in total power consumption significantly. This will facilitate in raising the green power footprint as part of sustainability goals and help meeting GHG emission reduction targets.

7.1.1 Action Plan to Reduce its Carbon Intensity

SCL aims to enhance the **Alternative Fuel Rate (AFR)** progressively within upcoming years and have imported technology from Denmark and Italy to enhance the same. By using AFR, it is envisaged that the CO₂ emission will be reduced by further 8 kg/MT Clinker.

SCL is in process to explore feasibility of another sustainable alternative to OPC i.e., **Limestone Calcined Clay Cement (LC3)**. LC3 cement can help reduce up to 40% CO₂ emission as compared to OPC and contribute towards sustainable growth.

SCL is evaluating emerging technologies in area of product chemistry, energy storage, new forms of energy and capture technologies.

7.1.2 Glasgow COP26 Climate Submit

Action Plan of SCL to achieve Five Commitments announced by Hon'ble Prime Minister of India during COP 26 Climate Change Summit at Glasgow :

Commitment-1 : By 2030, India will bring its non - fossil energy capacity to 500 GW.

Implementation Status : As a part of Renewable Energy, SCL enhanced its green power generation capacity from 263.1 MW in FY 21-22 to 581.94 MW in FY 24-25 (including Waste Heat Recovery System, Wind and Solar). Out of 581.94 MW, 56.30 MW is from Wind Energy, 283.14 MW from Solar Energy and remaining 242.50 MW energy from WHRS.

Commitment-2 : By 2030, India will fulfil 50 percent of its energy requirements with renewable energy.

Implementation status : Presently, SCL is meeting around 56% of power requirement through green energy sources. With the new investment in renewable energy, company aim to enhance the share of green energy in total power consumption significantly. This will facilitate in raising the green footprint as part of sustainability goals.

Commitment-3 : India will reduce one billion tonnes of the total projected carbon emission between now and 2030.

Commitment-4 : By 2030, India will bring its economy's carbon intensity down to 45%.

Implementation Status : SCL has GHG emission reduction targets - validated by the Science-Based Targets initiative (SBTi). Company aims to reduce **Scope-1 GHG intensity by 12.7% by 2030** from the base year 2019. Committed to reduce **Scope-2 GHG intensity by 27.1% by 2030** from the base year of 2019.

Commitment-5 : India will achieve the targets of net zero emission by 2070.

Implementation Status : SCL strives to follow sectoral roadmap to achieve net zero concrete by 2050.

7.1.3 Single Used Plastic Waste

There will be **ban on one time use and throw away Plastic usage** in the Plant in compliance with Tamil Nadu, Environment and Forests (EC-2) Department, G.O.(D) No. 84 dated 25.06.2018. SCL will encourage the use of ecofriendly alternative such as banana leaf, areca nut palm plate, stainless steel glass, porcelain plates / cups, cloth bag, jute bag etc.

7.2 Hazards Identification & Risk Analysis

Hazards Identification & Risk Analysis (**HIRA**) is the tool to identify the potential Hazards due to the industrial activities and assessment of the Risks to propose an Emergency Preparedness Plan (EPP). The major elements of the Risk Assessment include :

- ❖ **Hazard & Operability (HAZOP) Studies** for identification of hazards and vulnerable sections of the storage.
- ❖ **Consequence Analysis** for various release scenarios.
- ❖ Presentation of **Damage Contour** for worst damage from fire or explosion.
- ❖ Risk Assessment and
- ❖ Provision of guidelines for **Emergency Preparedness Plan** based on the findings.

The study includes :

1. Hazard Identification and Visualisation of Credible Accident Scenarios :

- ❖ Study of Plant Layouts and Process involved in the Hazardous Materials storage and handling.
- ❖ The inventory of stored materials.
- ❖ Identification of hazards.
- ❖ Analysis of past accident data to develop the credibility of worst accident scenarios and
- ❖ Visualization of Credible Accident scenarios (CAS).

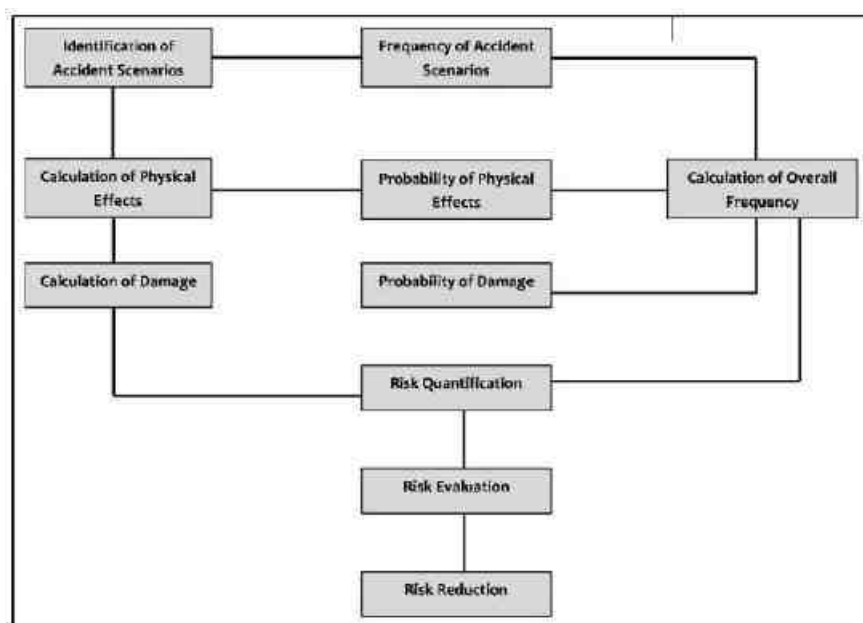
2. Analysis of CAS

Analysis of identified CAS and quantification of effects pertaining to the cases of :

- ❖ Outflow and releases
 - ❖ Heat radiation
 - ❖ Explosion
 - ❖ Application of damage criteria for heat radiation and explosion.
 - ❖ Presentation of damage contours for worst damages from fire or explosion.
 - ❖ Effect of the proposed project on neighboring areas (including cascade effects if any).
3. Risk Assessment based on the individual Risk Contour Plots and
4. Emergency Preparedness Plan and other safety recommendations based on the studies.

Activities requiring assessment of risk due to occurrence of most probable instances of hazard and accident are both onsite and off-site (**Plate XIV**).

Plate : XIV Risk Analysis Strategy



HIRA is a collective term that encompasses all activities involved in identifying hazards and evaluating risk at facilities, throughout their life cycle, to make certain that risks to employees, public, or environment which are consistently controlled within the organization's risk tolerance. Possible hazards in Grinding Unit are as follows:

- ❖ Physical Hazards
- ❖ Events pertaining to Manufacturing Process
- ❖ Fire
- ❖ Electrocution
- ❖ Explosion
- ❖ Natural & Manmade Hazards
- ❖ Noise and Vibration

These Hazards mainly impact on those working within the industry, although health impacts can also be envisaged on local communities. The potential hazardous areas and the likely incidents with the concerned area have been enlisted in **Table 7.1**. Details of Possible Hazards, their Cause and Safety measures to be adopted are given in **Table 7.2**.

Table : 7.1 Possible Hazardous Locations

Sl. No.	Hazardous Area	Likely Incident
1	Electrical rooms	Fire and electrocution
2	Transformer area	Fire and electrocution
3	Cable tunnel	Fire and electrocution
4	Storage yard	Sliding and fire
5	Grinding unit	Injuries
6	Chimney	Air Pollution
7	Fuel storage area	Fire and spillage

Table : 7.2 HIRA and Safety measures to be Adopted

Sl. No.	Possible Hazard	Cause of Hazard	Safety Measures
1	Physical Hazards • Falling / impact with objects. • Hot Surface burns • Transportation • Contact with allergic substances	• Slips, Trips and fall. • Contact with falling / moving objects and Lifting / over exertion. • Contact with, or capture in, moving machinery. • Maintenance of equipment, including mills, mill separators, fans,	• It will be personally ensured that the equipment with moving parts are de-energized, isolated and locked/tagged out. • Work permit for work at height • Fall protection system will be used by workers working at an elevation more than or equal to 6 feet.

Sl. No.	Possible Hazard	Cause of Hazard	Safety Measures
		coolers, and belt conveyors.	- PPEs will be provided to the person dealing with flame welding, cutting or brazing. - Safety helmets will be provided to workers for protection from any falling accidents. - Barriers will be provided to prevent slipping or being knocked off the edge of a structure. - Danger areas will be marked clearly with suitable warning signs to avoid any accident. - Proper medical care will be provided at the project site in case of any accidental issues.
2	Events Pertaining to Manufacturing Process		
i.	Handling of Cement	Cement is a fine dust requiring proper care and handling during material transfer.	Proper care will be taken while handling, storage and packing of Cement.
ii.	Handling of Fuel – HFO / Coal / Dolochar / Biomass	- Material Spillage. - Flammable, ignitable and reactive property of fuel.	- Storage area will be designed to withstand the load of material stocked and any damage from the material spillage. - Adequate fire - fighting systems will be provided for the storage area, along with the areas in the facility.
iii.	Electrocution	Carelessness during working hours, Damage of equipment/tools	- Proper care will be taken while working on such equipment. - Proper earthing of panel will be checked. - Correct Fire Extinguisher will be available at site.
iv.	Fire	Chemical Spillage, Gypsum Electrical rooms, Transformer area, Empty bag go-down, Diesel Storage tank and Flammable gas cylinder storage area.	- Suitable fire extinguishers, fire hydrant system and fire buckets will be provided for fighting the fire during emergency. - Employees working in such areas will be imparted training for first aid firefighting to

Sl. No.	Possible Hazard	Cause of Hazard	Safety Measures
			prevent/extinguish the fire at initial stage.
V.	Explosion	Heat and Pressure load due to damage in equipment/ tool	• Proper isolation of system. • All cylinders will be secured. • 8 Flash back arrestor will be used between the cylinder & torch. • Hoses in good condition. • Proper PPE. • Correct Fire extinguisher will be available at site. • Deployment of Experienced personnel. • Inspect the cylinders & hoses before starting the job.

High Risk Categories and Preventive Measures are given in **Table 7.3**.

Table : 7.3 High Risk Categories and Preventive Measures

High Risk Categories	Prevention
Contractors	Contractor Safety Management
Young/Temporary Employees	Special Safety Induction Training
Direct Causes :	
Traffic and Mobile Plant	Driver Training
Falls from Heights, Objects falling from Heights	Safety Procedures for Work at Heights, Overhead Protection, in house training
Caught in Starting/Moving Equipment	Plant Isolation Procedures, Machine Guarding

7.3 Disaster Management Plan

Disasters are off natural as well as man-made. **Natural Disasters** include Earthquakes, Floods, River Erosion, Cyclones, Tsunami, Landslides, Fires, etc. and the **Man Made Disasters** include Nuclear, Chemical, Mines, Biological, Cyber Terrorism, Environmental Disasters, etc. In order to better protect the Factory from any hazards, proactive approach has been applied in all operations (**Table 7.4**). To deal with an emergency, the arrangement for immediate deployment or appointment of key personnel and their specific duties are also brought out.

Objectives : The Disaster Management Plan is aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and salvage operations in the

same order of priorities. In effect, it is to optimize operational efficiency to rescue rehabilitation and render medical help and to restore normalcy. For effective implementation of the DMP, it should be widely circulated and personnel training through rehearsals/drills. The objective of the Industrial DMP is to make use of the combined resources of the Plant 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 news media
- ❖ Secure the safe rehabilitation of affected area.
- ❖ Preserve relevant records and equipment for the subsequent inquiry into the cause and circumstances of the emergency.

Table : 7.4 Natural and Manmade Calamities & Mitigation Measures

Sl. No.	Calamity / Activity	Mitigation Measures
1	Earthquake	✓ Construction of buildings as per IS 1893 Part 4:2005 Criteria for Earthquake Resistant Design of Structures (Industrial Structures Including Stack-Like Structures) and IS 13920:1993 Ductile Detailing of Reinforced Concrete Structures Subjected to Seismic Forces to minimize the risk of Seismic loads. ✓ Identification and Constitution of Emergency Response Team. ✓ Equipping the Control Centers with Communication facilities, emergency vehicles, emergency contact and supplies, etc. ✓ Assembling of persons at emergency assembly points will be ensured during emergency ✓ Shut down of plants will be ensured and first aid to victims will be provided.
2	Storm and Lightning	✓ Regular contacts will be established with local meteorological department. ✓ The factory operations installations will be appraised. ✓ Availability of tools, batteries, non-perishable other materials that might be required will be checked. ✓ All the systems will be shut down; metallic sheets, loose material, empty drums etc., will be secured properly. ✓ Drainage Systems will be flushed down properly. ✓ Do not seal the office completely as the suction created by the difference in atmospheric pressure inside and outside can rip open a window or door by breaking window glass panes. ✓ Take special precautions in driving vehicles since the under-pavement could cave in due to the weight of automobile.

Sl. No.	Calamity / Activity	Mitigation Measures
3	Flood	✓ Nallahs will be monitored by supervisors in all shifts.
4	Air Raid	✓ Air raid warning will be obtained from District Emergency Authority or Defense Authorities, during which total blackout of the entire complex should be considered. ✓ Aviation lights, Street lights, Plant lightning will be switched off. ✓ Brown curtains will be provided for all windows inside building.
5	Food and Water Poisoning	✓ Medical Officer will be immediately informed by senior most person available at site. ✓ Adequate inventory / supply of medicines, saline water etc. will be maintained and Impart awareness as well as training regarding food / water poisoning will be provided. ✓ Contaminated Source will be identified and seized to avoid its further circulation and alternate supplies will be arranged. ✓ Detailed epidemiological investigation to identify cause of contamination will be conducted.

7.4 Emergency Preparedness Plan

To deal with the emergencies, Emergency Plan has been prepared and submitted in **Table 7.5**.

Table : 7.5 Emergency Preparedness Plan

Sl. No.	Disaster/ Activity	Area	Mitigative steps to be adopted
1	Fire and Explosion	Stores	✓ Suitable fire extinguishers, fire hydrant system and fire buckets will be provided for fighting the fire during emergency. ✓ Stores staff will be imparted the training for first aid firefighting to prevent/extinguish the fire at initial stage.
		Packing Plant	✓ The packing plant will be declared as "No Smoking of Fire" area. ✓ Suitable fire extinguishers and fire hydrant system for fire- fighting in emergency situation. ✓ Permission for working with welding/gas cutting in that area. ✓ Adequate drainage to immediately drain out the water used in fire- fighting to avoid water damage and the sheds will be properly ventilated.
		Silos	✓ Structural Soundness of silos will be ensured and filling up of Silos will be avoided. ✓ Installation of lighting arrestor at the top of silos bucket elevator.
		Electrical Transformer	✓ Installation of predictive interlocks to automatically give an alarm/trip the system. ✓ In case oil pressure inside the transformer tank increases, buchholz relay provided will sound an alarm

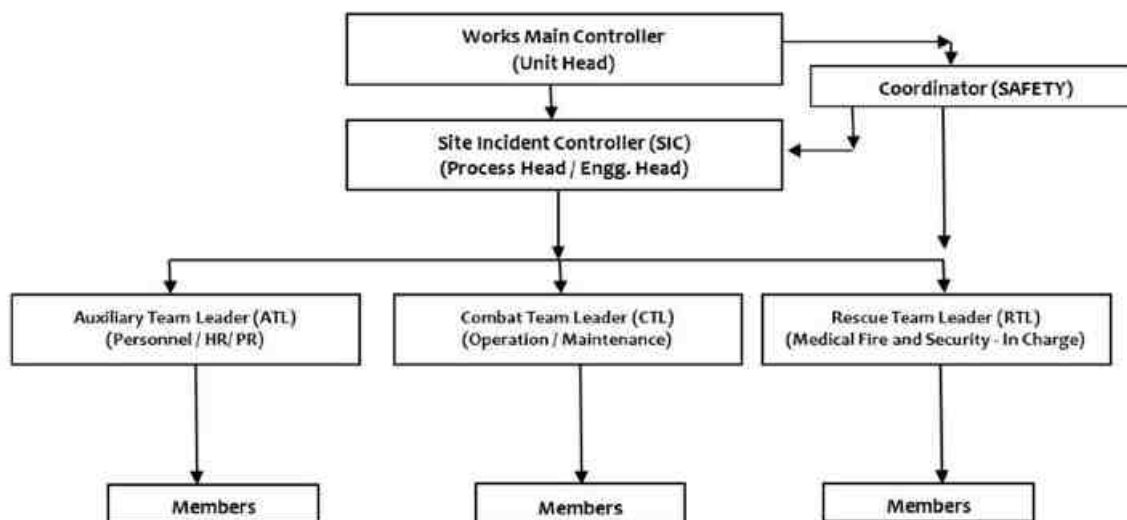
Sl. No.	Disaster/ Activity	Area	Mitigative steps to be adopted
			and if necessary, will trip the transformer and thus avoid oil explosion. ✓ A diaphragm provided at the bottom of explosion vent to vent out high oil pressure whenever pressure is increased beyond limit. ✓ Fire extinguishers and sand buckets provided in the transformer room for firefighting due to explosion or during an emergency.
		Transformer Yard and HT/LT Sub-Station	✓ Transformers separated by brick wall up to height of transformer. ✓ Soak pits of suitable capacity to collect the leaked transformer oil in case of fire and explosion. ✓ Periodic maintenance of all electrical machinery apparatus ✓ In case of fire in HT transformer, first of all switch off 33/132 kV Incomer breaker ✓ In case of LT transformer fire/explosion, switch off the transformer feeder from HT line ✓ Soundness of insulation, proper ventilation and earthing arrangements will be checked regularly by department. ✓ Emergency control room will be Informed for fire brigade and other actions
		Electrical Cable Tunnels	✓ Provision of suitable fire extinguishers for fire- fighting. ✓ Good housekeeping to avoid any fire rise. ✓ Exhaust fans to avoid suffocation.
		Covered Conveyor Belts	✓ Provision of suitable fire extinguishers for each transfer towers for firefighting during emergency and Suitable fire equipment will be kept at hand during gas cutting / welding. ✓ Full cord system will be provided throughout its length to stop it in any emergency and preventive checks on frictional parts like drum and lagging of drum will be done.
2	Injury to person and damage to equipment	Failure of Lifting Tools and Tackles and Pressure Vessels	✓ All lifting tools and tackles and pressure vessels will be tested/examined by competent person authorized by chief inspector of factories, Govt. of Tamil Nadu as per statutory requirement and at defined frequency. ✓ Safe working pressure range will be maintained in the Air receiver tank/pressure vessels. ✓ Safe Working Load will not be violated while using cranes, hoists, ropes, chains and other lifting tools and tackles, only authorized personnel will be allowed to handle the same. ✓ Regular and periodic maintenance will be done.
3	Falling from Height	Any Working Area	✓ Information will be given immediately to Emergency Control Room/ OHC. ✓ Information will be given immediately to the Job Execution In-charge. ✓ Rescue team member will rush at site with rescue kit.

Sl. No.	Disaster/ Activity	Area	Mitigative steps to be adopted
			✓ Emergency team will be allotted to act as per Emergency organization structure. ✓ Rescuers to access the probable risk for rescuing the victim. ✓ Rescuer has to use double fall protection as precaution (One rope grab falls arrestor/Winch fall arrestor and another is descender). ✓ Rescuer to use PN 56 model full body safety harness for rescue operation. ✓ Victim will be rescued by trained rescuer only.
4	Engulfment in Stockpile	Stockpiles	✓ Pedestrian to maintain a safe distance from stock pile and take permission before climbing on stock pile. ✓ If a person buried under stockpiles, top the job immediately and related equipment by pushing emergency button if applicable, Cordon off the affected area, take out the material with the help of section in-charge, rescue the affected persons and send to hospital.

7.5 Onsite Emergency Plan

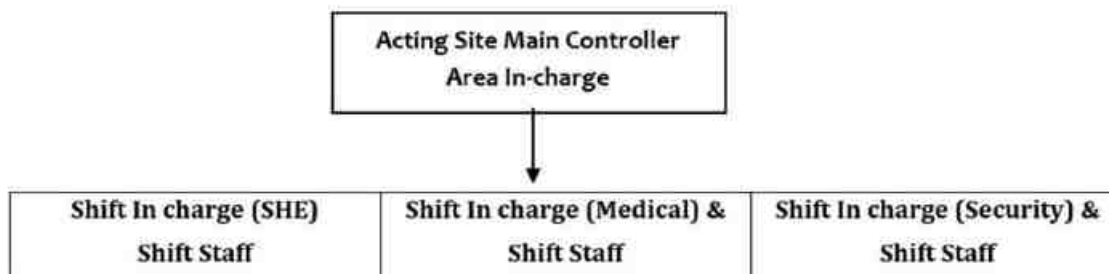
The Onsite Emergency Management Plan is a master plan which contains the emergency organization structure, responsibilities of key members, communications mean and emergency response strategies to control a range of major incidents (**Plate XV**).

Plate : XV Emergency : Organization and its Responsibilities



During silent hours the duty team will carry out their functions with available manpower until full-fledged organization is available at the site (**Plate XVI**).

Plate : XVI Emergency during Silent Hours: Organization and its Responsibilities



7.5.1 Responsibilities and Duties of Personnel

Emergency organization structure, responsibilities of key members, communication means and emergency response strategies to control a range of major incidents are given in **Table 7.6**.

Table : 7.6 Key Members & Responsibilities

Sl. No.	Designated Role of Emergency Command Structure	Responsibilities
1	Site Main Controller	✓ Exercising direct operational control of those parts of the work outside the affected area. ✓ Maintaining a speculative continuous review of possible developments and assess these to determine most probable course of events. ✓ Direct the shutting down of equipment and evacuation of areas in consultation with the site incident controller and key personnel. ✓ Communicate with Chief Officers of the fire and police services and with the experts on fire, safety, health etc. provide advice on possible effects on areas outside works. ✓ Ensuring rehabilitation of affected areas. ✓ Communication to Shree Cement Limited followed by a written report about the accident, including mitigation measure taken.
2	Site Incident Controller (SIC)	✓ Assessment of Scale of emergency and activation of subsequent major emergency procedure. ✓ Ensuring safety of personnel. ✓ Minimizing the damage / loss of equipment, property, material and environment. ✓ Reporting all significant development to the site main controller and providing advice and

Sl. No.	Designated Role of Emergency Command Structure	Responsibilities
		information, as required, to the senior officer of the Fire Brigade in case of fire. ✓ Ensure that the outside emergency services and key personnel are called in. ✓ Maintenance of record of emergency Chronology wise. ✓ Direct instructions about the “ALL CLEAR” communication through mobile phones and walkie-talkie.
3	HR & ADMIN – Head	✓ Handling the evacuation of personnel from emergency situation to Assemble point. ✓ Taking Head count of the Evacuated personnel. ✓ Assisting the Site Controller in liaise with the local emergency authorities. ✓ Managing traffic movement towards the incident area and clearing the way to Emergency vehicles.
4	Electrical – Head	✓ Heading the shutdown and arrangement to stop the power supply to the site after receiving the instructions from Incident Controller. ✓ Resuming of Power Supply to site after receiving “ALL CLEAR” instruction from the Incident Controller.
5	Mechanical – Head	✓ Heading the heavy equipment and arranging proper access at site after receiving instructions from Incident Controller. ✓ Resuming the tool tackles (welding machine, cutting machine, grinding machine, etc.) at site after receiving “ALL CLEAR” instructions from Incident Controller.
6	Fire Fighting Team	✓ Immediately reporting at the site after receiving communication from Incident Controller. ✓ Controlling the fire and Gas leakages.
7	First Aid Team	✓ Immediately reporting at site after receiving communication from Incident Controller. ✓ Removing the casualties from incident area to the safe place and providing immediate first-aid to the casualties.
8	Area in-charge of Emergency Affected Area	✓ Immediate movement to the site of incident for conformation and assessment of situation. ✓ Notifying the nature of emergency to fire station and security office to inform SIC and concerned persons. ✓ Ensuring that all hot jobs including welding, cutting, grinding, chipping, open fire heating, etc. are stopped in the area. ✓ He will be in constant touch with emergency post. ✓ The person can ask for spare manpower from other area in-charge of unaffected areas.

Emergency Control Post : Emergency control post will be set up at the time of any major emergency, by the in-charge of the concerned area, for team leaders of assistance groups, from where the control and directions of the emergency operation is safe. Communication media e.g. telephone will also be provided at the control post.

Assembly Points : The assembly points will be provided so as to cover the whole site area with the consideration of wind direction, nearby paging facility and more than one road approach on each point.

Communication System : Communication is crucial factor in handling an emergency. It is the practice at many plants that any employee can raise an emergency alarm, so allowing the earliest possible action to be taken to control the situation. The possible communication can be given by

- ✓ By telephone,
- ✓ By shouting,
- ✓ By messenger,
- ✓ By walkie-talkie

Fire Control : Concerned SHE In-charge will inform the Fire Station through the quickest way possible for quick response and Security Office for passing of the information to the concerned persons and services :

- ✓ Fire Station
- ✓ Medical Centre / Medical In-charge
- ✓ Plant head
- ✓ SHE Staff
- ✓ Security Staff.

List of Extinguishers to be used for both Site Specific and Case Specific are given in **Tables 7.7-7.8**.

Table : 7.7 List of Extinguishers - Site Specific

Sl. No.	Name of Site	Type of Extinguisher
1	Cable galleries	CO ₂ and Foam type, Dry chemical powder
2	High voltage panel	CO ₂ and Foam type, Dry chemical powder
3	Control rooms	CO ₂ and Foam type, Dry chemical powder
4	MCC rooms	CO ₂ and Foam type, Dry chemical powder
5	Pump Houses	CO ₂ and Foam type, Dry chemical powder
6	Guest houses and offices	Dry chemical powder, foam type
7	Godown	Foam type
8	Bunkers, Silo, enclosed dust collector	CO ₂ type, N ₂ type, automatic sprinkler, fixed spray nozzle (unless water reactive)

Table : 7.8 List of Extinguishers - Case Specific

Sl. No.	Type of Extinguisher	Type of Fire
1	CO ₂ Extinguisher	Office fire & Electronic equipment fire
2	DCP & ABC Type Extinguisher	Multipurpose
3	Water type	For fire of Ply/ paper/ wood etc.
4	Foam Type	For Petrol/Diesel / Lubricants
5	Water Buckets	'A' category
6	Sand Buckets	For Petrol/ Diesel/ Lubricants
7	Fire Hydrant System	For Class A, B & C

Escape Routes and Evacuation Procedure : The escape route will be Tiruttani Bypass which is the shortest route to reach out of the operation area to open area. The assembly points and escape route shall be depicted on the layout plan.

First Aid : A first aid center with adequate facilities will be provided. It will be maintained round the clock by a dedicated Doctor & supporting Staff. Ambulance which is available with plant will also be used at site to carry affected people to nearby hospital at Tiruttani.

Emergency Drills : The emergency response plans and emergency preparedness level would be tested through Table-top exercise (TTE), Functional exercise (FE) and Full-scale exercise (FSE)/Mock Drills.

7.6 Off-Site Emergency Preparedness Plan

When the consequences of an emergency situation go beyond the plant boundaries, it becomes an off-site emergency. Off-site emergency is essentially responsibility of the public administration which lies with the District Collector. However, the factory management will provide the public administration with the technical information relating to the nature, quantum and probable consequences of an emergency on the neighbouring population.

Important Phone Nos.

District Collector, Tiruvallur : 9444132000 / 044-27661600
 Suptd. of Police : 9498187171 / 044-27666555
 District Revenue Officer : 9445000902 / 044-27662222
 RDO, Tiruttani : 9445000411 / 044-27885877
 DEE, TNPCB : 044 - 27664425
 Disaster Mgmnt. Section : Toll Free No. : 1077 / 044 – 27664177
 Station Fire Officer, Tiruttani : 9445086167
 Dy. Director-Health Services : 044-27666273

8.0 Project Benefits

8.1 Environmental Benefits

Waste materials from other Industries like Fly Ash, Gypsum, Slag, etc. are beneficially utilised for the cement manufacturing. No adverse effect on environment is envisaged as proper mitigation measures will be taken up for the same.

8.2 Social Benefits

The Unit will generate employment for about 250 people (50 Direct & 200 Indirect) during the Construction Phase. About 200 persons will get employment (50 Direct & 150 Contractual) during Operation Phase of the Project. Adequate Corporate Environmental Responsibility (CER) Budget will be allotted for the benefit of local villages in compliance with MoEF&CC OM F. No. 22-65/2017.IA.III dated 01.05.2018.

8.3 Financial Benefits

The Project will bring Rs. 838 Crores investment to the Region. There will be a huge positive impact due to the proposal, by way of employment, better socioeconomic conditions, improved local and regional economy, etc.

8.4 Tangible Benefits

The state of Tamil Nadu will get revenue in terms of taxes, local people will get opportunity in terms of direct/ indirect employment, business opportunity like transport of Cement to the market, maintenance & housekeeping contract work and fly ash transport from nearby Power Plant, in short nearby people will get opportunity to improve their livelihood.

Proposed project will result in growth of the surrounding areas by increased direct and indirect employment opportunities in the surrounding region including ancillary development and supporting infrastructure. Development of social amenities will be done in the form of medical facilities, education to under privileged and creation of self-help groups. Special emphasis on Financial and Social benefits will be given to the local people including tribal population, if any, in the area.

9.0 Environmental Cost Benefit Analysis

Environmental Cost Benefit Analysis is not applicable for the proposal as there is no forest land is envisaged and also no tree cutting is proposed.

This is a Clinker Grinding Unit proposed for nearby marketing centres and for effective utilization of waste materials like Fly Ash, Slag, Gypsum, etc. It **does not require financial viability analysis/assessment**. Adequate budgetary provisions are made for the Project establishment.

10.0 Environmental Management Plan

An Environmental Management Plan (EMP) is formulated for mitigation of adverse impacts and is based on present environmental status and impact appraised. It is mandatory to comply with the various regulatory Norms for Prevention and Control of Pollution.

10.1 Construction Phase

The following environmental management plans are proposed for mitigation of impacts on the environment :

- ❖ It shall be ensured that no change due to the constructions to the hydrology/natural drainage of the area.
- ❖ All the topsoil excavated shall be stored and maintained for use for Green Belt development.
- ❖ The construction materials like sand, stone chips, etc. shall be obtained only from approved quarries.
- ❖ Proper placement of construction machineries shall be ensured to eliminate vibrations and noise.
- ❖ All construction machinery items shall be well lubricated to reduce noise.
- ❖ High Speed Diesel with low sulphur content shall be used for running the construction machineries.
- ❖ The labourers for the construction works shall be pooled from the local public.
- ❖ Adequate drinking water and sanitary facilities shall be provided for construction workers.
- ❖ PPEs shall be provided to the construction workers. Protection devices viz. ear plugs/ear muffs shall be provided to the workers during welding works.
- ❖ The safe disposal of wastewater and solid wastes generated shall be ensured.
- ❖ On completion of construction, all debris and extraneous materials shall be cleared off and no residuals should be left at the site.
- ❖ EMP Cell ensure the periodical Monitoring of Environmental Parameters during the Construction Period and ensure its compliance with Norms.

10.2 Operation Phase

10.2.1 Traffic Volume

- ❖ Adequate measures shall be taken to avoid any traffic congestion near the entry and exit points.
- ❖ Security Guards will be posted at the Road Junction to handle the inward and outward vehicles from the Plant to the Bypass/Highway.
- ❖ Adequate parkings will be provided in the Plant.
- ❖ Facilities for **drivers (rest room, toilet, etc.)** will also be provided.
- ❖ All Trucks will be fully covered with Tarpaulin to avoid any spillage on transportation.
- ❖ Restriction of over loading of Trucks/Tippers and Speed restrictions will be imposed.

- ❖ Restriction of Truck parking in the Highway and Public Roads will be ensured.
- ❖ Regular and preventive maintenance of transport vehicles has to be ensured.
- ❖ Compliance to 'Pollution under Control' Certification has to be checked periodically.

10.2.2 Air Quality Management Plan

- ❖ Adequate air pollution control systems viz. Bag Filters, etc. shall be installed in the Cement Mills & Packers to control PM emissions $<30 \text{ mg/Nm}^3$.
- ❖ Inside the Plant, all materials transfer shall be through closed conveyor belts.
- ❖ Adequate dust extraction systems shall be installed at various transfer points.
- ❖ Fully covered sheds shall be provided for Gypsum & Coal storages.
- ❖ RCC Silos shall be provided for Clinker, Fly Ash & Cement storages.
- ❖ Suction arrangements with suitably designed Bag Filters shall be provided at Silos to arrest the fugitive emissions.
- ❖ Dense Phase Pneumatic Handling System for receiving and conveying Fly Ash.
- ❖ Charter on Corporate Responsibility for Environmental Protection (CREP) Guidelines for Fugitive Emission Control in Cement Industries shall be fully complied.
- ❖ The periodical evaluation for the efficiency performance of Bag Filters shall be carried out.
- ❖ Periodical Ambient Air Quality and Stack Emissions shall be undertaken and the Status Reports shall be submitted to the Authorities as required.

10.2.3 Noise Quality Management Plan

- ❖ Noise generating sources would be maintained properly to minimise noise and vibrations.
- ❖ For all fans, compressors etc. vibration isolators shall be provided to reduce noise.
- ❖ Provision of silencers shall be made wherever possible.
- ❖ The operators shall be provided with necessary safety and protection equipment like ear plugs, ear muffs etc.

10.2.4 Effluent Management Plan

- ❖ Water consumption shall not be more than the consented quantity.
- ❖ No trade effluent shall be discharged from the Plant.
- ❖ The domestic sewages from the Plant shall be treated effectively in the Sewage Treatment Plant so as to meet the TNPCB Discharge Norms and the treated sewage shall be used for Green Belt.
- ❖ 'Zero Effluent Discharge' shall be practiced.
- ❖ Effective Rain Water Harvesting Systems shall be adopted and harvested water shall be utilized for the industrial needs so as to conserve the fresh water demand.
- ❖ Periodical monitoring for specific parameters shall be done regularly.

10.2.5 Solid & Hazardous Waste Management Plan

- ❖ It should be ensured that there is no industrial solid waste from the Plant.
- ❖ The dust collected from APC Measures will be consumed in the Plant fully.
- ❖ Solid wastes from STP Plant shall be vermi composted and used as manure for Green Belt.
- ❖ Waste Oil shall be collected and sold to the CPCB/TNPCB Authorised Agency for further treatment & disposal.
- ❖ The municipal wastes shall be collected, transported, treated in a landfill (composting) within the Plant vicinity to make use of it as manure for Green Belt.
- ❖ Used Lead acid batteries will be generated which will be stored in the designated storage area and will be disposed off / sold to registered vendors as per prevalent rules.

10.2.6 Storm Water Management Plan

- ❖ SCL shall harvest Rain Water through Roof Tops, RWH Ponds with Recharge Mechanism. Roof Top Collections shall be directly stored and used as Raw Water for the Plant.
- ❖ Harvested water by surface drain shall also be utilized for the industrial needs so as to conserve the fresh water demand.

10.2.7 Biodiversity Plan

- ❖ Green Belt (33% Coverage) shall be developed and maintained effectively.
- ❖ Local species and fruit bearing trees may also be developed to have a thick canopy cover.
- ❖ The treated sewage shall be used fully for the Green Belt development.
- ❖ There will be **ban on one time use and throw away Plastic usage** in the Plant in compliance with Tamil Nadu, Environment and Forests (EC-2) Department, G.O.(D) No. 84 dated 25.06.2018. SCL will encourage the use of ecofriendly alternative such as banana leaf, areca nut palm plate, stainless steel glass, porcelain plates / cups, cloth bag, jute bag etc.

10.2.8 Occupational Health

- ❖ SCL shall provide a safety & healthy working conditions and continually improve the occupational health and safety performance.
- ❖ Its objectives shall be to achieve zero accident and safe work environment, to improve moral and health of all employees and to maintain the emission levels below the norms.
- ❖ SCL shall provide ergonomic support in work comfortness with periodical review.

10.2.9 Socio-economic Management Plan

As per the Companies Act 2013, Companies should spend at least 2% of the Profit after Tax of the previous year for the CSR activities but not lower than 2% of average of previous three years Profit after Tax.

10.3 Project Cost & EMP Implementation Budget

The total Project Cost of Rs. 838 Crores. A budgetary allotment of Rs.19.23 crores has been made as Capital EMP Cost and Rs.1.30 crores per annum towards Operating EMP Cost (Table 10.1).

Table : 10.1 EMP Budget

Sl. No.	Description of Item	Total	
		Capital Cost, Rs. in Lakhs	Recurring Cost, Rs. Lakhs/Annum
1	Air Pollution Control/Noise	1430	65.50
2	Water Pollution Control	125	16.00
3	Solid Waste Management	18.75	3.00
4	Greenbelt & plantation Development & Maintenance	83	12.00
3	Environmental Monitoring Works	266	34.00
Total		1922.75	130.5

Adequate Budget for Corporate Environmental Responsibility (**CER**) **Budget** will be allotted in compliance with MoEF&CC OM's dated 30th Sept., 2020 & OM dated 20th Oct., 2020, on the basis of the issues raised during the Public Hearing and will also be part of EMP Cost.

11.0 Summary & Conclusion

M/s. Shree Cement Limited (SCL) are one of the largest Cement manufacturers in India. SCL's Cement and Clinker manufacturing facilities are located at Beawar, Ras & Nawalgarh in Rajasthan, Balodabazar-Bhatapara in Chhattisgarh, Sedam in Karnataka, Guntur in Andhra Pradesh and Ras Al Khaimah (RAK) in United Arab Emirates (UAE). It has split grinding units at twelve locations Pan-India. Presently, the cement production capacity of SCL Group stands at 62.8 Million Tonnes per Annum (MTPA).

The cement demand is steadily increasing in northern Districts of Tamil Nadu including Chennai and Southern Districts of nearby Andhra Pradesh State due to infrastructure development activities. Thus, SCL is proposing its Tiruttani Clinker Grinding Unit (TCGU) at Tiruttani near the Raw Material sources at Chennai and Marketing Centres.

After the Tamil Nadu Global Investors Meet in 2024, a Memorandum of Understanding (MoU) has been signed on 08.01.2024 between **GUIDANCE**, a nodal Agency of Government of Tamil Nadu and SCL for establishing the Cement Grinding Unit at Tiruttani in two Phases. In the first Phase, SCL TCGU is proposed with a Cement production capacity of **3.50 MTPA** (OPC/PPC/PSC/RHPC/SRC/CC- Composite Cement) along with Railway Siding and DG Sets for total capacity of 1250 KVA (1000 KVA or 2x500 KVA & 1x250 KVA) for standby operations.

The identified Site is over an extent of **19.58 Ha** with 14.848 Ha of SCL's own Land and 4.735 Ha is Govt. Poramboke Land (on exchange for SCL's nearby lands). The entire land is located outside Tiruttani Municipal Limit in Tiruttani Village, Devasenapuram Village & Valliammapuram Villages, Karthikeyapuram Panchayat, in Tiruttani Taluk, Tiruvallur District of Tamil Nadu (**Fig. 1.1**). As per DTCP, the Site falls in 'Non-Planning Area' and will be converted into Industrial Use. There is no Rehabilitation & Resettlement (R&R) issue due to the Proposal. Also, there is no Litigation/Pending Case against the Proposal.

Site falls in Survey of India Topo Sheet No. 57 O/12 (Open Series Map D44N12) within the Coordinates 13°9'36.54" to 13°9'51.65" North Latitude & 79°37'29.42" to 79°37'56.66" East Longitude. There are no Eco Sensitive Areas like National Parks, Wildlife Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar Sites, Tiger/Elephant Reserves, etc. (existing as well as proposed), within 10 km from the Site. There are two Reserved Forests (RFs) viz. Kolattur RF @ 8.5 km in SE direction & Ammanur RF near Arakkonam @ 8.0 in SSE direction. The shortest Tamil Nadu-Andhra Pradesh State Border is at 10.1 km in northeast. Arulmighu Sri Subramaniaswamy Temple-Tiruttani, a Hindu Pilgrimage Centre, is at 2.4 km in northwest. The seasonal Nandi River flows at 1.3 km in north and confluences into Nagari River.

Site is accessible from **Tiruttani Bypass** connecting NH-716 (Chennai-Tirupati Section) and is connected to SH-58 Tiruttani-Arakkonam-Kancheepuram Section). Southern Railway BG Line (Arakkonam-Tiruttani-Renigunta Section) runs adjacent to the Site. Railway Sidings are proposed from Ichipurur Railway Station (3 km in south)/Tiruttani Railway Station (2 km in NW). Arakkonam Railway Junction is at 9.3 km in SSE direction. District Head Quarters Tiruvallur is at 28 km in the east and State Head Quarters Chennai is at 55 km in the east. Tiruttani Municipality with a Population of 44,781 Persons, with all basic amenities, is at 0.4 km in the west (aerial distance).

Greenbelt & plantation will be developed in 6.46 Ha (33% coverage) and maintained. No Township is proposed. A small Guest House will be established for temporary Guests.

Main process of manufacturing of cement involves inter-grinding of Clinker, Gypsum and other Pozzolana materials in the specified ratio in a Cement Mill for Packing and Dispatch it to the local market. Clinker will be transported from SCL sister Plants at Guntur in Andhra Pradesh, Kodla in Karnataka & Balodabazar (Chhattisgarh) by Railway Wagons. Fly Ash will be sourced from Thermal Power Plants in Chennai and Gypsum from local market. Total power requirement will be around 22 MW which will be sourced from TN State Electricity Grid and DG Sets for back-up.

As this is only a grinding unit, water is mainly required for equipment cooling (100 KLD in addition to 2 KLD RO Rejects), domestic consumption (15 KLD) and Green Belt (5 KLD). Total fresh water requirement for the Grinding Unit will be 120 KLD which will be tapped from permitted Dugwells and Borewells at the Plant Site. There will be no effluent generation from the Grinding Unit. However, 2 KLD RO Rejects will be there which will be fully utilised for equipment cooling. Domestic Sewage to the tune of 12 KLD will be treated in a 15 KLD Sewage Treatment Plant (STP) based on MBBR Technology and Treated Sewage of 12 KLD, in compliance with TNPCB Norms for On-land irrigation Norms, will be fully utilized for Green Belt development & maintenance. Thus, 'Zero Effluent Discharge' will be adopted/practiced.

The total Project Cost of Rs. 838 Crores. A budgetary allotment of Rs.19.23 crores has been made as Capital EMP Cost and Rs.1.30 crores per annum towards Operating EMP Cost. Adequate Budget for Corporate Environmental Responsibility (CER) Budget is also allotted.

The Project will give Direct Employment to 50 persons and Indirect Employment to 200 persons, thus, total 250 employment during Construction Phase. Local labourers will be pooled for the Construction. The Project will give Direct Employment to 50 persons and Indirect / Contract Employment to 150 persons, thus, total 200 employment during Operation Phase. Local people will be given preference for Contractual Works. SCL will provide all the amenities like first aid room, drinking water facilities, toilet facility, canteen etc. for the permanent and contractual employees.

The Stand Alone Grinding Unit falls under Sl. No. 3(b) & Category 'B' with non-applicability of General Conditions of EIA Notification 2006 (as amended) and requires Prior Environmental Clearance (EC) from the State Environment Impact Assessment Authority-Tamil Nadu (SEIAA-TN). Accordingly, TOR Application was submitted by SCL vide Parivesh Online proposal No. **SIA/TN/IND1/542782/2025 on 25.06.2025**. After paying Online Scrutiny Fees, the File has been accepted by SEIAA on 27.06.2025 under File No. 12367.

The Proposal was deliberated by the State Expert Appraisal Committee (SEAC)-Tamil Nadu in its 595th Meeting held on 21.07.2025 and SEIAA-TN in its 868th Meeting held on 08.08.2025. TOR has been awarded vide Identification No. TO25B1103TN5124110N dated 19.08.2025 with Public Hearing.

The EIA Consultant, M/s. ABC Techno Labs India Private Limited, Chennai has been accredited for various Sectors including Sector-9 (Cement Plants) for Category 'A' by NABET vide Certificate NABET/EIA/2225/RA0290 dated 11.06.2023 with validity till 16.11.2025 (Sl. No. 4 of the List) which will be extended by NABET periodically. 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. Baseline Data (BLD) was collected during Jun.-Aug. 2025 (Premonsoon Season) for the EIA Study as the area experiences NE Monsoon during Oct.-Dec. months.

The Environmental Impact Assessment (EIA) Report and Summary Environmental Impact Assessment Reports have been prepared in compliance with the awarded TORs and as per the generic structure proposed in EIA Notification 2006 and submitted.

12.0 Disclosure of Consultants

EIA Consultant, M/s. ABC Techno Labs India Private Limited, Chennai has been accredited for various Sectors including **Sector-9 (Cement Plants) 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) which will be extended by NABET periodically. 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.

ABC comprises a team of highly talented professionals, who work in sync with clients ensuring that the defined assessment and survey or reporting is executed with high level of efficiency. The proficient team consists of Environmentalists, Policy makers, Geologists, Chemists, Engineers, Industrial hygienists, Technicians, Research Associates, Sociologists and others with expertise in various key areas.

ABC has a proven successful track record of working with industry & institutions and in executing multi faceted projects funded by organizations like World Bank, UNDP, MoEF&CC, amongst others. ABC Techno labs India Private Ltd. has laid down new benchmarks in all its areas of strategic operations by the dedicated team of outstanding professionals and client-centric approach, clearly evident by our accomplishments/ clients list. The accredited/approved Experts of ABC are appended.

DISCLOSURE OF EXPERTS	
Details as per Schedule of EIA Notification 2006, as amended till date	
Name of the Project	Proposed Tiruttani Clinker Grinding Unit with a Cement production capacity of 3.50 MTPA (OPC/PPC/PSC/RHPC/ SRC/CC) along with Railway Siding and DG Sets for total capacity of 1250 KVA (Stand Alone Grinding Unit) in Tiruttani, Devasenapuram & Valliammapuram Villages in Tiruttani Taluk, Tiruvallur District of Tamil Nadu' by M/s. Shree Cement Limited.
Schedule as per EIA notification 2006	3 (b)
Category	B
NABET Sector No.	9

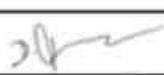
DECLARATION:

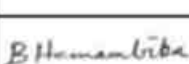
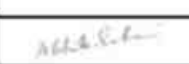
Declaration by experts contributing to the Environmental Impact Assessment Report for Proposed Tiruttani Clinker Grinding Unit with a Cement production capacity of 3.50 MTPA (OPC/PPC/PSC/RHPC/ SRC/CC) along with Railway Siding and DG Sets for total capacity of 1250 KVA (Stand Alone Grinding Unit) in Tiruttani, Devasenapuram & Valliammapuram Villages in Tiruttani Taluk, Tiruvallur District of Tamil Nadu' by M/s. Shree Cement Limited.

I, hereby, certify that I was a part of the EIA team in the following capacity that developed the above EIA/EMP.

EIA Coordinator Signature :	
Name	: K. Selvaraj
Period of involvement	: Jan. 2024 to till date
Contact information	: ensyscon@gmail.com

FUNCTIONAL AREA EXPERTS:

Sl. No.	Functional Areas	Name of the Expert/s	Involvement (Period)	Signature & Date
1.	Land use (LU)	Dr. N Rama Krishnan	Jan. 2024 to till date	
2.	Air pollution monitoring, prevention and control (AP)	Haneesh KR	Jan. 2024 to till date	
3.	Meteorology, air quality modeling and prediction (AQ)	Vinod Kumar Gautam	Jan. 2024 to till date	
4.	Water pollution monitoring, prevention and control (WP)	Vaishnavi Dhinakaran	Jan. 2024 to till date	
5.	Ecology and biodiversity (EB)	Abhik Saha	Jan. 2024 to till date	
6.	Noise and vibration (NV)	Haneesh KR	Jan. 2024 to till date	

Sl. No.	Functional Areas	Name of the Expert/s	Involvement (Period)	Signature & Date
7.	Socio- economics (SO)	Dr. N Rama Krishnan	Jan. 2024 to till date	
8.	Hydrology, ground water and water conservation (HG)	Dr. Veezhinathan Subramaniyam	Jan. 2024 to till date	
9.	Geology (GEO)	Dr. Veezhinathan Subramaniyam	Jan. 2024 to till date	
10.	Soil conservation (SC)	Beamsika Balakrishnan	Jan. 2024 to till date	
11.	Risk assessment and hazards management (RH)	Vinod Kumar Gautam	Jan. 2024 to till date	
12.	Solid and hazardous waste management (SHW)	Abhik Saha	Jan. 2024 to till date	

Declaration by the head of the Accredited Consultant Organization

I, Mr. G. Muruges, hereby confirm that the above mentioned experts prepared the EIA/EMP Report for Proposed Tiruttani Clinker Grinding Unit with a Cement production capacity of 3.50 MTPA (DPO/PPG/PSG/RHPC/ SRG/CO) along with Railway Siding and DG Sets for total capacity of 1250 KVA (Stand Alone Grinding Unit) in Tiruttani, Devasenapuram & Valliammapuram Villages in Tiruttani Taluk, Tiruvallur District of Tamil Nadu by M/s. Shree Cement Limited. I also confirm that ABC Techno Labs India Pvt. Ltd. shall be fully accountable for any misleading information mentioned in this statement.

Signature	
Name	Mr. G. Muruges
Designation	Chairman & Managing Director
Name of the EIA Consultant Organization	ABC Techno Labs India Private Limited
NABET Certificate No. & Issue Date:	NABET/EIA/2225/RA0290 dated 11.06.2023 with validity till 16.11.2025 (Sl. No. 4 of List)


**QUALITY COUNCIL
OF INDIA**
Creating an Ecosystem for Quality



**National Accreditation Board
for Education and Training**



Certificate of Accreditation

ABC Techno Labs India Private Limited, Chennai
 ABC Tower, 400, 13th Street, SIDCO Industrial Estate, North Phase, Ambattur, Chennai 600098
The organization is accredited as Category-A under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA-EMP reports in the following Sectors –

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals including opencast/ underground mining	1	1 (a) (i)	A
2	Offshore and onshore oil and gas exploration, development & production	2	1 (b)	A
3	River Valley projects	3	1 (c)	A
4	Thermal power plants	4	1 (d)	A
5	Mineral beneficiation including pelletisation	7	2 (b)	A
6	Metallurgical industries (ferrous & non-ferrous)	8	3 (a)	A
7	Cement Plants	9	3(b)	A
8	Petroleum refining industry	10	4 (a)	A
9	Leather/skin/hide processing industry	15	4 (f)	A
10	Chemical fertilizers	16	5 (a)	A
11	Petro-chemical complexes	18	5 (c)	A
12	Petrochemical based processing	20	5 (e)	A
13	Synthetic organic chemicals industry	21	5 (f)	A
14	Distilleries	22	5 (g)	A
15	Integrated paint industry	23	5 (j)	B
16	Sugar industry	25	5 (i)	B
17	Oil & gas transportation pipeline, passing through national parks/sanctuaries/coral reefs / ecologically sensitive areas including LNG terminal	27	6 (a)	A
18	Airports	29	7 (a)	A
19	Industrial estates/ parks/ complexes/ Areas, export processing zones (EPZs), Special economic zones (SEZs), Biotech parks, Leather complexes	31	7 (c)	A
20	Ports, harbours, break waters and dredging	33	7 (e)	A
21	Highways	34	7 (f)	A
22	Common Effluent Treatment Plants (CETPs)	36	7 (h)	B
23	Common Municipal Solid Waste Management Facility (CMSWMF)	37	7 (i)	B
24	Building and construction projects	38	8 (a)	B
25	Townships and Area development projects	39	8 (b)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated June 09, 2023 posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no QCI/NABET/ENV/ACO/23/2785 dated July 11, 2023. The accreditation needs to be renewed before the expiry date by ABC Techno Labs India Private Limited, Chennai following due process of assessment.


Sr. Director, NABET
Dated: July 11, 2023

Certificate No.
NABET/EIA/2225/RA 0290

Valid up to
Nov 16, 2025

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to the QCI-NABET website.



**National Accreditation Board for
Testing and Calibration Laboratories**

CERTIFICATE OF ACCREDITATION

ABC TECHNO LABS INDIA PRIVATE LIMITED

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

**"General Requirements for the Competence of Testing &
Calibration Laboratories"**

for its facilities at

ABC TOWER, NO 400, 13TH STREET, SIDCO INDUSTRIAL ESTATE-NORTH PHASE, AMBATTUR, CHENNAI,
TAMIL NADU, INDIA

in the field of

TESTING

Certificate Number: TC-5770

Issue Date: 03/04/2024

Valid Until: 02/04/2026

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued
satisfactory compliance to the above standard & the relevant requirements of NABL.
(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Name of Legal Entity: ABC Techno Labs India Private Limited

Signed for and on behalf of NABL




N. Venkateswaran
Chief Executive Officer

List of Experts



SCHEME FOR ACCREDITATION OF EIA
CONSULTANT ORGANIZATIONS



NATIONAL ACCREDITATION BOARD FOR EDUCATION AND TRAINING

(EIA_LoginForm.aspx)

tal for Scheme of Accreditation of EIA Consultant Organization || FAQ For Initial Accredita

ABC Techno Labs India Private Limited (formerly known as ABC Environ Solutions Pvt. Ltd.)

S No	Name	Type	Designation	Sector	FA
1	Ratnakumar V Mudliar	Empanelled	EC,FAE	2(A),21(A),32(A),37(B),39(B)	SHW(A),SC(A),V
2	Abhik Saha	In House	EC,FAE	2(A),9(A),12(A),21(B),22(A)	WP(A),EB(A),AP
3	Dr. R. K Jayaseelan	In House	EC,FAE	1(B),31(B),39(B),21(A),37(B)	LU(A),WP(A),HG
4	Dr. R. Paramasivam	In House	EC,FAE	31(A),36(A)	WP(A),HG(A)
5	Dr.Mohit Kumar Ray	Empanelled	EC	10(A),18(A),4(a),20(A),27(A)	

S No	Name	Type	Designation	Sector	FA
6	Geetha S	In House	,FAE		SE(B)
7	Haneesh Paniker	Empanelled	EC,FAE	34(B),36(B),37(B),38(B),39(B)	AP(B),WP(B),NV
8	K Sekar	Empanelled	EC	1(A),7(A),9(A),31(A),33(A)	
9	Kavitha Zog	Empanelled	EC,FAE	3(A),4(B),22(A),25(B),39(B)	SHW(B),WP(B),I
10	M.S Bhaskar	Empanelled	EC,FAE	1(A),2(A),7(B),21(A)	Geo(A),HG(A),LI
11	Muthiah Mariappan	Empanelled	EC,FAE	4(A),10(A),15(A),16(A),29(A)	SHW(A),AP(A),V
12	P Swamiraj	Empanelled	EC	34(A)	
13	R Rajendran	Empanelled	EC,FAE	8(B),38(B),39(B),29(A)	SHW(B),AP(B),N

S No	Name	Type	Designation	Sector	FA
14	Shankar N Gajbhiye	Empanelled	EC	27(A),33(A)	
15	Sushil Mishram	In House	,FAE		SE(A)
16	Vaishnavi Dhinakaran	In House	,FAA		SHW,WP
17	Vijayalakshmi K	Empanelled	EC,FAE	28(B),39(B),4(a),21(A)	NV(A),RH(A),AQ
18	Vinod Kumar Gautam	Empanelled	EC,FAE	29(A),38(B),28(B),21(A),34(A)	SHW(A),AQ(A),F
19	Vivek P Navare	Empanelled	EC,FAE	1(A)	NV(A)

Website Compatibility:

Best viewed in 1024X768 or higher resolution mode.

The documents are in PDF format. In case you are not able to view the documents, kindly click here (<https://get.adobe.com/reader/?promoid=BUGOJ>) to download and install PDF Viewer.

For any changes, suggestion or complaint regarding website please mail at admin@qci.org.in (<mailto:admin@qci.org.in>).

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Terms and Conditions ([TermsAndCondition.aspx](#)) || Designed by : 7techies (<http://www.7techies.com/>)

Document-1 MoU Signed by SCL with TN State Govt. on 08.01.2024

MEMORANDUM OF UNDERSTANDING

Between

**GUIDANCE,
GOVERNMENT OF TAMIL NADU**

And

M/s. SHREE CEMENT LTD.

THIS MEMORANDUM OF UNDERSTANDING IS MADE ON

8th January 2024

BY AND BETWEEN

Guidance, the nodal agency of **Government of Tamil Nadu (GoTN)** for investment promotion and facilitation, duly represented by and acting through the Managing Director (MD) & Chief Executive Officer (CEO), Guidance, and having office at Prestige Polygon Towers, 11th Floor No.471, Annasalai, Rathna Nagar, Teynampet, Chennai 600 035, which expression shall unless repugnant to the subject or context, means and includes its successors-in-office and assignees, of the first part;

AND

M/s. Shree Cement Ltd., (SCL) a company incorporated under the Indian Companies Act, 1956 and having their registered office at Bangur Nagar, Beawar, Rajasthan, India and through their authorized signatory, Mr Vijay Patil, Chief Strategy Officer (hereinafter referred to as "M/s.Shree Cement Ltd.") of the other part;

GoTN and M/s. Shree Cement Ltd. are hereinafter where the context so permits referred to individually as "Party" and collectively as "Parties";

WHEREAS M/s. Shree Cement Ltd., is a private/public Company incorporated in 1979 with an authorized share capital of Rs. 75,00,00,000/- (Rupees Seventy-five crores)

M/s. Shree Cement Ltd., has proposed to set up a 3 MTPA Cement Grinding Unit in Thiruttani, Thiruvallur District, Tamil Nadu in its first phase and further an Integrated Unit in its second phase as and when Limestone Mines are allotted.

M/s. Shree Cement Ltd., Ltd has requested the GoTN to offer facilitation and support for implementing the project in Tamil Nadu.

Considering the tangible economic and social benefits that are engendered due to the establishment of the Project by M/s. Shree Cement Ltd., in Tamil Nadu, the GoTN has assured M/s. Shree Cement Ltd., that GoTN will extend necessary support and facilitation to M/s. Shree Cement Ltd., as set forth in this Memorandum of Understanding (hereinafter referred to as "MoU").

Hence, the Parties hereby enter into this MoU and agree to co-operate on the following in order to facilitate the timely establishment and operation of the Project by M/s. Shree Cement Ltd.:-

NOW, THEREFORE IT IS HEREBY AGREED AS FOLLOWS: -**1. Investment by M/s. Shree Cement Ltd.:**

M/s. Shree Cement Ltd. plans in the first phase a Cement grinding unit of 3 MTPA capacity in Thiruvallur district, Tamil Nadu with an estimated investment of Rs 700 Cr employing 375 people directly. Furthermore, as and when, Limestone mines are allotted to M/s. Shree Cement Ltd., setting up a 3 MTPA Clinker and 2 MTPA Cement Integrated unit with an estimated investment of Rs 2300 Cr employing 1000 personnel directly. Thus, the total investment can reach about Rs 3000 Cr by SCL over a period of 5-10 years.

2. Facilitation and support by GoTN:

GoTN will provide facilitation and support to M/S. Shree Cement Ltd. in the form of necessary infrastructural support and regulatory facilitation subject to applicable laws. GoTN will also provide uninterrupted power supply & other infrastructure support on best-effort basis. This includes the Single Window facilitation as per Tamil Nadu Business Facilitation Act 2018, on filing the necessary applications through the online portal tnswp.com and a system for effective monitoring of fulfilment of all obligations as agreed to in this MoU through Guidance. Subject to eligibility, standard incentives as per the existing Policy, will be applicable.

This MoU cannot be used for any other purposes except for which it is meant, and will exclude purposes such as financing, advertising, assurance of any commitments on behalf of Government of Tamil Nadu to third parties etc. M/s. Shree Cement Ltd. understands that there is no commitment on part of the Government of Tamil Nadu or its departments to procure/ purchase goods / services produced by M/s. Shree Cement Ltd. under this MoU.

This MoU is not intended to be legally binding on the Parties but expresses the spirit of the co-operation and the best intentions of the Parties to achieve the purposes stated herein.

IN WITNESS WHEREOF, the Parties hereto have hereunto set and subscribed their hands on the day, month and year first above mentioned at Chennai, Tamil Nadu.

On behalf of M/S. SHREE CEMENT LTD.	On behalf of GOVERNMENT OF TAMIL NADU
	
Mr. Vijay Patil Chief Strategy Officer M/s. Shree Cement Ltd. (acting for and on behalf of M/s. Shree Cement Ltd.	Mr. Vishnu V, IAS MD & CEO Guidance, Industries, Investment Promotion & Commerce Department Government of Tamil Nadu.

Date: 8th January 2024

Document-2 Application for Govt. Poramboke Land on Exchange

SHREE CEMENT LTD.
 An ISO 9001, 14001, 50001 & OHS 18001 Certified Company
 Regd. Office:
 BANGUR NAGAR, POST BOX NO.33, BEAWAR 305901, RAJASTHAN, INDIA

CIN No. : L26943RJ1979PLC001935
 Phone : 01462 228101-6
 Toll Free : 1800 180 6063 / 6064
 Fax : 01462 228117 / 228119
 E-Mail : shreecement@shreecement.com
 Website : www.shreecement.com

Ref: SCL/TIRUTTANI / 2024/ 01

Date: 06/06/2024

To
 The District Collector
 Tiruvallur District
 Tamilnadu.

Through : 1) District Revenue Officer, DRO, Tiruvallur District
 2) Thasildhar, Tiruttani Taluk, Tiruvallur District
 3) VAO, Tiruttani, Tiruvallur District.

Respected Sir,

Sub: Exchange of Grassing Land / Meikkal Poramboke Land at Tiruttani Village, Tiruvallur District.

This is to apprise you that, We M/s Shree Cement Limited proposed to set up a Grinding unit (Cement Plant) at Tiruttani Village, Tiruvallur District, for which we have already procured near about 36 acres of land at Tiruttani Village, Tiruvallur District (details of Survey Number procured attached herewith as Annexure -1).

For the procured 36 acres, patta name transfer has been obtained in the name of our Company M/s Shree Cement Limited, Tiruttani. In this regard we would like to state that, the detailed layout plan showing our proposed Grinding unit is enclosed herewith for your ready reference (Annexure -2). As per the proposed Layout plan there is one survey number 425 whose extent is near about 13 acres as per Patta and A Register, out of which 8.10 acres is coming inside our proposed Layout plan.

Hence in this regard we request your good self, that for the smooth functioning of our plant and also to maintain a good rapport with the local residents, we are hereby giving our consent for the exchange of land for the Meikkal Poramboke land, for which we are having some surplus land nearby our proposed Layout plan, which is outside our plant boundary (whose area is attached as annexure -3) showing the access road for the concerned site.

Kindly consider our request and arrange to issue necessary orders for the exchange of Meikkal Poramboke land and also we agree to pay the necessary official charges for the exchange of Govt land.

Kindly look into the matter and do the needful sir please.

For Shree Cement Limited

Authorized Signatory

Handwritten signature and stamp of the Authorized Signatory.

ENCLOSURES :

Contd.....

JAIPUR OFFICE : SB-187, Bapu Nagar, Opp. Rajasthan University, JLN Marg, Jaipur 302015
 Phone : 0141 4241200, 4241204, Fax : 0141 4241219
 NEW DELHI OFFICE : 122-123, Hans Bhawan, 1, Bahadurshah Zafar Marg, New Delhi 110002
 Phone : 011 23370828, 23379218, 23370776, Fax : 011 23370499
 CORP. OFFICE : 21, Strand Road, Kolkata 700001 Phone : 033 22309601 & Fax : 033 22309602

Document-3 : Land Ownership – Patta Copies

8/15/24 4:55 PM

வட்டாட்சியர் அலுவலக இலாபம் சென்னை - தலை உரிமை விபரங்கள்



தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : திருவள்ளூர்

வட்டம் : திருத்தணி

வருவாய் கிராமம் : தேவசேனாபுரம்

பட்டா எண் : 3509

உரிமையாளர்கள் பெயர்

பெயர் :

1. - ... ஸ்ரீ சிமென்ட் லிமிடெட் (Shree Cement Ltd)

புல எண்	உட்பிரிவு	புன்செய்	நுன்செய்	மற்றவை	குறிப்புகள்
S.No	புன்-மா	பரப்பு	நீர்வை	பரப்பு	நீர்வை
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				0 - 7.20	1.00



தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : திருவள்ளூர்

வட்டம் : திருத்தணி

வருவாய் கிராமம் : தேவசேனாபுரம்

பட்டா எண் : 3510

உரிமையாளர்கள் பெயர்

1. - ... ஸ்ரீ சிமென்ட் லிமிடெட்

புல எண்	உட்பிரிவு	புன்செய்	நுன்செய்	மற்றவை	குறிப்புகள்
		பரப்பு	நீர்வை	பரப்பு	நீர்வை
		ஹெக்ட - ஏர்	க - எய்	ஹெக்ட - ஏர்	க - எய்
374	5	--	--	0 - 10.00	1.41
				0 - 10.00	1.41



தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : திருவள்ளூர்

வட்டம் : திருத்தணி

வருவாய் கிராமம் : தேவசேனாபுரம்

பட்டா எண் : 3514

உரிமையாளர்கள் பெயர்

1. - ... ஸ்ரீ சிமென்ட் லிமிடெட்

புல எண்	உட்பிரிவு	புன்செய்	நுன்செய்	மற்றவை	குறிப்புகள்
		பரப்பு	நீர்வை	பரப்பு	நீர்வை
		ஹெக்ட - ஏர்	க - எய்	ஹெக்ட - ஏர்	க - எய்
374	5	--	--	0 - 9.00	1.35
				0 - 9.00	1.35


 Government of Tamil Nadu
 Revenue and Disaster Management Department
 Land ownership details: E. No. 10(1) Section

District: Tiruvallur Taluk: Tiruttani
 Revenue Village: Devasenapuram Patta Number: 3530

Owners name

I. SRI Cement Limited

Field number	Subdivision	Patta		Tiruv		Others		Notes
		Area	Solution	Area	Solution	Area	Solution	
		Heck - Ar	Sz - R	Heck - Ar	Sz - R	Heck - Ar	Sz - R	
372	4A	—	—	0 - 3.00	1.25	—	—	2025/01/03/01/460140-2025/01/06/00007050 Digitally signed: Maheswari P. Thakkar 25/04/2025 03:12:09 PM
372	4B	—	—	0 - 7.00	0.37	—	—	2025/01/03/01/460140-2025/01/06/00007050 Digitally signed: Maheswari P. Thakkar 25/04/2025 03:12:17 PM
374	3F1	—	—	0 - 5.00	0.69	—	—	2025/01/03/01/460140-2025/01/06/00007050 Digitally signed: Maheswari P. Thakkar 25/04/2025 03:12:30 PM
374	3F2	—	—	0 - 5.00	0.69	—	—	2025/01/03/01/460140-2025/01/06/00007050 Digitally signed: Maheswari P. Thakkar 25/04/2025 03:12:41 PM
374	4A1	—	—	0 - 4.55	0.53	—	—	2025/01/03/01/460140-2025/01/06/00007050 Digitally signed: Maheswari P. Thakkar 25/04/2025 03:12:50 PM
374	4A2	—	—	0 - 4.55	0.53	—	—	2025/01/03/01/460140-2025/01/06/00007050 Digitally signed: Maheswari P. Thakkar 25/04/2025 03:13:00 PM
383	7B	—	—	0 - 45.00	6.46	—	—	2025/01/03/01/460140-2025/01/06/00007050 Digitally signed: Maheswari P. Thakkar 25/04/2025 03:13:14 PM
383	8B	—	—	0 - 23.00	3.20	—	—	2025/01/03/01/460140-2025/01/06/00007050 Digitally signed: Maheswari P. Thakkar 25/04/2025 03:13:32 PM
				1 - 4.10	14.52			


Government of Tamil Nadu
Revenue and Disaster Management Department
Land ownership details: E. No. 10(1) Section

District: Tiruvallur Taluk: Tiruttani
Revenue Village: Devanapattinam Patta Number: 3528

Owners name

I. Set Current Limit

Field number	Subdivision	Purse		Enjoy		Others		Notes
		Area		Area		Area		
		HeCt - Sq	Sq - Ft	HeCt - Sq	Sq - Ft	HeCt - Sq	Sq - Ft	
383	5A	—	—	9 - 46.30	6.74	—	—	2023/0123/01/458405 Digitally signed: Kataravathi P. Tahsildar 25/04/2025 03:13:22 PM
383	8C	—	—	11 - 3.80	0.46	—	—	2023/0123/01/458405 Digitally signed: Azhimurugan V Zonal Deputy Tahsildar 08/04/2025 03:10:08 PM
				9 - 51.10	7.20			


Government of Tamil Nadu
Revenue and Disaster Management Department
Land ownership details: E. No. 10(1) Section

District: Tiruvallur Taluk: Tiruttani
Revenue Village: Devanapattinam Patta Number: 3533

Owners name

I. Set Current Limit

Field number	Subdivision	Purse		Enjoy		Others		Notes
		Area		Area		Area		
		HeCt - Sq	Sq - Ft	HeCt - Sq	Sq - Ft	HeCt - Sq	Sq - Ft	
374	10B1	—	—	0 - 5.90	0.68	—	—	2023/0123/01/464403 2023/01/06/464403 Digitally signed: Devaraj R Zonal Deputy Tahsildar 25/04/2025 03:17:32 PM
374	10B2	—	—	0 - 3.00	0.64	—	—	2023/0123/01/464403 2023/01/06/464403 Digitally signed: Devaraj R Zonal Deputy Tahsildar 25/04/2025 03:17:32 PM
318	10	—	—	0 - 2.08	0.24	—	—	2023/0123/01/464403 Digitally signed: Devaraj R Zonal Deputy Tahsildar 24/04/2025 03:17:32 PM
378	12	—	—	0 - 3.58	0.34	—	—	2023/0123/01/464403 Digitally signed: Devaraj R Zonal Deputy Tahsildar 24/04/2025 03:17:32 PM
326	18	—	—	0 - 6.88	0.84	—	—	2023/0123/01/464403 Digitally signed: Devaraj R Zonal Deputy Tahsildar 24/04/2025 03:17:32 PM
329	15	—	—	0 - 5.58	0.73	—	—	2023/0123/01/464403 Digitally signed: Devaraj R Zonal Deputy Tahsildar 24/04/2025 03:17:32 PM
				0 - 36.00	5.57			



தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : திருவள்ளூர்

வட்டம் : திருத்தணி

வருவாய் கிராமம் : திருத்தணி

பட்டா எண் : 7145

உரிமையாளர்கள் பெயர்

1. - ... ஸ்ரீ சிமென்ட் லிமிடெட்

புல எண்	உட்பிரிவு	புன்செய்		நுன்செய்		மற்றவை		குறிப்புகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	
329	10	0 - 22.50	0.84	--	--	--	--	2024/0103/01/390428- -- --யு--யு-- 26-04- 2024
329	5	0 - 59.00	1.86	--	--	--	--	2024/0103/01/390428- -- --யு--யு-- 26-04- 2024
330	10	0 - 10.00	0.38	--	--	--	--	2024/0103/01/390428- -- --யு--யு-- 26-04- 2024
330	2	3 - 6.00	11.34	--	--	--	--	2024/0103/01/390428- -- --யு--யு-- 26-04- 2024
330	9	0 - 16.00	0.60	--	--	--	--	2024/0103/01/390428- -- --யு--யு-- 26-04- 2024
		4 - 4.50	15.02					



தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : திருவள்ளூர்

வட்டம் : திருத்தணி

வருவாய் கிராமம் : திருத்தணி

பட்டா எண் : 7146

உரிமையாளர்கள் பெயர்

1. - ... ஸ்ரீ சிமென்ட் லிமிடெட்

புல எண்	உட்பிரிவு	புன்செய்		நுன்செய்		மற்றவை		குறிப்புகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	
329	11B	0 - 56.50	2.10	--	--	--	--	2024/0103/01/391715- -- --யு--யு-- 07-05- 2024
329	3	0 - 18.00	0.66	--	--	--	--	2024/0103/01/391715- -- --யு--யு-- 07-05-2024
329	6C	0 - 16.00	0.59	--	--	--	--	2024/0103/01/391715- -2019/01/06/001227SD ----- 07-05-2024
		0 - 90.50	3.35					



தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : திருவள்ளூர்

வட்டம் : திருத்தணி

வருவாய் பிராமம் : திருத்தணி

பட்டா எண் : 7147

உரிமையாளர்கள் பெயர்

1. - ... ஸ்ரீ சிமென்ட் லிமிடெட்

புல எண்	உட்பிரிவு	புன்செய்		தன்செய்		மற்றவை		குறிப்புகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	
330	6	0 - 6.00	0.23	--	--	--	--	2024/0103/01/396938- -- -- -- -- 25-05- 2024
330	8	0 - 39.00	1.43	--	--	--	--	2024/0103/01/396938- -- -- -- -- 25-05-2024
		0 - 45.00	1.66					



தமிழ்நாடு அரசு

வருவாய் மற்றும் ரேபர்டர் மேலாண்மைத் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : திருவள்ளூர்

வட்டம் : திருத்தணி

வருவாய் பிராமம் : திருத்தணி

பட்டா எண் : 7149

உரிமையாளர்கள் பெயர்

1. - ... SHREE CEMENT LIMITED

புல எண்	உட்பிரிவு	புன்செய்		தன்செய்		மற்றவை		குறிப்புகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	
329	6A2	0 - 14.20	0.53	--	--	--	--	2024/0105/01/565623- 2024/01/06/00171950 ----- Digitally signed: Malarvizhi R.L Tamilnar 28/07/2024 11:36:50 AM
		0 - 14.20	0.53					

Document-4 : Lab Reports

தமிழ்நாடு அரசு
வருவாய் மற்றும் செலவுத் துறை
நிலை கட்டுப்பாடு விபரங்கள் : இ. எண் 10(1) பிரிவு

மாபட்டம் : இருவகைஞர்
வருவாய் பிரிவு : இருவகைஞர்
கட்டுப்பாட்டாளர் பெயர் :
பட்டா எண் : 7177

1. -- -- பி.சி.என்.டி. எண்: 26

புர. எண்	உட்பிரிவு	புரட்செலவு		தொகை		விற்பனை		குறிப்புகள்
		பரப்பு	தீர்மானம்	பரப்பு	தீர்மானம்	பரப்பு	தீர்மானம்	
		மொத்த - ரூ	மொத்த - ரூ	மொத்த - ரூ	மொத்த - ரூ	மொத்த - ரூ	மொத்த - ரூ	
330	3	0 - 32.00	1.18	--	--	--	--	2023/01/03/01/451473 -- -- -- -- Digitally signed Attestation V Zonal Deputy Tahsildar 25/02/2023 07:06:57 PM
330	4B	0 - 3.50	0.31	--	--	--	--	2023/01/03/01/451473 -- -- -- -- Digitally signed Attestation V Zonal Deputy Tahsildar 30/04/2023 11:16:32 AM
330	HC	0 - 5.00	0.20	--	--	--	--	2023/01/03/01/451473 -- -- -- -- Digitally signed Attestation V Zonal Deputy Tahsildar 12/04/2023 02:41:11 PM
330	5	1 - 34.00	4.88	--	--	--	--	2023/01/03/01/451473 -- -- -- -- Digitally signed Attestation V Zonal Deputy Tahsildar 25/02/2023 07:06:57 PM
330	7	0 - 61.00	2.42	--	--	--	--	2023/01/03/01/451473 -- -- -- -- Digitally signed Attestation V Zonal Deputy Tahsildar 25/02/2023 07:06:57 PM
		2 - 45.00	8.99					

தமிழ்நாடு அரசு
வருவாய் துறை
நிலை கட்டுப்பாடு விபரங்கள் : இ. எண் 10(1) பிரிவு

மாபட்டம் : இருவகைஞர்
வருவாய் பிரிவு : வள்ளிமாபுரம்
கட்டுப்பாட்டாளர் பெயர் :
பட்டா எண் : 4724

1. -- -- பி.சி.என்.டி. எண்: 4

புர. எண்	உட்பிரிவு	புரட்செலவு		தொகை		விற்பனை		குறிப்புகள்
		பரப்பு	தீர்மானம்	பரப்பு	தீர்மானம்	பரப்பு	தீர்மானம்	
		மொத்த - ரூ	மொத்த - ரூ	மொத்த - ரூ	மொத்த - ரூ	மொத்த - ரூ	மொத்த - ரூ	
423	1	--	--	0 - 43.00	4.97	--	--	2024/01/03/01/382831- -- -- -- -- 2024
423	2	--	--	0 - 31.50	3.66	--	--	2024/01/03/01/382831- -- -- -- -- 2024
423	3	--	--	0 - 46.00	5.35	--	--	2024/01/03/01/382831- -- -- -- -- 2024
423	4	--	--	0 - 69.50	16.36	--	--	2024/01/03/01/382831- -- -- -- -- 2024
426	-	--	--	1 - 91.00	22.14	--	--	2024/01/03/01/382831- -- -- -- -- 25-04-2024
				4 - 1.00	46.48			



தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : திருவள்ளூர்

வட்டம் : திருத்தணி

வருவாய் பிராமம் : வள்ளிமாபுரம்

பட்டா எண் : 4725

உரிமையாளர்கள் பெயர்

1. - - - - - ஸ்ரீ சிவமண்ட சிவசெட்டி

புல எண்	உ.பிரிவு	பன்செய்		நன்செய்		மற்றவை		குறிப்புக்கள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		மெற்கு - ஏர்	கு - எப	மெற்கு - ஏர்	கு - எப	மெற்கு - ஏர்	கு - எப	
424	1	--	--	2 - 0.0	23.17	--	--	2024/0103/01/388301- -- --பு-பு-- 26-04- 2024
424	2	--	--	0 - 34.00	3.60	--	--	2024/0103/01/388301- -- --பு-பு-- 26-04- 2024
				2 - 34.00	27.16			



தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : திருவள்ளூர்

வட்டம் : திருத்தணி

வருவாய் பிராமம் : வள்ளிமாபுரம்

பட்டா எண் : 4726

உரிமையாளர்கள் பெயர்

1. - - - - - ஸ்ரீ சிவமண்ட சிவசெட்டி

புல எண்	உ.பிரிவு	பன்செய்		நன்செய்		மற்றவை		குறிப்புக்கள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		மெற்கு - ஏர்	கு - எப	மெற்கு - ஏர்	கு - எப	மெற்கு - ஏர்	கு - எப	
424	3C	--	--	0 - 7.50	0.86	--	--	2024/0103/01/388301- -- --பு-பு-- 26-04-2024
				0 - 7.50	0.86			



தமிழ்நாடு அரசு

வருவாய் மற்றும் பேரிடர் மேலாண்மைத் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : திருவள்ளூர்

வட்டம் : திருத்தணி

வருவாய் பிராமம் : வள்ளிமாபுரம்

பட்டா எண் : 4729

உரிமையாளர்கள் பெயர்

1. - - - - - ஸ்ரீ சிவமண்ட சிவசெட்டி

புல எண்	உ.பிரிவு	பன்செய்		நன்செய்		மற்றவை		குறிப்புக்கள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		மெற்கு - ஏர்	கு - எப	மெற்கு - ஏர்	கு - எப	மெற்கு - ஏர்	கு - எப	
424	3B	--	--	0 - 4.50	0.51	--	--	2024/0103/01/388330- -- --பு-பு-- 26-04-2024 Digitally Signed: Manigandan C Zonal Deputy Tahsildar 18/05/2024 06:00:19 PM
				0 - 4.50	0.51			


தமிழ்நாடு அரசு
வருவாய் மற்றும் பேரூட்டர் மேலாண்மைத் துறை
நிலை உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : திருவள்ளூர் வட்டம் : திருத்தணி
வருவாய் பிராமம் : வள்ளியாபுரம் பட்டா எண் : 4749
உரிமையாளர்கள் பெயர்

1. - ... ஸ்ரீ சிவசண்முகம் விஜய்

புற எண்	உட்பிரிவு	புள்ளி		புள்ளி		மற்றவை		குறிப்புகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்டே - ஏர்	ரூ - பை	ஹெக்டே - ஏர்	ரூ - பை	ஹெக்டே - ஏர்	ரூ - பை	
424	4	--	--	0 - 14.00	1.59	--	--	2024/0103/01/423430- Digitally signed: Manigandan C Zonal Deputy Tahsildar 30/09/2024 09:11:54 PM
				0 - 14.00	1.59			


தமிழ்நாடு அரசு
வருவாய் மற்றும் பேரூட்டர் மேலாண்மைத் துறை
நிலை உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : திருவள்ளூர் வட்டம் : திருத்தணி
வருவாய் பிராமம் : வள்ளியாபுரம் பட்டா எண் : 4749
உரிமையாளர்கள் பெயர்

1. - ... ஸ்ரீ சிவசண்முகம் விஜய்

புற எண்	உட்பிரிவு	புள்ளி		புள்ளி		மற்றவை		குறிப்புகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்டே - ஏர்	ரூ - பை	ஹெக்டே - ஏர்	ரூ - பை	ஹெக்டே - ஏர்	ரூ - பை	
424	5	--	--	0 - 17.00	1.97	--	--	2024/0103/01/423430- Digitally signed: Manigandan C Zonal Deputy Tahsildar 30/09/2024 09:11:54 PM
				0 - 17.00	1.97			

Document-4 : Land Use Certificate**அனுப்பிநர்****பெறுநர்**

திரு.ந.இராதிசா கராஜன் பி.பி.பெ.க.,
உதவி இயக்குநர்,
மாவட்டநகர் ஊரமைப்பு அலுவலகம்,
திருவள்ளூர் மாவட்டம்,
எண்.43/397A, இரண்டாம் நகரம்,
அவ்வை இத்திராயாந்திசைலை,
இராஜாஜியம் பகுதி II, திருவள்ளூர் - 602 001,
தொலைபேசி- 044 - 29595440,
email-dicp@tiruvallur@gmail.com

M/s. Shree Cements Limited,
Tiruttani.

ஒ.மு.எண்.95/2023/திருவள்ளூர்-2**நாள். .10.2023.****ஐயா,**

பொருள்: நில உபயோகச்சான்று - மாவட்ட நகர் ஊரமைப்பு அலுவலகம் - திருவள்ளூர் மாவட்டம் - திருத்தணி வட்டம் - திருத்தணி கிராமம் -சரவே எண்கள்.329/2, 6, 10, 5, 7, 7A, 11, 11B, 112B, 112C, 112E, 330/2, 4B, 4C, 4E, 4D, 8, 9, 10, 331, 332, தேவசேனாபுரம் கிராமம் -சரவே எண்கள்.374/3B, 3E, 5, 6, 7, 9, 10, 11, 370/19, 20, 379/8, 9, 10, 11A, 383/7C, 8A, 8B, 8C, 384/8B, 8G, 10A, 10B, 7B, 8F2, 8C2, 8E2, 7A, 8F1, 8C1, 8E1, 9B, 9C, 9D, 9A, 374/2A, 3C, 3A, 3F1, 3F2, 4A1, 4A2, 4B, 3C1, 4D, வள்ளியமபுரம் கிராமம் -சரவே எண்கள்.424/1, 2, 423/1, 2, 4, 426, 424/4, 5, 3A, 3B, 3C-மறு நில உபயோகச் சான்று வழங்க கோரியது -கொள்கை.

பாலை: தங்கள் கடிதம், நாள்.10.10.2023.

திருவள்ளூர் மாவட்டம் - திருத்தணி வட்டம் - திருத்தணி கிராமம் -சரவே எண்கள்.329/2, 6, 10, 5, 7, 7A, 11, 11B, 112B, 112C, 112E, 330/2, 4B, 4C, 4E, 4D, 8, 9, 10, 331, 332, தேவசேனாபுரம் கிராமம் -சரவே எண்கள்.374/3B, 3E, 5, 6, 7, 9, 10, 11, 370/19, 20, 379/8, 9, 10, 11A, 383/7C, 8A, 8B, 8C, 384/8B, 8G, 10A, 10B, 7B, 8F2, 8C2, 8E2, 7A, 8F1, 8C1, 8E1, 9B, 9C, 9D, 9A, 374/2A, 3C, 3A, 3F1, 3F2, 4A1, 4A2, 4B, 3C1, 4D, வள்ளியமபுரம் கிராமம் -சரவே எண்கள்.424/1, 2, 423/1, 2, 4, 426, 424/4, 5, 3A, 3B, 3C-ஆகியவற்றிற்கு நில உபயோகச்சான்று வழங்க கோரப்பட்டதை தொடர்ந்து, கீழ்க்கண்ட விவரம் தெரிவிக்கலாகிறது.

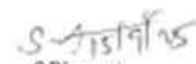
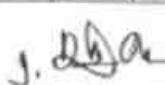
மேற்கூறியபிரிவுள்ள சரவே எண்களுக்கு நகர் ஊரமைப்புத் துறையால் எவ்வித நில உபயோகமும் வகைபடுத்தப் பில்லை என்ற விவரம் தெரிவிப்பதன் கீழ்க்கண்ட விவரங்கள் தெரிவிக்கலாகிறது.

(1) இவ்விலத்தில் மனைபிரிவே/ நிறுவனமோ/ கட்டடமோ அல்லது எக்கிது அபிவிருத்தியோ செய்யும் முன்னர் நகர் ஊரமைப்புச் சட்டம் 1971, பிரிவு 47A-ன்படி, இத்துறையின் முன் அனுமதி பெறப்பட வேண்டும். அவ்வாறு அனுமதி பெறாமல் அபிவிருத்தி செய்யப்பட்டால் நகர் ஊரமைப்புச் சட்டம் 1971 பிரிவு 56 மற்றும் 57-ன் கீழ் நடவடிக்கை தொடரப்படும்.

- 2) அபிவிருத்திகளுக்கு அனுமதி பெறுவதை எளிமைப்படுத்தும் விதமாக அதிகபட்சம் 10000 சதுர அடி பரப்பளவுள்ள குடியிருப்புக் கட்டட உத்தேசம் மற்றும் அதிகபட்சம் 8 குடியிருப்புகளை உள்ளடக்கியதான மற்றும் அதிகபட்சம் Stilt + மூன்று தளங்கள் (அல்லது) தரைதளம் + இரு தளங்கள் உடயரம் 12மீ வரையிலான குடியிருப்புக் கட்டடம் போன்றவற்றிற்கும் அதிகபட்சம் 2000 சதுரஅடி வரையிலான வணிக உபயோகக் கட்டடங்களுக்கு சம்மந்தப்பட்ட உள்ளாட்சியே இத்துறையின் சார்பாக அனுமதி வழங்கிட இத்துறையால் அதிகாரப்பயிர்வு வழங்கப்பட்டுள்ளது. மேற்காண் வகைக் கட்டடங்கள் தடவிர கூடுதல் பரப்பளவுள்ள குடியிருப்புக் கட்டடங்கள், வணிகக் உபயோகக் கட்டட உத்தேசங்களுக்கு இல்லாதவகைத்தின் அனுமதி பெறப்பட வேண்டும். இதரபொது வகைக் கட்டடங்கள் போன்றவற்றிற்கு இத்துறையின் முன் அனுமதி பெறப்பட வேண்டும் எனவும் தெரிவிக்கப்படுகிறது.
3. புன்செய் நில அபிவிருத்தி எனில் வேளாண்மை இணை இயக்குநர், அவர்களின் தடையின்மைச் சான்று பெறப்பட வேண்டும்.
4. நன்செய் நில அபிவிருத்தி எனில் மாவட்ட ஆட்சியர் அவர்களின் தடையின்மைச் சான்று பெறப்பட வேண்டும்.
5. இச்சான்று தகவல் அளிக்கும் நோக்கத்தில் மட்டுமே வழங்கப்படுகிறது. நில உரிமம் குறித்து பரிசீலிக்கப்படவில்லை இதனை சட்டரீதியான நடவடிக்கைகளுக்கு தேவையான நகர் ஊரமைப்பு துறையின் அனுமதியாக கருதக் கூடாது.


உதவி இயக்குநர்,
மாவட்டநகர் ஊரமைப்பு அலுவலகம்,
திருவள்ளூர் மாவட்டம்.
14/06/23

Document-5 : Lab Reports

 ABC Techno Labs India Private Limited ABC TOWER #402, 13th Street, SIDCO Industrial Estate - North Phase, Ambattur, Chennai - 600 036, Tamilnadu, INDIA. Ph : +91-44-2625 7788 / 99, +91 94442 60050 / 95561 87777 Email: lab@abctechnolabs.com / Web: www.abctechnolabs.com (An ISO : 9001, ISO : 14001, ISO : 45001 & ISO : 22000 Certified Company)		 TC - 5770										
Accredited by NABL vide TC-5770, NABET / QCI, Approved by FSSAI, Recognized by MoEF&CC, BIS, APEDA, IOPEPC, Tea Board of India												
ISSUED TO: M/s. Shree Cements Limited, Tiruttani, Tiruvallur District, Tamil Nadu.												
TEST REPORT												
Report number	ABCTL/SCL/06/AAQ1											
Sample drawn by	ABC Techno Labs India Private Limited											
Sample description	Ambient Air Quality Monitoring - 24 Hourly Basis Twice a week for three Month											
Location of sampling	AAQ1- Project Site											
Project name	Tiruttani Clinker Grinding Unit (3.50 MTPA), Tiruvallur District, Tamil Nadu											
Date of sampling	02-06-2025 TO 23-06-2025											
Report date	15-07-2025											
Page 1 of 1												
Parameter	PM 2.5 µg/m ³ IQA 48 CVR P20	PM 10 µg/m ³ IS: 5182 P21	SO ₂ ppm ³ IS: 5182 P2	NO ₂ ppm ³ IS: 5182 P6	CO mg/m ³ IS: 5182 P18	O ₃ µg/m ³ ABCTL/SOP P407	NH ₃ µg/m ³ ABCTL/ SOP/ACK5	Lead µg/m ³ IS: 5182 P22	Benzene µg/m ³ IS: 5182 Part 11	O(a)P ng/m ³ ABCTL/S OP/18	Ni ng/m ³ ABCTL/S OP/112	As ng/m ³ ABCTL/ SOP/110
Test Method	IS: 5182 P20	IS: 5182 P21	IS: 5182 P2	IS: 5182 P6	IS: 5182 P18	ABCTL/SOP P407	ABCTL/ SOP/ACK5	IS: 5182 P22	IS: 5182 Part 11	ABCTL/S OP/18	ABCTL/S OP/112	ABCTL/ SOP/110
Date of Monitoring	02-06-2025	03-06-2025	04-06-2025	05-06-2025	06-06-2025	07-06-2025	08-06-2025	09-06-2025	10-06-2025	11-06-2025	12-06-2025	13-06-2025
Result	37	35	31	5.5	13.2	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	35	31	5.5	13.2	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	39	41	5.5	12.5	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	18	39	6.1	11.9	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	18	33	6.8	10.8	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	17	28	5.2	12.5	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	19	40	6.3	14.1	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	17	27	6.6	12.8	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	19	42	5.7	13.5	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	18	36	5.2	12.5	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	15	32	5.9	11.9	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	18	39	7.1	13.0	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	20	41	8.8	12.2	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	18	35	6.2	11.4	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	19	42	6.9	11.4	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	16	31	6.5	12.8	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	18	39	6.7	13.1	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	16	34	6.3	11.7	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	29	38	6.9	13.1	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	15	32	6.4	12.8	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	17	34	5.5	12.5	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	16	33	5.9	13.1	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	20	41	7.1	12.2	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Result	18	35	6.3	11.7	904(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)	804(+0.1)
Min	15	31	5.2	10.8	-	-	-	-	-	-	-	-
Max	29	42	7.1	14.1	-	-	-	-	-	-	-	-
Mean	12.5	34.4	6.3	12.5	-	-	-	-	-	-	-	-
permissible CPCB Standard	30.8	41.5	7.1	11.9	-	-	-	-	-	-	-	-
	60	100	80	80	2	100	400	1	5	1	20	6
BDL-Below Detection Limit												
--End of report--												
 S. Dharani Quality Manager Verified by								 A. Robson Chinnadurai Technical Manager-Lab Authorised Signatory				
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TC - 5770

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ISSUED TO:

TEST REPORT

**M/s. Shree Cements Limited,
Tiruttani, Tiruvallur District, Tamil Nadu.**

Report number	ABCTL/SCL/06/AAQZ											
Sample drawn by	ABC Techno Labs India Private Limited											
Sample description	Ambient Air Quality Monitoring -24 Hourly Basis Twice a week for three Month											
Location of sampling	AAQZ- Tiruttani											
Project name	Tiruttani Clinker Grinding Unit (3.50 MTPA), Tiruvallur District, Tamil Nadu											
Date of sampling	02-06-2025 TO 23-08-2025											
Report date	15-09-2025											

Page 1 of 3

Parameter	PM 2.5 µg/m ³	PM 10 µg/m ³	SO ₂ µg/m ³	NO _x µg/m ³	CO mg/m ³	O ₃ µg/m ³	NH ₃ µg/m ³	Lead µg/m ³	Benzo(a) pyrene µg/m ³	Dibenz(a,h) anthracene µg/m ³	Fluoranthene µg/m ³	Acenaphthene µg/m ³
Test Method	EPA 40 CFR 504	IS: 5182 P23	IS: 5182 P2	IS: 5182 P6	IS: 5182 P10	ABCTL/OPH/07	ABCTL/ SOPH/05	IS: 5182 P22	IS: 5182 Part 11	ABCTL/SOPH/ 16	ABCTL/ OPH/12	ABCTL/ SOPH/10
02-02-06-2025	26	56	8.9	17.7	0.26	18.2	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
03-04-06-2025	21	51	9.3	16.3	0.31	15.4	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
10-11-06-2025	22	46	7.5	10.5	0.28	17.2	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
11-12-06-2025	26	51	8.1	18.2	0.33	16.1	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
18-10-06-2025	25	53	6.9	14.9	0.41	12.9	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
19-20-06-2025	27	57	8.2	16.6	0.38	14.6	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
26-27-06-2025	29	61	7.1	15.1	0.46	13.7	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
27-28-06-2025	34	52	6.1	17.5	0.41	15.2	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
07-02-07-2025	23	48	8.5	13.8	0.42	12.3	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
09-03-07-2025	26	56	9.4	18.6	0.33	15.6	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
10-11-07-2025	34	48	2.7	14.9	0.27	12.8	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
11-12-07-2025	22	47	7.8	16.6	0.35	14.3	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
17-18-07-2025	28	59	6.2	17.2	0.31	13.8	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
19-19-07-2025	25	53	8.1	18.9	0.42	14.3	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
25-26-07-2025	23	48	9.3	16.3	0.25	15.1	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
26-27-07-2025	28	57	8.4	18.1	0.39	14.7	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
01-02-08-2025	24	53	7.3	16.7	0.41	15.6	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
02-03-08-2025	26	60	10.7	15.3	0.29	13.3	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
08-09-08-2025	27	56	9.4	18.3	0.41	16.8	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
09-10-08-2025	25	53	7.6	17.5	0.29	15.4	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
13-14-08-2025	27	59	8.4	18.4	0.37	15.3	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
16-16-08-2025	29	59	6.9	16.1	0.38	14.6	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
21-22-08-2025	28	47	7.7	17.5	0.21	13.9	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
22-23-08-2025	28	61	8.6	19.2	0.33	15.3	NDL(<0.1)	NDL(<0.1)	NDL(<0.01)	NDL(<0.1)	NDL(<1)	NDL(<1)
Min	22	45	6.2	13.8	0.21	12.3	-	-	-	-	-	-
Max	29	61	10.7	19.5	0.46	17.10	-	-	-	-	-	-
Mean	25.5	53.8	8.1	17.1	0.34	14.89	-	-	-	-	-	-
SD	-	-	-	-	-	-	-	-	-	-	-	-
permissible	29.8	61.0	10.1	19.4	0.44	16.73	-	-	-	-	-	-
CPCB Standard	60	100	80	80	2	100	400	1	5	1	20	6

NDL-Below Detection Limit

S. Dharani
Quality Manager
Verified by

...End of report...

A. Robson Chinnadurai
Technical Manager-Lab
Authorised Signatory

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TC - 5770

ISSUED TO: **TEST REPORT**

M/s. Shree Cements Limited,
Tiruttani, Tiruvallur District, Tamil Nadu.

Report number	ABCTL/SCL/06/AAQB										
Sample drawn by	ABC Techno Labs India Private Limited										
Sample description	Ambient Air Quality Monitoring - 24 Hourly Basis Twice a week for three Month										
Location of sampling	AAQB- Suryanagar										
Project name	Tiruttani Clinker Grinding Unit (3.50 MTPA), Tiruvallur District, Tamil Nadu										
Date of sampling	07-06-2025 TO 23-06-2025										
Report date	15-01-2025										

Page 1 of 1

Parameter	PM 2.5 µg/m ³	PM 10 µg/m ³	SO ₂ µg/m ³	NO _x µg/m ³	CO mg/m ³	O ₃ µg/m ³	RM, µg/m ³	Lead µg/m ³	Benzene µg/m ³	B(a)P ng/m ³	Ni ng/m ³	As ng/m ³
Method	EPA 43 CFR P90	IS: 5182 P22	IS: 5182 P2	IS: 5182 P8	IS: 5182 P18	ABCTL/5 OPR/07	ABCTL/5 SOP/05	IS: 5182 P22	IS: 5182 Part 11	ABCTL/5OPV 12	ABCTL/5 OPR/12	ABCTL/5 SOP/10
03-03-2025	19	41	5.9	13.3	0.21	12.1	BOX(+3)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+2)	BOX(+2)
03-06-2025	22	46	6.3	12.4	0.16	11.6	BOX(+5)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+3)
10-11-2025	18	39	5.7	13.9	0.29	12.7	BOX(+5)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+2)
11-12-2025	23	48	5.1	14.2	0.33	12.2	BOX(+5)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+3)
18-19-06-2025	21	44	6.4	12.8	0.17	11.3	BOX(+5)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+1)
19-20-06-2025	20	42	6.1	14.4	0.25	12.6	BOX(+5)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+1)
26-27-06-2025	23	47	5.9	13.6	0.14	11.7	BOX(+5)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+1)
27-28-06-2025	18	41	7.1	13.7	0.36	12.1	BOX(+5)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+1)
01-02-07-2025	22	48	5.5	13.9	0.20	12.8	BOX(+3)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+1)
02-03-07-2025	19	38	5.9	14.7	0.13	12.8	BOX(+1)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+1)
10-11-07-2025	21	43	6.2	12.9	0.18	11.2	BOX(+5)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+1)
11-12-07-2025	23	47	6.7	13.4	0.21	10.6	BOX(+1)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+1)
17-18-07-2025	18	40	5.5	14.7	0.14	12.6	BOX(+5)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+1)
18-19-07-2025	22	49	6.1	13.3	0.18	11.3	BOX(+5)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+1)
23-24-07-2025	21	45	6.9	15.2	0.23	13.6	BOX(+5)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+1)
26-27-07-2025	19	39	7.2	14.6	0.17	12.6	BOX(+5)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+1)
01-02-08-2025	23	43	6.6	13.9	0.16	11.8	BOX(+5)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+1)
02-03-08-2025	21	48	5.8	13.8	0.21	10.6	BOX(+1)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+1)
08-09-08-2025	19	40	5.1	15.5	0.15	11.2	BOX(+1)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+1)
09-10-08-2025	21	45	6.4	16.7	0.13	14.2	BOX(+5)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+1)
13-14-08-2025	23	49	5.9	14.3	0.16	11.3	BOX(+5)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+1)
14-15-08-2025	25	51	6.1	13.2	0.14	12.6	BOX(+5)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+1)
21-22-08-2025	30	42	5.8	12.9	0.12	11.8	BOX(+5)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+1)
22-23-08-2025	19	39	6.8	15.3	0.19	13.6	BOX(+5)	BOX(+0.1)	BOX(+0.0)	BOX(+0.1)	BOX(+1)	BOX(+1)
Min	10	38	5.3	12.4	0.11	10.6	-	-	-	-	-	-
Max	25	51	7.2	16.7	0.29	14.20	-	-	-	-	-	-
Avg	20.9	43.8	6.1	14.0	0.18	12.11	-	-	-	-	-	-
permissible CPCB Standard	24.1	50.1	7.2	16.1	0.27	11.92	-	-	-	-	-	-
	60	100	80	80	2	109	400	1	5	1	20	6

End of report...

S. Dharami
S. Dharami
Quality Manager
Verified by



A. Robson Chinnadurai
A. Robson Chinnadurai
Technical Manager-Lab
Authorized Signatory

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TC - 5770

ISSUED TO: **TEST REPORT**

**M/s. Shree Cements Limited,
Tiruttani, Tiruvallur District, Tamil Nadu.**

Report number	1	ABCCTL/SCL/06/N1-N3
Sampled by	2	ABC Techno Labs India Private Limited
Sample description	1	Noise Level Monitoring
Project Name	2	Tiruttani Clinker Grinding Unit (3.50 MTPA), Tiruvallur District, Tamil Nadu
Date of sampling	1	15-06-2025 TO 16-06-2025
Date of Receipt	1	17-06-2025
Date of Analysis	1	17-06-2025
Report date	1	24-06-2025

Page 1 of 1

No.	Shift	Time (Hours)	Project Site (N1)		Tiruttani (N2)		Perungalathur (N3)	
			Leq Hourly	Leq	Leq Hourly	Leq	Leq Hourly	Leq
1	Day Time	06-07	43.8	Day 47.2	46.8	Day 51	44.5	Day 48.4
2		07-08	44.9		49.8		46.1	
3		08-09	45.5		50.6		46.8	
4		09-10	46.7		52.1		47.4	
5		10-11	48.5		53.3		49.5	
6		11-12	47.8		51.6		50.3	
7		12-13	46.7		50.7		49.7	
8		13-14	48.1		49.9		48.8	
9		14-15	46.6		50.1		49.2	
10		15-16	46.7		51.6		48.6	
11		16-17	48.4		51.9		50.7	
12		17-18	49.6		52.6		51	
13		18-19	50.7		53.1		50.3	
14		19-20	47.7		51.3		48.4	
15	Night Time	20-21	45.94	50.7	46.5	Night 43.1		
16		21-22	45.7	49.1	46			
17		22-23	45.5	48	45.9			
18		23-00	44.7	47	44.3			
19		00-01	43.7	46.2	43.6			
20		01-02	42.2	44.7	41.5			
21		02-03	42.2	43.8	41.7			
22		03-04	41.9	42.5	42.9			
23		04-05	42.3	42	41.5			
24		05-06	42.9	44.5	43.1			

Method: IS: 9899-1981 (Reaff: 2023)-Ambient

Ambient Noise Standards

Zone Classification	Day dB(A)	Night dB(A)
Industrial Area	75	70
Commercial Area	65	55
Residential Area	55	45
Silence Zone	50	40



S. Dharam
Quality Manager
Verified by

End of report





A. Robinson Chinnadurai
Technical Manager-Lab
Authorised Signatory

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TC - 5770

ISSUED TO: **TEST REPORT**

**M/s. Shree Cements Limited,
Tiruttani, Tiruvallur District, Tamil Nadu.**

Report number	: ABCTL/SCL/06/N7-N8
Sampled by	: ABC Techno Labs India Private Limited
Sample description	: Noise Level Monitoring
Project Name	: Tiruttani Clinker Grinding Unit (3.50 MTPA), Tiruvallur District, Tamil Nadu
Date of sampling	: 15-06-2025 TO 16-06-2025
Date of Receipt	: 17-06-2025
Date of Analysis	: 17-06-2025
Report date	: 24-06-2025 Page 1 of 1

No.	Shift	Time (Hours)	Guruvayapet(N7)		Suryanagaram (N8)	
			Leg Hourly	Leg	Leg Hourly	Leg
1	Day Time	06-07	45.2	Day 49.3	43.8	Day 47.9
2		07-08	47.8		45.3	
3		08-09	49.8		45.9	
4		09-10	50.3		47.4	
5		10-11	49.7		48.6	
6		11-12	49.1		49.2	
7		12-13	50.6		50.2	
8		13-14	50.1		48.6	
9		14-15	49.9		50.3	
10		15-16	50.1		49.4	
11		16-17	51.1		50.5	
12		17-18	51.0		50.9	
13		18-19	49.8		48.9	
14		19-20	48.1		47.6	
15	20-21	47.9	45.1	Night 42.1		
16	21-22	47.5	44.9			
17	22-23	46.3	44.6			
18	23-00	44.6	42.5			
19	00-01	43.7	41.8			
20	01-02	43.1	41.5			
21	02-03	42.2	41.1			
22	03-04	41.7	40.8			
23	04-05	41.6	41.9			
24	05-06	42.8	42.7			

Method: IS: 9995-1901(Reaff: 2023)-Ambient

Ambient Noise Standards

Zone Classification	Day dB(A)	Night dB(A)
Industrial Area	75	70
Commercial Area	65	55
Residential Area	55	45
Silence Zone	50	40

S. Dharani
S. Dharani
Quality Manager
Verified by

...End of report...

A. Robson Chinnadurai
A. Robson Chinnadurai
Technical Manager-Lab
Authorised Signatory

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ISSUED TO:		TEST REPORT					
M/s. Shree Cements Limited, Tiruttani, Tiruvallur District, Tamil Nadu.							
Report number	ABCTL/SCI/08/SW1-SW3						
Sample Drawn by	ABC Techno Labs India Private Limited						
Sampling method	IS 17614 :Part 4 & Part 6 :2021						
Sample description	Surface Water - SW1 - Nandhi River Upstream SW2 - Nandhi River Near Site , SW3- Nandhi River Downstream						
Project Name	Tiruttani Clinker Grinding Unit (3.50 MTPA), Tiruvallur District, Tamil Nadu						
Date of sampling	09-08-2025						
Date of Receipt	11-08-2025						
Date of Analysis	11-08-2025						
Date Completion	19-08-2025						
Report date	20-08-2025						
Page 1 of 2							
S. No	Parameter	Unit	Results			Test procedure	
			SW1	SW2	SW3		
1	Temperature	°C	27.5	27.3	26.5	APHA 24 th EDN - 2550B	
2	Colour	Hazen	BDL(DL5)	BDL(DL5)	BDL(DL5)	APHA 24 th EDN - 2120 C	
3	pH at 25°C	-	7.18	7.75	7.71	IS 3025(part 11)2022	
4	Electrical Conductivity	µS/cm	900	810	970	IS : 3025 Part 14-1984 (Reaff: 2019)	
5	Turbidity	NTU	9.8	7.1	12.4	IS : 3025 Part 10- 2023	
6	Total Dissolved Solids	mg/l	580	530	650	IS : 3025 Part 16- 2023	
7	Total Hardness as CaCO ₃	mg/l	180	152	240	IS : 3025 Part 21-1983 (Reaff: 2019)	
8	Calcium Hardness	mg/l	118	90	140	IS:3025 Part 40	
9	Magnesium Hardness	mg/l	70	62	100	APHA 24 th EDN - 3500 Mg B	
10	Total Alkalinity as CaCO ₃	mg/l	130	148	160	IS : 3025 Part 23- 2023	
11	Chloride as Cl	mg/l	145	107	145	IS : 3025 Part 32-1988 (Reaff: 2019)	
12	Sulphate as SO ₄	mg/l	46	34	49	APHA 24 th EDN - 3112 B	
13	Fluoride as F	mg/l	0.36	0.25	0.16	APHA 24 th EDN - 4500-F B&D	
14	Nitrate as NO ₃	mg/l	13	13	15	APHA 24 th EDN - 4500- NO ₃ B	
15	Phosphate as PO ₄	mg/l	0.96	0.51	0.81	IS : 3025 Part 31-1988 (Reaff: 2019)	
16	Sodium as Na	mg/l	98	79	91	IS:3025 Part 45-1993(Reaff: 2019)	
17	Potassium as K	mg/l	8.9	6	12	IS:3025 Part 45-1993(Reaff: 2019)	
18	Calcium as Ca	mg/l	44	36	56	IS:3025 Part 40-1991(Reaff: 2019)	
19	Magnesium as Mg	mg/l	17	15	24.2	APHA 24 th EDN 3500 Mg B	
20	Iron as Fe	mg/l	0.3	0.65	0.41	IS : 3025 Part 53-2003 (Reaff: 2019)	
21	Manganese as Mn	mg/l	0.13	0.09	0.1	APHA 24 th EDN - 3111 B	
BDL - Below Detection Limit							
Contd.							
 S. Dharani Quality Manager Verified by						 A. Robson Chinnadurai Technical Manager-Lab Authorised Signatory	
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ISSUED TO:

**M/s. Shree Cements Limited,
Tiruttani, Tiruvallur District, Tamil Nadu.**

TEST REPORT

Report number	: ABCTL/SCL/08/SW1-SW3
Sample description	: Surface Water - SW1 - Nandhi River Upstream SW2 - Nandhi River Near Site, SW3- Nandhi River Downstream
Report date	: 20-08-2025 Page 2 of 2

S. No	Parameter	Unit	Results			Test Procedure
			SW1	SW2	SW3	
22	Total Suspended Solids	mg/l	12	9	15	IS:3025 Part 17-2022
23	Dissolved Oxygen as O ₂	mg/l	5.1	5.4	4.9	IS:3025-Part-38-1989(Reaff: 2019)
24	Chemical Oxygen Demand	mg/l	32	24	38	IS:3025-Part-58-2023
25	Bio-Chemical Oxygen Demand @ 27°C for 3 days	mg/l	5.8	4.8	6.3	IS:3025-Part-44-2023
26	Phenolic compounds as CalhOH	mg/l	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	APHA 24 th EDN 5530 B,C,D
27	Boron as B	mg/l	0.14	0.12	0.21	APHA 24 th EDN -4500-B B
28	Aluminum as Al	mg/l	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	APHA 24 th EDN 3500 Al B
29	Copper as Cu	mg/l	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	APHA 24 th EDN -3111 B
30	Mercury as Hg	mg/l	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	APHA 24 th EDN -3112 B
31	Cadmium as Cd	mg/l	BDL(DL:0.003)	BDL(DL:0.003)	BDL(DL:0.003)	APHA 24 th EDN -3111 B
32	Selenium as Se	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	APHA 24 th EDN -3113 B
33	Total Arsenic as As	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	APHA 24 th EDN -3111 B
34	Cyanide as CN	mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	APHA 24 th EDN -4500-CN E
35	Lead as Pb	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	APHA 24 th EDN -3111 B
36	Zinc as Zn	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	APHA 24 th EDN -3111 B
37	Total Chromium as Cr	mg/l	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	APHA 24 th EDN -3111 B
38	Nickel as Ni	mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	APHA 24 th EDN -3111 B
39	Oil & Grease	mg/l	BDL(DL:1)	BDL(DL:1)	BDL(DL:1)	IS:3025-Part-39:1991(Reaff: 2019)
40	Pesticides	mg/l	Absent	Absent	Absent	APHA 24 th EDN -6630 B, C
41	Percent sodium	%	52.7	51.9	43.7	ABCTL/SOP/ W/33
42	Residual Free Chlorine	mg/l	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	IS 3025 Part 26
43	Total Coliform	MPN/100ml	>1600	>1600	>1600	IS-622-1981 (Reaff - 2019)
44	E.coli	MPN/100ml	>1600	900	>1600	IS-1622-1981(Reaff - 2019)
45	Fecal Coliform	MPN/100ml	>1600	280	>1600	IS-622-1981 (Reaff - 2019)

BDL - Below Detection Limit

...End of Report...

S. Dharani
Quality Manager

Verified by



S. Thamarai Selvi

Manager - Microbiology



A. Robson Chinnadural
Technical Manager-Lab

Authorised Signatory

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ISSUED TO:

TEST REPORT

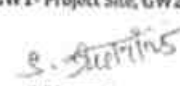
M/s. Shree Cements Limited,
Tiruttani, Tiruvallur District, Tamil Nadu.

Report number	:	ABCTL/SCL/07/GW1-GW2
Sample drawn by	:	ABC Techno Labs India Private Limited
Sampling method	:	IS 17614 :Part 21-2021& IS 17614 :Part 25-2021
Sample description	:	Ground Water
Project Name	:	Tiruttani Clinker Grinding Unit (3.50 MTPA), Tiruvallur District, Tamil Nadu
Date of sampling	:	15-07-2025
Date of Receipt	:	16-07-2025
Date of Analysis	:	16-07-2025
Date Completion	:	24-07-2025
Report date	:	24-07-2025

Page 1 of 2

S. No.	Parameter	Unit	Results		Test procedure	Acceptable limit as per IS 10500 : 2012
			GW1	GW2		
1	Colour	Hazen	BDL(DL:5)	BDL(DL:5)	IS 3025 (part 4) 2021	5
2	Temperature	°C	25.9	25.3	APHA 24 th EDN 2550 B	Not Specified
3	Turbidity	NTU	BDL(DL:0.5)	BDL(DL:0.5)	IS 3025(part 10)2023	1
4	pH at 25 °C	-	7.29	7.62	IS 3025(part 11)2022	6.5-8.5
5	Conductivity at 25 °C	µS/cm	1100	1580	IS 3025 (part 14) 2013(RA 2019)	Not Specified
6	Total dissolved solids	mg/l	720	1050	IS :3025 Part 16-2023	500
7	Total Suspended solids	mg/l	BDL(DL:1)	BDL(DL:1)	IS :3025 Part 17-2022	Not Specified
8	Total Alkalinity as CaCO ₃	mg/l	208	231	IS : 3025 Part 23-2023	200
9	Total Hardness as CaCO ₃	mg/l	222	314	IS : 3025 Part 21-2009	200
10	Calcium Hardness	mg/l	155	195	IS : 3025 Part 40	Not Specified
11	Magnesium Hardness	mg/l	67	119	APHA 24 th EDN -3500 Mg B	Not Specified
12	Calcium as Ca	mg/l	62	98	IS:3025 Part 40-1991(Reaff: 2019)	75
13	Magnesium as Mg	mg/l	16.2	29	APHA 24 th EDN -3500 Mg B	30
14	Chloride as Cl ⁻	mg/l	136	287	IS :3025 Part 32-1988(Reaff: 2019)	250
15	Sulphate as SO ₄	mg/l	67	110	APHA 24 th EDN -4500-SO ₄ ²⁻ E	200
16	Nitrate as NO ₃	mg/l	3	7	APHA 24 th EDN -4500- NO ₃ ⁻ B	45
17	Iron as Fe	mg/l	0.29	0.41	IS 3025(part 53)1987(Reaff: 2019)	1
18	Manganese as Mn	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	APHA 24 th EDN -3111 B	0.10
19	Fluoride as F ⁻	mg/l	0.29	0.41	APHA 24 th EDN -4500-F B&D	1.00

GW1- Project Site, GW2- Tiruttani




S. Dharani
Quality Manager
Verified by



Contd....



A. Robson Chinnadurai
Technical Manager-Lab
Authorised Signatory

Terms and Conditions:

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Accredited by NABL vide TC-5770, NABET / QCI, Approved by FSSAI, Recognized by MoEF&CC, BIS, APEDA, IOPEPC, Tea Board of India						
ISSUED TO:		TEST REPORT				
M/s. Shree Cements Limited, Tiruttani, Tiruvallur District, Tamil Nadu.						
Report no	:	ABCTL/SCL/07/GW1-GW2				
Sample description	:	Ground Water				
Date of report	:	24-07-2025				
				Page 2 of 2		
S. No.	Parameter	Unit	Results		Test procedure	Acceptable limit as per IS 10500 : 2012
			GW1	GW2		
20	Sodium as Na	mg/l	102	184	IS : 3025 Part 45-1993 (Reaff-2019)	Not Specified
21	Potassium as K	mg/l	4.7	9.7	IS : 3025 Part 45-1993 (Reaff-2019)	Not Specified
22	Phosphate as PO ₄	mg/l	0.18	0.32	IS : 3025 Part 45	Not Specified
23	Residual Free Chlorine	mg/l	BDL(DL:0.1)	BDL(DL:0.1)	IS 3025 Part 26	0.20
24	Boron as B	mg/l	BDL(DL:0.1)	0.15	APHA 24 th EDN -4500-B B	0.20
25	Aluminium as Al	mg/l	BDL(DL:0.03)	BDL(DL:0.03)	APHA 24 th EDN 3500 Al B	0.03
26	Cadmium as Cd	mg/l	BDL(DL:0.003)	BDL(DL:0.003)	APHA 24 th EDN -3111 B	0.003
27	Lead as Pb	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	APHA 24 th EDN -3113 B	0.01
28	Copper as Cu	mg/l	BDL(DL:0.03)	BDL(DL:0.03)	APHA 24 th EDN -3111 B	0.05
29	Nickel as Ni	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	APHA 24 th EDN -3113 B	0.02
30	Zinc as Zn	mg/l	0.03	0.07	APHA 24 th EDN -3111 B	5.00
31	Total Chromium as Cr	mg/l	BDL(DL:0.03)	BDL(DL:0.03)	APHA 24 th EDN -3111 B	0.05
32	Arsenic as As	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	APHA 24 th EDN -3113 B	0.01
33	Cyanide as CN	mg/l	BDL(DL:0.05)	BDL(DL:0.05)	APHA 24 th EDN -4500-CN E	0.05
34	Selenium as Se	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	APHA 24 th EDN -3113 B	0.01
35	Mercury as Hg	mg/l	BDL(DL:0.001)	BDL(DL:0.001)	APHA 24 th EDN -3112 B	0.001
36	Phenolic Compounds as Phenol	mg/l	BDL(DL:0.001)	BDL(DL:0.001)	APHA 24 th EDN 5530 B,C	0.001
37	Pesticides	mg/l	Absent	Absent	APHA 24 th EDN -6630 B, C	Absent
38	Total Coliforms	MPN/100ml	<2	<2	IS-1622-1981 (Reaff - 2019)	Absent /100ml
39	E.coli	MPN/100ml	<2	<2	IS-1622-1981 (Reaff-2019)	Absent /100ml
40	Fecal Coliform	MPN/100ml	<2	<2	IS-1622-1981 (Reaff-2019)	Not Specified
GW1 - Project Site, GW2 - Tiruttani BDL - Below Detection Limit DL - Detection Limit S. Dharani Quality Manager Verified by						
 S. Dharani Quality Manager Verified by			 A. Robson Chinnadurai Technical Manager-Lab Authorized Signatory			
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TEST REPORT

M/s. Shree Cements Limited,
Tiruttani, Tiruvallur District, Tamil Nadu.

Report number	:	ABCTL/SCL/07/GW1-GW2
Sample drawn by	:	ABC Techno Labs India Private Limited
Sampling method	:	IS 17614 :Part 21:2021& IS 17614 :Part 25:2021
Sample description	:	Ground Water
Project Name	:	Tiruttani Clinker Grinding Unit (3.50 MTPA), Tiruvallur District, Tamil Nadu
Date of sampling	:	15-07-2025
Date of Receipt	:	16-07-2025
Date of Analysis	:	16-07-2025
Date Completion	:	24-07-2025
Report date	:	24-07-2025

Page 1 of 1

S. No.	Parameter	Unit	Results		Test procedure	Acceptable limit as per IS 10500 : 2012
			GW1	GW2		
1	Dissolved Oxygen, mg/l	mg/l	5.8	5.5	IS:3025:Part-38:1989(Reaff: 2019)	Not Specified
2	BOD-3 days @ 27°C, mg/l	mg/l	BDL(DL:1)	BDL(DL:1)	IS:3025:Part-44:2023	Not Specified
3	COD, mg/l	mg/l	4	12	IS:3025:Part-58:2023	Not Specified
4	Oil & Grease, mg/l	mg/l	BDL(DL:0.1)	BDL(DL:0.1)	IS:3025:Part-39:1991(Reaff: 2019)	Not Specified
5	Percent Sodium	mg/l	49.3	55.0	ABCTL/SOP/W/33	Not Specified

GW1- Project Site, GW2- Tiruttani
 BDL- Below Detection Limit DL-Detection Limit

---End of report---


S. Dharani
 Verified for
 Quality Manager


A. Robson Chinnadurai
 Authorized Signature
 Technical Manager - Lab

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Quality Empowerment

ABC Techno Labs India Private Limited

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ISSUED TO:

TEST REPORT

**M/s. Shree Cements Limited,
Tiruttani, Tiruvallur District, Tamil Nadu.**

Report number	: ABCTL/SOI/06/S1-S3			
Sample collected by	: ABC Techno Labs India Private Limited			
Sample description	: Soil Analysis			
Project Name	: Tiruttani Clinker Grinding Unit (3.50 MTPA), Tiruvallur District, Tamil Nadu			
Date of sampling	: 15-06-2025 TO 16-06-2025			
Date of Receipt	: 17-06-2025			
Date of Analysis	: 18-06-2025			
Report date	: 24-06-2025			

S.No	Parameters	Test Methods	S1	S2	S3
1	pH	IS-2720(Part 26):1987(RA 2021)	7.54	7.69	8.11
2	Bulk Density, g/cc	FAO Chapter 3, ABCTL/SOIL/SOP 1	1.31	1.35	1.24
3	Moisture, %	IS 2720 (Part 2)	9.84	7.68	11.1
4	Electrical Conductivity, $\mu S/cm$	IS - 14767:2000 (RA 2021)	124	174	207
5	Total Nitrogen as N, mg/kg	IS - 14684:1999, Reaff:2019	248	171	312
6	Available Phosphorus as P, mg/kg	FAO Chapter 3, ABCTL/SOIL/SOP 2	35.8	51.4	42.8
7	Available Potassium as K, mg/kg	FAO Chapter 3, ABCTL/SOIL/SOP 7	334	284	394
8	Exchangeable Calcium as Ca, meq/100g	FAO Chapter 3, ABCTL/SOIL/SOP 4	23.6	21.7	25.9
9	Exchangeable Magnesium as Mg, meq/100g	FAO Chapter 3, ABCTL/SOIL/SOP 5	6.78	5.31	5.95
10	Exchangeable Sodium as Na, meq/100g	FAO Chapter 3, ABCTL/SOIL/SOP 6	1.14	0.98	1.21
11	Sodium Absorption Ratio (cmol/kg) ^{1/2}	ABCTL/SOP/S20	0.96	0.84	0.96
12	Cation Exchange Capacity, meq/100 g	IS 2720 (Part 24)	17.9	16.8	19.1
13	Organic Carbon (%)	IS 2720 (Part 22):1972, Reaff:2020	0.64	0.54	0.71
14	Chloride as Cl, mg/kg	ABCTL/SOP/S/21 Issue Date 20.05.2023	132	174	191
15	Sulphate as SO ₄ , mg/kg	IS 2720 (Part 27)	274	312	182
16	Texture Classification	ABCTL/SOP/S21 Issue No.1 Date 20.05.2023	Clay Loam	Loam	Clay
17	Sand (%)		35.3	38.4	28.4
18	Clay (%)		30.9	34.5	11.9
19	Silt (%)		33.8	27.1	59.7

Page 2 of 3

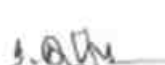
S1- Project Site, S2 -Tiruttani, S3- Palliyakoppam

...End of report...



S. Dharani
Quality Manager
Verified by





A. Robson Chinnadural
Technical Manager-Lab
Authorized Signatory

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Email: lab@abctechnolabs.com / Web: www.abctechnolabs.com

TEST REPORT

M/s. Shree Cements Limited,
Tiruttani, Tiruvallur District, Tamil Nadu.

Report number	: ABCTL/SCL/06/S1-S3
Sample collected by	: ABC Techno Labs India Private Limited
Sample description	: Soil Analysis
Project Name	: Tiruttani Clinker Grinding Unit (3.50 MTPA), Tiruvallur District, Tamil Nadu
Date of sampling	: 15-06-2025 TO 16-06-2025
Date of Receipt	: 17-06-2025
Date of Analysis	: 18-06-2025
Report date	: 24-06-2025

Page 1 of 1

S.No	Parameters	Test Methods	S1	S2	S3
1	Colour	By Visual Method	Red	Brown	Grey
2	Compaction	FAO Chapter 3	Medium	Medium	Medium
3	Infiltration Rate, cm/hr	FAO Chapter 3	3.4	4.8	2.5

S1- Project Site, S2 -Tiruttani, S3- Palliyakuppam

...End of report...



Verified by
S. Dharani
Quality Manager

Robson Chinnadurai
Technical Manager-Lab

Terms and conditions :

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Accredited by NABL vide TC-5770, NABET / QCI, Approved by FSSAI, Recognised by MoEF&CC, BIS, APEDA, IOF&PC, Tea Board of India					
ISSUED TO:		TEST REPORT			
M/s. Shree Cements Limited, Tiruttani, Tiruvallur District, Tamil Nadu.					
Report number	:	ABCTL/SCL/06/54-56			
Sample collected by	:	ABC Techno Labs India Private Limited			
Sample description	:	Soil Analysis			
Project Name	:	Tiruttani Clinker Grinding Unit (3.50 MTPA), Tiruvallur District, Tamil Nadu			
Date of sampling	:	15-06-2025 TO 16-06-2025			
Date of Receipt	:	17-06-2025			
Date of Analysis	:	18-06-2025			
Report date	:	24-06-2025			
Page 1 of 1					
S.No	Parameters	Test Methods	S4	S5	S6
1	pH	IS-2720(Part 26) 1987(RA 2021)	7.46	7.79	7.81
2	Bulk Density, g/cc	FAO Chapter 3, ABCTL/SOIL/SOP 1	1.31	1.35	1.24
3	Moisture, %	IS 2720 (Part 2)	8.45	12.6	9.78
4	Electrical Conductivity, $\mu S/cm$	IS - 14767:2000 (RA 2021)	156	178	187
5	Total Nitrogen as N, mg/kg	IS - 14684:1999, Reaff:2019	196	282	154
6	Available Phosphorous as P, mg/kg	FAO Chapter 3, ABCTL/SOIL/SOP 2	38.4	47.2	61.4
7	Available Potassium as K, mg/kg	FAO Chapter 3, ABCTL/SOIL/SOP 7	342	402	294
8	Exchangeable Calcium as Ca, m.eq/100g	FAO Chapter 3, ABCTL/SOIL/SOP 4	24.1	26.6	22.8
9	Exchangeable Magnesium as Mg, m.eq/100g	FAO Chapter 3, ABCTL/SOIL/SOP 5	6.38	6.11	6.74
10	Exchangeable Sodium as Na, m.eq/100g	FAO Chapter 3, ABCTL/SOIL/SOP 6	1.06	1.15	1.32
11	Sodium Absorption Ratio (cmol/kg) ^{1/2}	ABCTL/SOP/S20	0.69	0.90	1.10
12	Cation Exchange Capacity, meq/100 g	IS 2720 (Part 24)	18.7	20.1	17.5
13	Organic Carbon (%)	IS 2720 (Part 27):1972, Reaff:2020	0.68	0.49	0.71
14	Chloride as Cl, mg/kg	ABCTL/SOP/S21 Issue Date 20.06.2023	117	135	166
15	Sulphate as SO ₄ , mg/kg	IS 2720 (Part 27)	241	219	198
16	Texture Classification		Clay	Clay	Clay Loam
17	Sand (%)	ABCTL/SOP/S21 Issue No.1 Date 20.05.2023	25.6	27.7	36.5
18	Clay (%)		12.6	15.9	28.8
19	Silt (%)		61.8	56.4	34.7
S4- Kolattur, S5-Guruvajapet, S6- Suryanagaram					
End of report					
 S.Dharani Quality Manager Verified by		 A. Robson Chinnadurai Technical Manager-Lab Authorised Signatory			
Terms and Conditions : • This test results valid only in the form tested • The test report shall not be reproduced in full or part without the written approval of ABC TL • The test items will not be retained for more than 10 days from the date of issue of test report for Non-Perishable samples and in the case of Perishable samples test items will be retained for 7 days after date of receipt as per customer					



ABC Techno Labs India Private Limited

(An ISO : 9001, ISO : 14001, ISO : 45001 & ISO : 22000 Certified Company)

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TEST REPORT

M/s. Shree Cements Limited,
Tiruttani, Tiruvallur District, Tamil Nadu.

Report number	:	ABCTL/SCL/06/S4-S6
Sample collected by	:	ABC Techno Labs India Private Limited
Sample description	:	Soil Analysis
Project Name	:	Tiruttani Clinker Grinding Unit (3.50 MTPA), Tiruvallur District, Tamil Nadu
Date of sampling	:	15-06-2025 TO 16-06-2025
Date of Receipt	:	17-06-2025
Date of Analysis	:	18-06-2025
Report date	:	24-06-2025

S.No	Parameters	Test Methods	S4	S5	S6
1	Colour	By Visual Method	Grey	Grey	Grey
2	Compaction	FAO Chapter 3	Medium	Medium	Medium
3	Infiltration Rate, cm/hr	FAO Chapter 3	2.1	2.9	3.7

Page 3 of 1

S4- Kolattur, S5 -Guruvorajapet, S6- Suryanagaram End of report....



Verified by *S. Dharani*
Quality Manager

A. Robinson Chinadurai
Technical Manager-Lab

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