
HARYANA STATE POLLUTION CONTROL BOARD
C-11 Sector-6, Panchkula
Ph - 0172- 577870-73, Fax No. 2581201
E-mail- hspcbplanning@gmail.com
Website: hspcb.org.in

08-04-2025

To

The Member Secretary,
State Environment Impact Assessment Authority (SEIAA)
Bays No. 55 - 58, Prayatan Bhawan,
1st floor, Sector 2, Panchkula.

Sub: Proceedings of Minutes of Meeting of the Public Hearing for Submission of Draft EIA-EMP Report alongwith Executive Summary for Conducting Public Hearing for obtaining Environment Clearance with respect to the proposed Cement Grinding Unit with Cement Production Capacity of 2x3 Million Metric Tones per Annuam (6.0 MMTPA) at Located Village Devli, Tehsil and District- Palwal Haryana of M/s Ambuja Cement Limited.

Kindly refer to reference dated 27.08.2024 on the subject noted above.

Please find enclosed herewith the proceeding of the public hearing conducted on 30.01.2025 at 11:00 AM. under the provisions of EIA Notification dated 14.09.2006 for Draft EIA-EMP Report alongwith Executive Summary for Conducting Public Hearing for obtaining Environment Clearance with respect to the proposed Cement Grinding Unit with Cement Production Capacity of 2x3 Million Metric Tones per Annuam (6.0 MMTPA) at Located Village Devli, Tehsil and District- Palwal Haryana State forwarded by Regional Officer, Palwal Region, Haryana State Pollution Control Board vide letter dated 27.02.2025 alongwith attendance sheet, CD, photographs and other relevant documents for information and further necessary action.

DA/as above.

Env. Engineer (HQ)
For Member Secretary

Endst. No.

Date:

A copy of above alongwith copy of proceeding with attendance sheet is forwarded to following for information and further necessary action please:-

1. The Secretary, Impact Assessment division -II (I), Minister of environment forest and climate change ,India Paryavaran Bhavan, Vayu Wing, 3rd floor, Aliganj Jor Bagh Road, New Delhi 110003
2. The Additional Chief Secretary to Govt. Haryana, Environment Forest and Wild Life Department.
3. The Director, Environment Forest and Wild Life Department, Haryana.
4. The Deputy Commissioner, Palwal.
5. The Chairman, Zila Parishad, Palwal.
6. DMC/E.O., Municipal Council, Palwal.
7. District Development and Panchayat Officer, Palwal.
8. Deputy, District Industries Centre, Palwal.
9. Regional Officer, Palwal Region. He is requested to send the copy of proceedings to all the concerned Village Panchayat for displaying in the same their offices.
10. PS to Chairman.
11. PA to Member Secretary.
12. Nodal Officer-IT for uploading the proceeding on the website of the Board.
13. M/s Ambuja Cement Limited, Adani Corporate House, Shantigram, S.G. Highway, Khodiyar, Shantigram, Ahmadabad Gujarat, pin- 3824211

DA/Copy of Proceeding

Digitally signed by
VIKAS CHAND
Date: 08-04-2025
09:49:59
Env. Engineer (HQ)
For Member Secretary



Regional Office, Palwal Region
Haryana State Pollution Control Board
II- Floor, HSVP Office Complex, Near
Gymkhana Club, Sector-12, Palwal
Website - www.hspcb.gov.in E-Mail - hspcbopal@gmail.com



No. HSPCB/PAL/2024/ 1294

Dated: 27-02-2025

To

The Chairman,
Haryana State Pollution Control Board,
Panchkula, Haryana

Kind Attention: Sr. Environment Engineer- Coordination Cell (HQ)

Sub: Submission of Draft EIA-EMP Report alongwith Executive Summary for Conducting Public Hearing for obtaining Environment Clearance with respect to the proposed Cement Grinding Unit with Cement Production Capacity of 2x3 Million Metric Tones per Annuam (6.0 MMTPA) at Located Village Devli, Tehsil and District- Palwal Haryana of M/s Ambuja Cement Limited..

Kindly refer to the subject noted above.

In this regard, please find enclosed herewith the duly signed Proceedings of the Submission of Draft EIA-EMP Report alongwith Executive Summary for Conducting Public Hearing for obtaining Environment Clearance with respect to the proposed Cement Grinding Unit with Cement Production Capacity of 2x3 Million Metric Tones per Annuam (6.0 MMTPA) at Located Village Devli, Tehsil and District- Palwal Haryana of M/s Ambuja Cement Limited., under chairmanship of Smt. Jyoti, IAS, Sub-Divisional Magistrate (SDM), Palwal and under the supervision of Deputy Commissioner, Palwal. The original proceedings with two photo copies, two sets video recording (Pen drive), two sets of Photo albums, copies of attendance register and Annexure's are also attached for further submission to Competent Authority for approval.


Submitted for kind information, and further necessary action, please.

DA: As Above

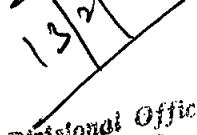

Regional Officer
Palwal Region

Submission of Draft EIA-EMP Report alongwith Executive Summary for Conducting Public Hearing for obtaining Environment Clearance with respect to the proposed Cement Grinding Unit with Cement Production Capacity of 2x3 Million Metric Tones per Annuam (6.0 MMTPA) at Located Village Devli, Tehsil and District- Palwal Haryana of M/s Ambuja Cement Limited.

Please find enclosed herewith the Submission of Draft EIA-EMP Report alongwith Executive Summary for Conducting Public Hearing for obtaining Environment Clearance with respect to the proposed Cement Grinding Unit with Cement Production Capacity of 2x3 Million Metric Tones per Annuam (6.0 MMTPA) at Located Village Devli, Tehsil and District- Palwal Haryana of M/s Ambuja Cement Limited. for kind approval please.


Regional Officer, HSPCB
Haryana State Pollution Control Board
Palwal


Sub-Divisional Magistrate (SDM), Palwal


Sub Divisional Officer (Civil)
PALWAL (Haryana)


Deputy Commissioner
PALWAL

MINUTES OF MEETING OF PUBLIC HEARING

PROJECT OR ACTIVITY	3 (b) CEMENT PLANT
PROJECT PROPONENT	M/S AMBUJA CEMENTS LIMITED
CATEGORY UNDER EIA	"B1" PROJECT
NOTIFICATION	
MEETING VENUE	Project Site at Village Devli, Tehsil and District Palwal, Haryana
MEETING DATE & TIME	30 th January 2025, 11:00 AM
MEETING TYPE	Physical (Offline)

Minutes of Public Hearing under the provisions of EIA Notification, 2006 conducted for the Proposed Cement Grinding Unit with Cement Production Capacity of 2 X 3 Million Metric Tons Per Annum (6.0 MMTPA) located at Village Devli, Tehsil and District Palwal, Haryana by Ambuja Cements Limited

The following Government Officials took part and conducted the Environmental Public Hearing:

1. Smt. Jyoti Kumari, SDM, Palwal
2. Smt. Akansha Tanwar, Regional Officer, HSPCB, Palwal,

The following representatives of M/s Ambuja Cements Limited:

1. Sh. Mukesh Saxena
2. Sh. Bhismi Kachhot
3. Sh. Sanjeev Kumar Singh

EIA Consultants of Ecomen Mining Private Limited (QCI-NABET Approved EIA Consultant)

1. Dr. Ashish K. Mishra

Smt. Akansha Tanwar, Regional Officer HSPCB, Palwal, welcomed the SDM, Palwal with all other officers of district administration and public present during the hearing and thereafter sought permission from the SDM/Chairman to start the Public Hearing for proposed project Cement Grinding unit with Cement Production Capacity of 2 X 3 Million Metric Tons Per Annum (6.0 MMTPA) Located at Village Devli, Tehsil and District Palwal, Haryana by Ambuja Cements Limited.

RO-PCB, Palwal briefed about the process of public Hearing as per EIA notification, 2006 dated 14.09.2006, also requested to the public to speak one by one and put up their questions after the presentation of project and assured the public that their questions will be answered by the Project Proponents. Thereafter she asked the Project Proponent (PP)/EIA Consultant to give a presentation of the project.

Representative of project Proponent (PP), Mr. Mukesh Saxena has briefed the proposed project and requested EIA Consultant to explain the brief project/draft EIA-EIMP report presentation for the proposed cement grinding unit.

Dr. Ashish K. Mishra, Environmental Consultant has presented the EIA/EMP presentation. He has briefed about the salient features of the project, the baseline observations, impacts and mitigation measures undertaken for proposed project.

Main points of presentation:

1. Ambuja Cements Limited (ACL) proposes to set up a green field cement grinding unit with Cement Production Capacity of 2X 3 Million Metric Tons Per Annum (6.0 MMTPA) located at village: Devli, Tehsil and District- Palwal, Haryana.
2. Terms of Reference (TOR), vide File No. SEAC/HR/2024/176 dated 27.08.2024 granted by State Level Expert Appraisal Committee (SEAC), Haryana. As per ToR point to conduct the public hearing of this project. Accordingly, the public hearing is being carried out today at this place.
3. The proposed plant will be established in 10.97 Ha. In which 3.67 Ha (33.45%) area will be developed as green belt area.
4. The total cost of the project is Rs. 1400 Crores. Industry will also provide employment to about 1530 persons during construction phase & 155 persons during operation phase to prefer the local people nearby area based on their eligibility & skills.
5. It was presented that the Proposed project location does not fall under any sensitive zone.
6. The proposed cement grinding unit project will utilize raw material namely Clinker, Gypsum and Fly ash from domestic sources. Clinker would be sourced from domestic plants in Marwar Mundwa or any other in-house sources as per price dynamics. Fly Ash shall be sourced from nearby thermal power plant from NTPC Dadri/Harduaganj/NTPC Jhajjar. Natural Gypsum shall be sourced from Rajasthan.
7. Vertical Roller Mill (VRM) / Roller Press technology shall be used for clinker grinding.
8. The proposed cement-grinding unit will produce cement (PPC, OPC, PSC and Composite cement, etc.) by utilizing clinker, gypsum and fly ash.
9. The total water requirement for grinding unit will be 600 KLD which will be sourced from Ground Water/ Agra Canal.
10. 36 MW power will be required during plant operation which will be taken by State Grid.
11. 70.2 Crores budget has been allotted for Environment Management Plan purpose.
12. There will be no effluent generation in the proposed project. The only wastewater generation will be sewage of quantity 15 KLD which will be treated in the proposed STP of total capacity of 20 KLD.
13. The extent project is 10.97 Ha, out of which 3.67 hectare i.e. 33.5 % of the area will be developed as greenbelt area & plantation. A greenbelt will be developed along the roads and plant boundary.
14. All major sources of air pollution (Cement Mill, Packer) will be provided with Bag houses & Bag filters to maintain emissions within the prescribed norms less than 30 mg/Nm³ for particulate matter emission from the stacks.
15. Adequate measures will be adopted to minimize the impact of pollutants generated from Grinding & Packaging activities.

Smt. Jyoti Kumari,SDM, Palwal anticipated that the management will put all efforts to implement the suggestions during public hearing. There will not be any pollution problem from proposed Cement Grinding Unit. She then sought public opinion on the project and express willingness to clarify their queries Smt. Akansha Tanwar, R.O. HSPCB, Palwal asked the public to submit their queries/ suggestions.

Pointwise Questions and Reply presented to the Public

S.No.	Questions	Reply by Project Proponent
1	Sh. Chetan Sharma of Village Devli was happy with this upcoming project in his village area. He further suggested that water & drainage requirement, school development, employment reservation for ladies and road development should be done in village area.	The management expressed thankfulness for the supporting the proposed project. Company will consultation with Local govt. authority as per requirements for developmental activities like village road, drainage maintenance and make plantation on both side of the road nearby project area.
2	Sh. Babban from Devli Village has suggested the same measures/ requirements as raised by Sh. Chetan Sharma for the mutual development of village and project. He assured the support of the village for the project and asked about preference of village persons in the work force of the project.	Company will contribute to development of village road & drainage system with local govt. collaboration. For employment, preference will be given to the local peoples on the basis of eligibility & skills. At construction phase of the plant, plant will prefer local skilled & unskilled persons for employment on the basis of educational qualification and skills.
3	Sh. Mohit Sharma of village Devli asked about local people priority in Employment.	ACL management will prefer to local people of nearby villagers for employment on the basis of eligibility & Skills.
4	Sh. Praduman Prajapati of Village Devli appreciated to the Proposed Project and suggested that overall development of the area should be done.	The ACL management expressed thankfulness for the support to the proposed project. ACL will cover development of the nearby project area in collaboration with local Govt. authority under CSR activities.
5	Sh. Jagdish of Village Devli welcomed the Proposed Project and suggested use all mitigation measure to combat environmental Pollution generated by plant. He also requested to solve the problem of waterlogging in railway underpass near the project	We are proposing Bag House and Bag Filters as pollution Control Equipment's to mitigate the air pollution. All necessary precautions will be taken to reduce the fugitive dust emissions from proposed Grinding Unit. We will develop for air pollution mitigation systems, water sprinkling on roads, greenbelt development

	& provide maximum employment to the villagers.	along the road on both sides with gap plantation will be done on the approach roads. ACL management will prefer for employment to nearby area to the basis of their eligibility & skills.
6	Sh. Ishwar Dutt Sharma of Village Devli has asked project proponent to take all mitigation measure to combat environmental Pollution generated by plant and waterlogging problem. They will support Ambuja Group in each steps.	<p>PP had informed that in our proposed grinding unit, we are proposing Bag House and Bag Filters to arrest the dust from mills. We are proposing to maintain the latest norms of CPCB & MoEF&CC guidelines. A thick greenbelt shifted to new location all around the Plant Boundary will be maintained.</p> <p>Additionally, all necessary precautions like water sprinkling on roads, greenbelt development along the road on both sides with gap plantation will be done on the approach roads. Therefore, no water & soil pollution done by Plant</p>
7	R.O. HSPCB, Palwal asked about (i) medical facility used in a emergency during Plant operation, (ii) Continuous or manual which process will be used in post ambient air monitoring, (iii) Mitigation measures to be used in Plant Stacks.(iv) Packaging bag material is Biodegradable or Non biodegradable, and M/s. Ambuja Cements Limited will comply the EPR (Extended Producer Responsibility)-status	<p>(i) We have developed the group On-site & off-site emergency plan and OHC to be developed in the proposed project.</p> <p>(ii) Continuous monitoring system will be developed, and it will be connect with the CPCB/SPCB online portal.</p> <p>(iii) We are proposing Bag House and Bag Filters to arrest the dust from mills. We are proposing to maintain the latest norms of CPCB and MoEF&CC guidelines. A thick greenbelt shifted to a new location all around the plant boundary will be maintained.</p> <p>(iv) EPR is complied by M/s. Ambuja cements limited in its existing operational units and shall also comply in proposed project.</p>
8	Mr. Naresh Prajapati of Village Devli has asked to provide maximum employment to local person and medical facility not available in the village. Palwal village is 12-13 Km far away from hospital and no medical	ACL management will prefer to local people of nearby villagers for employment to the basis of eligibility & skills. ACL will provide the skill development training for students of the nearby villages of the project area, which help to improve the villager's employment. ACL will be arranging medical

	facility available in the village.	facility and periodic medical checkup facilities once in year for nearby villages as a part of CER activities.
9	Mahipal (Sarpanch) of Village Devli said to adopt village Devli for development purposes, provide maximum employment, improvement of Girls education. Improve the village drainage patterns & develop a village pond. He has submitted his query in Written.	ACI. management will prefer to local people of nearby villagers for Employment to the basis of eligibility & Skills. Under CSR activities we will be provide trainings for the skill development nearby interested village students, awareness for girls' education development, maintenance of village pond and drainage in consultation with local concerned Government department.
10	Ajay Kumar of Village Devli said to provide the street light facility to villagers	Solar light will be provided for villagers and roadside to the nearby project area under CSR/CER activity in consultation with local Govt. authority.

As there were no further questions from the public side, Smt. Akansha Tanwar R.O. HSPCB, Palwal closed the ceremony of Public Hearing with the permission of Smt. Jyoti Kumari, SDM, Palwal. Then, Smt. Jyoti Kumari, SDM, Palwal gave some suggestions for the betterment of the villagers:

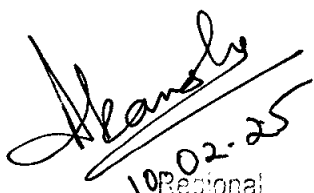
1. Feedback Mechanism on annual basis to be developed by the project proponent so that continuous monitoring could be ensured.
2. A complaint redressal mechanism to be developed by the project proponent.
3. Occupational health centre to be developed by project proponent should be available to the people 24*7.
4. An annual chart to be developed by the project proponent regarding CSR expenditure.

The project proponent agreed to the above mentioned suggestions and submitted that a Feedback Mechanism on annual basis will be developed for continuous monitoring, for complaint redressal mechanism, a meeting on quarterly basis will be convened, occupational health centre will be available 24*7 and regarding CSR expenditure we already have mechanism in our existing plants also.

During public hearing, it was observed that participants from nearby villages were satisfied with the answers given by the representatives of project proponent regarding questions raised by public participants.

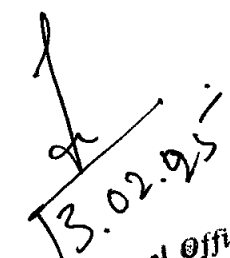
Smt. Akansha Tanwar, R.O. HSPCB, Palwal thanked the public for attending the public hearing.

The Public Hearing was concluded with the vote of thanks to the chair.


10.02.25

Haryana State Pollution Control Board
Palwal


Deputy Commissioner
PALWAL


13.02.25
Sub Divisional Officer (Civil)
PALWAL (Haryana)



Regional Office, Palwal Region
Haryana State Pollution Control Board
II - Floor , HSVP Office Complex,
Near Gymkhana Club, Sector -12, Palwal
Website – www.hspcb.gov.in E-Mail –
hspcbropal@gmail.com



No. HSPCB/PAL/2024/1106

Dated: 27/01/2025

To

The Deputy Commissioner,
 Palwal

Sub:- Deputation of Duty Magistrate along with the Police assistance for Conductance of Public Hearing for obtaining Environment Clearance for proposed Cement Grinding unit at village Devli, Tehsil and District Palwal.

Kindly refer to subject noted above, in this connection it is submitted that public hearing has to be conducted on 30.01.2025 at 11:00 AM at village Devli, Tehsil & District Palwal. At this Event, approximately 1000 people are expected together which may result in mis-management of law & order.

In view of above, it is requested to kindly depute Duty Magistrate along with the Police assistance of around 100 police perssonel for smooth conductance of public hearing.

Submitted for kind information and further necessary action please.

AKANSHA Digitally signed by
TANWAR AKANSHA TANWAR
 Date: 2025.01.27
 16:17:46 +05'30'
Regional Officer
Palwal Region



Regional Office, Palwal Region
Haryana State Pollution Control Board
II - Floor, HSVP Office Complex,
Near Gymkhana Club, Sector -12, Palwal-121102
 Website - www.hspcb.gov.in E-Mail -
hspcbropal@gmail.com



HSPCB/PAL/2024/845
 To,

Date: 28/11/2024

The Deputy Commissioner
 Palwal

Sub: **Submission of Draft EIA-EMP Report alongwith Executive Summary for Conducting Public Hearing for obtaining Environment Clearance with respect to the proposed Cement Grinding Unit with Cement Production Capacity of 2x3 Million Metric Tones per Annuam (6.0 MMTPA) at Located Village Devli, Tehsil and District- Palwal Haryana of M/s Ambuja Cement Limited.**

Ref **HSPCB Head Office letter No. I/260567/2024 dated 11.11.2024**

In this connection, it is submitted that Draft EIA/EMP report for the above said project for conducting Public Hearing as per EIA notification, 2006 has been received in this office on the 21.10.2024 public hearing fee has been deposited by the project proponent in our head office.

As per the EIA notification 14th Sept, 2006 amended till date" The District Magistrate/ District Collector/ Deputy Commissioner or his or her representative not below the rank of an Additional District Magistrate assisted by a representative of SPCB or UTPCC, shall supervise and preside over the entire public hearing process".

Your good self is requested to give convenient date & time at least 45 days before the date of conducting Public Hearing for the above said project so that same could be advertised in one major Newspaper Daily Newspaper/ Local Newspaper as per procedure of EIA notification 14th Sept. 2006 amended till date through our head office.

It is submitted for kind information & further necessary action please.
 DA/Copy of application of the project proponent.

AKANSHA TANWAR Digitally signed by
 AKANSHA TANWAR
 Date: 2024.11.28
 14:12:10 +05'30'

Regional Officer
Palwal Region

Dated :28/11/2024

Endst.No. HSPCB/PAL/2024/846

A copy of above is forwarded to the Member Secretary, Haryana State Pollution Control Board, panchkula for your kind information please.

AKANSHA TANWAR Digitally signed by
 AKANSHA TANWAR
 Date: 2024.11.28
 14:12:31 +05'30'

Regional Officer
Palwal Region

28-11-24

RECEIVED
 REGIONAL OFFICE, PALWAL
 28-11-24



Regional Office, Palwal Region
Haryana State Pollution Control Board
II - Floor , HSVP Office Complex,
Near Gymkhana Club, Sector -12, Palwal-121102
 Website – www.hspcb.gov.in E-Mail – hspcbropal@gmail.com



HSPCB/PAL/2024/887

Date: 12.12.2024

To,

The Member Secretary
 Haryana State Pollution Control Board
 Panchkula.

Sub: Submission of Draft EIA-EMP Report alongwith Executive Summary for Conducting Public Hearing for obtaining Environment Clearance with respect to the proposed Cement Grinding Unit with Cement Production Capacity of 2x3 Million Metric Tones per Annuam (6.0 MMTPA) at Located Village Devli, Tehsil and District- Palwal Haryana of M/s Ambuja Cement Limited.

Ref DC office letter No. 14475/MB-2 dated 11.12.2024

In this connection, it is submitted that Draft EIA/EMP report for the above said project for conducting Public Hearing as per EIA notification, 2006 has been received in this office on the 08.08.2024 public hearing fee has been deposited by the project proponent in our head office.

As per the EIA notification 14th Sept., 2006 amended till date" The District Magistrate/ District Collector/ Deputy Commissioner or his or her representative not below the rank of an Additional District Magistrate assisted by a representative of SPCB or UTPCC, shall supervise and preside over the entire public hearing process".

This office has sent a letter to Deputy commissioner with the request to provide date and time for conducting the public hearing of above said project. Thereafter, date and time was accorded by the Deputy commissioner vide letter No. 14475/MB-2 dated 11.12.2024. So, that same could be advertised in one major Newspaper Daily Newspaper/ Local Newspaper as per per procedure of EIA notification 14th Sept. 2006 amended till date through our head office.

The date of hearing is fixed for 30.01.2025 at 11:00 AM, at Village - Devli, Tehsil & District Palwal.

Submitted for kind information and further necessary action please. AKANSHA TANWAR
Digitally signed by AKANSHA TANWAR
 Date: 2024.12.12
 10:10:05 +05'30'

**Regional Officer
 Palwal Region**

Endst.No. HSPCB/PAL/2024/888-890

Dated : 12.12.2024

A copy of above is forwarded to the following for kind information and further necessary action please.

1. The Deputy Commissioner, Palwal.
2. The Senior Environmental Engineer (SWM), Haryana State Pollution Control Board, Panchkula
3. The Senior Environmental Engineer (Cord. Cell), Haryana State Pollution Control Board, Panchkula

AKANSHA TANWAR
Digitally signed by AKANSHA TANWAR
 Date: 2024.12.12
 10:10:20 +05'30'
**Regional Officer
 Palwal Region**



उपायुक्त / जिलाधीश कार्यालय, पलवल।
Deputy Commissioner/District Magistrate Office, Palwal.

निजी ध्यानार्थ / अति आवश्यक

प्रेषित,

क्षेत्रीय अधिकारी,
हरियाणा राज्य प्रदूषण नियंत्रण बोर्ड,
पलवल।

क्रमांक 14475 /एम0बी0 - II, दिनांक: 11-12-2024

विषय:- Submission of Draft EIA/EMP Report alongwith Executive Summary for conducting Public Hearing for obtaining Environment Clearance with respect to the proposed Cement Grinding Unit with Cement Production Capacity of 2 X 3 Million Metric Tons per Annum (6.0 MMTPA) Located at Village- Devli, Tehsil & District - Palwal Haryana of M/s Ambuja Cement Limited.

उपरोक्त विषय पर आपके कार्यालय के पत्र क्रमांक HSPCB/PAL/2024/845, दिनांक 28.11.2024 के सन्दर्भ में।

विषयोक्त मामले में माननीय उपायुक्त महोदय के आदेश दिनांक: 09.12.2024 की पालना में आपको लिखा जाता है कि आप द्वारा किए गए अनुरोध के सन्दर्भ में उपायुक्त महोदय, पलवल द्वारा उक्त कार्यक्रम/कार्य (आमजन की सुनवाई) हेतु दिनांक 30.01.2025 समय प्रातः 11:00 बजे निश्चित की गई है। यह आपको सूदनार्थ एवं नियमानुसार आगामी आवश्यक कार्यवाही हेतु प्रेषित है।

कृते: उपायुक्त, पलवल।

Cc: PA to Ld. DC/Reader to CTM.

क्षेत्रीय तह, जिला कार्यालय, पलवल: दूरभाष 01275-298051, 298052, ईमेल dcmwl@hry.nic.in
2nd Floor, District Secretariat, Palwal, Haryana-127124, Fax: 01275-298053, 298054, 298055, 298056, 298057, 298058, 298059, 298060, 298061, 298062, 298063, 298064, 298065, 298066, 298067, 298068, 298069, 298070, 298071, 298072, 298073, 298074, 298075, 298076, 298077, 298078, 298079, 298080, 298081, 298082, 298083, 298084, 298085, 298086, 298087, 298088, 298089, 298090, 298091, 298092, 298093, 298094, 298095, 298096, 298097, 298098, 298099, 298100, 298101, 298102, 298103, 298104, 298105, 298106, 298107, 298108, 298109, 298110, 298111, 298112, 298113, 298114, 298115, 298116, 298117, 298118, 298119, 298120, 298121, 298122, 298123, 298124, 298125, 298126, 298127, 298128, 298129, 298130, 298131, 298132, 298133, 298134, 298135, 298136, 298137, 298138, 298139, 298140, 298141, 298142, 298143, 298144, 298145, 298146, 298147, 298148, 298149, 298150, 298151, 298152, 298153, 298154, 298155, 298156, 298157, 298158, 298159, 298160, 298161, 298162, 298163, 298164, 298165, 298166, 298167, 298168, 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HARYANA STATE POLLUTION CONTROL BOARD
C-11, SECTOR-6, PANCHKULA
Website – www.hspcb.org.in
E-Mail : hspcbho@gmail.com
Ph:0172-2577870-873

Date 19-11-2024

To

The Regional Officer,
HSPCB, Palwal

Subject: Submission of Draft EIA-EMP Report alongwith Executive Summary for Conducting Public Hearing for obtaining Environment Clearance with respect to the proposed Cement Grinding Unit with Cement Production Capacity of 2x3 Million Metric Tones per Annuam (6.0 MMTPA) at Located Village Devli, Tehsil and District- Palwal Haryana of M/s Ambuja Cement Limited.

Kindly refer to the subject noted above.

In this connection, it is intimated that M/s Ambuja Cement Limited vide letter dated 21.10.2024 has submitted that draft EIA report alongwith Executive Summery for conducting the public Hearing of the project (copy enclosed for ready reference).

In view of above, you are asked to take the proposed date for conducting Public Hearing from the Deputy Commissioner concerned in terms of provisions of EIA notification 2006 (as amended) and the proposed date of public hearing be obtained atleast beyond 45 days from the date of reporting to the HQ, after receiving required number of EIA report and EMP report in hard copies and soft copies from the project proponent, so that further action be taken as per provision of EIA notification dated 14.09.2006.

DA/As above

Signed by

Vikas Chand

Date: 19-11-2024 11:18:03

Env. Engineer (HQ)

For Member Secretary

CC:

M/s Ambuja Cement Limited Adani Corporate House, Shantigram, S.G. Highway, Khodiyar, Shantigram, Ahmadabad Gujarat, Near Shantinagar, 382421 for information.

**Ambuja
Cement**

ambuja

Cement

ACL/ENV/Devii/PH/01/2024

Date: 11th Oct, 2024

To,
The Member Secretary,
Haryana State Pollution Control Board,
C-11, Sector - 6, Panchkula, Pin Code- 134109

Sub.: Submission of Draft EIA-EMP Report along with Executive Summary for conducting Public Hearing for obtaining Environment Clearance with respect to the proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devii, Tehsil and District Palwal, Haryana of M/S Ambuja Cements Limited

Ref: Standard ToR issued by SEAC, Haryana vide File No. SEAC/HR/2024/176 dated 27.08.2024

Dear Sir,

With reference to the above cited subject and Standard ToR issued by SEAC, Haryana dated 27.08.2024, ToR Identification No.: TO23B1103HR5420124N. As per TOR condition, we are submitting herewith the three copies of the Draft EIA and EMP report with respect to the Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devii, Tehsil+ District: Palwal, State: Haryana by M/S. Ambuja Cements Limited (ACL), for conduct the Public Hearing for obtaining the Environmental Clearance, as per the EIA Notification dated 14th September, 2006 and subsequently amended time to time.

The following documents are enclosed herewith:

1. Copy of TOR letter dated 27/08/2024.
2. Draft EIA/EMP Report-3 Nos.
3. Executive summary (English & Hindi) - 10 copy.
4. Pen drive consisting of soft copy of ToR, Demand Draft, Draft EIA/EMP Report & Executive summary (English & Hindi)
5. Demand Draft of Rs. 1,50,000/- (Rupees One Lakh Fifty Thousand only), bearing DD No. "877513" dated 08/10/2024 in the favor of Member Secretary, Haryana State Pollution Control Board, Panchkula towards the fees for conducting the Public Hearing.

We request you kindly consider our request and process for conducting Public Hearing at the earliest.

Thanking You,
Your faithfully,
M/s Ambuja Cements Limited

Bhimsi Kachhot
Chief Strategy & BD

Encls.: As above

Registered Office:
Ambuja Cement Limited
Room No. 101, 102, 103
Sector-6, Panchkula
Distt. Palwal, Haryana-134109
GATEWAY-4, Panchkula-134109
GATEWAY-4, Panchkula-134109
GATEWAY-4, Panchkula-134109
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GATEWAY-4, Panchkula-134109

3583415/2024/Estt.Br

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Or Order

Rupees

*****150000.00

Purchaser: AMBUJA CEMENTS LIMITED

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A/C. No. 010405222218

877513

For ICICI BANK LTD

E. Lalwani Dasi

Authorised Signatory
Please sign above

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VALID FOR THREE MONTHS FROM DATE OF ISSUE
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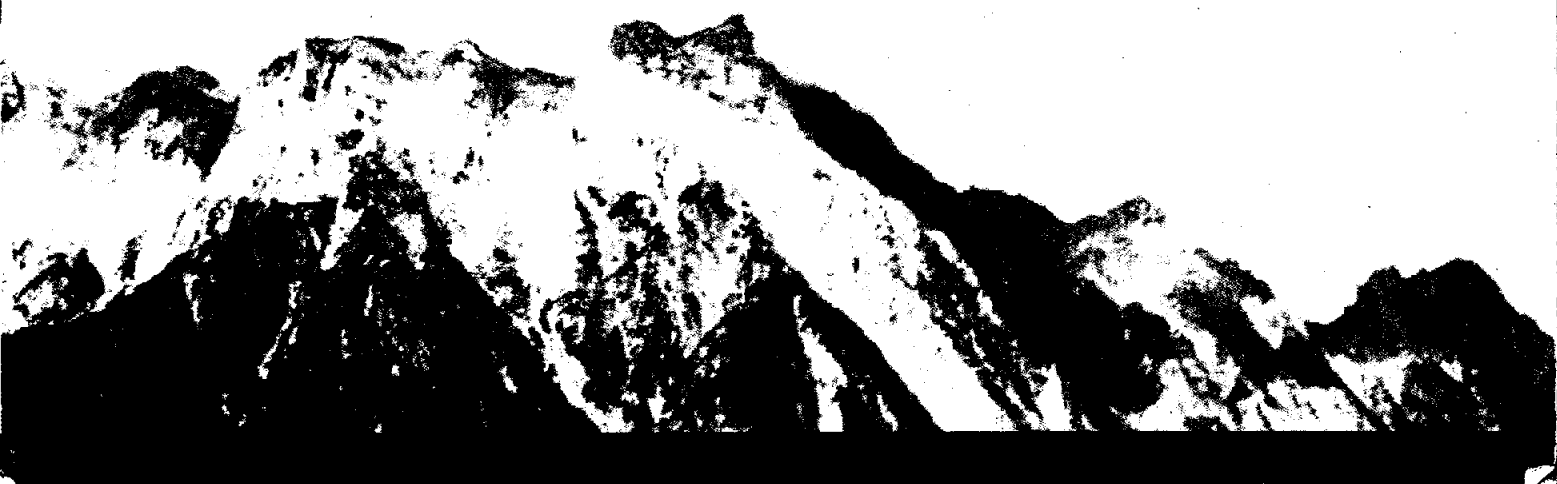


Flying

A4 Long Exercise Book

Attendance

Submission of Draft EIA-EMP Report alongwith Executive Summary for Conducting Public Hearing for obtaining Environment Clearance with respect to the proposed Cement Grinding Unit with Cement Production Capacity of 2x3 Million Metric Tones per Annuum (6.0 MMTPA) at Located Village Devli, Tehsil and District- Palwal Haryana of M/s Ambuja Cement Limited.



30/1/25

PAGE NO.	
DATE	

Sl. No.

Officers Name

Designation

Signature.

1. Anju Rani

Scientist 'B'

2. Anksha Tanwar

Regional officer

3. Jitender Kumar

SDE (E) PWD

4. JYOTI, IAS

SDM, Palwal

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Note Book

ATTENDANCE REGISTER FOR PUBLIC HEARING OF THE PROPOSED CEMENT GRINDING UNIT
WITH CEMENT PRODUCTION CAPACITY OF 2 X 3 MILLION METRIC TONS PER ANNUM (6.0
MMTPA) LOCATED AT VILLAGE: DEVL, TEHSIL AND DISTRICT: PALWAL, HARYANA FOR
ENVIRONMENTAL CLEARANCE OF AMBUJA CEMENTS LIMITED

PH Venue: Project site at Village - Devli, Tehsil and District - Palwal, State - Haryana
Date & Time: 30.01.2025 (Thursday) at 11:00 AM

Attendance Register for
Public Hearing of Proposed
Cement Grinding Unit with Capacity of 6.0
MMTPA at Village - Devli, Palwal Dist.

Attendance Sheet



DATE 30/01/2025

PAGE

Sr. no.	Name	Village	Mobile No.	Signature
1	Punjabpal	Dadhwa	9813969652	Punjabpal
2	Jinder Pal Tewatia	Dadhwa	8130513261	Jinder Pal
3	Rushendra	Kushli Pur	7082641957	Rushendra
4	Manish Kumar	Deuli	8816945719	Manish
5	Sindhu Rana	Daywala	9457584133	Sindhu
6	Manish	Daywala	7632840290	Manish
7	Manish	Deuli	9671709506	Manish
8	SAHAR	Deuli	9813288186	Sahar
9	Bhushan	Deuli	9813262881	Bhushan
10	Deepak	Deuli	9817977006	Deepak
11	Monu	Palwal	7015804073	Monu
12	Vijay Arun (Saini)	Deuli	9813262881	Vijay
13	Jagdeep	Deuli	8396024467	Jagdeep
14	3rd rank	Deuli	9050087196	Deuli
15	Rohit	Devala	7351193083	Rohit
16	जयदेव का 91	Deuli	7582847028	जयदेव का 91
17	DEEPCHAND	देवली	6306150118	DEEPCHAND
18	सोनीमाम	देवली	9302251561	सोनीमाम
19	प्रकाश	देवली	8527697850	प्रकाश
20	दीपक	देवली	9711729440	दीपक
21	मामा दीपक	देवली	8820556100	मामा दीपक
22	Manish Chandel	Palwal	7027393956	Manish Chandel
23	Nitin Poswal	देवली	8571007988	Nitin
24	Akhil Singh	Deuli	8930418116	Akhil
25	सर्वजित	देवली	9205214562	सर्वजित
26	दीपक सहनी	देवली	9572752560	दीपक सहनी
27	अंशु कुमार	देवली	8684107187	अंशु कुमार
28	सुभाष	देवली	8684107187	सुभाष
29	पप्पू	देवली		पप्पू

Attendance Sheet

DATE 30/01/2025

PAGE

Sr.No	Name	Village	Mobile No.	Signature
30	Rohan	Devli	9634320419	Rohan
31	Vijay	Devli	9879787522	Vijay
32	Vatini	Devli	9899571075	Vatini
33	कुशुम मल्लि	Devli	-	कुशुम
34	शोनिवा	कपासा	9026183059	शोनिवा
35	माइती	देवली	-	माइती
36	सुनील	देवली	-	सुनील
37	सुनील	देवली	-	सुनील
38	राम प्रसाद	देवली	-	राम
39	Chetan Sharma	Deoli	788558218	Chetan
40	Sunny Singh	Deoli	8053318372	Sunny
41	Madan Kumar	Deoli	7678373810	Madan
42	Bhupendra	Deoli	9968019051	Bhupendra
43	मनीष	Deoli	8059831402	Munish
44	Deepak	Deoli	7027886625	Deepak
45	पूजा	देवली	9302515619	पूजा
46	मनीष कुमार	देवली	9050199638	मनीष
47	राहुल	देवली	70279742	राहुल
48	मूलचन्द	मादेवाली	9671278841	मूलचन्द
49	विजय	देवली	887893122	विजय
50	राज कुमार	देवली	-	राज
51	सतीश कुमार	देवली	-	सतीश
52	मदन मीन	देवली	-	मदन
53	राहुल	देवली	-	राहुल
54	विवेक	देवली	7054556734	Vivek
55	Pankaj Kumar	Deoli	7380736300	Pankaj
56	Tarun	Deoli	8930460217	Tarun
57	Sunil Kumar	Deoli	7524825635	Sunil
58	Pardeep	Deoli	9468850402	Pardeep

Attendance Sheet

DATE 30/01/2025

PAGE

Sr. No	Name	Village	Mobile No.	Signature
59	VN/A	Deuli	8930490934	
60	Abhishek	Deuli	7419169016	
61	Umesh Kumar	Deuli	8950146815	
62	MUNISH	Deuli	8307491806	
63	देव चरण	देवली	9518015991	
64	म - देवी	देवली	7027639669	
65	Bijender	देवली	9991164277	
66	MOHIT	देवली	9050960466	
67	Aakash	देवली	9129332797	
68	Bijender	देवली	701651407	
69	पिपला राव	देवली	-	
70	देवली	Deuli	9050208975	
71	Laxman Dev Sharma	Deuli	9910572597	
72	Tuli Ram	Deuli	9717065048	
73	Shweta Selt	Deuli	8860458040	
74	Vijay Singh	देवली	9717635750	
75	Bhim	Deuli	-	
76	भारत मधु	देवली	9728034959	
77	राहुल	देवली	-	
78	अमित	देवली	97797249	
79	Anshu	देवली	9992969259	
80	Bunmit	देवली	9130637369	
81	विमलेश	देवली	-	
82	Archit	देवली	9306269587	
83	देवली	देवली	-	
84	लोकेश	देवली	7404116283	
85	Haroon	देवली	9090181582	
86	लखमी	देवली	9813447503	
87	अ - शी	देवली	9918399009	

Attendance Sheet

DATE 30/01/2025

PAGE _____

Sr.No.	Name	Village	Mobile No.	Sign
88	Dinesh	देवली	9990859817	
89	मुरारि चंद	देवली	7027375529	
90	PAWAN KR	देवली	9817010315	
91	Ravinder	Baghale	8607189808	
92	राजेश	देवली	9034881740	
93	Yagdeet	देवली	9999694769	
94	Amzon Kumar	Bihar Begusarai	9973403314	
95	Sour Sharma	देवली	8399836540	
96	Deepak Sharma	देवली	9988102389	
97	Sourav Sharma	देवली	9315885003	
98	Sheer Singh	देवली	8506868657	
99	Shiv Ram	देवली	8930334104	
100	Gomath Kumar	देवली	7988039851	
101	LUCKY	देवली	8814969344	
102	MOURAV	देवली	8053289283	
103	Sagar	देवली	8168143092	
104	देव दत्त	देवली	-	देव दत्त
105	Ravi Kumar	Palwal	8168306504	
106	Jitesh L	Palwal	8813841391	J.G.S.
107	राहुल लाल	देवली	9671244238	
108	Lachhman	देवली	8221984167	
109	Rajy	देवली	8813927161	
110	राजेश	देवली	-	राजेश
111	कुलदीप	देवली	-	कुलदीप
112	Ramdevsham	देवली	9911908860	
113	Parvesh	देवली	-	Parvesh
114	राजेश	देवली	-	राजेश
115	अमिनी	देवली	-	अमिनी
116	अमिनी	देवली	-	अमिनी

Attendance Sheet

DATE 30/01/2025

PAGE

Sr.No.	Name	Village	Mobile No.	Signature
117	Suren AC	Devli	702738418	Suren
118	Rampashael	Devli	-	Ramp
119	Pat Ran	देवली	7015261811	Pat Ran
120	Somant	देवली	9467821583	Somant
121	लखन	-	8396920065	-
122	मनीष	तलारपुर	967107355	-
123	Gosav	अमामता	8683951130	Gosav
124	Shakti	पलवल	9050022623	Shakti
125	अनिल कुमार	कानपुर देहात	9521602640	-
126	सत्यम	कानपुर देहात	-	-
127	लाला	देवली	8053953503	-
128	नीरू	देवली	7906787702	Neetu
129	हरिपाल	देवली	-	हरिपाल
130	राजेश	देवली	805343459	-
131	-	-	-	-
132	मकेश	पलवल	9812956455	मकेश
133	बबू	देवली	-	बबू
134	सुरेश	देवली	9253402390	सुरेश
135	रायप्रसाद	देवली	-	रायप्रसाद
136	Dushyant	Devli	7027367400	Dushyant
137	रेशा	Devli	-	रेशा
138	गामकी	Devli	-	गामकी
139	वन्दना	देवली	-	वन्दना
140	हिमांशी	देवली	-	हिमांशी
141	Preeti	Devli	7027587104	Preeti
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143	-	-	-	-
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Attendance Sheet

DATE 30/01/2025

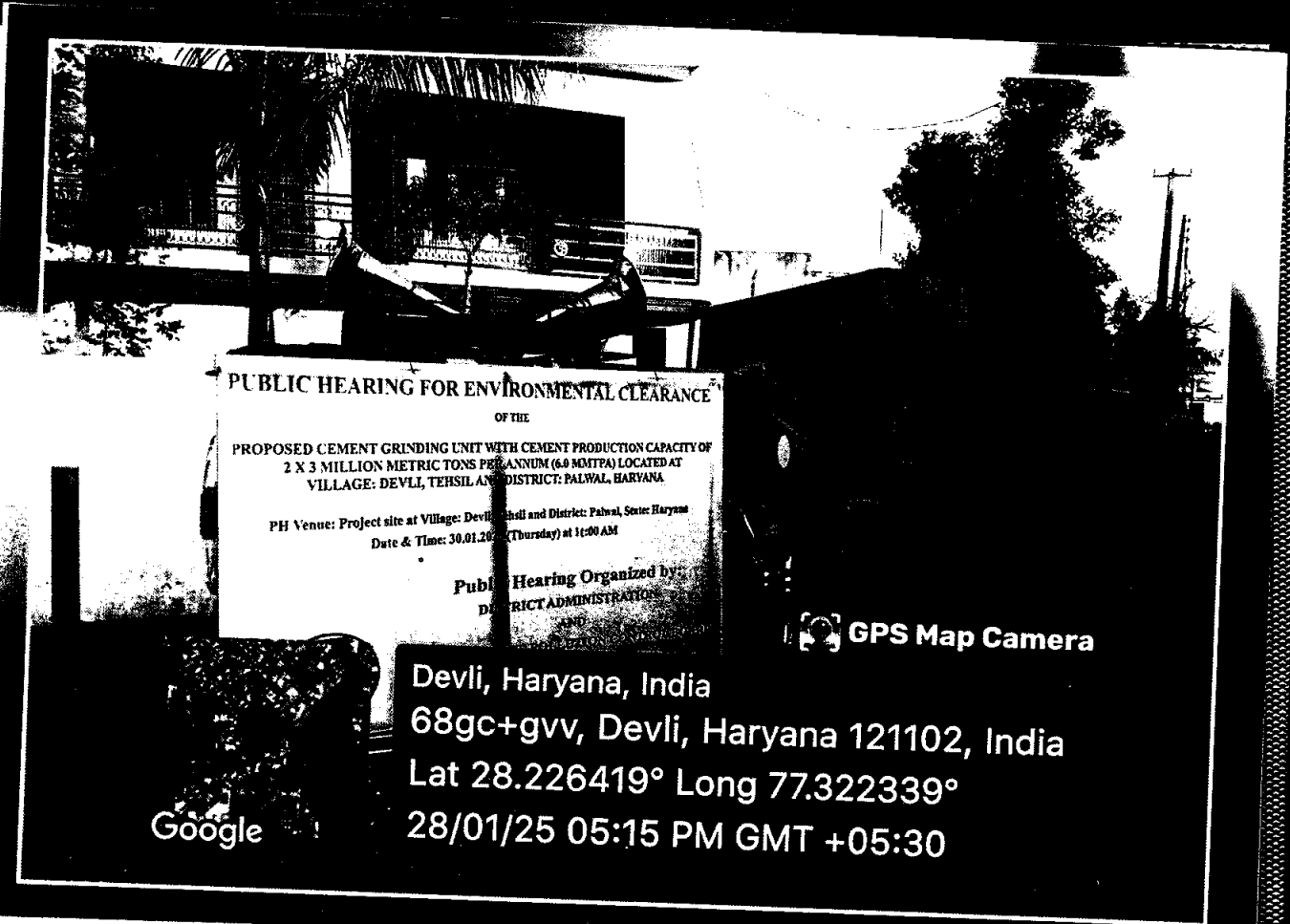
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Sr.No.	Name	Village	Mobile No.	Signature
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118	Rampershad	Devli	-	Rampershad
119	Pat Ram	देवली	7015261811	Pat Ram
120	Sunil	देवली	9467821583	Sunil
121	लखेश	-	8396920065	-
122	शमीचन्द	तलारपुर	967107355	-
123	Gosav	गुमामता	8683951130	Gosav
124	Shakti	पलवल	9050022623	Shakti
125	अनुराज कुमार	कानपुर देहात	9521602640	-
126	सचिन	कानपुर देहात	-	-
127	लाला	देवली	8053953503	-
128	नीरू	देवली	7906787702	Neeru
129	हरिपाल	देवली	-	हरिपाल
130	राजेश	देवली	805343459	-
131	-	-	-	-
132	मकेश	पलवल	9812956455	मकेश
133	बबु	देवली	-	बबु
134	सुरेश	देवली	9253402390	सुरेश
135	रामप्रसाद	देवली	-	रामप्रसाद
136	Dushyant	Devli	7027367400	Dushyant
137	रंजना	Devli	-	रंजना
138	गोमती	Devli	-	गोमती
139	बन्धना	देवली	-	बन्धना
140	हिमांशी	देवली	-	हिमांशी
141	Preeti	Devli	7027587104	Preeti
142	-	-	-	-
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Ambuja Cement Ltd
(Delhi Govt)-

Public Hearing held
on 30.01.25





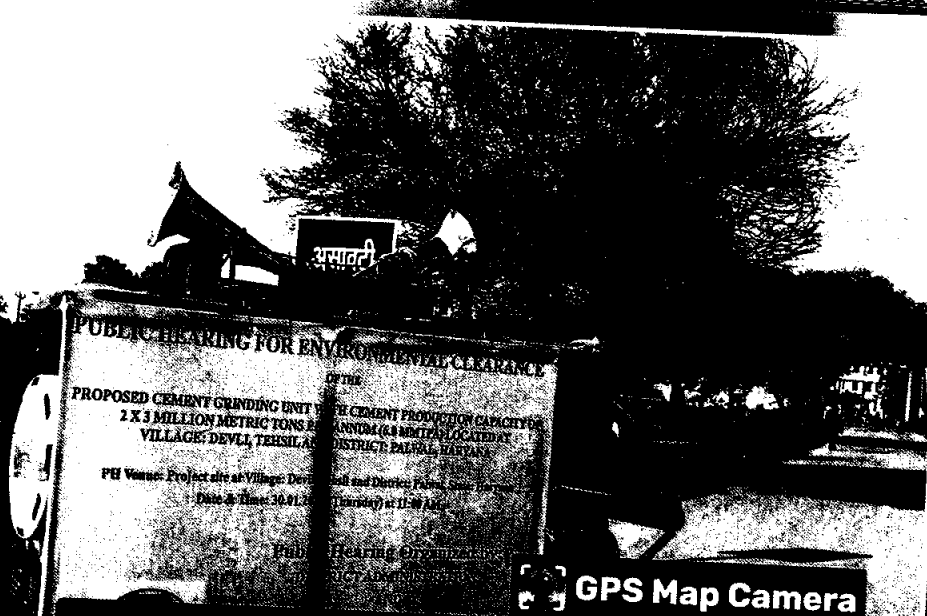
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GPS Map Camera

Google

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Palwal, Asoati, Haryana 121102, India

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GPS Map Camera

Google

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68p7+234, Nh-19, Faridabad, Palwal, Haryana

121102, India

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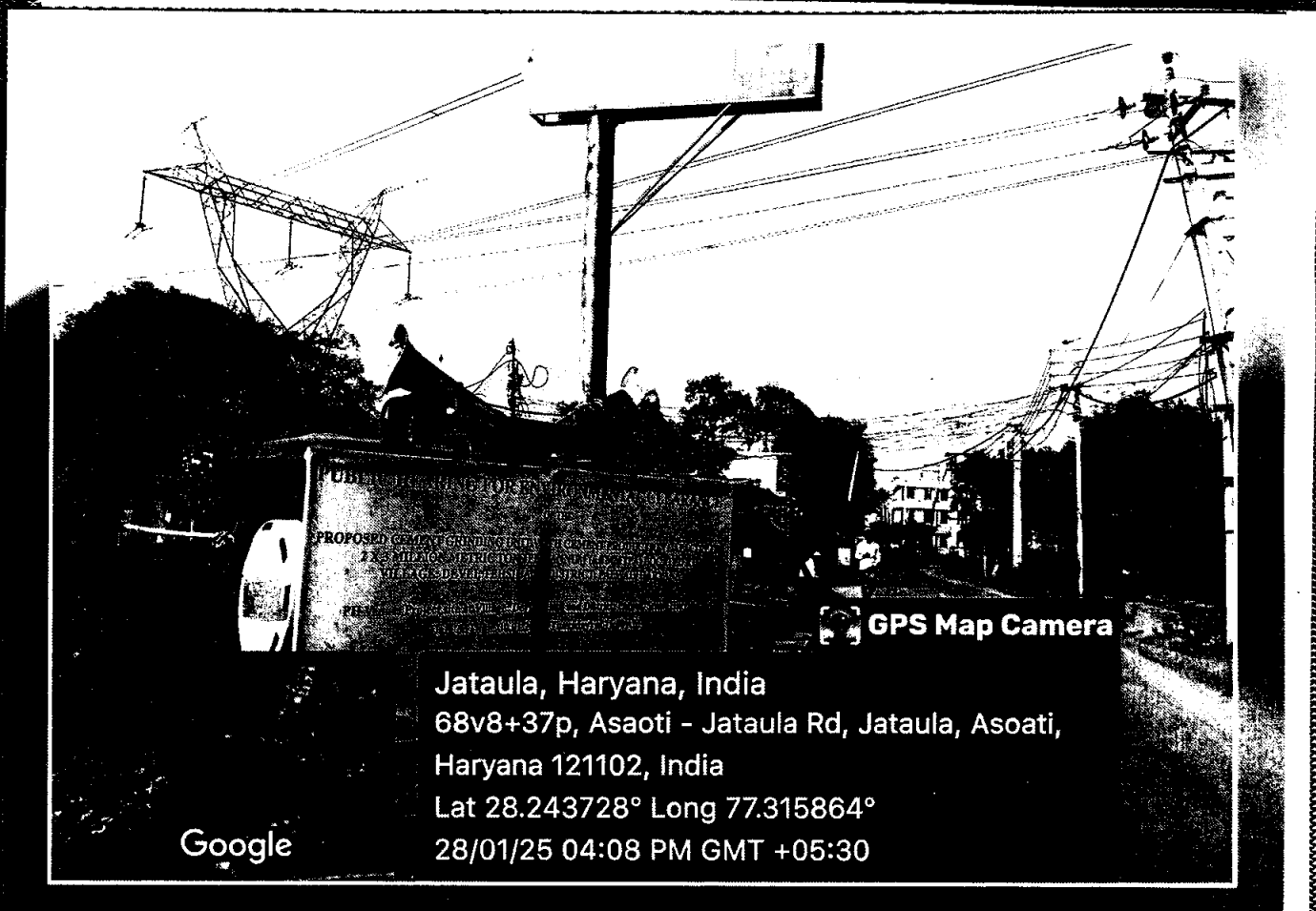
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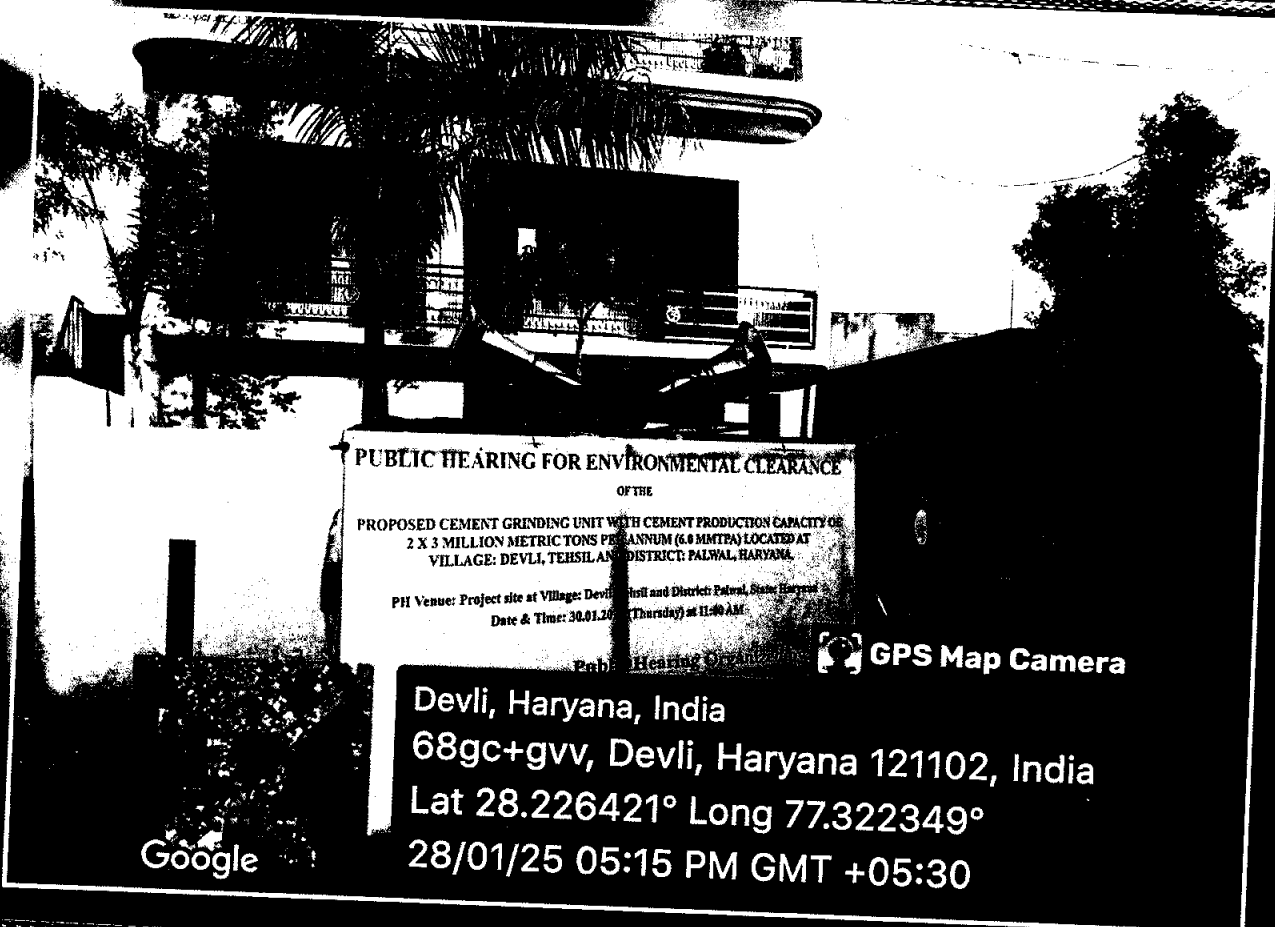
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Haryana 121102, India
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Google



PUBLIC HEARING FOR ENVIRONMENTAL CLEARANCE

OF THE

PROPOSED CEMENT GRINDING UNIT WITH CEMENT PRODUCTION CAPACITY OF
2 X 3 MILLION METRIC TONS PER ANNUM (6.0 MMTPA) LOCATED AT
VILLAGE: DEVLII, TEHSIL AND DISTRICT: PALWAL, HARYANA

PH Venue: Project site at Village: Devli, Tehsil and District: Palwal, State: Haryana
Date & Time: 30.01.2025 (Thursday) at 11:00 AM

Public Hearing Organized by:

GPS Map Camera

Devli, Haryana, India

68gc+gvv, Devli, Haryana 121102, India

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28/01/25 05:15 PM GMT +05:30

Google



PUBLIC HEARING FOR ENVIRONMENTAL CLEARANCE

OF THE

PROPOSED CEMENT GRINDING UNIT WITH CEMENT PRODUCTION CAPACITY OF
2 X 3 MILLION METRIC TONS PER ANNUM (6.0 MMTPA) LOCATED AT
VILLAGE: DEVLII, TEHSIL AND DISTRICT: PALWAL, HARYANA

PH Venue: Project site at Village: Devli, Tehsil and District: Palwal, State: Haryana
Date & Time: 30.01.2025 (Thursday) at 11:00 AM

Public Hearing Organized by:

DISTRICT ADMINISTRATION

AND

HARYANA STATE POLLUTION CONTROL BOARD

Regional Office: Palwal, Haryana

GPS Map Camera

Devli, Haryana, India

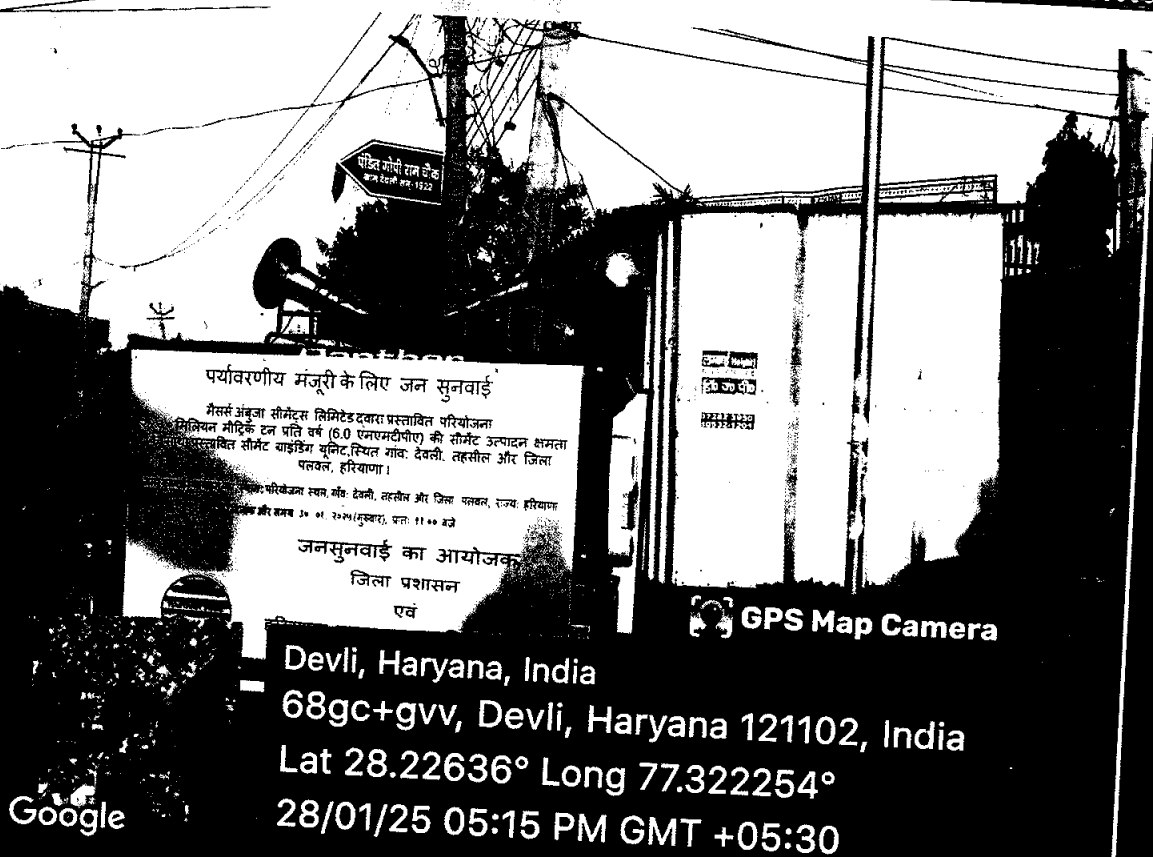
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ग्राम पंचायत देवली
पंच निवास स्थान
श्री विपिन S/o श्री सोहन
वार्ड नं०
7
M.: 9310171570
सदस्य : कुमारी नीतू D/o विजय राम
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राजकीय उच्च विद्यालय, देवली (पलवल)

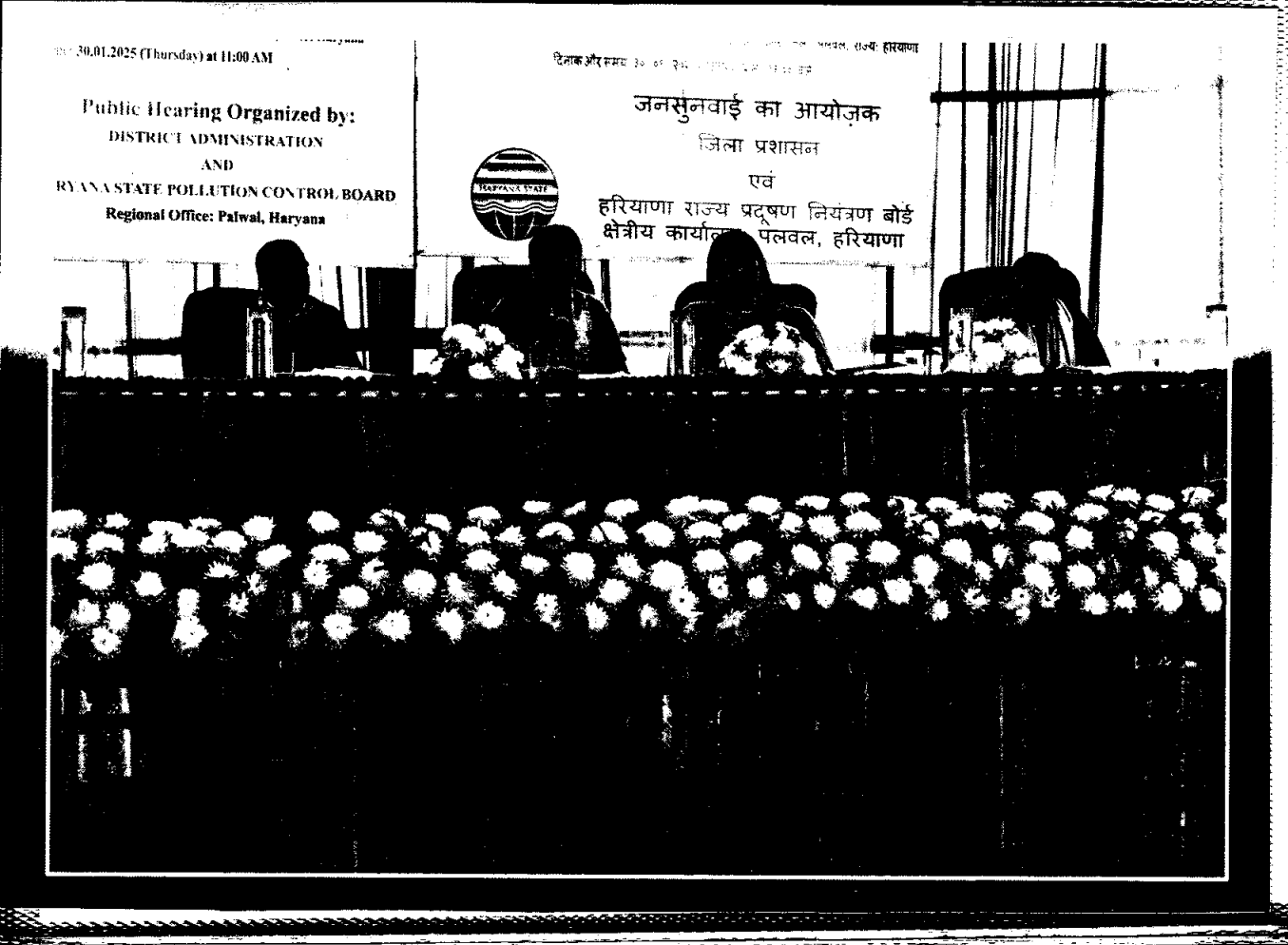
PUBLIC HEARING FOR ENVIRONMENTAL CLEARANCE
 OF THE
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 2 X 3 MILLION METRIC TONS PER ANNUM (6.9 MMT/PA) LOCATED AT
 VILLAGE: DEVL, TEHSIL AND DISTRICT: PALWAL, HARYANA
 PH Venue: Project site at Village: Devli, Tehsil and District: Palwal, State: Haryana
 Date & Time: 28.01.2025 (Thursday) at 11:00 AM
 Public Hearing Organized by
 DISTRICT ADMINISTRATION
 DISTRICT PALWAL, HARYANA

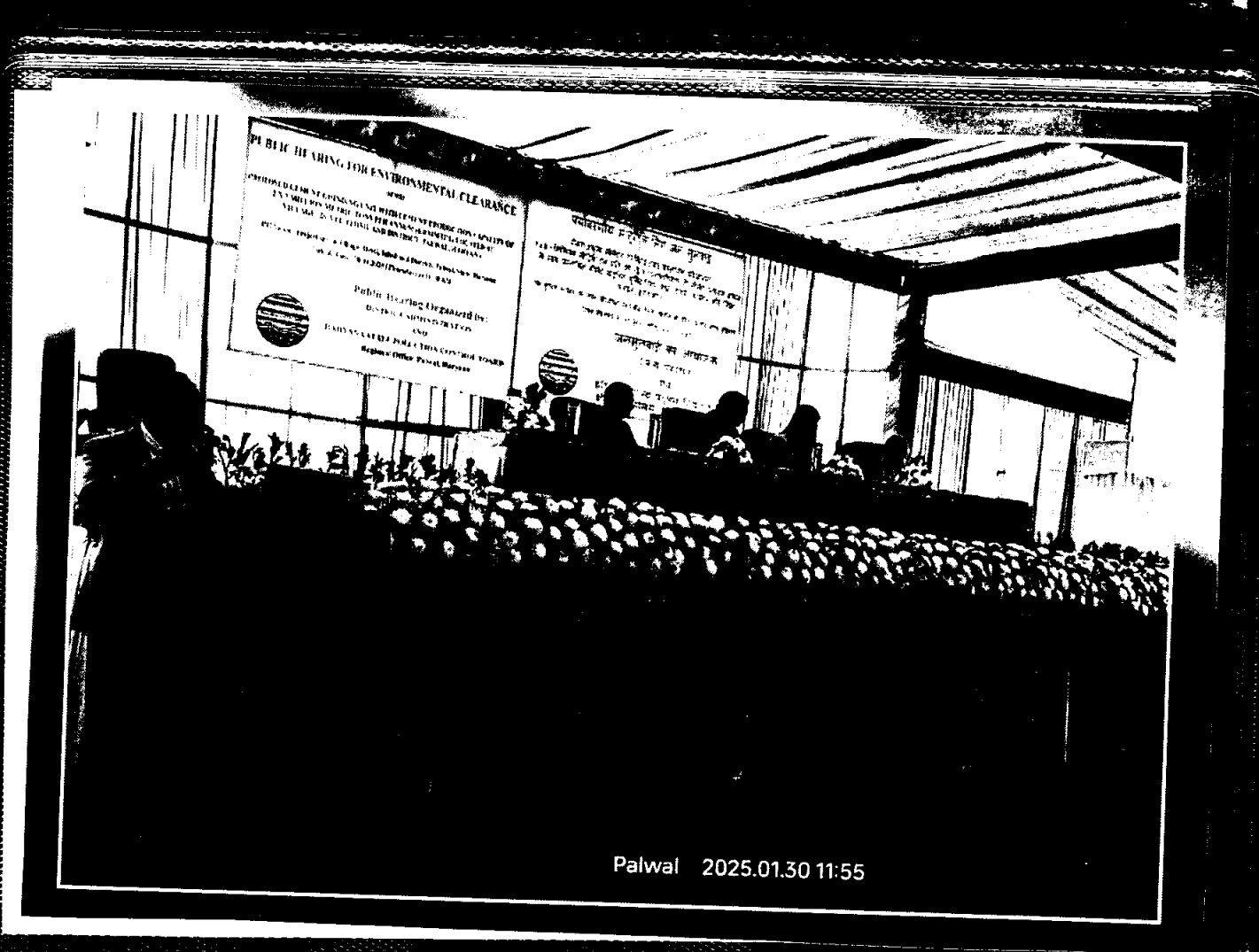
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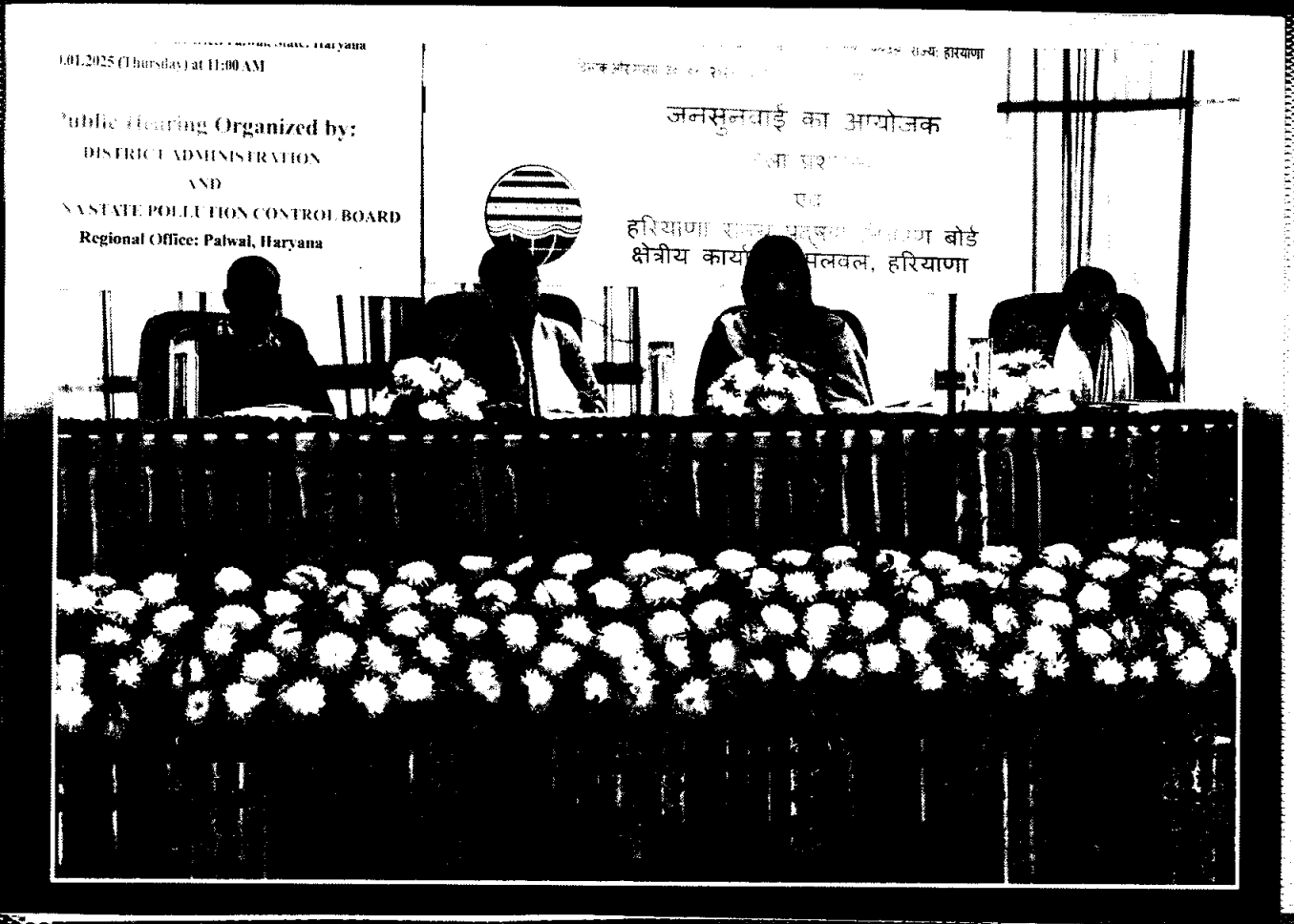
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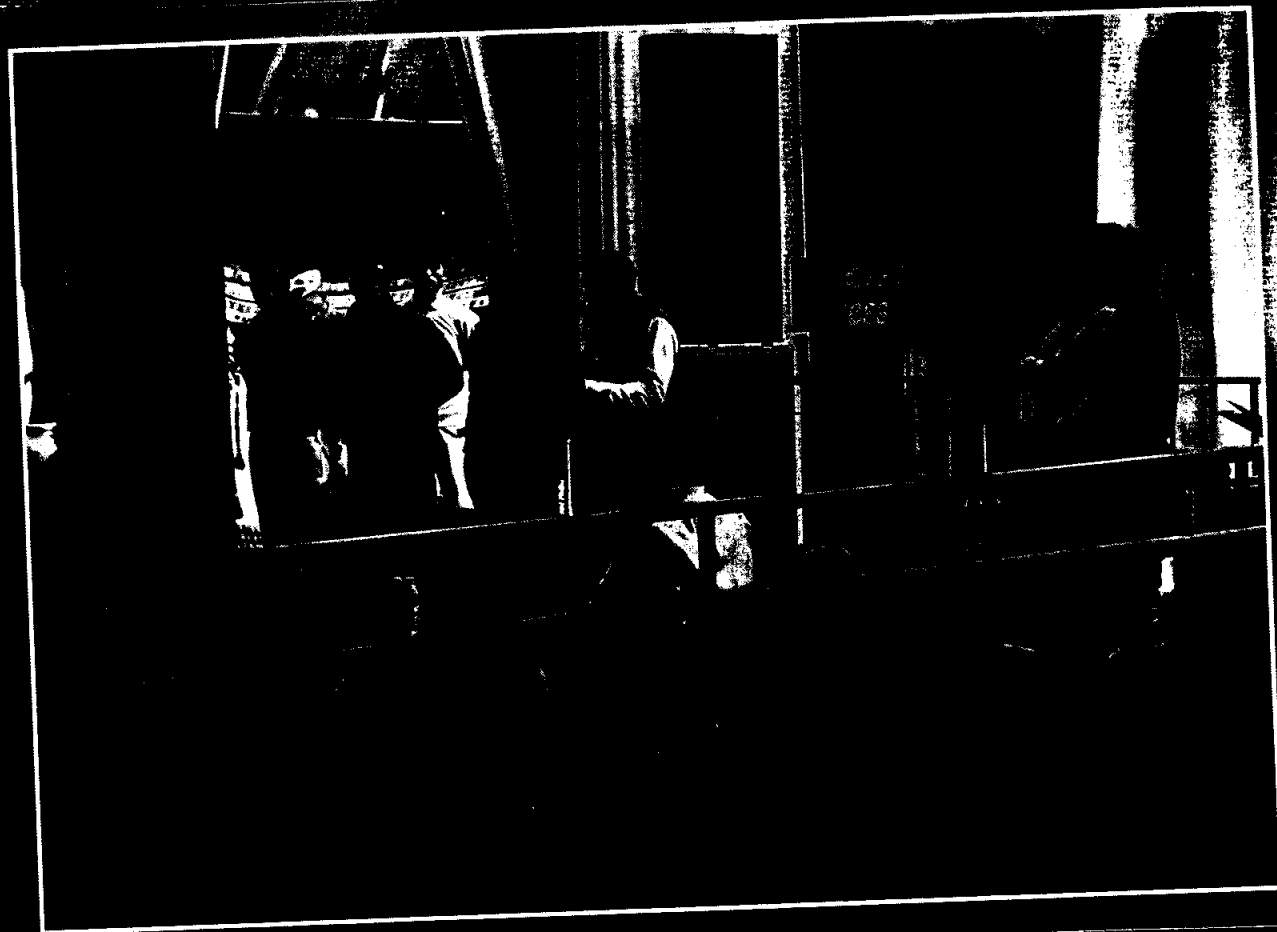


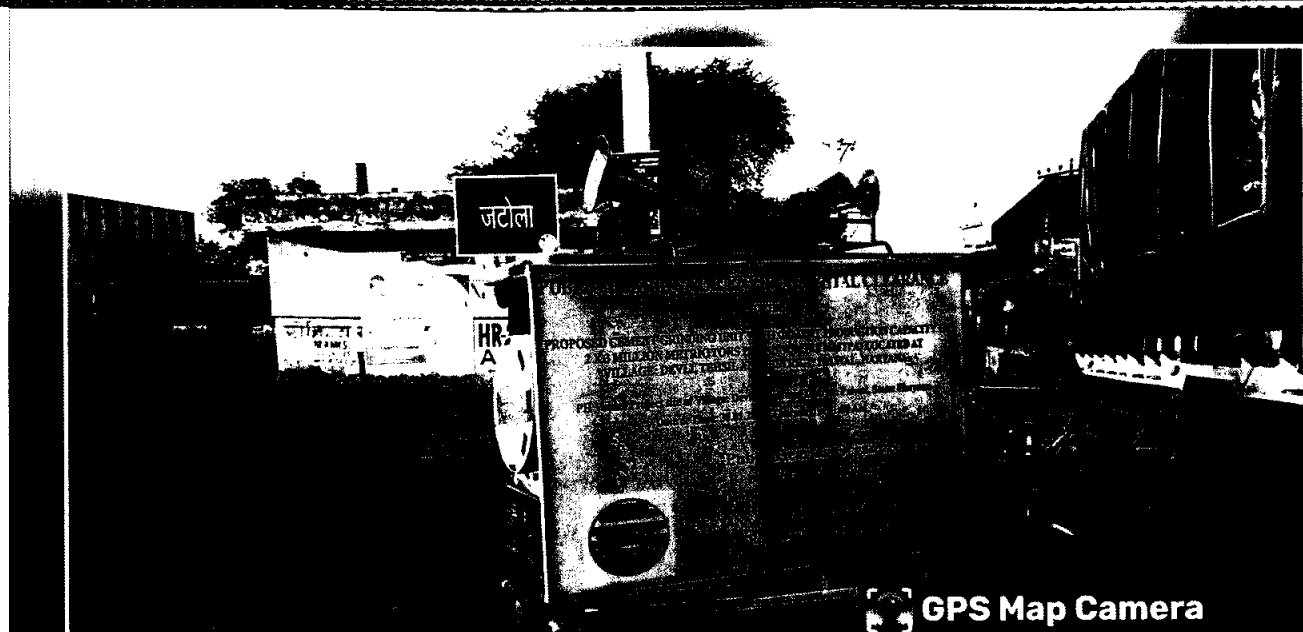












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121102, India

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DRAFT ENVIRONMENTAL IMPACT ASSESSMENT AND ENVIRONMENTAL MANAGEMENT PLAN

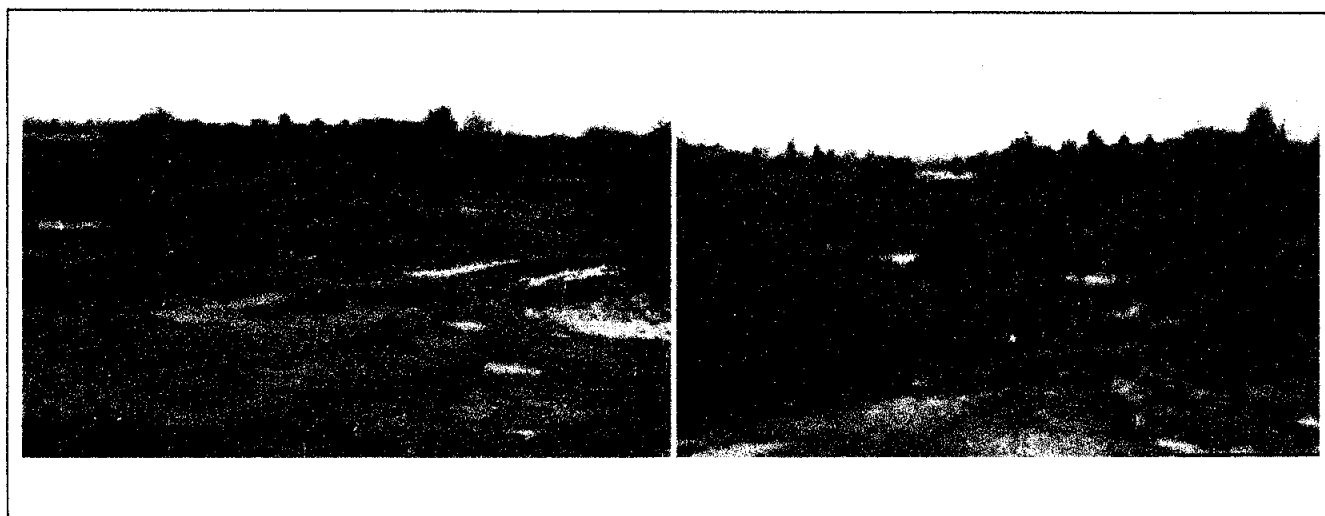
FOR

**PROPOSED CEMENT GRINDING UNIT WITH CEMENT PRODUCTION CAPACITY OF 2
X 3 MILLION METRIC TONS PER ANNUM (6.0 MMTPA) LOCATED AT VILLAGE:
DEVLI, TEHSIL AND DISTRICT PALWAL, HARYANA BY AMBUJA CEMENTS LTD.**

STANDARD TOR OBTAINED FROM SEAC, HARYANA

VIDE F. NO. SEAC/HR/2024/176

PROPOSAL NO: SIA/HR/IND1/449852/2023 dated 27/08/2024



**SECTOR: 3 (b) CEMENT PLANT AS PER SCHEDULE OF EIA NOTIFICATION
2006 AND ITS AMENDMENTS (CATEGORY "B1")**

BASELINE STUDY PERIOD: 1ST OCTOBER 2023 – 31ST DECEMBER 2023

<p>PROJECT PROPONENT M/s AMBUJA CEMENTS LIMITED Address: Adani Corporate House, Shantigram, SG Highway, Ahmedabad (Gujarat) Pin code- 382421 Email: blimsi.kachhot@adani.com/ sanjeewkumar.singh@adani.com</p>	<p>EIA CONSULTANT M/S ECOMEN MINING PVT. LTD. [Formerly known as Ecomen Laboratories Pvt. Ltd.] Regd. Office:- Second Floor Hall, House No. B-1/8, Sector-H, Aliganj, Lucknow-226 024 (U.P)Phone: (0522) 2746282, 4079201 E-mail: contactus@ecomen.in NABET Certificate No. NABET/EIA/22-25/SA 0219, Validity : 22.03.2025</p>
---	--



Date: 09.10.2024

UNDERTAKING

We hereby certify that the contents (Information & Data) given in the EIA-EMP with respect to Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District: Palwal, State: Haryana by M/S. Ambuja Cements Limited (ACL), a group company of Adani Group are correct to the best of my knowledge.

The prescribed ToR dated 27.08.2024 has been complied with and presented in EIA/EMP Report.

Sanjeev Kumar Singh
(Authorized Signatory)
Ambuja Cements Limited

Registered Office:
Ambuja Cements Limited
Adani Corporate House
Shantigram, S. G. Highway
Khodiyar, Ahmedabad - 382 421
Gujarat, India
Ph +91 79-2555 5555
Website: www.ambujacement.com
CIN: L26942GJ1981PLC004717

ECOMEN MINING PVT. LTD.

(Formerly Known as Ecomen Laboratories Pvt. Ltd.)

Second Floor Hall, House No. B-1/8, Sector-H, Aliganj, Lucknow – 226 024

Phone No. : 0522 – 4079201/2746282

E-mail: contactus@ecomen.in, Website: www.ecomen.in. CIN: U74210UP1989PTC010601, GSTIN: 09AAACE6076H1ZI

Date: 09.10.2024

UNDERTAKING

We hereby certify that the contents (Information & Data) given in the EIA-EMP with respect to Proposed Cement Grinding unit with cement production capacity of 2 x 3.0 Million Metric Tons Per Annum (6.0 MMTPA) located at Village: Devli, Tehsil+ District: Palwal, State: Haryana by M/s Ambuja Cements Limited (ACL), a group company of Adani Group are correct & based on the information provided by Project Proponent.

for Ecomen Mining Pvt. Ltd.



(Dr. Binay Prakash Pandey)
Chairman & CEO



Plagiarism Checker X - Report

Originality Assessment

13%

Overall Similarity

Date: Oct 18, 2024

Matches: 12428 / 96332 words

Sources: 350

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FILE - DRAFT EIA EMP OF DEVLIA MBUJA CEMENTS (1).PDF

DISCLOSURE OF CONSULTANT

Part A: Declaration by ACO and Experts contributing to the EIA Report

Declaration by Experts contributing to contributing to Draft EIA-EMP with respect to Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District: Palwal, State: Haryana by M/s. Ambuja Cements Limited (ACL), a group company of Adani Group are correct & based on the information provided by Project Proponent.

I, hereby, certify that I was a part of the EIA team in the following capacity that developed the above EIA.

EIA coordinator : Mr K. N. Bhaskar Rao

Signature :



Date : 09.10.2024

Team Member : Ms Anuradha Srivastava

Signature :



Date : 09.10.2024

Team Member : Dr. Ashish K Mishra

Signature :



Date : 09.10.2024

Period of involvement: August 2023 - May 2024






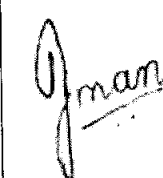
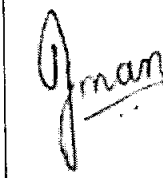
Contact information: Ecomen Mining Pvt. Ltd.





(Formerly known as Ecomen Laboratories Pvt Ltd)

Second Floor Hall, H No. B - 1/8, Sector-H, Aliganj,

Lucknow - 226 024, Mob: 9335947474

Functional area experts:

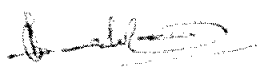
S. No.	Functional areas	Name of the expert/s	Involvement (Period and task**)	Signature and date
1	AP*	Mr K N Bhaskar Rao	August 2023 – May 2024 Identification of Locations, interpretation of data wrt to standard, statistical analysis compilation etc.	
2	WP*	Mr Rajneesh	August 2023 – May 2024 Identification of Locations, interpretation of data wrt to standard, Compilation of report	
3	SHW*	Anuradha Srivastava	August 2023 – May 2024 Identification of waste generation management & mitigation measures etc.	
4	SE	Mr Vikas Jaiswal	August 2023 – May 2024 Group discussion, designing of questionnaire, data analysis and interpretation	
5	EB*	Dr Ashish Mishra	August 2023 – May 2024 Conducted ecological survey, assessment of impacts, prepared report and compilation etc.	
6	HG*	Aman Dixit	August 2023 – May 2024 Hydrogeology of the study area including status, water level of ground water of the area & possibility of recharge rain water harvesting etc.	
7	GEO*	Aman Dixit	August 2023 – May 2024 Geological features & formations, topography & Lithology of the 10 km radius area and lease area	
8	SC*	Dr Ashish Mishra	August 2023 – May 2024 Identification of Locations,	

			interpretation of data report quality, Compilation of report	
S. No.	Functional areas	Name of the expert/s	Involvement (Period and task**)	Signature and date
9	AQ*	Mr. Rajneesh	August 2023 – May 2024 Prediction of GLC by using AERMOD model etc.	
10	NV	Dr. M. K. Jain	August 2023 – May 2024 Identification of locations, Data Interpretation (Leq), Compilations of report including impact assessment, vibration & impact etc.	
11	LU*	Mr. Anshuman Singh	August 2023 – May 2024 Developing the Land use/ land cover of the study area by using remote sensing data.	
12	RH*	Anuradha Srivastava	August 2023 – May 2024 Identification of Hazards, Hazardous substance. Preparation of on- site emergency plan etc.	

*One TM against each FAE may be shown, **Please attach additional sheet if required

Date and Sign of EIA Coordinator:

Name: Mr K N Bhaskar Rao



Signature:

Date: 09.10.2024

Date and Sign of Head of ACO / authorised person:

Name: Dr Binay Prakash Pandey

Signature:



Designation: Chairman & CEO

Date: 09.10.2024

Name of the EIA consultant organization: Ecomen Mining Pvt. Ltd.

(Formerly known as Ecomen Laboratories Pvt Ltd)
Second Floor Hall, H No. B – 1/8, Sector-H, Aliganj,
Lucknow – 226 024, Mob: 9335947474

NABET Certificate No. & Issue Date: NABET/EIA/22-25/SA 0219 dated 27.03.2024

Part B: Declaration by the Head of the Accredited Consultant organization/ Authorized Person

I, Dr. Binay Prakash Pandey, hereby, confirm that the above-mentioned experts prepared the EIA-EMP report with respect to the Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District: Palwal, State: Haryana by M/s. Ambuja Cements Limited (ACL), a group company of Adani Group.



(Binay Prakash Pandey)
Chairman & CEO, Ecomen Mining Pvt. Ltd.
Date: - 09.10.2024

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PLAN-I	LAYOUT PLAN
PLAN-II	DRAINAGE PLAN
PLAN-III	CONTOUR MAP
PLAN-IV	TOPOGRAPHICAL MAP

ABBREVIATION

ACL	Ambuja Cements Limited
TOR	Terms of Reference
SEAC	State Level Expert Appraisal Committee
SEIAA	State Environment Impact Assessment Authority
HAG	Hot Air Generator
NTPC	National Thermal Power Corporation
LNG	Liquefied Natural Gas
NH	National Highway
AALL	Adani Agri Logistics Limited
ALL	Adani Logistics Limited
MOU	Memorandum of Understanding
EMP	Environment Management Plan
GLC	Ground Level Concentrations
CAGR	Compound Annual Growth Rate
OPC	Ordinary Portland Cement
PPC	Portland Pozzolana Cement
PSC	Portland Slag Cement
PCC	Plain Cement Concrete
VRM	Vertical Roller Mill
TPH	Tons Per Hour
CFA	Coal Fly Ash
WFA	Wet Fly Ash
GU	Grinding Unit
CGWA	Central Ground Water Authority
STP	Sewage Treatment Plant
PCB	Pollution Control Board
CPCB	Central Pollution Control Board
TSDF	Treatment Storage and Disposal Facilities
OEM	Original Equipment Manufacture
SPCB	State Pollution Control Board
CCR	Central Control Room
MoEF&CC	Ministry of Environment Forest and Climate Change
RSPM	Respirable Suspended Particulate Matter
APHA	American Public Health Association
NKP	Nitrogen Phosphorous Potassium
ERDAS	Earth Resources Data Analysis System
ARC GIS	Geographical Information System
LISS-IV	Linear Imaging Self Scanning Sensor
NW	North West
AAQ	Ambient Air Quality
RDS	Respirable Dust Sampler
IMD	Indian Meteorological Department
RET	Rare Endangered and Threatened
NARP	National Agriculture Research Project
LOS	Level of Services
PCU	Passenger Car Unit

GES	:	Groundwater Estimation Committee
GOI	:	Government of India
APCE	:	Air Pollution Control measures
Ha	:	Hectare
HPCB	:	Haryana Pollution Control Board
HAZID	:	Hazard Identification
HIRA	:	Hazard Identification and Risk Analysis
ECC	:	Emergency Control Centre
CCC	:	Central Control Centre
ECO	:	Emergency Coordinating Officer
EPO	:	Emergency Planning Officer
IWPA	:	Indian Wildlife protection Act
IS	:	Indian Standards
KLD	:	Kilo Litre Per Day
Km	:	Kilometer
KWH	:	Kilo Watt Hour
LULC	:	Land Use/Land Cover
LP	:	Low Pressure
MSDS	:	Material Safety Data Sheets
MT	:	Metric Tonne
MTPA	:	Million Tonnes Per Annum
MoEFCC	:	Ministry of Environment and Forest & Climate Change
MW	:	Mega Watt
NAAQS	:	National Ambient Air Quality Standards
NABARD	:	National Bank for Agriculture and Rural Development
NABL	:	National Accreditation Board for Testing And Calibration Laboratories
NABET	:	National Accreditation Board for Education & Training
NGO	:	Non- Governmental Organization
NDIR	:	Non-dispersive Infrared Detector
NE	:	North East
NW	:	North West
NH	:	National Highway
NIDM	:	National Institute of Disaster Management
NOC	:	No Objection Certificate
NNW	:	North of Northwest
NOx	:	Oxides of Nitrogen
NRSA	:	National Remote Sensing Agency
NTU	:	Nephelometric Turbidity Unit
NW	:	North West
OHS	:	Occupational Health & Safety
PAS	:	Public address system
PPE	:	Personal Protective Equipment's
PPM	:	Parts Per Million
PSC	:	Portland Slag Cement
PVC	:	Poly Vinyl Chloride
RDS	:	Respiratory Dust Sampler
RI	:	Rainfall Infiltration

RO	:	Reverse Osmosis
RSPM	:	Respirable Suspended Particulate Matter
R & R	:	Rehabilitation & Resettlement
SAR	:	Specific Absorption Rate
SC	:	Scheduled Caste
SE	:	South East
SELC	:	South Eastern Coalfields Limited
SHE	:	Safety, Health and Environmental Protection
SOP	:	Safe operating procedure
SIC	:	Site Incident Controller
SOI	:	Survey of India
SRTM	:	Shuttle Radar Topographic Mission
SSE	:	South of South East
SW	:	South West
SSW	:	South of Southwest
ST	:	Scheduled Tribes
STP	:	Sewage treatment Plant
TAD	:	Tertiary air Duct
TTE	:	Table-top exercise
TDS	:	Total Dissolved Solids
TPD	:	Tonnes Per Day

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EXECUTIVE SUMMARY

1.0 INTRODCUTION

1.1 PROJECT

Ambuja Cements Ltd., a prominent entity within the Adani Group, has been a leading force in the Indian cement industry for over 25 years. Renowned for its commitment to sustainability, Ambuja Cement aims to be the most competitive and sustainable company in the cement manufacturing sector. This dedication to sustainable practices not only fulfills a crucial business imperative but also provides the company with a distinct competitive edge. Currently, Ambuja Cement has a cement capacity of 31 million tonnes with six integrated cement manufacturing plants and eight cement grinding units across the country.

M/s Ambuja Cements Limited (ACL) proposes to setup a Cement Grinding Unit with Cement Production Capacity of 2 x 3.0 Million Metric Tons per Annum (6 MMTPA) at Village: Devli, Tehsil + District: Palwal, State: Haryana with an area of 10.97 Ha. This report has been prepared in reference to the Terms of Reference (ToR) issued by State Level Expert Appraisal Committee (SEAC), Haryana vide file no SEAC/HR/2024/176 dated 27/08/2024 for carrying out the Environmental Impact Assessment (EIA) study for the installation of Cement Grinding Unit. As per EIA Notification 2006 and subsequent amendments, the project can be classified under Schedule 3(b) Cement Plants. All standalone grinding units are classified under Category 'B1' and must obtain environmental clearance from the SEAC/SEIAA.

1.2 DETAILS OF THE PROJECT

1.2.1 LOCATION AND ACCESSIBILITY

The Cement Grinding & Packing unit will be situated in Village Devli, Tehsil+District: Palwal, State: Haryana. The area falls within Survey of India Topo sheet no. 53 H /8, (H43x8), scaled at 1: 50,000. Location map & Salient features / Environmental setting map for the proposed project is given in Figure 1& Table 1.

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**TABLE NO:1 ENVIRONMENTAL SETTING WITHIN 10 KM RADIUS OF THE PLANT
SITE**

S. No	Particulars	Details		
1.	Project Location & Project Proponent name	Village: Devli, District+Tehsil- Palwal, State: Haryana M/S Ambuja Cements Limited (A Group Company of AdaniGroup)		
2.	Project Area	10.97 Ha		
3.	Geographical Location	Centroid - Latitude 28° 13' 47.4256'' to 28° 14' 00.5638'' N Longitude: 77° 19' 18.8045'' to 77° 19' 39.9306'' E		
4.	Elevation above Mean Sea Level	430 m		
5.	Present Land Use	Fellow Land, Ambuja Resources Limited		
6.	Nearest Railway Station	Description	Distance (~km)	Direction
		Asoati Railway Station	1.3	N
7.	Nearest Airport	Indira Gandhi International Airport	42	NW
		Kidzania International Airport	36.78	N
8.	Nearest Highway	NH-2 (19)	2.6	W
9.	Nearest Road	NH-2 (19)	2.6	W
10.	Nearest habitation /Village	Devli	Adjacent	SW
		Medapur	1	W
		Asoati	1	NNW
		Pahladpur	2.1	NE
		Mandakaul	2.8	SE
		Kakaripur	4.2	ESE
11.	Nearest District Headquarters	Palwal	9	S
12.	Nearest City	Palwal	9	S

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13.	Densely populated area	S. No.	Places	Population as per census 2011 (Nos.)	Distance (~km)	Direction
		1	Devli	2958	Adjacent	SW
14	Inland waterbodies	S. No.	Description	Distance (~km)	Direction	
		River canal				
		1.	Agra Canal	2.6	E	
15.	Reserved Forests/ Protected Forests/Notified Wildlife Sanctuary/ Notified national parks/ Ecologically sensitive areas	Nill				
16	Defence Installations	Nill				
17.	Archeologically Important places	S. No.	Description	Distance (~km)	Direction	
		1.	Raja Nahar Singh Fort	11	N	
		2.	Panchwati Temple	10.9	S	
18.	Interstate/National Boundaries	Nil within 15km study Area				
19.	Hills/Valleys	Nil within 15km study Area				
20.	Seismic Zone	Zone-IV (High Damage Risk Zone)				

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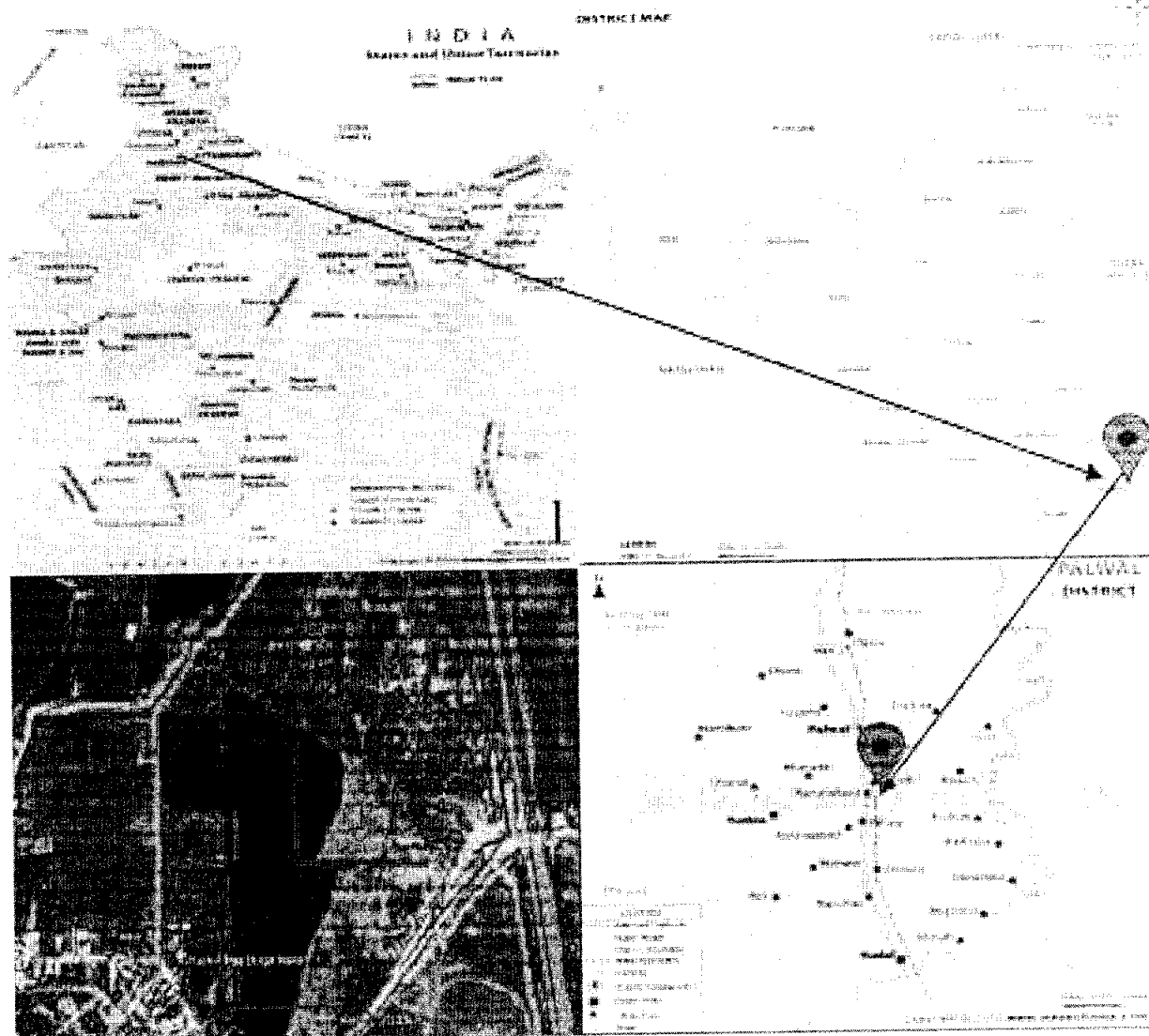


FIGURE NO.1 LOCATION MAP OF THE PROJECT SITE

2.0 PROJECT DESCRIPTION

2.1 Resource Requirement for The Project Activity

Out of total land about 3.67 hectare of which ~33.5 % of the area will be developed as greenbelt area & plantation.

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Table 2 Proposed Land Area Break up Details

S. No	Land use Description	Area (in hectare)	Percent (%)
1	Cement Plant (Plant Machinery)	3.82	34.8
2	Green Belt/Plantation	3.67	33.5
3	Open Area	3.48	31.7
Total		10.97	100

2.1.1 WATER REQUIREMENT

The total water requirement for grinding unit will be 600 KLD which will be sourced from Ground Water/ Agra Canal. The breakup of the water requirement is given in the table below

TABLE NO.3 BREAK UP OF WATER REQUIREMENTS

	Mill-1	Mill-1	Total
Process water consumption	180	180	360
Drinking & Flushing water consumption	15	15	30
Water treatment reject/Backwash water	15	15	30
Cooling water , (Evaporation + Blow down losses)	90	90	180
Total water consumption	300	300	600
Total waste water from process and cooling			
Reject water of Water Treatment	15	15	30
Reject/blow down water of CT	15	15	30
Regeneration from sewage water treatment plant	11	11	22
Total for Dust suppression system and green belt	41	41	82

2.1.2 POWER REQUIREMENT

Total power requirement for the proposed grinding unit will be 36 MW which will be sourced from nearest sub-station at line from nearby sub-station at Devli at 132 KV / 66 KV or 33 KV switch yard with suitable step down transformer, if required.

2.1.3 FUEL REQUIREMENT

The fuel is required for the operation of 1000 KVA DG set. To be directly sourced from nearby authorized local retailers as and the required for intermittent consumption. The estimated requirement of the fuel will be 80-100 liters per hour.

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2.1.4 RAW MATERIAL REQUIREMENT

The maximum annual requirement of major raw materials and their probable sources of procurement are given below in Table 4. Raw material requirement shall vary with the type of cement (OPC/PPC & other types as per market demand) manufacturing.

TABLE NO.4 THE MAXIMUM ANNUAL REQUIREMENT OF MAJOR RAW MATERIALS

Sl. No.	Raw material for each line (Dry basis)			Source & Distance	Mode of Transport	Storage for both lines
	Particulars	Max	Min			
1.	Clinker	2 x 2.85 MMTPA	2 x 0.90 MMTPA	In house/ Domestic Plants (Marwar Mundwa) ~600Km	Road/Rail	Clinker Silo 100000MT
2.	Gypsum (natural/ chemical)	2 x 0.24 MMTPA	2 x 0.15 MMTPA	Bikaner , Rajasthan or any other domestic sources ~500Km	Road/Rail	Covered Shed 4000 MT
3.	Fly ash	2 x 1.05 MMTPA	2 x 0.90 MMTPA	Nearby thermal Power plant(NTPC Dadri/Harduaganj/N TPC Jhajjar) ~200 Km	Road/Rail	RCC Silo 2 x 4000 MT CFA/WFA- 2000t
4.	Slag	2 x 1.95 MMTPA	2 x 0.75 MMTPA	Domestic ~500 km	Rail/Road	Covered Shed 7000 MT
5.	Coal (For HAG)	2 x 0.07 MMTPA	2 x 0.03 MMTPA	South Eastern Coal Field Ltd ~ 1200Km	Road/Rail	Covered Shed 1000 MT

2.1.5 MANPOWER REQUIREMENT

The total manpower requirement for the project is estimated around 1685 persons, of which the requirement during construction period is 1530. Details of manpower required during construction and operation phase are given as below in Table 5.

TABLE NO 5. TOTAL MANPOWER REQUIREMENT

Description		Construction Phase	Operation Phase
Proposed	Permanent	30	30
	Contract	1500	125
Total (A)		1530	155
Period of employment in days (B)		545	365

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Total Man-days (A*B)	833850	56575
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2.2 CEMENT MANUFACTURING PROCESS

The proposed cement grinding unit will use advanced Vertical Roller Mill (VRM) and Ball Mill + Roller Press technology to produce PPC, OPC, PSC, and composite cement. Clinker, gypsum, and fly ash will be stored and handled efficiently, with clinker grinding done in closed ball mills with high-efficiency separators. The plant emphasizes energy efficiency and environmental sustainability. The production process includes clinker, fly ash, and gypsum grinding, cement production, storage, packing, and dispatch. VRM allows for drying, grinding, material transport, and classification in one unit, while ball mills work on impact and attrition. The finished cement will be packed via rotary packers or transported in bulk.

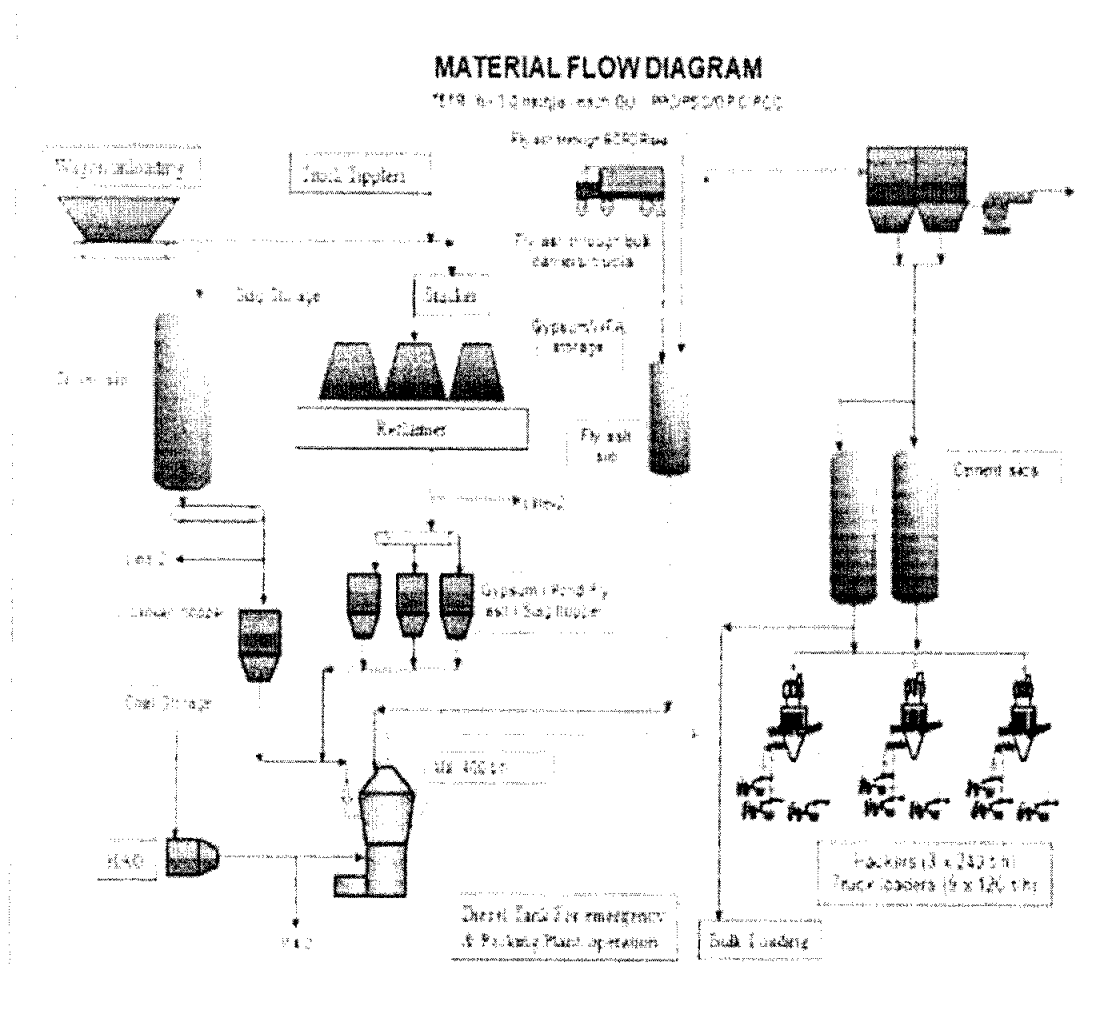


FIGURE NO.2 PROPOSED PROCESS FLOW DIAGRAM

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2.3 SOLID AND HAZARDOUS WASTE MANAGEMENT

The proposed waste management plan includes the collection of 65 kg/day of organic waste in bins, which will be composted and used as manure for greenbelt development. Additionally, 40 kg/day of inorganic waste will be collected in bins and disposed of through authorized PCB vendors.

TABEL NO.6 HAZARDOUS WASTE GENERATION AND MANAGEMENT

Sl.No	Name of materials	Schedule	Proposed Quantity (TPD)	Handling & Storage	Method of disposal
1	Used oil	5.1	2	In isolated area with non-permeable concrete flooring	Through CPCB/SPCB authorized agency Recycler
2	Cotton rags	33.2	4	In isolated area with non-permeable concrete flooring	Through CPCB/SPCB authorized agency (TSDF/CHWIF)
3	Lead acid batteries	-	0.7	In isolated area with non-permeable concrete flooring	To OEM through buy-buy-back/through authorized recycler
4	Used oil containers @20L capacity	33.1	0.6	In isolated area with non-permeable concrete flooring	Through CPCB/SPCB authorized Agency Recycler

3.0 BASELINE ENVIRONMENTAL STUDIES

A comprehensive survey was conducted within a 10-kilometer radius for the expansion of Ambuja Cements Ltd. located at Village Devli, Tehsil and District: Palwal, State- Haryana. As per the EIA guidelines, study was conducted within a 10 Km radius from the periphery of the proposed site. Baseline data for environmental attributes like ambient air, meteorology, water, hydrology, land use, soil, geology, noise, socio-economic, ecology and biodiversity etc. were collected. The study was conducted over a three-month period, from 1st October 2023 to 31 December 2023 during Post Monsoon season.

3.1 LAND USE

Land use refers to the economic use of land, while land cover describes the composition of the land's surface. Remote sensing and digital image processing techniques, using tools like ERDAS and ARC GIS, are employed to map land use/land cover for environmental management and resource planning.

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TA BLE NO 7. MAJOR LAND USE/LAND COVER CATEGORIES OF STUDY AREA

SL No	Category	Area in Ha	% of the Study Area
1	Agricultural Land	9429.36	27.57
2	Fallow Land	14730.62	43.07
3	Water bodies/Canal/Nala	206.69	0.60
4	Plantation	3757.76	10.99
6	Settlements/Built-up • Land	6077.67	17.77
	Total	34202.1	100.00

3.2 AMBIENT AIR QUALITY

Eight (8) monitoring locations were set up in the study area for assessment of the existing ambient air quality. Ambient Air Quality Monitoring reveals that in post-monsoon season, the concentrations of average PM10 and PM2.5 for all the 8 stations was found in the range of 31.67µg/m³ (Baghaura Village) to 74.24 µg/m³ (within project site) and 17.20 µg/m³ (Pahaladpur Village) to 37.08µg/m³ (within project site) respectively. During the study period, SO₂ and NO_x were found to be in the range of 8.03 µg/m³ (Pahaladpur Village) to 17.30 µg/m³ (Mandkaul Village) and 12.63 µg/m³ (at Baghaura village) to 35.24 µg/m³ (Within the project site) respectively. CO concentration was observed in the range of 0.16 mg/m³ (Badram) to 1.20 mg/m³ (Asoati). All the parameters are observed to be well within the limits of NAAQ norms. Air quality modelling was carried out using AERMOD and revealed that the incremental values will be marginal and resultant air quality parameters will be well within limits. Based on the primary and secondary data collection the ambient air quality monitoring results were analyzed and observed that the anthropogenic source of air pollution within the 10 km study area were mainly due to point and line sources.

3.3 NOISE QUALITY

Noise levels were monitored at eight locations around the project site during both day and night. The monitoring focused on residential, commercial areas, and nearby small to medium industries. Within a 10 km radius, noise levels at all sampling points were within CPCB's prescribed limits. Daytime noise levels ranged from 51.6 Leq dB(A) at Devli village (N-2) to 70.4 Leq dB(A) at the project site (N-1), while night time levels varied from 42.0 Leq dB(A) near Baghaura village (N-6) to 59.6 Leq dB(A) at

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the project site (N-1). The noise levels monitored at all residential areas are within the norms prescribed for Residential Zone.

3.4 SOIL QUALITY

The soil quality is good enough for agriculture with additional macro and micro nutrients by way of fertilization through organic/inorganic means. As the soil parameters shows varying nutrient contents, acidic to basic soil parameters and organic carbon contents, slightly basic pH soil, varying organic carbon, soil amendments as well addition of fertilizers may be needed to make the soil amenable to chosen agricultural crop or plantation.

3.5 WATER QUALITY

3.5.1 SURFACE WATER QUALITY

The water quality is mostly within acceptable limits for Class-C waters, with only a slight exceedance in BOD. This indicates minor organic pollution but generally safe conditions for primary water contact and aquatic life. The water quality shows significant signs of organic pollution, with BOD levels well above the permissible limit and a high COD. This suggests a substantial presence of decomposing organic matter, potentially from domestic or agricultural runoff, which could harm aquatic life and reduce the suitability for recreational activities. The proposed grinding unit will have adopted zero liquid discharge technique. Hence, major impact is not envisaged by the proposed project and the surface water quality will be monitored regularly and maintained.

3.5.2 GROUND WATER QUALITY

Groundwater pollution is usually traced back to four main origins: Industrial, Domestic, agriculture and environmental pollution. The contaminant is carried by the aquifers and results in the groundwater pollution. The groundwater from all the tested villages is generally safe for drinking as per the IS 10500:2012 standards. Although some parameters, like turbidity and hardness, slightly exceed desirable levels, they are still within permissible limits, indicating the water is of acceptable quality. The proposed grinding unit will be based on the dry process thus no discharge of waste water is envisaged from the proposed project. Hence, major impact is not envisaged by the proposed project and the ground water quality will be monitored regularly and maintained.

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3.6 BIOLOGICAL ENVIRONMNET

The Biological Environment study has been carried out as a part of the EIA study report to understand the present status of ecosystem prevailing in the study area and to study the floristic and fauna diversity of the terrestrial and aquatic environment of the study area within the 10 km radius of the plant site. The schedule I species found in the study area are one mammals, one bird and two reptiles. A wildlife conservation plan is under preparation for submission to regulatory authorities details of which along with the budget will be included in the final EIA after its approval from the regulatory authorities As per study conducted in the study area and as per information collected from Divisional Forest Officer, Palwal it is found that there are no National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/Elephant Reserves/(existing as well as proposed) within 10 km of the site area. The nearest protected areas Asola Bhatti Wildlife sanctuary which is ~29 km away from away from project site.

3.7 SOCIO ECONOMIC ENVIRONMENT

The socio-economic survey of the villages provides a comprehensive overview of the population, average household size, literacy rate, and sex ratio, among other factors. One key concern highlighted in the study is the non-working population in the study area. A portion of the population faces challenges due to limited income opportunities, with many expressing the need for sustainable, long-term employment to improve their livelihoods. The infrastructure and amenities available in the region reflect the area's moderate economic development. While basic infrastructure exists, higher-level amenities such as advanced education, healthcare services, and access to clean drinking water are notably lacking. The availability of educational and healthcare facilities is below average, highlighting the urgent need for enhanced medical services. In general, the socio-economic condition of the local population can be described as average, with moderate levels of literacy and work participation. However, the study underscores the need for significant improvements in essential services and employment opportunities to uplift the community's overall well-being.

3.8 TRAFFIC STUDY

Due to the proposed project, there will be addition of heavy and light motor vehicles in the existing traffic. The LOS value is 0.17. According to this performance will be in the category of Excellent scenario. The present road capacity is good enough to bear the increased traffic load due to proposed project. However, internal roads and feeder roads will be maintained to facilitate transportation.

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4.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.1 IMPACT ON AMBIENT AIR QUALITY

During the construction phase, air quality may deteriorate due to fugitive dust emissions from activities like excavation, backfilling, concreting, and the operation of heavy vehicles and machinery. Emissions of pollutants such as particulate matter, sulphur dioxide (SO₂), nitrogen dioxide (NO₂), and carbon monoxide (CO) are likely during both the construction and operational phases, with sources including raw material handling, production processes, and vehicle movement.

Mitigation measures include regular maintenance of vehicles and equipment to meet CPCB emission standards, water sprinkling on roads and construction sites to control dust, and the use of bag filters in cement mill stacks and bagging plant to limit dust emissions to 30 mg/Nm³. Fly Ash handling will be done in a closed circuit with water sprays to minimize dust. Automatic tripping systems will be installed in case of pollution control equipment failure, and materials will be stored in covered or enclosed spaces to prevent windblown dust. Dust suppression, including water sprinkling, will be employed at key areas, air quality will be monitored regularly, and construction workers will be provided with dust masks for protection.

4.2 IMPACT ON AMBIENT NOISE QUALITY

During the construction phase, activities such as foundation work, structure fabrication, construction equipment operations, and vehicle movement are likely to increase ambient noise levels, particularly in areas closer to the site, though the impact will be minimal due to the absence of nearby settlements. In the operation phase, noise levels are expected to rise near equipment, but they will be contained and kept within OSHA's 75 dB(A) limit.

To mitigate noise, measures such as regular machine maintenance, speed limits for vehicles, improved silencers, vibration isolation, use of personal protective equipment (PPE), and development of a greenbelt around the site will be implemented.

4.3 IMPACT ON WATER QUALITY

During the construction phase of the proposed plant, approximately 200 KLD of water will be sourced from the Agra Canal or treated water from Palwal, with the construction lasting around 18 months. This temporary water requirement will have minimal impact on regional groundwater availability, and drinking water will be provided for workers. Domestic wastewater will be treated on-site using septic tanks and soak pits, ensuring no discharge and protecting surrounding water quality. In the operation

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phase, the grinding unit will have minimal water consumption, using a closed-loop cooling system that recirculates water, with only a small amount of makeup water needed to offset evaporation losses. Mitigation measures include preventing wastewater discharge outside the plant, installing rooftop rainwater harvesting structures to recharge groundwater, treating domestic wastewater in an STP, and maintaining separate networks for storm water and wastewater drains with sedimentation pits and oil separators.

Mitigation measures

- Wastewater will not be discharged outside the plant premises. Therefore, operation of Grinding Unit will not pose any adverse impact on the ground water resources of the area.
- The company will install roof top rainwater harvesting structures inside the plant premises to re-charge the groundwater
- The domestic wastewater generated from the toilets, washrooms and canteen of the plant shall be treated in STP.
- The network of storm water drains and wastewater drains inside the plant will be made separate.
- The storm water drain will have sedimentation pits

4.4 IMPACT ON LAND ENVIRONMENT

The project activities will result in the generation of soil and debris, which will be carefully managed throughout the construction process. Prior to the onset of the monsoon season, comprehensive measures will be taken to stabilize any disturbed slopes to prevent erosion and maintain site integrity. Topsoil will be meticulously preserved and reinstated upon the completion of construction to restore the natural landscape. The levelling process will involve the strategic placement of backfill materials to ensure proper ground stability. To mitigate fugitive dust emissions during construction, it is highly recommended to implement dust suppression techniques, such as regular spraying, to maintain air quality and reduce environmental impact.

Mitigation Measures

- All earth work will be completed in such a way so that the soil erosion and carryover of the materials in other areas are protected.
- Excavated soil will be stored properly to avoid the spread of wind-blown dust and shall be reused for greenbelt maintenance.

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- Proper disposal of construction debris, the packaging materials which may consist of wooden boxes and jute wrappers will be stored at suitable place and disposed of suitably.
- Change in existing Land use\Land cover from agricultural fallow land into industrial uses will be for longer duration and this change in Land use\Land cover shall be confined to project site only.

There will be no change in Land use\Land cover outside the plant area.

4.5 IMPACT ON ROAD AND TRAFFIC

The activities which would probably be responsible for traffic congestion would be transportation of raw material for which trucks will be used. Traffic to the different sites during construction/installation will be intensive and heavier than at present in normal operating conditions. The aspect of the activities would be generation of dust from movement of vehicles are likely to cause some impacts on the working population within the immediate vicinity of the project site. In turn, it will subject existing roads to more stress.

Mitigation Measures

- Vehicles with PUC certificate will be hired
- Vehicles will be covered with a tarpaulin and not overloaded.
- Un-necessary blowing of horn will be avoided.
- Roads from NH-2(19) to Plant Site will be maintained in good condition to reduce noise due to traffic.
- Greenbelt of appropriate quality and width will be developed.
- To avoid accidents, the speed of vehicles will be low near habitation areas

4.6 IMPACT ON SOCIO ECONOMIC ENVIRONMENT

The construction phase will employ about 1,530 people, mostly from the local area, creating indirect jobs through market and trade development. However, the influx of workers may strain sanitation, introduce diseases, increase local conflicts, and cause short-term health impacts like eye irritation and headaches from dust exposure.

Mitigation Measures

- Awareness programme will be conducted before the monsoon season regarding the spread of water borne/ vector diseases.

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- Mosquito repellents will be provided in the nearby villages and at construction site to avoid the spread of diseases.
- In advance, facilities with equipped medical and safety services will be provided to take a control over the incident/violence if any caused.
- To control the dust emissions during the construction phase, the site boundary will be covered by the curtains.
- Whenever necessary, collaboration between project authority and local bodies will be done on regular basis with an objective to build and maintain a good relationship which is necessary for smooth functioning of the project as well as progress and welfare of the people in the study area
- Job oriented training courses will be organized through industrial/technical training institutions for educated youth like electrical, tailoring, plumbing, type writing, shorthand and machine repairing, welding fabrication, and other skill developing trades.

5.0 ALTERNATIVE ANALYSIS

Ambuja Cements Limited conducted a comprehensive site suitability analysis for the proposed cement grinding unit, assessing three potential locations. The evaluation process involved a detailed comparison of the three sites based on various factors such as environmental impact, logistical advantages, and infrastructure support. This thorough assessment was carried out to identify the most appropriate location for the project, ensuring that the selected site meets both operational requirements and sustainability standards.

TABLE NO. 8 DETAILS OF ALTERNATIVE SITE

SITE 1:Village Amaru, Tehsil +District: Palwal; State: Haryana	SITE 2:Village: Devli, Tehsil+District: Palwal; State: Haryana	SITE 3:Village: Pyala, Tehsil+District: Palwal; State: Haryana
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The selected site is site 2. Selected site is suitable due to road and rail connectivity. 90% of raw materials are expected by rail to arrive at project site and 90% product will be transported by road. Since the selected site is having very low human settlement the same has been considered. The selected site is a fallow land with no agriculture and the land is already converted for industrial purposes.

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6.0 ENVIRONMENTAL MONITORING PROGRAMME

Post project monitoring will be conducted as per the guidelines of SPCB and MoEF & CC and are tabulated below in Table 9. A monitoring schedule is very important to comply with the standards for which control measures have been designed.

TABLE NO 9. MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

S. No	Potential impact	Action to be followed	Parameters for monitoring	Frequency of monitoring	Location
1	Air Emissions	Ambient Air Quality Monitoring 4 locations inside the project boundary.	PM10, PM2.5, SO ₂ , NO _x & CO	Twice in a week.	At least four locations
		Online Continuous Ambient Air Quality Monitoring	PM10, PM2.5, SO ₂ , NO _x & CO	Online Continuous	At one location (Already Provided)
		Exhaust from Vehicles Use of fuel efficient vehicles. Maintenance of vehicles, Use of only PUC certified vehicles.	Vehicle logs to be maintained	--	Within the plant boundary
		Stack Emission Monitoring Monitoring of stack attached Cement Mill, Packaging Area	PM (Ball Mill, FAD, Roller Press, Packaging Plant, Wagon Tripler) PM, SO ₂ , NO _x , (for DG)	Once in a month	Within the plant boundary
2	Noise	Noise generated from various plant operations, vehicular to be optimized and monitored	Spot Noise Level recording; Leq (night), Leq(day), Leq (dn)	Once in a month	Noise measurement at the source & boundary of the project
		Generation of vehicular noise	Maintain records of vehicle	Periodic during operation phase	Within plant boundary
3	Wastewater Discharge	No untreated discharge of sewage to be made to surface water, groundwater or soil.	No discharge hoses in vicinity of watercourses.	Periodic during operation phase	Within plant boundary

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---	--

		Take care in disposal of sewage generated such that soil and groundwater resources are protected	Discharge norms for sewage will be maintained	Discharge norms for sewage will be maintained	STP discharge water
		Compliance of treated sewage usage/ discharge to standards	pH, TSS, TDS, BOD, COD, Oil Grease Coliforms count	Periodic during operation Phase	One location (Treated Wastewater)
4	Drainage and effluent Management	Ensure drainage system and specific design measures are working effectively. Design to incorporate existing drainage pattern and avoid disturbing the same.	Visual inspection of drainage and records thereof	Periodic during operation phase	Within plant boundary
5	Water Quality and Water Level	Monitoring used water quality & groundwater quality and levels	Comprehensive monitoring as per IS: 1050 Groundwater	Quality-twice a year Level-Monthly.	Four locations surrounding project site
6	Energy Usage	Energy usage for air-conditioning and other activities to be minimized Conduct annual energy audit for the buildings	Energy audit report	Annual audits and periodic checks during operational Phase	Within plant boundary
7	Emergency preparedness, such as fire fighting	Fire protection and safety measures to take care of fire and explosion hazards, to be assessed and steps taken for their prevention.	Mock drill records, on site emergency plan, evacuation plan	Periodic during operation phase	Within plant boundary
8	Maintenance flora and fauna	Vegetation, greenbelt/ green cover development.	No. of plants, species	Periodic during operation Phase	Within project boundary.
9	Solid and Hazardous Waste Management	Implement waste management plan that identifies and characterizes every waste arising associated with proposed activities and which identifies the	Records of solid waste generation, treatment and disposal	Periodic during operation phase	Within plant boundary

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		procedures for collection, handling & disposal of each			
10	Health	Employees and migrant labour health check ups	All relevant parameters like Routine Blood Examination, Microscopic, Biochemistry Routine Urine Examination, Lung function test, Sputum examination, Audiometry, X-ray, ECG	Regular check ups	All workers

6.1 EMISSION AND DISCHARGE FROM PLANT

A well-equipped environmental laboratory will be set up within the plant premises. Proper periodic training will be given to EMC employees to carry out necessary environmental monitoring and analysis. The production of cement can cause the following environmental problems:

- (i) Emission to air
- (ii) Water pollution
- (iii) Solid wastes and
- (iv) Hazardous wastes.

Details of emission monitoring system installation is given in the table no 10

TABLE NO. 10 DETAILS OF EMISSION MONITORING SYSTEM INSTALLATION

Particulars	Off-Line Monitoring as per (3 rd party monitoring – Monthly)	On-Line Monitoring Parameters
A. Stack Monitoring		
Cement Mill	CPCB standard & Consent to Operate	PM
B. Industrial Wastewaters		

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Inlet & Outlet of the STP	CPCB standard & Consent to Operate	pH, BOD, COD, TSS, Conductivity residual Cl, DO.
------------------------------	---------------------------------------	--

6.2 GREEN BELT

The extent project is 10.97 Ha out of which 3.67 hectare ie. ~33.5 % of the area will be developed as greenbelt area & plantation. A thick greenbelt all along the roads and plant will be developed. This greenbelt will serve as a buffer between the peripheries and the industry, there by controlling the air emissions and noise levels.

6.3 SOCIAL PARAMETERS

The socio-economic development activities associated with the proposed project will focus on benefiting the nearby villages surrounding the project site. The company plans to implement initiatives that complement existing governmental programs aimed at improving the well-being of the local population. In addition to these efforts, environmental awareness campaigns are being organized and will continue to be held to educate and engage local communities on sustainable practices. These awareness camps aim to promote environmental responsibility and encourage active participation in preserving local ecosystems. Aligning with the national objective of sustainability, the company will undertake a range of developmental activities that foster long-term economic growth, environmental stewardship, and social upliftment in the region.

7.0 ADDITIONAL STUDIES

7.1 RISK ASSESSMENT

Risk is the potential that a chosen action or activity will lead to a loss of human or property. Risk assessment is a step for Risk Management. Risk assessment is the determination of qualitative and quantitative value of risk related to a situation or hazard.

TABLE NO. 11 POSSIBLE HAZARDOUS LOCATIONS

S.No	Hazardous area	Hazard/Impact
1	Electrical room	Fire and electrocution
2	Transformer area	Fire and electrocution
3	Cable tunnel	Fire and electrocution

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4	Coal storage yard	Sliding and fire
5	Clinker silo	Collapse and material spillage
6	Grinding unit	Fatal accident, High noise
7	Chimney	Structure failure, Leakage/Air Pollution
8	Coal handling	Fire
9	Fuel storage area	Fire and spillage
10	Packing plant	Fire collapse and material spillage

Disaster management plans are prepared with an aim of taking precautionary step to control the hazard propagation, avert disaster, take action after the disaster which limits the damage to the minimum and follow the on-site emergency planning. The onsite emergency is an unpleasant situation that causes extensive damage to plant personnel and surrounding area and its environment due to in operation, maintenance, design and human error.

The off-site plan in detail will be based on those events, which are most likely to occur, but other less likely events, which have severe consequence, will also be considered. Incidents which have very severe consequences yet have a small probability of occurrence would also be considered during the preparation of the plan. However, the key feature of a good off-site emergency plan is flexibility in its application to emergencies other than those specifically included in the formation of the plan.

7.2 PUBLIC CONSULTATION

The Draft EIA/EMP report has been submitted to concerned authority, Haryana for public hearing. Action plan will be prepared and submitted after the conduction of public hearing.

8.0 PROJECT BENEFITS

The proposed project will enhance the overall socio-economic growth of the region by improving physical and social infrastructure, creating employment opportunities for skilled, semi-skilled, and unskilled workers, and providing various other tangible benefits to the nearby areas.

The proposed project will significantly improve local physical infrastructure by enhancing healthcare, roads, water access, sanitation, and implementing water security measures like rainwater harvesting and pond renovation. Social infrastructure will also benefit, with job creation boosting socio-economic conditions, especially for local and tribal populations, and the development of medical, educational, and self-help initiatives. The project will generate 1,530 jobs during the 18-month construction phase and

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155 operational jobs, alongside indirect employment in transportation, ancillary services, and local businesses, with a focus on hiring local unskilled and semi-skilled labour.

9.0 ENVIRONMENTAL MANAGEMENT PLAN

The major source of pollution in a cement plant are stack. Air pollution will be the major concern to be looked upon for the project activity. No major water, noise & soil pollution is envisaged from the project activity. Various mitigation measures have been proposed to take care of the environment in respect of air, water, noise, soil & the green cover of the project.

9.1 Air Quality management plan

The Air Quality Management Plan for the construction and operation phases includes water sprinkling on unpaved roads, regular sweeping of paved roads, and the use of PUC-certified construction equipment. Vehicles will be well-maintained, and stockpiles will be covered to prevent dust emissions. During the operation phase, fugitive emissions will be controlled by transporting clinker via covered conveyor belts and fly ash pneumatically, concreting plant roads, sweeping with vacuum machines, limiting vehicle speeds to 10 km/h, and using water sprinkling on bare lands. CPCB guidelines will be implemented to minimize emissions.

9.2 Solid and Hazardous waste management plan

TABLE NO. 12 SOLID WASTE MANAGEMENT PLAN

S. No.	Type of Waste	End Use / Disposal Plan
1.	Dust collected from air pollution control equipment	Will be totally recycled back to process.
2.	Sludge from Sewage Treatment Plant (30 Kg/day)	Will be used as manure for greenbelt development
3.	Municipal waste (domestic and or commercial wastes (40 kg/day)	Waste will be collected & segregated into bio- degradable & non- degradable. Further, Bio- degradable waste will be converted into organic manure by installation of Organic Waste Converter (OWC) machine and manure will be used for greenbelt development & plantation and non-degradable waste will be sent to authorized vendor from CPCB/SPCB as per scientifically in compliance of Solid

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		Waste Management rules 2016, as amended thereof.
4.	Redundant machinery or equipment of (~250 tonnes/ annum)	Occasionally, scraps as and when generated segregated, stored & sold to vendors.
5.	Horticultural waste	Horticultural wastes generated from gardens/greenbelt will be composted.
6.	Construction and demolition waste	Will be utilized in levelling of land and construction of roads

TABLE NO. 13 HAZARDOUS WASTE GENERATION

S. No.	Type of Waste	Waste Category	Treatment/Disposal Plan
1.	Used Oil /Spent oil / Grease	Schedule I, Category - 5.1	Will be generated per Schedule-I of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016; which will be sent to CPCB/ SPCB authorized recycler. Used Oil/ Spent oil will be filled in Empty barrels and further sent to CPCB/ SPCB authorized recycler.
2.	Waste/ Residue containing oil	Schedule I, Category - 5.2 & 33.2	
3.	Empty barrels	Schedule I, Category - 33.1	
4.	Contaminated cotton rags	Schedule I, Category - 5.2 & 33.2	
5.	E-Waste	Schedule I	Will be sent to registered vendors as per E- Waste Management Rules, 2016.
6.	Used Lead acid batteries	Schedule III	Will be stored in the designated storage area and will be disposed-off/ sent to registered vendors as per Battery Waste Management Rules 2020.

9.3 STORM WATER MANAGEMENT PLAN

Rainwater harvesting will be implemented according to the site's elevation and contour profile, directing storm water towards a dedicated rainwater harvesting pond based on these elevations. To ensure the collected storm water is suitable for direct use, careful management practices will be employed to prevent

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contamination. This includes regular inspections and cleaning of storm drains to maintain their effectiveness. Additionally, to protect the quality of harvested rainwater, the use of fertilizers and pesticides will be avoided before and during the monsoon season. These measures aim to optimize rainwater harvesting and ensure the resource remains clean and usable.

9.4 OCCUPATIONAL HEALTH AND SAFETY MANGEMENT PLAN

- Standard methods and machinery will be used.
- Use of Personal Protective Equipment (PPE) will be mandatory.
- Electrical equipment will be grounded, well insulated and conform to applicable codes.
- Employees will be provided with hard hats, safety boots, eye and ear protection, and snug fitting gloves as appropriate.
- Masks and dust-proof clothing will be provided to personnel working in areas with high dust levels.
- Sanitation facilities will be well equipped.
- Ventilation systems will be provided to control work area temperatures and humidity;
- Pre-employment and periodic medical examinations will be conducted for all personnel, and specific surveillance programs instituted for personnel potentially exposed to health hazards.
- At the time of placement each worker will be medically examined by a qualified doctor to ascertain his physical fitness for specific job.
- During the course of employment, the workers will be examined for such parameters as Chest X-ray Vision Audiometry Spirometry ECG, the examination will be conducted once in six months in the occupational health center by a part time factory medical officer, to evaluate the effect of exposure.

9.5 GREEN BELT DEVELOPMENT PLAN

Out of the total project area of 10.97 hectares, 3.67 hectares (approximately 33%) will be dedicated to greenbelt and plantation development in line with CPCB guidelines, with plans to plant around 2500 saplings per hectare, factoring in a 70% survival rate. The Greenbelt/Plantation Management Plan includes preparing seed beds with appropriate fertilizers and mulch, using topsoil for development, and selecting plant species that are fast-growing, tall, and a mix of perennial evergreen and deciduous trees with thick canopies. Planting will be done in alternating rows around the site to minimize pollution dispersion, and species will be chosen for their ecological compatibility and adherence to regional soil and hydrological conditions, with a preference for indigenous species. The company will provide the

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necessary facilities and equipment, assign a horticulturist and team for management and care, and apply fertilizers as needed to ensure a healthy and dense greenbelt.

9.6 SOCIO ECONOMIC MANAGEMENT PLAN

An Environmental Cell will be established to oversee the mitigation of transient and temporary impacts during the construction phase, focusing on minimizing air pollutants by installing advanced pollution control equipment before any emissions are released into the atmosphere. Regular monitoring and analysis of gases will be conducted to ensure compliance with environmental norms. The project is expected to yield short-term positive impacts, including an improved quality of life for the local community. Additionally, the project proponent and contractors are committed to engaging the majority of the workforce from nearby villages and towns, thereby supporting local employment and economic development.

9.7 PROJECT COST AND EMP IMPLEMENTATION BUDGET

The total investment for the proposed project works out to approximately INR 1400 Crores for 6 MMTPA Devli Cement Grinding Unit. The breakup of cost of the project is given in the Table 14.

TABLE NO: 14 PROJECT COST BREAKUP

Particulars	Amount (INR in Crores)
Land & Site development	27.0
Engineering know-how & project management	24.0
Civil works & structure	464.0
Plant & machinery	568.9
Expense on training	6.0
Misc. fixed asset	9.0
Pre-operative expenses including interest during construction	146.9
EMP cost	70.2
Contingency @ 6%	84.0
Total Capital Budget	1400.0

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COST BREAKUP FOR EMP**TABLE NO: 15 PROPOSED EMP COST**

Sl.No	Particulars	Estimated cost in INR	
		Capital	Recurring
1	Air pollution Control Measures	35.0	3.0
2	Water Pollution Control Measures	20	0.2
3	Occupational Health and Safety	3.0	0.4
4	Environmental Monitoring	10.0	1.0
5	Green Belt Development	2.2	0.2
	Total	70.2	4.8

10.0 CONCLUSION

The plant design incorporates leading-edge technology to effectively manage air emissions and noise levels during operations. No effluent will be produced from the plant, and all solid waste generated will be recycled back into the plant's processes. This Environmental Impact Assessment (EIA) report demonstrates that the careful execution of the proposed Environmental Management Plan will minimize negative environmental impacts while promoting both direct and indirect positive benefits to society through the project's development.



File No.: SEAC/HR/2024/176
Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Level Expert Appraisal
Committee(SEAC), HARYANA)



Dated 27/08/2024

To,

M/s Ambuja Cement Limited
 Adani Corporate House, Shantigram, S.G. Highway, Khodiyar, Shantigram, Ahmadabad Gujarat, Near
 Shantinagar, 382421
 sanjeevkumar.singh@adani.com

Subject:

Standard Terms of Reference (ToR) to the proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil and District Palwal, Haryana under the EIA Notification 2006-and as amended thereof-regarding.

Sir/Madam,

This is in reference to your application submitted to SEAC vide proposal number SIA/HR/IND1/449852/2023 dated 27/08/2024 for grant of Terms of Reference (ToR) to the project under the provision of the EIA Notification 2006-and as amended thereof.

2. The particulars of the proposal are as below :

(i) ToR Identification No.	TO23B1103HR5420124N
(ii) File No.	SEAC/HR/2024/176
(iii) Clearance Type	Fresh ToR
(iv) Category	B1
(v) Project/Activity Included Schedule No.	3(b) Cement plants
(vii) Name of Project	Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District: Palwal, State: Haryana by M/S. Ambuja Cements Limited (ACL)
(viii) Name of Company/Organization	Ambuja Cement Limited
(ix) Location of Project (District, State)	PALWAL, HARYANA
(x) Issuing Authority	SEAC
(xii) Applicability of General Conditions	NO

3. The SEAC has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification,

2006 & further amendments thereto and after detailed examination hereby decided to grant Standard Terms of Reference to the instant proposal of **M/s.Ambuja Cement Limited** under the provisions of the aforementioned Notification.

4. The brief about products and by products as submitted by the Project proponent in Form-1 (Part A, B) and Standard Terms of Reference are annexed to this letter as Annexure (1).
5. The Ministry reserves the right to stipulate additional TORs, if found necessary.
6. The Standard Terms of Reference (ToR) to the aforementioned project is under provisions of EIA Notification, 2006 and as amended thereof. 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. The granted letter, all the documents submitted as a part of application viz. Form-1 Part A and Part B are available on PARIVESH portal which can be accessed by scanning the QR Code above.

Copy To

sanjeewkumar.singh@adani.com
scy.seachr@gmail.com

Annexure 1

Standard Terms of Reference

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 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. c. Undertaking by the project proponent owning the contents (information and data) of the EIA/EMP report. d. 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.

3. Executive Summary

3.1. Introduction

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

4. Executive Summary

4.1. Project description

S. No..	Terms of Reference
4.1.1	Resource requirements (Land; water; fuel; manpower)
4.1.2	Operational activity
4.1.3	Key pollution concerns

5. Executive Summary

5.1. Baseline Environment Studies

S. No..	Terms of Reference
5.1.1	Ambient air quality
5.1.2	Ambient Noise quality
5.1.3	Traffic study
5.1.4	Surface water quality
5.1.5	Ground water quality
5.1.6	Soil quality
5.1.7	Biological Environment
5.1.8	Land use
5.1.9	Socio-economic environment

6. Executive Summary

6.1. Anticipated impacts

S. No..	Terms of Reference
6.1.1	Impact on ambient air quality
6.1.2	Impact on ambient noise quality

S. No..	Terms of Reference
6.1.3	Impact on road and traffic
6.1.4	Impact on surface water resource and quality
6.1.5	Impact on ground water resource and quality
6.1.6	Impact on terrestrial and aquatic habitat
6.1.7	Impact on socio-economic environment

7. Executive Summary

7.1. Alternative analysis

S. No..	Terms of Reference
7.1.1	

8. Executive Summary

8.1. Environmental Monitoring program

S. No..	Terms of Reference
8.1.1	Ambient air, noise, water and soil quality
8.1.2	Noise quality management plan
8.1.3	Emission and discharge from the plant
8.1.4	Green Belt
8.1.5	Social Parameters

9. Executive Summary

9.1. Additional Studies

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

10. Executive Summary

10.1. Environment management plan

S. No..	Terms of Reference
10.1.1	Air quality management plan
10.1.2	Solid and hazardous waste management plan
10.1.3	Effluent management plan
10.1.4	Storm water management plan
10.1.5	Occupational health and safety management plan
10.1.6	Green belt development plan
10.1.7	Socio-economic management plan
10.1.8	Project cost and EMP implementation budget.

11. Introduction

S. No..	Terms of Reference
11.1	Background about the project
11.2	Need of the project
11.3	Purpose of the EIA study
11.4	Scope of the EIA study

12. Project description

12.1. Site Details

S. No..	Terms of Reference
12.1.1	Location of the project site covering village, Taluka/Tehsil, District and State.
12.1.2	Site accessibility
12.1.3	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).
12.1.4	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.
12.1.5	Environment settings of the site and its surrounding along with map.
12.1.6	A list of major industries with name, products and distance from plant site within study area (10km radius)

S. No..	Terms of Reference
	and the location of the industries shall be depicted in the study area map.
12.1.7	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.
12.1.8	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.
12.1.9	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.
12.1.10	Type of land, land use of the project site needs to be submitted.
12.1.11	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.
12.1.12	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.
12.1.13	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.
12.1.14	A detailed report covering all aspects of Fire Safety Management and Fire Emergency Plan shall be submitted.
12.1.15	Details of drone survey for the site, needs to be included in report and presented before the EAC during appraisal of the project.

13. Project description

13.1. Forest and wildlife related issues (if applicable)

S. No..	Terms of Reference
13.1.1	Status of Forest Clearance for the use of forest land shall be submitted.
13.1.2	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

S. No..	Terms of Reference
	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.
13.1.3	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.
13.1.4	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.

14. Project description

14.1. Salient features of the project

S. No..	Terms of Reference
14.1.1	Products with capacities in Tons per Annum for the proposed project.
14.1.2	If expansion project, status of implementation of existing project, details of existing/proposed products with production capacities in Tons per Annum.
14.1.3	Site preparatory activities.
14.1.4	List of raw materials required and their source along with mode of transportation.
14.1.5	Other than raw materials, other chemicals and materials required with quantities and storage capacities.
14.1.6	Manufacturing process details along with process flow diagram of proposed units.
14.1.7	Consolidated materials and energy balance for the project.
14.1.8	Total requirement of surface/ ground water and power with their respective sources, status of approval.
14.1.9	Water balance diagram
14.1.10	Details of Emission, effluents, hazardous waste generation and mode of disposal during construction as well as operation phase.
14.1.11	Man-power requirement.
14.1.12	Cost of project and scheduled time of completion.
14.1.13	In case of expansion projects, project proponent shall submit structural stability certificate showing whether existing structure withstand for proposed expansion activity.
14.1.14	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

S. No..	Terms of Reference
	<p>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.</p>

15. Description of the Environment

S. No..	Terms of Reference			
15.1	Study period			
15.2	Approach and methodology for data collection as furnished below			
	Attributes	Network	Sampling Frequency	Remarks
	Air Environment Micro-Meteorological			
	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• IS 5182 Part 1-20• Site specific primary data is essential• Secondary data from IMD, New Delhi• CPCB guidelines to be considered.
	Pollutants			
	<ul style="list-style-type: none">• PM10	At least 8-12 locations	As per National Ambient Air Quality	<ul style="list-style-type: none">• Sampling as per CPCB guidelines

S. No..	Terms of Reference
	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <ul style="list-style-type: none"> SO₂ NO_x CO HC Other parameters relevant to the project and topography of the area </div> <div style="width: 50%;"> <p>Standards, CPCB Notification.</p> <ul style="list-style-type: none"> 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 annexure to the EIA Report. </div> </div> <p>Noise</p> <p>Hourly equivalent noise levels At least 8-12 locations s per CPCB norms</p> <p>Water</p> <p>Parameters for water quality</p> <ul style="list-style-type: none"> 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 <p>Samples for water quality should be collected and analyzed as per:</p> <ul style="list-style-type: none"> 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

S. No..	Terms of Reference
	<ul style="list-style-type: none"> • Zoo plankton <p>For River Bodies</p> <ul style="list-style-type: none"> • Total Carbon • pH • Dissolved Oxygen • Biological Oxygen Demand • Free NH₄ • Boron • Sodium Absorption Ratio • Electrical Conductivity <p>For Ground Water</p> <p>Traffic Study</p> <p>Type of vehicles</p> <ul style="list-style-type: none"> • Frequency of vehicles for transportation of materials • Additional traffic due to proposed project <p>Soil</p> <ul style="list-style-type: none"> • Particle size distribution • Texture • pH • Electrical conductivity • Cation exchange capacity • Alkali metals • Sodium Absorption Ratio (SAR) • Permeability • Water holding capacity • Porosity <p>Land use/Landscape</p> <ul style="list-style-type: none"> • Location code

S. No..	Terms of Reference
	<ul style="list-style-type: none"> • Total project area • Topography • Drainage (natural) <p>Cultivated, forest, plantations, water bodies, roads and settlements</p> <p>Biological Environment</p> <p>1. Aquatic</p> <ul style="list-style-type: none"> • Primary productivity • Aquatic weeds • Enumeration of phyto plankton, zoo plankton and benthos • Fisheries Diversity indices • Trophic levels • Rare and endangered species • Marine Parks/ Sanctuaries/ closed areas /coastal regulation zone (CRZ) <p>2. Terrestrial</p> <ul style="list-style-type: none"> • 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 <p>socio-economic</p> <ul style="list-style-type: none"> • 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, published literature.

S. No..	Terms of Reference																																																																																		
	<p>Demographic structure</p> <ul style="list-style-type: none"> Infrastructure resource base Economic resource base Health status:Morbidity pattern Cultural and aesthetic attributes. Education <p>Socio-economic survey is based on proportionate, stratified and random sampling method.</p> <ul style="list-style-type: none"> Primary data collection through questionnaire Secondary data from census records, statistical hard books, topo sheets, health records and relevant official records available with Govt. agencies 																																																																																		
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S. No..	Terms of Reference
	<ul style="list-style-type: none"> • Boron • Sodium Absorption Ratio • Electrical Conductivity <p>For Ground Water</p> <p>Traffic Study</p> <p>Type of vehicles</p> <ul style="list-style-type: none"> • Frequency of vehicles for transportation of materials • Additional traffic due to proposed project <p>Land Environment</p> <p>Soil</p> <ul style="list-style-type: none"> • Particle size distribution • Texture • pH • Electrical conductivity • Cation exchange capacity • Alkali metals • Sodium Absorption Ratio (SAR) • Permeability Water holding capacity • Porosity <p>Soil samples be collected as per BIS specifications</p> <p>Land use/Landscape</p> <ul style="list-style-type: none"> • Location code • Total project area • Topography • Drainage (natural) <p>Cultivated, forest, plantations, water bodies, roads and settlements</p> <p>Biological Environment</p>

S. No..	Terms of Reference
	<p>1. Aquatic</p> <ul style="list-style-type: none"> • Primary productivity • Aquatic weeds • Enumeration of phyto plankton, zoo plankton and benthos • Fisheries Diversity indices • Trophic levels • Rare and endangered species • Marine Parks/ Sanctuaries/ closed areas /coastal regulation zone (CRZ) <p>2. Terrestrial</p> <ul style="list-style-type: none"> • 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 <p>socio-economic</p> <p>Demographic structure</p> <ul style="list-style-type: none"> • Infrastructure resource base • Economic resource base • Health status: Morbidity pattern • Cultural and aesthetic attributes. • Education <ul style="list-style-type: none"> • 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, published literature. • 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, topo sheets, health records and relevant official records available with Govt. agencies

S. No..	Terms of Reference
15.3	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
15.4	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.

16. Anticipated Environment Impacts and mitigation measures (In case of expansion, cumulative impact assessment shall be carried out)

S. No..	Terms of Reference												
16.1	<p>Identification of potential impacts in the form of a matrix for the construction and operation phase for all the environment components</p> <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													
16.2	<p>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.</p>												
16.3	<p>Impact on ambient noise quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase</p>												
16.4	<p>Impact on traffic (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase</p>												
16.5	<p>Impact on soil quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase</p>												
16.6	<p>Impact on land use (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase</p>												
16.7	<p>Impact on surface water resource and quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase</p>												
16.8	<p>Impact on ground water resource and quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase</p>												
16.9	<p>Impact on terrestrial and aquatic habitat (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase</p>												

S. No..	Terms of Reference
16.10	Impact on socio-economic environment (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase
16.11	Impact on occupational health and safety (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase

17. Analysis of Alternatives (Technology & Site)

S. No..	Terms of Reference
17.1	No project scenario
17.2	Site alternative
17.3	Technical and social concerns
17.4	Conclusion

18. Environmental Monitoring Program

18. Environmental Monitoring Program																								
S. No..	Terms of Reference																							
18.1	Details of the Environment Management Cell																							
18.2	Performance monitoring schedule for all pollution control devices shall be furnished.																							
18.3	<p>Corporate Environment Policy</p> <p>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.</p> <p>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.</p> <p>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</p> <p>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</p>																							
18.4	<p>Action plan for post-project environment monitoring matrix:</p> <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 colspan="6">Construction phase</td></tr><tr><td colspan="6">Operation phase</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																								

19. Additional Studies

S. No..	Terms of Reference																	
19.1	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.																	
19.2	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.																	
19.3	Implementation status/measures adopted for avoiding the generation of single used plastic waste.																	
19.4	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.																	
19.5	Public consultation details (Entire proceedings as separate annexure along with authenticated English Translation of Public Consultation proceedings).																	
19.6	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.																	
19.7	<div>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</div> <table><tr><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>S.No</th><th>Name of the Physical Activity</th><th>1st</th><th>2nd</th><th>3rd</th></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	Physical activity and action plan		Year of implementation (Budget in INR)			Total Expenditure (Rs. in Crores)	S.No	Name of the Physical Activity	1st	2nd	3rd						
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S.No	Name of the Physical Activity	1st	2nd	3rd														
19.8	<div>Risk assessment</div> <div><ul style="list-style-type: none">• Methodology• Hazard identification• Frequency analysis• Consequence analysis• Risk assessment outcome</div>																	
19.9	Emergency response and preparedness plan																	

20. Project Benefits

S. No..	Terms of Reference
20.1	Environment benefits
20.2	Social infrastructure
20.3	Employment and business opportunity
20.4	Other tangible benefits

21. Environment Cost Benefit Analysis

S. No..	Terms of Reference
21.1	Net present value
21.2	Internal rate of return
21.3	Benefit cost ratio
21.4	Cost effectiveness analysis

22. Environment Management Plan (Construction and Operation phase)

S. No..	Terms of Reference
22.1	Action plan for hazardous waste management
22.2	Action plan for solid waste management
22.3	Action plan for e-waste management.
22.4	Action plan for plastic waste management, considering the Plastic Waste Management Rules 2016.
22.5	Action plan for construction and demolition waste management.
22.6	Rain water harvesting plan
22.7	Plan for maximum usage of waste water/treated water in the Unit
22.8	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 %.
22.9	Wildlife conservation plan (In case of presence of schedule I species)
22.10	Total capital cost and recurring cost/annum for environment pollution control measures shall be included.

S. No..	Terms of Reference
22.11	Explore possibilities for recycling and reusing of treated water in the unit to reduce the freshwater demand and waste disposal.
22.12	An Action Plan for improving the house-keeping activities in the raw material handling area need to be submitted
22.13	Action plan for the stock piles with impervious floor, provision of garland drains and catch pits to trap run off material shall be submitted.
22.14	Action plan to limit the dust emission from all the stacks below 30 mg/Nm ³ shall be furnished.
22.15	Action plan for fugitive emission control in the plant premises shall be provided.

Standard Terms of Reference for conducting Environment Impact Assessment Study for Cement plants and information to be included in EIA/EMP report

1.

Sr. 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 used/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.

Sr. 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 to limit the particulate matter emission from all the stacks below 30 mg/Nm ³ shall be furnished.
1.13	PP shall explore the possibility of plastic waste utilization in the Plant/Unit process.
1.14	Action plan for 100 % solid waste utilization shall be submitted.
1.15	PM (PM ₁₀ and P _{2.5}) present in the ambient air must be analysed for source analysis – natural dust/RSPM generated from plant operations (trace elements) of PM ₁₀ to be carried over.

Additional Terms of Reference

N/A

Annexure 2**Details of Products & By-products**

Name of the product /By-product	Product / By-product	Quantity	Unit	Mode of Transport / Transmission	Remarks (eg. CAS number)
Ordinary Portland Cement (OPC)/ Portland Pozzolana Cement (PPC) and other cement	Product	6	MMTPA	Combination of two or three modes	NA

Subject: Standard Terms of Reference (ToR) proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil and District Palwal, Haryana

Proposal Number: SIA/HR/IND1/449852/2023 dated 27/08/2024

ToR Identification No.: TO23B1103HR5420124N

Compliance of ToR

S. No.	ToR	Compliance
	Executive Summary	Complied and attached with the Draft EIA
1.0	Introduction	
1.1	Background about the project	Complied. Please refer section 1.2 in chapter 1.
1.2	Need of the project	Complied. Please refer section 2.3 in chapter 2.
1.3	Purpose of the EIA study	Complied. Please refer section 1.3 in chapter 1
1.4	Scope of the EIA study	Complied. Please refer section 1.6 in chapter 1.
2.	Project description	
2.1	Site details	
2.1.1	Location of the project site covering village, Taluka/Tehsil, District and State.	Complied. Please refer chapter 1, section 1.5.3, Figure 1.1,1.2,1.3
2.1.2	Site accessibility	Complied. Please refer section 1.5.4 in chapter 1
2.1.3	A digital topo sheet 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).	Complied. Please refer section 1.5.3, Figure 1.2.
2.1.4	Latest High-resolution satellite image data having 1 m - 5 m spatial resolution like quick bird, 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.	Complied. Please refer chapter 3, section 3.7.3. in figure no: 3.6
2.1.5	Environment settings of the site and its surrounding along with map.	Complied. Please refer chapter 2, in section 2.4.2 in table 2.4.
2.1.6	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.	Complied. Please refer section 2.7, Table 2.9.
2.1.7	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	Not Applicable

	it's near the wetland, Guidelines for implementing Wetlands (Conservation and Management) Rules, 2017 may be followed.	
2.1.8	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
2.1.9	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.	Not Applicable
2.1.10	Type of land, land use of the project site needs to be submitted.	Complied. Please refer section 2.4.3 Table 2.5 chapter 2.
2.1.11	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.	Complied. Please refer section 2.7.1 in chapter 2.
2.1.12	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.	Complied. Please refer section 2.4.3. (Attached in the Plan 1)
2.1.13	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.	Complied. Attached in plan 3 (contour map) and Rainwater harvesting details with calculation compiled in section 10.5.1.
2.1.14	A detailed report covering all aspects of Fire Safety Management and Fire Emergency Plan shall be submitted.	Complied. Please refer chapter 10 in section 10.13
2.1.15	Details of drone survey for the site, needs to be included in report and presented before the EAC during appraisal of the project.	Will be submitted in Final draft EIA

Project Description

3.1 Forest and wildlife related issues (if applicable)

3.1.1	Status of Forest Clearance for the use of forest land shall be submitted.	No Forest land involved
3.1.2	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
3.1.3	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
3.1.4	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.	Schedule I species details are given in Table 3.27 in chapter 3. Wildlife Conservation Plan will be prepared and submitted with in Final EIA.

4 Project Description

4.1 Salient features of the project

4.1.1	Products with capacities in Tons per Annum for the proposed project.	Complied. Please refer section 2.8.2 in table 2.13
4.1.2	If expansion project, status of implementation of existing project, details of existing/proposed products with production capacities in Tons per Annum.	Not Applicable
4.1.3	Site preparatory activities.	Complied. Please refer Chapter 2, in section 2.5.
4.1.4	List of raw materials required and their source along with mode of transportation.	Complied. Please refer Chapter 2, section 2.8. table no 2.10
4.1.5	Other than raw materials, other chemicals and materials required with quantities and storage capacities.	Complied. Please refer in table 2.12, table 2.16
4.1.6	Manufacturing process details along with process flow diagram of proposed units.	Complied. Please refer section 2.6, figure no 2.2
4.1.7	Consolidated materials and energy balance for the project.	Complied. Please refer chapter 2, section 2.12.7 and in chapter 10 section 10.10

4.1.8	Total requirement of surface/ ground water and power with their respective sources, status of approval.	Complied. Please refer chapter 2, section 2.9, Table 2.14
4.1.9	Water balance diagram	Complied. Please refer in figure 2.3.
4.1.10	Details of Emission, effluents, hazardous waste generation and mode of disposal during construction as well as operation phase.	Complied. Please refer chapter 2 in section 2.12.2, 2.12.3, 2.12.4, 2.12.5 Table 2.21 and 2.22
4.1.11	Man-power requirement.	Complied. Please refer section 2.10, table 2.15
4.1.12	Cost of project and scheduled time of completion.	Complied. Please refer section 2.5, Table no:2.6 and 2.7
4.1.13	In case of expansion projects, project proponent shall submit structural stability certificate showing whether existing structure withstand for proposed expansion activity.	Not Applicable
4.1.14	<p>Brief on present status of compliance (Expansion/modernization proposals)</p> <p>a. Cumulative Environment Impact Assessment for the existing as well as the proposed expansion/modernization shall be carried out.</p> <p>b. Cumulative Impact Assessment need to be carried out by greenfield projects considering the nearby industries.</p> <p>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.</p> <p>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.</p>	Not Applicable

	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	
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5 Description of the Environment

5.1	Study period	Compiled in chapter 3 in section 3.2
5.2	Approach and methodology for data collection as furnished below Attributes Sampling Remarks	Compiled in chapter 3 in section 3.3.1 in table 3.1
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	Complied. Please refer chapter 3 in section 3.10, 3.11, 3.12, 3.13, 3.13.2, 3.14, 3.15, Table 3.6, 3.10, 3.12, 3.14, 3.16, 3.18, 3.22, 3.23, 3.24, 3.25
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.	Compiled in chapter 3 in figure 3.10, 3.12, 3.13, 3.14, 3.16, 3.17

6. Anticipated Environment Impacts and mitigation measures (In case of expansion, cumulative impact assessment shall be carried out)

6.1	<p>Identification of potential impacts in the form of a matrix for the construction and operation phase for all the environment components</p> <p>Activity Environment Ecological Socio-economic</p> <p>Construction phase</p> <p>Operation phase</p>	Complied. Please refer chapter 4 in section 4.2,4.3 and table 4.1, 4.2,4.3
6.2	<p>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.</p>	Complied. Please refer chapter 4, section 4.2.2,4.3.2,4.3.3 Figure 4.1 Table 4.5, 4.6
6.3	<p>Impact on ambient noise quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase</p>	Complied. Please refer chapter 4, section 4.2.3, 4.5, Figure 4.2,4.3 Table 4.1, Table 4.8
6.4	<p>Impact on traffic (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase</p>	Complied. Please refer chapter 3 section 3.16 and 4 section 4.11.
6.5	<p>Impact on soil quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase</p>	Complied. Please refer chapter 4, section 4.2.6.
6.6	<p>Impact on land use (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase</p>	Complied. Please refer chapter 4, section 4.2.1.,4.3
6.7	<p>Impact on surface water resource and quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase</p>	Complied. Please refer chapter 4, section 4.2,4.7
6.8	<p>Impact on ground water resource and quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase</p>	Complied. Please refer chapter 4, section 4.2.4,4.7

6.9	Impact on terrestrial and aquatic habitat (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase	Complied. Please refer chapter 4 in section 4.10.
6.10	Impact on socio-economic environment (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase	Complied. Please refer chapter 4 in section 4.2.5, table 4..2,4.3
6.11	Impact on occupational health and safety (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase	Complied. Please refer chapter 4 section 4.8 & 10.12

7 Analysis of Alternatives (Technology & Site)

7.1	No project scenario	Complied. Please refer chapter 5 in section 5.2.
7.2	Site alternative	Complied. Please refer chapter 5 in section 5.3, Table 5.1
7.3	Technical and social concerns	Complied. Please refer chapter 5 in section 5.4 and 5.5.
7.4	Conclusion	Complied. Please refer chapter 5 in section 5.6.

8 Environmental Monitoring Program

8.1	Details of the Environment Management Cell	Complied. Please refer chapter 6 in section 6.3.
8.2	Performance monitoring schedule for all pollution control devices shall be furnished.	Complied. Please refer chapter 6 in section 6.4,
8.3	<p>Corporate Environment Policy</p> <p>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.</p> <p>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 maybe detailed in the EIA.</p> <p>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.</p>	Complied in chapter 10, please refer section 10.13 & 10.14.

	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	
8.4	Action plan for post-project environment monitoring matrix: Activity Aspect Monitoring parameter Location Frequency Responsibility Construction phase Operation phase	Complied. Please refer chapter 6 in section 6.6 in table 6.1,6.2

9. Additional Studies

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	Under preparation and will be incorporated in the Final EIA.
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.	Under preparation, will be incorporated in the Final EIA.
9.3	Implementation status/measures adopted for avoiding the generation of single used plastic waste.	Complied, please refer chapter 10 in section 10.8
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.	Not Applicable
9.5	Public consultation details (Entire proceedings as separate annexure along with authenticated English Translation of Public Consultation proceedings)	Draft report to be submit for PH
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.	Compiled in chapter 10 in section 10.14
9.7	Summary of issues raised during public consultation along 116	Will be incorporate in Chapter 7

	with action plan to address the same as per MoEF&CC O.M. dated 30/09/2020 Physical activity and action plan year of implementation (in INR) Total expenditure (Rs.in crores)	after PH
9.8	Risk assessment <ul style="list-style-type: none"> • Methodology • Hazard identification • Frequency analysis • Consequence analysis • Risk assessment outcome 	Complied. Please refer chapter 7, section 7.2.
9.9	Emergency response and preparedness plan	Complied. Please refer chapter 7 in section 7.5, 7.6

10. Project Benefits

10.1	Environment benefits	Complied. Please refer chapter 8 in section 8.2.2.
10.2	Social infrastructure	Complied. Please refer chapter 8 in section 8.2.2.
10.3	Employment and business opportunity	Complied. Please refer chapter 8 in section 8.2.3.
10.4	Other tangible benefits	Complied. Please refer chapter 8 in section 8.2.3.

11. Environment Cost Benefit Analysis

11.1	Net present value	Compiled. Please refer chapter 9 in section 9.3
11.2	Internal rate of return	Compiled. Please refer chapter 9
11.3	Benefit cost ratio	Compiled. Please refer chapter 9
11.4	Cost effectiveness analysis	Compiled. Please refer chapter 9 in section 9.7

12. Environment Management Plan (construction and operation phase)

12.1	Action plan for hazardous waste management	Complied. Please refer in the section 10.6.table no.10.10
12.2	Action plan for solid waste management	Complied. please refer in the section 10.6 table 10.9
12.3	Action plan for e-waste management.	Complied. Please refer section 10.8 in chapter 10.
12.4	Action plan for plastic waste management, considering the Plastic Waste Management Rules 2016.	Complied. Please refer section 10.9 in chapter 10

12.5	Action plan for construction and demolition waste management.	Complied in chapter 10 in section 10.6
12.6	Rain water harvesting plan	Complied. Please refer in section 10.5.1 in table 10.5
12.7	Plan for maximum usage of waste water/treated water in the Unit	Complied in chapter 10 Please refer section 10.5.2 table 10.8
12.8	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 %	Complied in chapter 10 in section 10.11
12.9	Wildlife conservation plan (In case of presence of schedule I species)	Under preparation and will be submitted in Final EIA.
12.10	Total capital cost and recurring cost/annum for environment pollution control measures shall be included.	Complied in chapter 10. Please refer in 10.15 in table 10.13
12.11	Explore possibilities for recycling and reusing of treated water in the unit to reduce the freshwater demand and waste disposal.	Complied in chapter 10. Please refer section 10.5.2
12.12	An Action Plan for improving the house-keeping activities in the raw material handling area need to be submitted	Complied in chapter 10 please refer section 10.11
12.13	Action plan for the stock piles with impervious floor, provision of garland drains and catch pits to trap run off material shall be submitted.	Complied in chapter 10. Please refer table 10.4
12.14	Action plan to limit the dust emission from all the stacks below 30 mg/Nm ³ shall be furnished.	Complied in chapter 10. Please refer section 10.2 in table 10.1,10.2,10.6
12.15	Action plan for fugitive emission control in the plant premises shall be provided	Complied in chapter 10 in section 10.2.1

Standard Terms of Reference for conducting Environment Impact Assessment Study for Cement plants and information to be included in EIA/EMP report

1.1	Limestone and coal linkage documents along with the status of environment clearance of limestone and coal mines.	Not Applicable
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 imagedata 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.	Complied in chapter 3 in section 3.7
1.4	If the raw materials used have trace elements, an environment management plan shall also be included.	Not Applicable
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.	Complied in chapter 10 in table 10.6
1.6	Energy consumption per ton of clinker and cement grinding	Complied in chapter 10 and 2
1.7	Provision of waste heat recovery boiler	Not applicable as it is cement grinding unit
1.8	Arrangement for co-processing of hazardous waste in cement plant.	Complied in chapter 2 and 10
1.9	Provision of Alternate fuels.	Complied
10	Details of Implementation of Fly Ash Management Rules	Complied.
1.11	Emission/Effluent norms as per GSR 496 (E) dated 9/5/2016 [EPA Rules 1986].	Emission/Effluent norms as per GSR 496 (E) dated 9/5/2016 are applicable for Cement Plant (without co - processing), Standalone Clinker Grinding Plant or, Blending Plant. The standalone grinding unit will be following all the norms/regulations as per GSR 496 (E).
1.12	Action plan to limit the particulate matter emission from all the stacks below 30 mg/Nm ³ shall be furnished.	Complied in chapter 10
1.13	PP shall explore the possibility of plastic waste utilization in the Plant/Unit process.	Complied in chapter 10
1.14	Action plan for 100 % solid waste utilization shall be submitted.	Complied in chapter 10 and 2
1.15	PM (PM ₁₀ and PM _{2.5}) present in the ambient air must be analyzed for source analysis – natural dust/RSPM generated from plant operations (trace elements) of PM ₁₀ to be carried over.	Complied.

Additional Terms of Reference

Not Applicable

CHAPTER-1 of Draft EIA/EMP	Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District: Palwal, State: Haryana.
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CHAPTER -1 INTRODUCTION

1.1 INTRODUCTION

Ambuja Cements Ltd., a prominent entity within the Adani Group, has been a leading force in the Indian cement industry for over 25 years. Renowned for its commitment to sustainability, Ambuja Cement aims to be the most competitive and sustainable company in the cement manufacturing sector. This dedication to sustainable practices not only fulfills a crucial business imperative but also provides the company with a distinct competitive edge. Through its innovative and sustainable development projects, Ambuja has established itself as the top choice for construction, setting the standard for excellence in cement manufacturing in India.

This chapter presents the objectives of the report, specifies the proposed project and its proponent, and gives a succinct summary of the project's nature, scale, and geographic setting. It underscores the importance of the project to both the region and the country. Additionally, this chapter defines the study's scope and provides thorough details on the regulatory scoping process, as outlined by the Terms of Reference (ToR) issued by the State Level Expert Appraisal Committee (SEAC) Haryana.

1.2 BACKGROUND ABOUT THE PROJECT

M/s Ambuja Cements Limited (ACL) proposes to setup a Cement Grinding Unit with Cement Production Capacity of 2 x 3.0 Million Metric Tons per Annum (6 MMTPA) at Village: Devli, Tehsil + District: Palwal, State: Haryana with an area of 10.97 Ha. Application for prior environmental clearance (Form-1) for the above proposal has been submitted to SEAC Haryana vide proposal no. SIA/HR/IND1/449852/2023 for the grant of Terms of Reference (ToR) for the preparation for EIA report under category 'B1' as it is a case of standalone grinding unit. The application for the project was considered by the State Expert Appraisal Committee for prescribing Terms of Reference (ToR) for preparation of the Environmental Impact Assessment (EIA) report. The Committee, after going through the Form-1, Pre-Feasibility report and presentation, has issued Standard ToR by SEAC for ToR identification no: TO23B1103HR5420124N dated 27/08/2024 for schedule no: 3(b) Cement plants for preparation of the EIA report. The ToR letter and its compliance is enclosed as **Annexure I**.

1.3 PURPOSE OF THE REPORT

The purpose of the report is to enable the stakeholders and the project proponent to properly consider the potential environment impacts of the project and to device an environment management plan to

CHAPTER-1 of Draft EIA/EMP	Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District: Palwal, State: Haryana.
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reduce the negative impacts and maximize the benefits. This report has been prepared in reference to the Terms of Reference (ToR) issued by State Environment Impact Assessment Authority (SEIAA), Haryana vide letter no SIA/HR/IND1/449852/2023 dated 27/08/2024 for carrying out the Environmental Impact Assessment (EIA) study for the installation of Cement Grinding Unit of capacity 6.0 MTPA at Village: Devli, Tehsil+District: Palwal, State: Haryana with an area of 10.97 Ha by M/s.Ambuja Cements Limited. As per the Environment Impact Assessment (EIA) Notification dated 14th September 2006 and its amendments thereof, the proposed project falls under Category "B1", Project or Activity '3(b)'.

Environmental Impact Assessment (EIA) is a structured approach employed to identify, forecast, assess, and mitigate the physical, biological, social, and other relevant environmental impacts of proposed development projects. This process is essential for informing decisions about the environmental repercussions of these projects. By pinpointing, enhancing, and applying suitable mitigation strategies, EIA fosters environmentally responsible and sustainable development. To mitigate the negative impacts that development projects can generate, the application of Environmental Impact Assessment (EIA) techniques becomes essential. EIA procedures are designed to identify environmental problems which may be caused by a development project and determine the magnitude of change in the environment. Through this process design, location and operational changes can be introduced to minimize the adverse impacts of the development.

The main purpose of the report is to provide a coherent statement after analyzing all significant impact of the proposed cement grinding unit and measures that should be taken to eliminate and mitigate them. It contains essential information for:

- The proponent to implement the proposal in an environmentally and socially responsible way;
- The responsible authority to make an informed decision on the proposal, including the terms and conditions that must be attached to an approval or authorization; and
- The public to understand the proposal and its likely impacts on people and the environment.

1.4 IDENTIFICATION OF PROJECT & PROJECT PROPONENT

1.4.1 THE PROJECT

Ambuja Cements Limited (ACL) proposes to set up a green field cement grinding unit with Cement Production Capacity of 6.0 Million Metric Tons per Annum (MMTPA) at Village Devli, Tehsil + District: Palwal, State: Haryana. ACL is setting up the proposed cement grinding units of 2 x 3.0 Million Metric Tons per Annum (6 MMTPA). The proposed grinding unit will make use of the raw materials like clinker, gypsum, slag, fly ash, coal (for HAG). The Gypsum is sourced from Bikaner,

CHAPTER-1 of Draft EIA/EMP	Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District: Palwal, State: Haryana.
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Rajasthan or any other domestic sources. Fly ash will be sourced from nearby thermal plant- NTPC Dadri, Harduaganj, Jhajjar. Coal will be sourced from south eastern coal field. The cement produced will be used by nearby districts of Haryana and Delhi.

1.4.2 PROJECT PROPONENT

The Adani Group is a diversified organization in India with market capacity of \$246.00. billion (as on September 5 th, 2022) comprising of 7 publicly traded companies. Adani Group is headquartered in Ahmedabad, in the state of Gujarat, India. Over the years, Adani Group has positioned itself to be the market leader in its transport logistics and energy utility portfolio businesses focusing on large scale infrastructure development in India with O & M practices benchmarked to global standards with key businesses across Resources - Coal mining and trading; Logistics – airports, shipping, rail and airport terminals; Energy – Gas (LNG, City Gas), thermal power generation, renewable (Solar & wind) and transmission energy infrastructure, city gas distribution; Agro commodities and ancillary industries. Adani Group is the largest private power producer in India. The biggest source of competitive advantage for the Adani Group is its highly qualified & experienced team of the professionals. The team has demonstrated capabilities in conceptualization and implementation of large projects and has excellent records of establishing benchmarks in the industry.

Adani Group is one of the fastest growing conglomerates in India and has the distinction of being the industry leader with business interest in India as well as abroad. Some highlights of the group are:

- It has the distinction of being India's largest port operator.
- Its Fortune brand of edible oil is the largest selling brand in its category in India.
- Adani Group is the largest Integrated Coal Manager in the country.
- It is the largest private sector thermal power producer in India.
- It is the largest Solar Power producer in India.
- It has the largest network of transmission lines in India

AEL is the flagship company of the group and has been instrumental in bringing up new business growth and prospects to the group. It has been instrumental in setting up thermal power generation, renewable power generation and transmission business of the group. Group has attained leadership position in the field it present and created immense value for the stakeholders. Ambuja Cements Limited (ACL), a subsidiary company of Adani Group, has been formed for development of number of Cement Projects (Integrated Cement Plant, Grinding Units & Limestone Mine). Ambuja Cements Limited (ACL) proposes to set up a green field Cement Grinding Plant with Cement Production

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Ecomen Mining Pvt Ltd

M/s Ambuja Cements Limited

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Capacity of 2 x 3.0 Million Metric Tons per Annum (6 MMTPA) at Village- Devli, Tehsil + District: Palwal, State- Haryana.

Address of the correspondence

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1.5 BRIEF DESCRIPTION OF NATURE, SIZE, LOCATION OF THE PROJECT AND ITS IMPORTANCE TO THE COUNTRY AND REGION

1.5.1 NATURE OF THE PROJECT

M/s Ambuja Cements Limited (ACL) proposes to setup a Cement Grinding Unit with Cement Production Capacity of 2x 3.0 Million Metric Tons per Annum (6 MMTPA) at Village- Devli, Tehsil + District: Palwal, State: Haryana. All standalone Cement Grinding Units fall under Category 'B' of Schedule 3(b) as per EIA Notification 2006 and its subsequent amendments. Though, 'General Conditions' are not applicable. Hence proposed Devli Cement Grinding Unit project is being applied under category 'B1'. The project makes use of the raw material like clinker, gypsum, fly ash, coal and slag.

1.5.2 SIZE OF THE PROJECT

M/s Ambuja Cements Limited (ACL) proposes to setup a Cement Grinding Unit with Cement Production Capacity of 2 x 3.0 Million Metric Tons per Annum (6 MMTPA) at Village- Devli, Tehsil + District: Palwal, State- Haryana. The environmental setting of the proposed project site is given in Table-1.1

Table 1. 1 BRIEF DESCRIPTION OF PROPOSED PROJECT SITE

Sl.No	Particulars	Details
1	Project Location & Project Proposer name	Village: Devli, District+Tehsil- Palwal, State: Haryana M/S Ambuja Cements Limited (A Group Company of Adani Group)
2	Project Area	10.97 Ha
4	Topo sheet No	53 H /8, (H43x8)
5	Geographical Location	Centroid - Latitude 28° 13'47.4256'' to 28° 14'00.5638'' Longitude: 77° 19' 18.8045'' to 77° 19' 39.9306''E
6	Elevation above mean sea level	430 m
7	Present land use	Fallow Land, Ambuja Resources Limited
8	Nearest Railway Station	Asoati Railway Station, 1.3 km, N
9	Nearest Airport	Indira Gandhi International Airport, 42 km NW

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		Kidzania International Airport, 36.78, N			
10	Nearest Highway	NH-2 (19), 2.6 Km, W			
11	Nearest Road	NH-2 (19), 2.6 Km, W			
12	Nearest Villages	Devli , Adjacent, SW			
		Medapur, 1 Km, W			
		Asoati, 1 Km, NNW			
		Pahladpur, 2.1 Km, NE			
		Mandakaul, 2.8 Km, SE			
		Kakaripur, 4.2 Km, ESE			
13	Nearest District Headquarter	Palwal, 9 Km, S			
14	Nearest City	Palwal, 9 Km, S			
15	Densely populated area	Places	Population as per census 2011 (Nos.)	Distance (~km)	Direction
		Devli	2958	Adjacent	SW
16	Inland water bodies	S.No.	Description	Distance (~km)	Direction
		River Canal			
		1.	Agra Canal	2.6	E
17	Reserved Forests/ Protected Forests/Notified Wildlife Sanctuary Notified national parks/ Ecological sensitive areas	Nil			
18	Defense Installations	Nil			
19	Interstate/ National Boundaries	Nil			
20	Hills/Valleys	Nil			

1.5.3 LOCATION OF THE PROJECT SITE

The Cement Grinding & Packing unit will be situated in Village Devli, Tehsil+District: Palwal, State: Haryana. The area falls within Survey of India Topo sheet no. 53 H /8(H43x8), scaled at 1: 50,000. The Geographical coordinates of proposed project site are given in Table 1.2.

Table 1. 2 GEOGRAPHICAL COORDINATES OF THE PROPOSED PROJECT SITE

Location Point	Longitude	Latitude
A	77° 19' 18.8045" E	28° 13' 57.1909" N
B	77° 19' 36.4399" E	28° 13' 57.2873" N
C	77° 19' 36.4399" E	28° 14' 00.5638" N
D	77° 19' 38.5172" E	28° 14' 00.5317" N

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E	77° 19' 39.9306" E	28° 13' 53.3576" N
F	77° 19' 36.8040" E	28° 13' 50.7235" N
G	77° 19' 36.3971" E	28° 13' 50.7128" N
H	77° 19' 36.3757" E	28° 13' 49.8991" N
I	77° 19' 33.8380" E	28° 13' 47.4684" N
J	77° 19' 27.5740" E	28° 13' 47.4256" N
K	77° 19' 27.5740" E	28° 13' 50.7021" N
L	77° 19' 26.6318" E	28° 13' 50.7128" N
M	77° 19' 26.6211" E	28° 13' 52.0834" N
N	77° 19' 27.6169" E	28° 13' 52.1155" N
O	77° 19' 27.6276" E	28° 13' 53.9251" N
P	77° 19' 24.6723" E	28° 13' 53.9572" N
Q	77° 19' 24.6723" E	28° 13' 54.4605" N
R	77° 19' 21.7598" E	28° 13' 54.4069" N
S	77° 19' 21.7277" E	28° 13' 55.5741" N
T	77° 19' 18.8152" E	28° 13' 55.5419" N

The location map of the project site is presented in figure 1.1, Study Area (10 Km radius) is shown in Figure 1.2 and Google Earth map of the proposed Project site is given in Figure 1.3. There is no critically polluted cluster identified by CPCB/MOEF in the vicinity of the project.

Status of Land Ownership

Currently, the selected site is partly (6.594 Acres) owned by Adani Logistics Limited (ALL) and party (20.513 Acres) by Adani Agri Logistics Limited (AALL). Further, individual MOU is signed by Ambuja Cements Limited with both the group companies i.e Adani Agri Logistics Limited (AALL) and Adani Logistics Limited (ALL) to acquire the land on lease to setup cement grinding unit on the said land. The MOU detailing this agreement is included as **Annexure II**.

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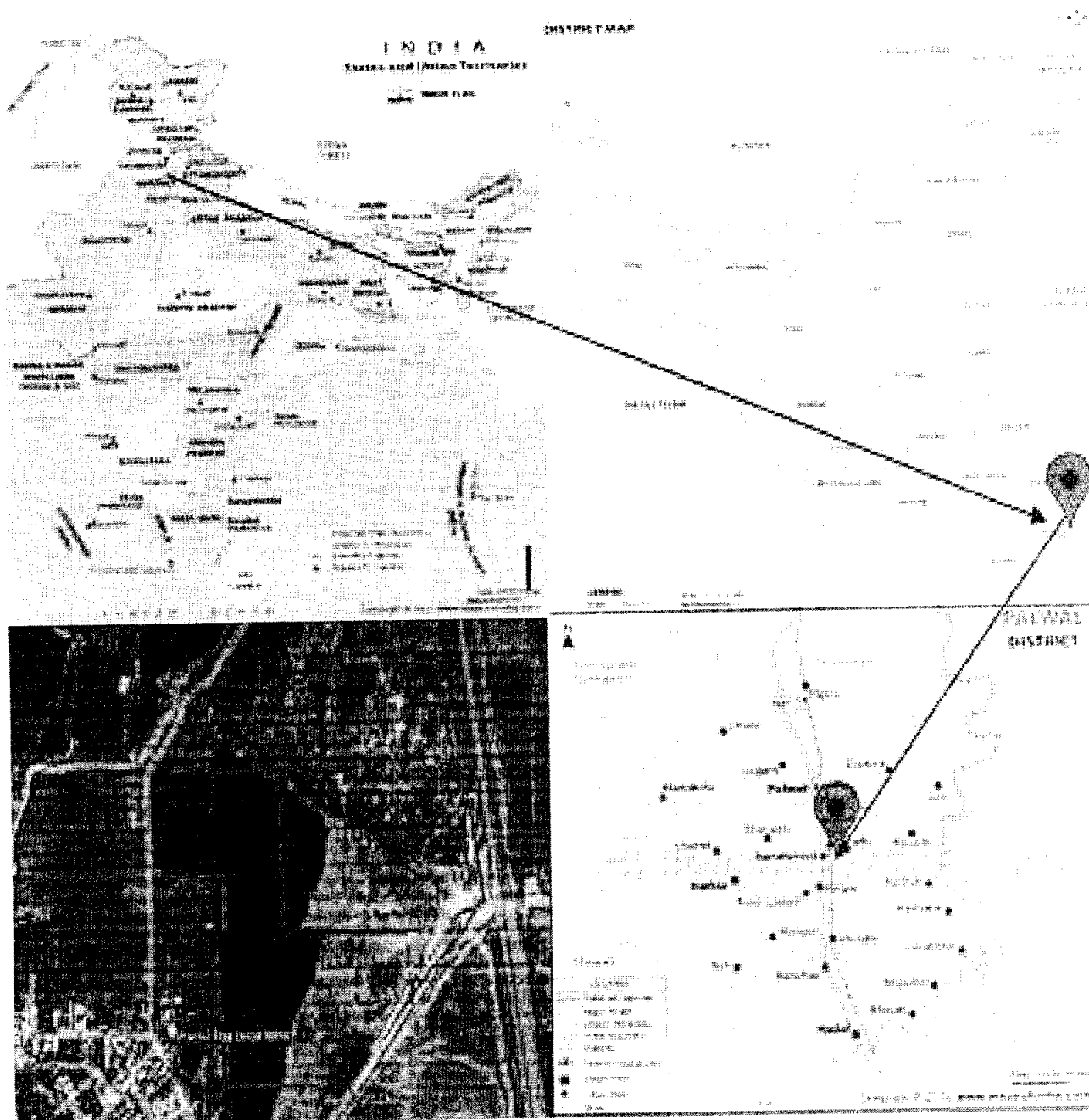


FIGURE 1.1 -LOCATION MAP OF THE PROJECT AREA

**CHAPTER-1 of
Draft EIA/EMP**

Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District: Palwal, State: Haryana.

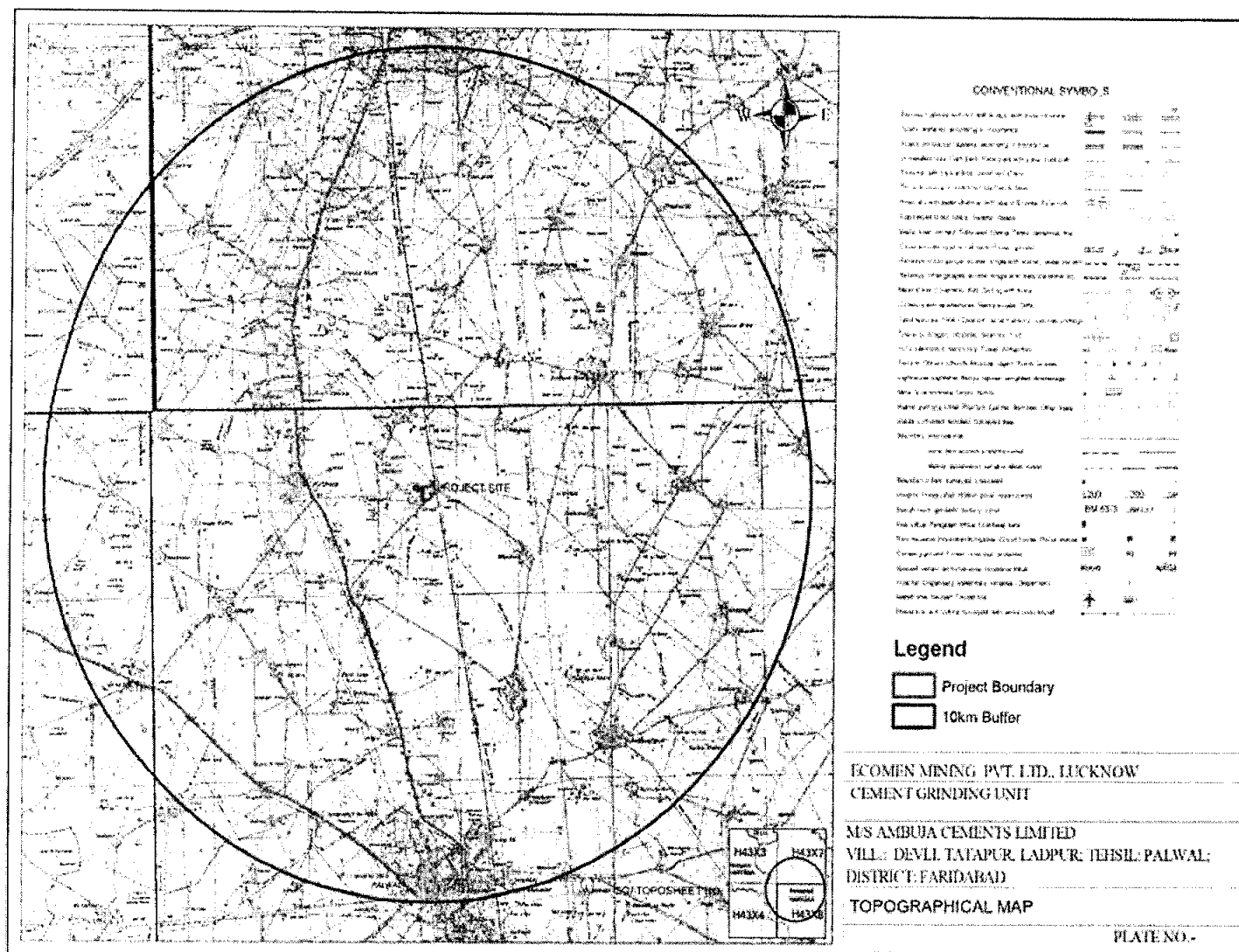


FIGURE 1. 2 TOPOMAP OF THE PROJECT AREA OF 10 KM

**CHAPTER-1 of
Draft EIA/EMP**

Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District: Palwal, State: Haryana.

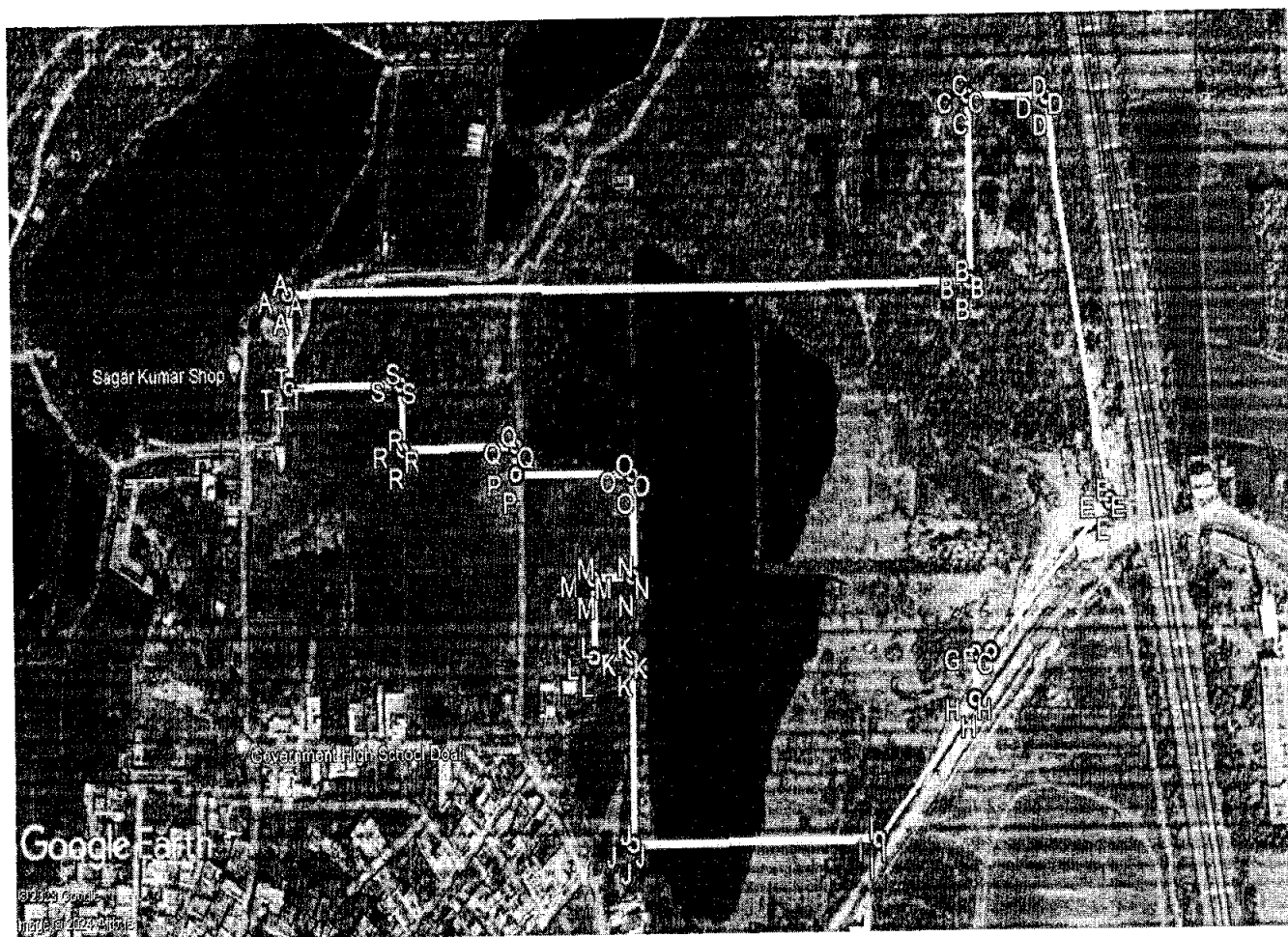


FIGURE 1.3 GOOGLE EARTH IMAGE SHOWING PROJECT LOCATION

1.5.4 CONNECTIVITY TO THE SITE

The site is well connected to the nearest road NH-2(19) in the West direction about 2.6 km. Nearest city is Palwal about 9 km in South direction. The nearest railway station is Asoati railway station within a distance of 1.3 km in North direction and nearest airport is Indira Gandhi International Airport in a distance of 42 km in NW direction and Kidzania International Airport in a distance of 36.78 in North direction.

1.5.5 PROJECT IMPORTANCE TO THE COUNTRY/REGION

i) National

Cement production in India is a significant part of the country's industrial sector, contributing to its economic development and infrastructure growth. India is the second-largest producer of cement in the world, after China. The installed capacity of cement production in India is over 500 million tonnes per year. Ever since the government has introduced the New Industrial Policy in 1982, encouraging

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private investment in the cement industry, leading to the establishment of many private cement companies. The Indian Cement industry has attracted huge investments both from India as well as foreign Investors. India has a lot of potential for development in the infrastructure and construction site and the cement sector is expected to largely benefit from it. Some of the recent major government initiatives such as development of 100 smart cities are expected to provide a major boost to the sector. Indian government has set a target to invest INR 100 billion on developing infrastructure from 2019-2025. The target investment on infrastructure is to double the investment made during 2014-19. In view of INR 100 billion investment on infrastructure, Indian cement industry is estimated to have cement consumption of 593 MTPA and industry consumption is expected to cross 85% capacity utilization after 2022-23. The execution of government development of infrastructure observed is high and even in many sectors and found to be touching 90% level. Therefore, the cement demand is expected to touch 593 MT by 2024-25 in high growth scenario.

The Indian Cement Industry has been a first mover with regard to keeping pace with changing socio-economic and environmental paradigms, whether it is adoption of new technologies, adhering to stricter environmental standards or utilizing other industries' waste produce. Government announcements in November-December 2020 regarding key infrastructure projects such as National Highway projects in Nagaland, Rajasthan, Karnataka and Telangana & several other infrastructural developments helped push on the demand and increase the net profits by 29.6% of 10 key listed cement firms. The importance of cement projects by the year 2025 cannot be overstated, as the increasing demand in various sectors such as housing, commercial construction, and industrial construction is expected to propel the cement industry to new heights. The industry is projected to reach a capacity of 550-600 million tonnes per annum (MTPA), generating significant revenues and boosting the country's economy. The demand forecast gives a future prospect of Indian Cement industry and cement industry is expected to grow CAGR growth scenario 9.8% till 2025 in high growth scenario. The forecasted cement demand and industry capacity utilization shows that by 2022-23 industry will cross capacity utilization of 90%. Therefore, there is a scope for Indian cement industry to start new capacity addition projects to get advantage of future market demand.

ii) Regional

Industrialization is the better way for growth & employment & also it is a strategic location connecting Indian markets. The proposed plant will ensure that the supply situation in Haryana and neighbouring state is comfortable in the coming times, as growth is expected to propel demand. Adani group is known for its environment friendly initiatives across sectors it operates in and strong

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reputation for sustainable growth. In line with the existing agenda to make India Power sufficient in the future sustainably, cement manufacturing unit are being planned close to coal based thermal power plants. Disposal of fly ash is an environmental concern which is faced by all coal based thermal power generating plants. Cement can consume up to thirty-five percent of fly ash produced in the power plants and thus reduce environmental concern. The project planned by group would also generate immense employment opportunities and significant contribution to the state & central exchequer., improvement of socio economics of the area by way of education, vocational training, improving infrastructure facilities such as roads, transport, improvement in Drinking water supply, Medical facility etc. The Adani Group is committed to the development of the country and will put all efforts for comprehensive development of this area also as being practiced by us at other establishments.

1.6 SCOPE OF THE EIA STUDY

EIA/EMP study is a planning tool to confirm environmental acceptability in addition to the statutory requirements. This report represents the results of the EIA process, which is intended to:

- Establish and review existing environment and social conditions pertaining to the plant site and its surrounding area.
- Identify and assess the environmental impacts during construction phase of proposed activity and subsequently during operation phase of the plant.
- Advise and assist in identifying appropriate measures to mitigate adverse impacts to be adopted under Environment Management Plan (EMP) for all specified environmental impacts likely to emerge.
- Establishing by primary survey and field visits, the baseline environmental status of the study area of 10 km radius for Meteorology, Ambient Air, Water (Surface & Ground), Noise, Traffic, Soil, Socio-economic, Ecology etc.;
- Assessing the project activity, predicting & interpreting through modeling and determining the Incremental Ground Level Concentrations (GLC) for ambient Air Quality components.
- Preparation of EMP outlining the measures for mitigating the impacts for various attributes like air, water, noise, soil, etc. and scope for future expansions for environmentally sustainable development; and Identification of critical environmental attributes required to be monitored during the operation of the post-monitoring plan for the project.

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1.7 METHODOLOGY OF EIA STUDY

Ecomen Mining Private Limited along with the team of ACL had conducted a reconnaissance survey and sampling locations were identified on the basis of:

- Predominant wind directions in the study area as recorded by India Meteorological Department (IMD) at Palwal
- Existing topography;
- Location of surface water bodies like ponds, canals and rivers;
- Location of villages/towns/sensitive areas;
- Accessibility, power availability and security of monitoring equipment; pollution pockets in the area;
- Areas which represent baseline conditions;
- Collection, collation and analysis of baseline data for various environmental attributes.

Table 1. 3 DETAILS OF APPLICABLE LEGISLATION OF THE PROJECT

S. No.	Rules and Regulations
1.	Environment (Protection) Act, 1986
2.	EIA Notification, 2006 and subsequent amendments on dated 20.07.2022
3.	Air (Prevention and Control of Pollution) Act, 1981 and subsequent amendments
4.	The Water (Prevention and Control of Pollution) Act, 1974 and subsequent amendments
5.	Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 and subsequent amendments
6.	The Solid Waste Management Rules, 2016 and subsequent amendments
7.	Noise Pollution (Regulation and Control) Rules, 2000 and its amendments
8.	Plastic Waste Management Rules, 2016 and subsequent amendments
9.	The Central Motor Vehicle Rules, 1989
10.	E-Waste Management Rules, 2016 and subsequent amendments
11.	The Batteries (Management and Handling) Rules, 2001 and subsequent amendments.
12.	Bio-Medical Waste Management Rules, 2016 and subsequent amendments
13.	The Public Liability Insurance Act, 1991 and subsequent amendments
14.	The Factories Act, 1948 and subsequent amendments

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1.8 CONTENT OF THE REPORT

This EIA Report is prepared in accordance with the EIA Notification, 2006 & prescribed ToR. The EIA report contains project features, baseline environmental setup, assessment of environmental impacts, and formulation of mitigation measures, environmental management, and monitoring plan with risk & disaster management plan. The report contains 12 Chapters as follows:

Chapter 1 – Introduction

This chapter provides background information on need of project, need of EIA study and brief of the project. The scope and EIA methodology adopted in preparation of EIA report have also been described in this Chapter. It also covers the identification of project & project proponent, brief description of nature, size, location of the project and its importance to the country and the region. Scope of the study details about the regulatory scoping carried out as per the generic structure given in the EIA Notification, 2006.

Chapter 2 – Project Description

This chapter deals with the project details of the existing unit and the proposed expansion of ACL Complex, with type of expansion in project, need for the expansion at the project site, location, size & magnitude of operation including associated activities required by and for the expansion project, proposed schedule for approval and implementation, including technical details of raw material, quality and quantity etc.

Chapter 3 – Description of the Environment

This chapter presents the environmental status of the study area around the unit and the proposed project including topography, drainage pattern, water environment, geological, climate, transport system, land use, flora & fauna, socio-economic aspects, basic amenities etc. Environmental assessment of the proposed project site considering its capability to receive the proposed new development is also discussed in this Chapter.

Chapter 4 – Anticipated Environmental Impacts and Mitigation Measures

This chapter describes the overall impacts of the proposed project activities and underscores the areas of concern, which need mitigation measures and describing the already implemented mitigation measures at the unit for respective environment concerns. It predicts the overall impact proposed project on different components of the environment viz. air, water, land, noise, biological, and socio-economic.

Chapter 5 – Analysis of Alternatives (Technology and Site)

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Technical aspects of monitoring the effectiveness of mitigation measures which are already set for the existing unit and updated as per the need of expansion proposed at the site (incl. Measurement methodologies, frequency, location, data analysis, reporting schedules, emergency procedures, detailed budget & procurement schedules).

Chapter 6 – Environmental Monitoring Program

Technical aspects of monitoring the effectiveness of mitigation measures which should set for the unit and updated as per the need of proposed at the site (incl. Measurement methodologies, frequency, location, data analysis, reporting schedules, emergency procedures, detailed budget & procurement schedules).

Chapter 7 – Additional Studies

This chapter deals with the potential risk assessment carried out for the proposed cement unit during construction and operation due to bulk storages of Hazardous materials and sample disaster management plan.

Chapter 8 – Project Benefits

This chapter presents the details of direct and indirect benefits due to proposed project.

Chapter 9 – Environmental Cost Benefit Analysis

Environmental Cost Benefit Analysis (ECBA) is a systematic approach for comparing the total expected costs and benefits of a project, policy, or regulation that affects the environment. It aims to quantify the economic values of both the positive and negative impacts on the environment

Chapter 10 – Environmental Management Plan(EMP)-Administrative Aspects

This chapter details the inferences drawn from the environmental impact assessment exercise and the EMP developed for the unit to strengthen the mitigation measures for the project. It describes the overall impacts of the proposed activities during construction and operation phases and underscores the areas of concern, which need mitigation measures. It also provides mitigation and control measures for environmental management plan (EMP) for minimizing the negative environmental impacts and to strengthen the positive environmental impacts of the proposed project.

Chapter 11 – Summary and Conclusion

This chapter provides the summary and conclusions of the EIA study of the proposed project with overall justification for implementation of the project and explanation of how, adverse effects will be mitigated.

Chapter 12 – Disclosure of Consultant

This chapter provides the brief resume of the consultants engaged and the team engaged to carry out the EIA study.

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CHAPTER -2

PROJECT DESCRIPTION

2.1 INTRODUCTION

This chapter provides a condensed description of those aspects of the project likely to cause environmental effects. Details are described in following sections with regards to type, need, location, size or magnitude of project operations, technology, major equipment & machineries, infrastructural facilities, description of mitigation measures and assessment of new & tested technology for the risk of technological failure.

2.2 TYPE OF THE PROJECT

M/s Ambuja Cements Limited (ACL) proposes to setup a Cement Grinding Unit with Cement Production Capacity of 2 x 3.0 Million Metric Tons per Annum (6 MMTPA) at Village- Devli, Tehsil +District: Palwal, State- Haryana. The project falls under Schedule 3(b) – Category ‘B’ Cement plants as per EIA Notification 2006 and its Amendments since all standalone grinding units falls this schedule under “B1” category as per EIA Notification 2006 and its subsequent amendments. This project is not an interlinked project. The total project area is 10.97 Ha.

2.3 NEED FOR THE PROJECT

In 2024, India's cement production is projected to reach approximately 410 million tons. This growth is driven by ongoing infrastructure development and rising demand in both residential and commercial sectors. The compound annual growth rate (CAGR) for cement production from FY 2019 to FY 2024 is estimated at around 3.83%, with consumption expected to increase slightly faster at 4.38% annually. India's cement production is expected to reach 550 MT by 2025 due to increasing demand in various sectors such as housing, commercial construction & industrial construction. In order to meet the increasing demand, most cement plants are making efforts to achieve higher production levels, at times by stretching the existing production facilities and by adding additional capacities.

The proposed plant will play a crucial role in ensuring a stable and sufficient cement supply for Haryana and neighbouring states, addressing the anticipated increase in demand driven by growth. The Adani Group, renowned for its commitment to environmental sustainability and its strong reputation for fostering sustainable growth across all sectors of its operations, is spearheading this

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initiative. In alignment with the national agenda to achieve power sufficiency in a sustainable manner, the group is planning to establish cement manufacturing units in close proximity to coal-based thermal power plants.

This strategic location addresses a significant environmental issue: the disposal of fly ash, which is a major concern for all coal-based plants. By integrating cement production with these power plants, the proposed units can utilize up to 35% of the fly ash generated, significantly mitigating the environmental impact associated with fly ash disposal. This innovative approach not only enhances the sustainability of the power and cement industries but also contributes to environmental conservation efforts, showcasing the Adani Group's dedication to sustainable and eco-friendly practices.

DEMAND AND SUPPLY GAP

The production of cement in India is expected to reach 410.21 Mn tons by FY 2024, expanding at a compound annual growth rate (CAGR) of ~3.83% during the FY 2019-FY 2024 period, owing to rising demand from the government and housing contractors.

Maximum percentage of cement produced would be consumed by nearby districts of Haryana with an estimated annual consumption of around 2.1 MTPA by FY 27. It would also cater the demand of Delhi markets with an estimated annual consumption of 3.8 MTPA by FY 27. Prime Districts which would be fulfilled by this plant are Faridabad, Palwal, Aligarh, Delhi (South, East, West and North) and other nearby markets. Optimized logistics have been a key challenge for the players in this region and low-cost logistics both in term of inbound for raw material and distribution cost will be the key success factor in this region.

Table 2. 1 -PREDICTED MARKET REQUIREMENTS

Market – FY 27	Consumption (MTPA)
Haryana Market	2.1
Delhi Market	3.8
Total	5.9

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2.4 LOCATION OF THE PROJECT

The Cement Grinding unit will be situated in Village- Devli, Tehsil+District: Palwal, State- Haryana. The closest railway station is Asoati Railway Station, located approximately 1.3 km to the north, with the nearest National Highway NH-2(19) situated approximately 2.6 km to the West. The district headquarters of Palwal is positioned around 9 km south from the project site. The area falls within Survey of India Topo sheet no. 53 H /8, (H43x8), scaled at 1: 50,000. Index.

2.4.1 SIZE OR MAGNITUDE OF OPERATION

ACL is setting up the proposed cement grinding Units of 2 x 3.0 Million Metric Tons per Annum (6 MMTPA) at Village- Devli, Tehsil+District: Palwal, State- Haryana. The breakup of plant area is given in the table below

TABLE 2.2 : PROPOSED CAPACITY

Description	Proposed capacity
Cement Grinding Units	2 Nos. of 3.0 MMTPA = 6.0 MMTPA

TABLE 2.3 : SIZE AND MAGNITUDE OF THE PROJECT

S.No.	Particulars	Details
1	Name and size of the project	Installation of Cement Grinding Unit of 6.0 MMTPA of M/s. Ambuja Cement Limited
2	Category of the Project	B1
Basic Requirements of the Project		
3	Total Land Requirement	10.97 Ha.
4	Water Requirement	During construction phase-200 KLD Agra canal/treated water During operational phase- 2 x 300 Agra Canal/Ground Water
5	Power requirement	2 x 18 MW Source- sub-station at Devli
	Manpower requirement	During construction phase- 1530 During operational phase- 155
6	Production capacity	2 x 3 MMTPA

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7	Product mix	OPC,PPC,PSC,PCC
8	Project cost	1400 Crores
	Budget for Environment Management Plan	70.2 Crore

2.4.2 ENVIRONMENTAL SETTING WITHIN 10 KM. RADIUS OF THE PLANT SITE

The following is the environmental setting within the 10 Km. radius of the plant site as given in Table 2.4.

TABLE 2. 4 ENVIRONMENTAL SETTING WITHIN 10 KM RADIUS OF THE PLANT SITE

S. No	Particulars	Details		
1.	Project Location& Project Proponent name	Village: Devli, District+Tehsil- Palwal, State: Haryana M/S Ambuja Cements Limited (A Group Company of AdaniGroup)		
2.	Project Area	10.97 Ha		
3.	Geographical Location	Centroid - Latitude 28° 13'47.4256'' to 28° 14'00.5638'' N Longitude: 77° 19' 18.8045'' to 77° 19' 39.9306''E		
4.	Elevation above Mean Sea Level	430 m		
5.	Present Land Use	Fellow Land, Ambuja Resources Limited		
6.	Nearest Railway Station	Description	Distance(~km)	Direction
		Asoati Railway Station	1.3	N
7.	Nearest Airport	Indira Gandhi International Airport	42	NW

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		Kidzania International Airport	36.78	N		
8.	Nearest Highway	NH-2 (19)	2.6	W		
9.	Nearest Road	NH-2 (19)	2.6	W		
10.	Nearest habitation /Village	Devli	Adjacent	SW		
		Medapur	1	W		
		Asoati	1	NNW		
		Pahladpur	2.1	NE		
		Mandakaul	2.8	SE		
		Kakaripur	4.2	ESE		
11.	Nearest District Headquarters	Palwal	9	S		
12.	Nearest City	Palwal	9	S		
13.	Densely populated area	S. No.	Places	Population as per census 2011 (Nos.)	Distance (~km)	Direction
		1	Devli	2958	Adjacent	SW
14	Inland waterbodies	S. No.	Description	Distance (~km)	Direction	
		River canal				
		1.	Agra Canal	2.6	E	
	Reserved Forests/ Protected Forests/Notified Wildlife Sanctuary/	NA				

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15.	Notified national parks/ Ecologically sensitive areas				
16.	Defence Installations	NA			
17.	Archeologically Important places	S. No.	Description	Distance (~km)	Direction
		1.	Raja Nahar Singh Fort	11	N
		2.	Panchwati Temple	10.9	S
18.	Interstate/National Boundaries	Nil within 15km study Area			
19.	Hills/Valleys	Nil within 15km study Area			
20.	Seismic Zone	Zone-IV (High Damage Risk Zone)			

2.4.3 PLANT LAYOUT

The proposed plant is located within the land which is already under possession of ACL. The detailed engineering plant layout showing the proposed plant set up has been given in figure 2.1. The land documents are enclosed as **Annexure-III**

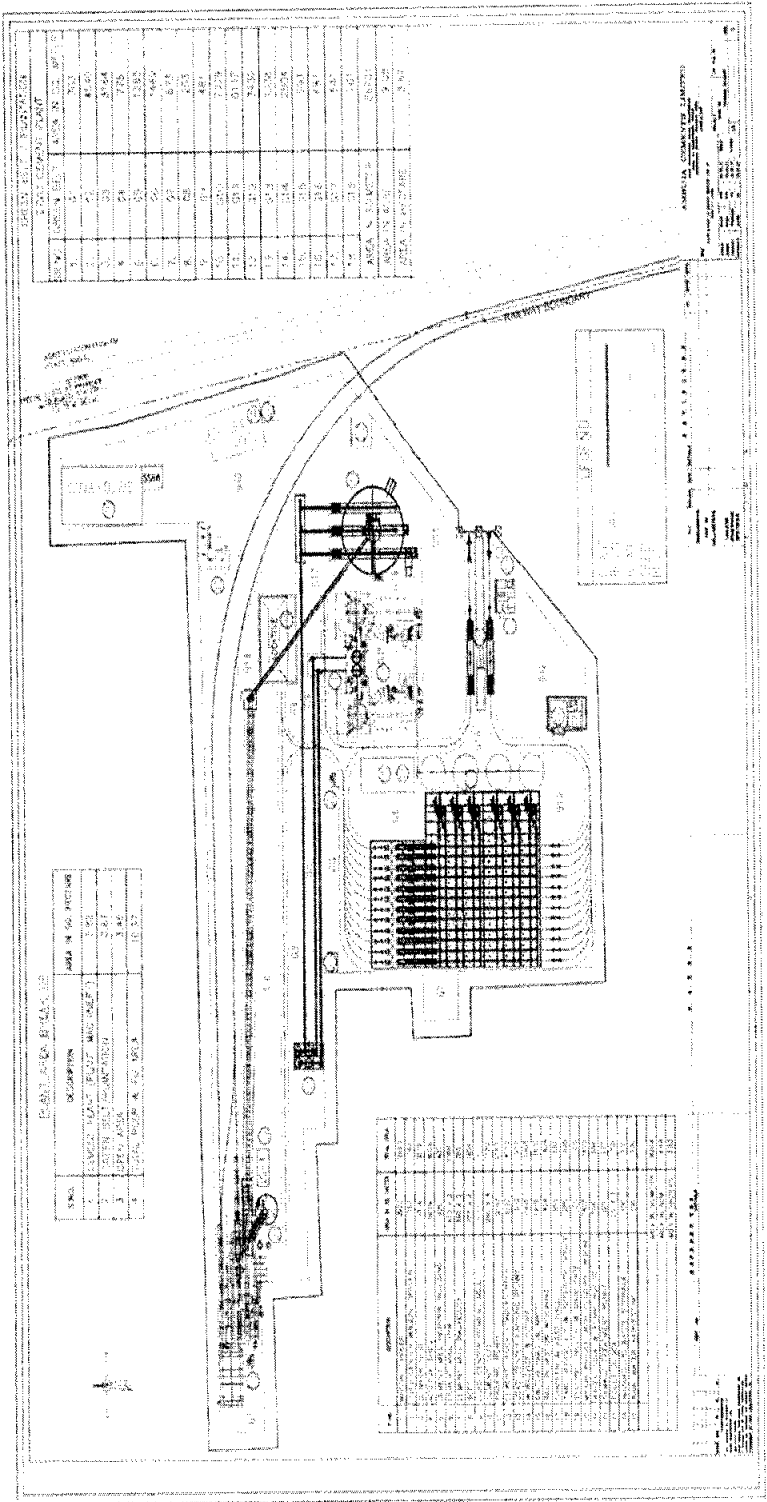


FIGURE 2.1 PLANT LAYOUT

CHAPTER-2 of Draft EIA/EMP	Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District: Palwal, State: Haryana.
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TABLE 2. 5 LAND AREA BREAKUP OF THE PLANT

Sl.No	Land use description	Proposed in Hectare	Percent (%)
1	Cement Plant (Plant Machinery)	3.82	34.8
2	Green Belt/Plantation	3.67	33.5
3	Open Area	3.48	31.7
Total		10.97	100

2.5 PROPOSED SCHEDULE FOR APPROVAL AND IMPLEMENTATION

The implementation period shall be 18 months for project execution activities after placement of main machinery order until the plant commissioning. The detailed time schedule for project execution after placement of main machinery order up to commissioning of the plant, in the form of bar charts is enclosed.

As per the project implementation schedule the expected implementation time has been estimated as:

- Pre project activities: 6 months
- Project execution activities: 18 months

The schedule will serve as a guideline for preparation of a detail implementation schedule once the decision of the project execution is taken. Implementation period can be further shortened with careful detail planning and close monitoring of various activities involved in project execution.

The total investment for the proposed project works out to approximately INR 1400 Crores for 6 MMTPA Devli Cement Grinding Unit.

TABLE 2. 6 PROJECT COST BREAKUP

Particulars	Amount (INR in Crores)
Land & Site development	27.0
Engineering know-how & project management	24.0
Civil works & structure	464.0
Plant & machinery	568.9
Expense on training	6.0

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Misc. fixed asset	9.0
Pre-operative expenses including interest during construction	146.9
EMP cost	70.2
Contingency @ 6%	84.0
Total Capital Budget	1400.0

**TABLE 2. 7 DETAIL PLANNING AND CLOSE MONITORING OF VARIOUS
ACTIVITIES INVOLVED IN PROJECT EXECUTION**

SN	Project Activity	Months																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Project Activities after Main Machinery Order																		
2	Load Data/GA from Suppliers 9Main Machinery)																		
3	Procurement of Auxiliary Equipments																		
4	LoadData/GA from Auxiliary Equipments																		
5	Departmental GA drawings																		
6	Design and Construction drawings																		
7	Civil Construction																		
8	Inspection and Delivery of Main Machinery																		
9	Inspection and Delivery of auxiliary Equipment																		
10	Mechanical Erection																		
11	Electrical Erection																		
12	Instrumentation Erection																		
13	Trial Runs and Commissioning of Grinding Unit																		

2.6 MANUFACTURING PROCESS OF GRINDING UNIT

2.6.1 PROCESS DESCRIPTION

Clinker and Gypsum shall be filled into the respective hoppers through suitable material handling system. ACL proposes to install 2 x 300 TPH Cement Grinding mills for Cement Grinding. Vertical Roller Mill (VRM) / Roller Press technology shall be used for clinker grinding. The proposed cement-grinding unit will produce PPC cement in combination with 10 % of OPC, PSC and Composite cement by utilizing clinker, gypsum and fly ash. The project emphasizes on state-of-the-art technology with environmental friendly and energy efficient plant concept. Portland cement is a fine powder, grey or white in colour, that consists of a mixture of hydraulic cement materials comprising primarily calcium silicates, aluminates and

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alumina ferrites. The proposed cement-grinding unit will have latest process control & instrumentation and software for steady and optimized operation. The clinker, which is mostly granular mixture of dark grey/black particle up to 50 mm in size, will be ground with required quantity of gypsum and fly ash to manufacture Portland Pozzolana Cement (PPC). The most commonly used system for clinker grinding is a closed ball mill with high efficiency separator. For PPC cement, Clinker (60%-65%), Fly ash (30%-35 %) and Gypsum (5%-8%) will be fed into the cement mill/Ball Mill through belt conveyor. Retentions time in Ball Mill is decided by fineness of the cement to be produced. Grinded cement will be conveyed to storage silos and packed in bags through rotary packers or supplied in bulk through bulkers as per requirement of the market. The Proposed manufacturing process will be followed:

- Clinker storage & handling
- Fly Ash storage & handling
- Gypsum storage & handling.
- Cement production and storage
- Cement packing & dispatch.

The manufacturing process details are given below:

Vertical Roller Mill (VRM)

Vertical roller mill operates under the principle of air swept with impact, Compression & Shear forces.

- Latest Generation VRM are most Robust state of art technology for Cement grinding application.
- VRM performs four major operations inside a single machine; Drying of Raw material, Grinding, Material Transportation and Material Classification
- It comes in 2 Roller / 4 Roller/ 6 Grinding roller segment design, which gives greater flexibility; if one roller is down, production with 70% capacity can be achieved with remaining rollers.
- VRM is most energy efficient equipment, Hence, Less power consumption.
- Water Spray required on table for material bed stabilization.
- External Heat sourced is required for Drying of Material. HAG (Coal fired/oil fired) is considered for additional heat requirement.

Ball Mill + Roller press circuit

Ball mill mainly works on principle of Impact and attrition forces.

- It consists of Single / Double chamber.
- Each Chamber is filled with grinding media (Steel Ball) of different sizes.

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- As the mill get rotated, along with that due to centrifugal forces Grinding media also get lifted and rotated, when centrifugal forces get neutralize by gravitational forces, grinding media fall on material, due to this continuous impact & attrition forces grinding process takes Place.
- A current of air is passed through the mill. This helps keep the mill cool and sweeps out evaporated moisture which would otherwise cause hydration and disrupt material flow. The dusty exhaust air is cleaned, usually with bag filters.
- Ball mill shall be used in conjunction with Roller Press

A high efficiency circulating fan will be operated to collect the ground material in the system. The collected ground material will be taken into the cement silos with the help of series of air slides and Bucket elevators. To minimise the pollution, the exhaust of circulating fan is connected with bag filter. Product collected at bag filter shall be transported to the cement silo through a set of air slides and bucket elevator.

• **Cement packing**

The cement from silos will be extracted and fed to the installed 2 x 3 nos. of electronic packers, 16 spout, double discharge with a capacity of 240 TPH each through air slides, bucket elevators and screens. Packer will be connected with 3 nos. truck/trailer loaders for loading packed cement bags. The packed bags from packers will be transported to truck loading bays by suitable flat belts conveyors and diverters. A separate provision will be also available to load bulk cement through closed tankers.

TABLE 2. 8 PROPOSED PLANT FACILITIES

Sl.No	Unit	Proposed major facilities
1	Grinding unit	<ul style="list-style-type: none"> - 2 no. with feeding system - Wagon Tippler with unloading sy - Packers (6 no.) - Stacker & Reclaimer - Storage facilities: Clinker Silo (2) Cement Silo (4), Fly ash Silo (2), RM Storage hoppers, and Covered Sheds - Raw Material Conveying system (

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	conveyors) - Cement bags loading machine for (18 nos.) - fly ash dryer (with HAG - 2 nos.)
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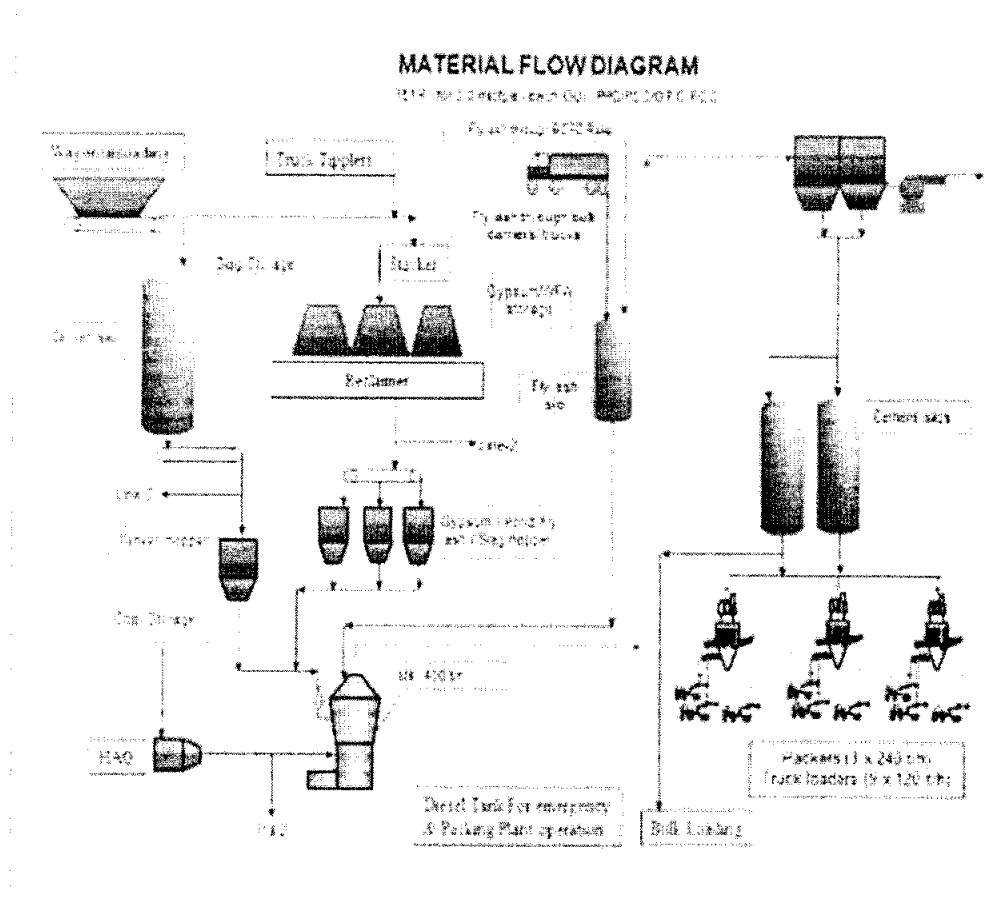


FIGURE 2. 2 PROPOSED PROCESS FLOW DIAGRAM

2.7 RESOURCE REQUIREMENT

2.7.1 LAND REQUIREMENT

ACL is desirous of setting up a cement grinding unit with 6 MMTPA capacity at the land measuring approximately 10.97 Ha, situated at village Devli, Tehsil+District-Palwal, in Haryana. The selected site is partly (6.594 Acres) owned by Adani Logistics Limited (ALL) and party (20.513 Acres) by Adani Agri Logistics Limited (AALL). Further, individual MOU is signed by Ambuja Cements Limited with

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M/s Ambuja Cements Limited

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both the group companies i.e Adani Agri Logistics Limited (AALL) and Adani Logistics Limited (ALL) to acquire the land on lease to setup cement grinding unit on the said land.

TABLE 2. 9 LIST OF INDUSTRIES WITHIN 10 KM RADIUS OF THE PROPOSED PLANT

Sl.No	Industries	Distance
1	CMR green technologies limited	1.58
2	Ferron tube private limited	1.49
3	India oil bending lube blending plant	3.02
4	Godara RMC plant	3.26

2.8 RAW MATERIAL DETAILS

Major raw material required for cement production is Clinker, Fly Ash, Slag & Gypsum. Details regarding quantity of raw material required, their source along with distance and mode of transportation are given in table below. Raw material requirement shall vary with the type of cement (OPC/PPC & other types as per market demand) manufacturing.

TABLE 2. 10 THE MAXIMUM ANNUAL REQUIREMENT OF MAJOR RAW MATERIALS

Sl. No.	Raw material for each line (Dry basis)			Source & Distance	Mode of Transport	Storage for both lines
	Particulars	Max	Min			
1.	Clinker	2 x 2.85 MMTPA	2 x 0.90 MMTPA	In house/ Domestic Plants (Marwar Mundwa)~600Km	Road/Rail	Clinker Silo 100000MT
2.	Gypsum (natural/ chemical)	2 x 0.24 MMTPA	2 x 0.15 MMTPA	Bikaner, Rajasthan or any other domestic sources ~500Km	Road/Rail	Covered Shed 4000 MT
3.	Fly ash	2 x 1.05 MMTPA	2 x 0.90 MMTPA	Nearby thermal Power plant(NTPC Dadri/Harduaganj/ NTPCJhajjar) ~200 Km	Road/Rail	RCC Silo 2 x 4000 MT CFA/WFA- 2000t
4.	Slag	2 x 1.95 MMTPA	2 x 0.75 MMTPA	Domestic~500 km	Rail/Road	Covered Shed 7000 MT

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5.	Coal (For HAG)	2 x 0.07 MMTPA	2 x 0.03 MMTPA	South Eastern Coal Field Ltd ~ 1200Km	Road/Rail	Covered Shed 1000 MT
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2.8.1 RAW MATERIAL MIX OF THE CEMENT

The details of the raw material mix of cement is given in the table below

TABLE 2. 11 RAW MATERIAL MIX OF CEMENT

SL.No	Raw material	OPC	PPC	PSC	PCC
1	Clinker	92%-95%	60%-65%	30%-35%	38%-42%
2	Gypsum (natural/chemical)	5%-8%	5%-8%	5-8%	5-8%
3	Fly ash	0%	30%-35%	0%	30%-35%
4	Slag	0%	0%	60%-65%	25%-30%

These values have been used as a basis for this report.

- Moisture in gypsum (natural/chemical) 12-20%
- Moisture in CFA / Wet Fly ash <10-20%
- Moisture in Dry Fly ash <1-2%
- Moisture in Slag 10-20%
- Moisture in Clinker <1% Dry

2.8.2 RAW MATERIAL TRANSPORT, STORAGE & HANDLING

• Clinker

Clinker will be sourced from our in-house clinker production unit located in Marwar Mundwa, Rajasthan, as well as from other internal sources. The clinker will then be transported either by rail or road to the Devli Grinding Unit (GU) plant for storage. This strategic approach ensures a steady supply chain and efficient logistics management, optimizing the production process at the Devli GU plant.

• Gypsum

Gypsum may be sourced from Bikaner, Rajasthan, or from nearby markets and will be stored at an available facility within the plant. It will be transported via road or rail, and upon arrival, will be

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unloaded by truck tippler into the Bulk Reception Unit. The required quantity of gypsum will then be transferred to steel hoppers through a series of belt conveyors. This method ensures efficient handling and storage of gypsum, supporting continuous and uninterrupted feed to the production process. By utilizing local sources and streamlined transportation logistics, we aim to maintain a reliable supply chain and enhance operational efficiency.

- **Fly ash**

Fly ash will be primarily sourced from NTPC Dadri, Harduaganj, NTPC Jhajjar, or other nearby thermal power stations. Once procured, the fly ash will be stored in a 6,000-ton fly ash silo and a 2,000-ton CFA/WFA stockpile. This strategic sourcing from prominent thermal power stations ensures a steady and reliable supply of fly ash. The storage facilities, including the high-capacity silo and stockpile, are designed to accommodate large quantities, ensuring consistent availability for the production process.

TABLE 2. 12 LIST OF MAJOR EQUIPMENTS PROPOSED

Sl.No	Department	Operating hours Per day	Days operating per Year
1	Cement Grinding Mill	21	355
2	Packing Plant	16	360

TABLE 2. 13 STORAGE OF FINISHED PRODUCTS

S.No	Product	Proposed quantity	Mode of transport	Storage capacity
1	Ordinary Portland Cement (OPC)/Portland Pozzolana Cement (PPC)/	6.0 MMTPA	Road	RCC silo- 4 Nos. of 10000 Tons (each)

2.9 WATER REQUIREMENT

2.9.1 DURING CONSTRUCTION PHASE

The water requirement of about 200 KLD will be supplied from nearby Agra Canal/Treated Water. The construction will be sustaining about 18-month approx. Application for ground water extraction will be submitted to Haryana State / CGWA and permission shall be processed progressively.

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2.9.2 DURING OPERATION PHASE

The water requirement will be 2 x 300 KLD. Major quantity of water in Cement grinding process requires for water spray in the mill to stabilize the material bed and to control the cement temperature. In addition to this second major quantity of water is required for equipment cooling. For plant equipment, water shall be re-circulated after cooling to avoid any wastage and only losses shall be making up from fresh water. Besides some quantity of water is required for drinking and Green belt development activities. Fresh water requirement for the entire facility is estimated as 600KLD supplied from nearby Agra Canal/Ground Water.

TABLE 2. 14 DISTRIBUTION OF WATER REQUIREMENT

	Mill-1	Mill-1	Total
Process water consumption	180	180	360
Drinking & Flushing water consumption	15	15	30
Water treatment reject/Backwash water	15	15	30
Cooling water , (Evaporation + Blow down losses)	90	90	180
Total water consumption	300	300	600
Total waste water from process and cooling			
Reject water of Water Treatment	15	15	30
Reject/blow down water of CT	15	15	30
Regeneration from sewage water treatment plant	11	11	22
Total for Dust suppression system and green belt	41	41	82

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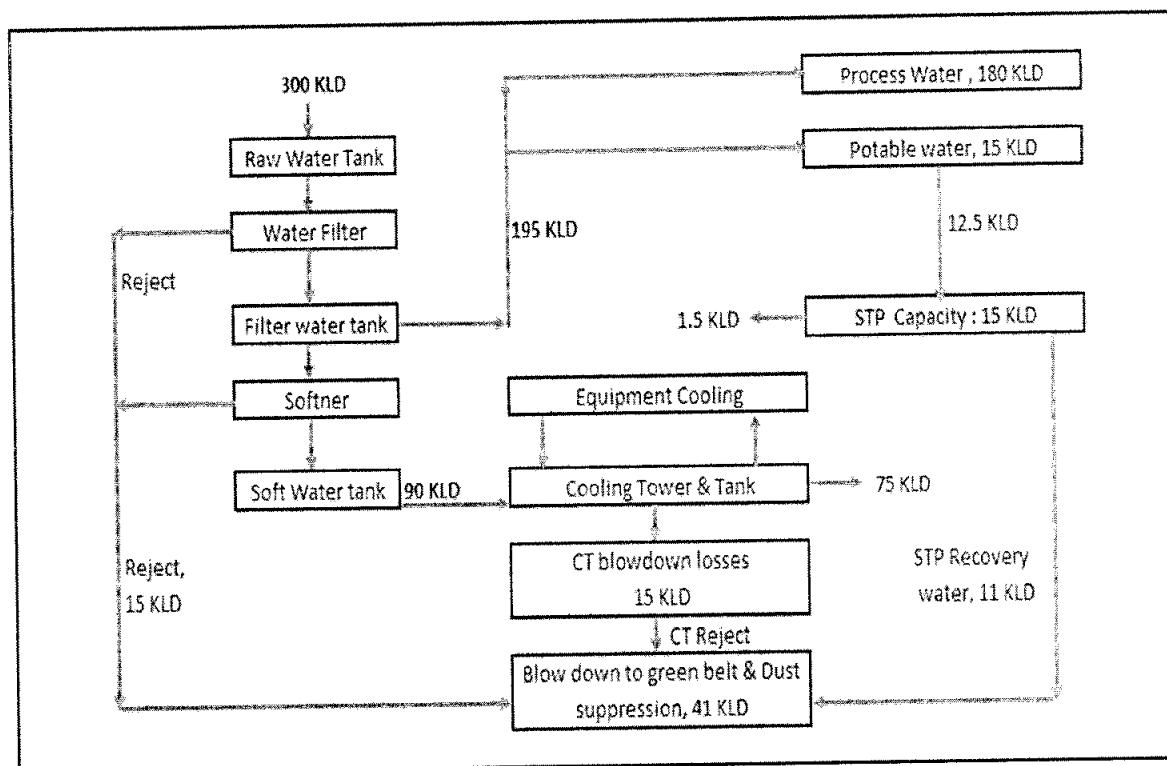


FIGURE 2.3 WATER BALANCE DIAGRAM

2.9.3 WASTEWATER GENERATION

There will be no effluent generation in the proposed project. The only wastewater generation will be sewage of quantity 15 KLD which will be treated in the proposed STP of total capacity of 20 KLD. Following the treatment, the treated sewage will be used for dust suppression and plantation purpose

2.10 MANPOWER REQUIREMENT

The total man power requirement of the project is given in the below table 2.15

TABLE 2.15 TOTAL MANPOWER REQUIREMENT

Description		Construction Phase	Operation Phase
Proposed	Permanent	30	30
	Contract	1500	125
Total (A)		1530	155
Period of employment in days (B)		545	365
Total Man-days (A*B)		833850	56575

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2.11 POWER AND FUEL REQUIREMENT

The power requirement for the project is sourced from nearby sub-station at Devli. The details of power requirement are given in Table 2.16. The construction power is envisaged to be made available from nearby sub-station at Devli.

TABLE 2. 16 POWER AND FUEL REQUIREMENT

Description	Proposed	Source
Power requirement (MW)	2 x 18 MW	Dedicated supply line from nearby sub-station at Devli at 132 KV / 66 KV or 33 KV switch yard with suitable step down transformer, if required.
Diesel (Standby)	80-100l/h for each DG set	To be directly sourced from nearby authorized local retailers as and the required for intermittent consumption for DG Set (2 X 500KVA) as power backup. No storage will be required.

2.12 MITIGATION MEASURES INCORPORATED IN THE PROJECT

The mitigation measures given in this section are for management of the emissions, effluents, solid and hazardous waste generation from the plant to meet the environmental standards and environmental operating conditions. Detailed mitigation measures are also given in Chapter-4 & 10 of this EIA/ EMP Report.

2.12.1 AIR QUALITY MITIGATION MEASURES

Following measures are included in the project report and should be implemented to meet statutory requirements.

TABLE 2. 17 MITIGATION MEASURES FOR AIR QUALITY

Emissions	Source		Proposed mitigation measures
	Plant unit	Section	
PM	Grinding Unit	Cement mill	Bag house
Fugitive	Grinding Unit	Raw Material	

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Emission		Handling & Storage	<ul style="list-style-type: none"> Covered conveyor belts for transfer materials/finished products. Bag Filters at all material transfer Points Fly ash received through closed Bulklers & fed into silo through pneumatic system Clinker, Fly Ash and cement stored in silos. Gypsum, Coal and Slag stored in covered sheds Water sprinkling to control dust Use of road sweeping machines Proper maintenance of vehicles to reduce gaseous emissions Use of PUC certified vehicles Greenbelt/plantation done along the plant boundary to attenuate air pollu
		Transportation Activity	

2.12.2 STACK EMISSION

To keep the PM emissions from stack below 30 mg/Nm³, the major source of air pollution (i.e. cement mill) will be provided with Bag House. Bag Filters will be installed in packaging plant and at all material transfer points. Ambient air quality and stack emissions will be regularly monitored to keep emission levels below the prescribed limits.

- Maintenance of the bag house, checking the performance of the bag house, maintenance of ID Fans etc. will be done.
- All the bag filters and bag house for the proposed cement plant will be designed for higher loads and gas flow, which can meet the prescribed standards
- Operators will be provided with personal protective equipment like safety Goggles, dust mask, ear plugs, helmets, shoes etc.

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2.12.3 WASTE WATER GENERATION AND TREATMENT

- Grinding unit is based on dry process technology. No industrial waste-water will be generated during cement manufacturing process. Treated wastewater will be used for green belt development
- Domestic waste-water generated from office toilets will be treated in modular STP and used for dust suppression and plantation.
- During Construction Phase: Mobile toilet facilities will be available as desired multiple locations.
- During Operation phase: Domestic waste water generated from office toilets will be treated in Modular STP and used for dust suppression and plantation

2.12.4 SOLID WASTE GENERATION

- No solid waste will be generated from the cement manufacturing process.
- Dust collected from air pollution control equipment will be totally recycled in process.
- Sludge from Modular Sewage Treatment Plant (STP) will be used as manure for green belt development.
- A part of used oil will be utilized for lubrication purpose & remaining will be sold to authorized members. The details of solid waste management are given in the Table 2.18

TABLE 2. 18 SOLID WASTE GENERATION AND MANAGEMENT

Waste	Quantity (kg/day)	Collection method	Treatment / disposal method
	Proposed		
Organic	65	Bins	Organic waste is composted and used as manure for green belt development
In organic	40	Bins	Authorized PCB vendors

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2.12.5 HAZARDOUS WASTE MANAGEMENT

TABLE 2. 19 HAZARDOUS WASTE GENERATION AND MANAGEMENT

Sl.No	Name of materials	Schedule	Proposed Quantity (TDP)	Handling & Storage	Method of disposal
1	Used oil	5.1	2	In isolated area with non-permeable concrete flooring	Through CPCB/ SPCB authorized Agency Recycler
2	Cotton rags	33.2	4	In isolated area with non-permeable concrete flooring	Through CPCB/ SPCB authorized agency (TSDF/ CHWIF)
3	Lead acid batteries	-	0.7	In isolated area with non-permeable concrete flooring	To OEM through buy-back/ through Authorized recycler
4	Used oil containers @ 20L capacity	33.1	0.6	In isolated area with non-permeable concrete flooring	Through CPCB/ SPCB authorized Agency Recycler

2.12.6 GREEN BELT DEVELOPMENT

Out of total land about 3.67 hectare of which ~33.5 % of the area will be developed as greenbelt area & plantation. A thick greenbelt all along the roads and plant will be developed.

- Plantation will be done in and around the plant premises.
- 80-85% survival rate will be maintained with all possible efforts.
- The trees will be planted at suitable grid spacing to encourage proper growth.
- Local plant species will be preferred

2.12.7 ENERGY SAVING MEASURES

To enhance energy conservation, we have implemented several power-saving methods:

1. Vertical Roller Mills (VRM) are highly efficient equipment used in the grinding process. They are known for their energy-saving properties. Here's why VRMs are considered energy-efficient:

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2. Installing high-efficiency classifiers or separators ensures finer particle distribution with less regrinding, thus reducing energy consumption.
3. Optimizing the size and quality of grinding media (e.g., steel balls) improve grinding efficiency, reducing energy consumption.
4. Power Consumption Monitoring: Check metering will be employed at various locations to monitor power consumption and identify any power losses. This allows for timely detection and rectification of inefficiencies, ensuring optimal energy use throughout the facility.
5. Installing VFDs on major motors (e.g., mill fans, pumps) allows for speed adjustments based on demand, preventing unnecessary energy consumption.
6. Proper control of grinding pressure in VRMs or other equipment ensures optimal performance and energy efficiency.
7. Using waste heat from preheaters or clinker coolers for drying raw materials or fuels can reduce energy needs for drying.
8. Keeping equipment well-maintained with regular inspections and cleanings can improve energy efficiency by reducing friction and wear.

2.12.8 QUALITY CONTROL PLAN

To produce good quality cement, it is imperative that sampling & testing of various raw materials like clinker, gypsum, fly ash and the final product is carried out regularly at the required intervals for taking corrective action timely as per standards. To ensure consistent product quality and to permit the trouble free and cost-effective operation, the quality control plan for sampling & testing of various raw materials, in-process materials and the final product is suggested. While proposing the methods and procedures for quality control, the following aspects have been considered. - Requirements and norms, particularly in cement testing. - Corrective measures to be undertaken as quickly as possible in the process operation. - Desired degree of automation. - Available raw materials and process equipment. - The main area of quality control has been envisaged. - Before Cement Mill - After Cement Mill - Laboratory The laboratory will be accommodated in the Central Control Room (CCR) building at the proposed plant site. The laboratory shall have the provision of chemical and physical testing facilities for raw materials, clinker, gypsum, fly ash and cement.

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2.12.9 ASSESSMENT OF NEW & UNTESTED TECHNOLOGY

No new and untested technology is proposed for the cement grinding unit. Latest modern technology of Cement Grinding Unit I.e. Vertical Roller Mill (VRM) will be used for manufacturing of cement. The plant will be using high efficiency machineries and energy efficient equipment's to ensure low power consumption. The proposed modern pollution control equipment's will be used to keep the pollution within prescribed limits by MoEF&CC and other concerned authorities. The plant will be fully automated using latest state-of-the-art technology.

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CHAPTER -3

DESCRIPTION OF THE ENVIRONMENT

3.1 INTRODUCTION

This chapter illustrates the description of the existing environmental status of the study area with reference to the prominent environmental attributes. As a precursor for the prediction of various types of environmental impacts likely to arise due to implementation of this project, it is essential to establish the base line environmental status.

The existing environmental setting is considered to adjudge the baseline environmental conditions, which are described with respect to physico-chemical, biological, and socio-economic parameters in the project area and within the project influence area. The objective of this section is to define the present environmental status which would help in assessing the environmental impacts due to the proposed project. The study area comprising 10 Km. radius of the project site of M/s Ambuja Cements Limited, Devli, Haryana is covered in Survey of India Topo Sheet Nos. 53 H /8, (H43x8).

3.2 STUDY AREA AND PERIOD

A comprehensive survey was conducted within a 10-kilometer radius for the expansion of Ambuja Cements Ltd. located at Village Devli, Tehsil and District: Palwal, State- Haryana. This survey involved identifying key features such as roads, water bodies, residential areas, and transportation networks. Additionally, relevant data including population demographics was gathered to facilitate a thorough assessment of the project's potential impact on the surrounding environment and communities. As per the EIA guidelines, study was conducted within a 10 Km radius from the periphery of the proposed site. Baseline data for environmental attributes like ambient air, meteorology, water, hydrology, land use, soil, geology, noise, socio-economic, ecology and biodiversity etc. were collected. The study was conducted over a three-month period, from 1st October 2023 to 31 December 2023 at Post Monsoon season. Project's 10 Km radius study area falls in Palwal districts, Therefore, additional secondary data pertaining to socio-economic factors and flora & fauna were sourced from various governmental entities within the districts.

3.3 STUDY COMPONENT AND METHODOLOGY

Various studies encompassing meteorology, ambient air quality, water quality, noise levels, soil characteristics, socio-economic aspects, ecology, and land use were conducted across different locations within both the core and buffer zones.

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The baseline data collection for ambient air, noise, water, and soil was conducted by the EIA team at the project site. The analysis of various parameters was performed at the in-house NABL and MoEF & CC recognized environmental lab of M/s. Ecomen Mining Pvt. Ltd. in Lucknow. The guidelines of the CPCB were followed during the baseline data collection. Standard Operating Procedures (SOPs), as per the QMS of Ecomen, were adhered to, ensuring that the procedures aligned with CPCB guidelines on sampling location selection, sample collection, preservation, transportation to the lab, and the analysis process according to NABL-approved procedures. The ecology, biodiversity, and socio-economic studies were conducted by FAEs through questionnaire surveys.

3.3.1 PRIMARY DATA COLLECTION

The primary data collection is a pre-requisite for an Environment Impact Assessment Study in order to provide a description of the status and trends of environmental factors against which the predicted changes can be compared and evaluated in terms of importance. Wherever possible, the primary data are interpreted with site conditions and cross-checked with secondary data.

Secondary data are those collected over the years by external agencies that can be used to understand the existing environmental scenario of the study area. The environmental impact assessment (EIA) studies are conducted over a short period of time and therefore the understanding of the environmental trends, based on a few months of primary data, has limitations.

TABLE 3. 1 STUDY COMPONENTS

S.No.	Attribute	Parameters	Three Months Baseline Monitoring (1 st October 2023 to 31 December 2023)
1	Meteorology	Wind Speed and Direction, Temperature, Relative Humidity & Rainfall	Hourly recording near project site
2	Ambient air quality	RSPM(PM ₁₀), PM _{2.5} , SO ₂ , and NO ₂	Eight locations (1 location at Core zone & 7 locations at Buffer zone) 24 hourly sampling twice a week for PM ₁₀ , PM _{2.5} , SO ₂ and NO ₂ , and other parameters and Heavy metals monitored once in a month.

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3	Water quality	Physical, Chemical and Bacteriological Parameters as per APHA and IS standards	Ten locations (8 locations for ground water & 2 locations for surface water)
4	Noise levels	Noise levels in dB(A)	Once during study period at Eight locations (1 location at Core zone & 7 locations at Buffer zone)
5	Soil characteristics	Soil profile, characteristics, soil type and texture, NKP value etc.	Once during study period at Six locations (1 location at Core zone & 5 locations at Buffer zone)
6	Socio-economic aspects	Socio-economic characteristics	Secondary data from Census-2011
7	Ecology	Existing terrestrial flora and fauna	Through field visit and secondary data
8	Land use	Land use for different categories (Satellite Imagery & Ground truthing)	Based on secondary data for core and buffer zone.

3.3.2 SECONDARY DATA COLLECTION

Secondary data are those collected over the years that can be used to understand the existing environmental scenario of the study area. The secondary data is required to authenticate the primary data as the primary data was collected over the short period which should be comparing to know the trend of baseline data to compete the understanding of baseline scenario.

TABLE 3.2 SECONDARY DATA COLLECTION

S. No.	Area	Description	Source
1.	Meteorology	Temperature, humidity, rainfall, wind speed, wind Direction	IMD Station Gurugram (1981-2010).
2.	Ambient Air	Air Pollutants	CPCB.
3.	Water Quality	Water (Surface & Ground) Characteristics	
4.	Soil Quality	Soil characteristics	

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5.	Nature of terrain	Land-use	Survey of India (Toposheet), National Remote Sensing Centre (Satellite image).
6.	Hydrogeology	Geological formation, hydro-geological analysis	District Ground Water Information Booklet, Palwal District, Haryana.
7.	Seismic Data	Seismic zone	Seismicity Map.
8.	Biological Environment	Inventory of flora & fauna	Divisional Forest Department.
9.	Socio-economic status	Demographic profile, household, occupation status.	Census data (2011).

3.4 VULNERABILITY OF THE SITE

The geological and geomorphologic setup of Haryana makes it prone to a number of natural hazards i.e. floods, water logging, soil salinity, soil erosion, landslides, drought etc. Natural hazards affect the infrastructure and cause loss of natural resources as well as human lives. Earthquakes, floods, cyclones and landslides rank among the most feared disasters in India, and the fear is naturally heightened in the districts of Faridabad & Gurgaon

a) Seismicity

All districts of Haryana sub-region lie in Zone IV and High damage risk zone (MSK VIII) in respect to earthquakes. The Palwal district falls under the under seismic-zone III which is a moderate risk zone.

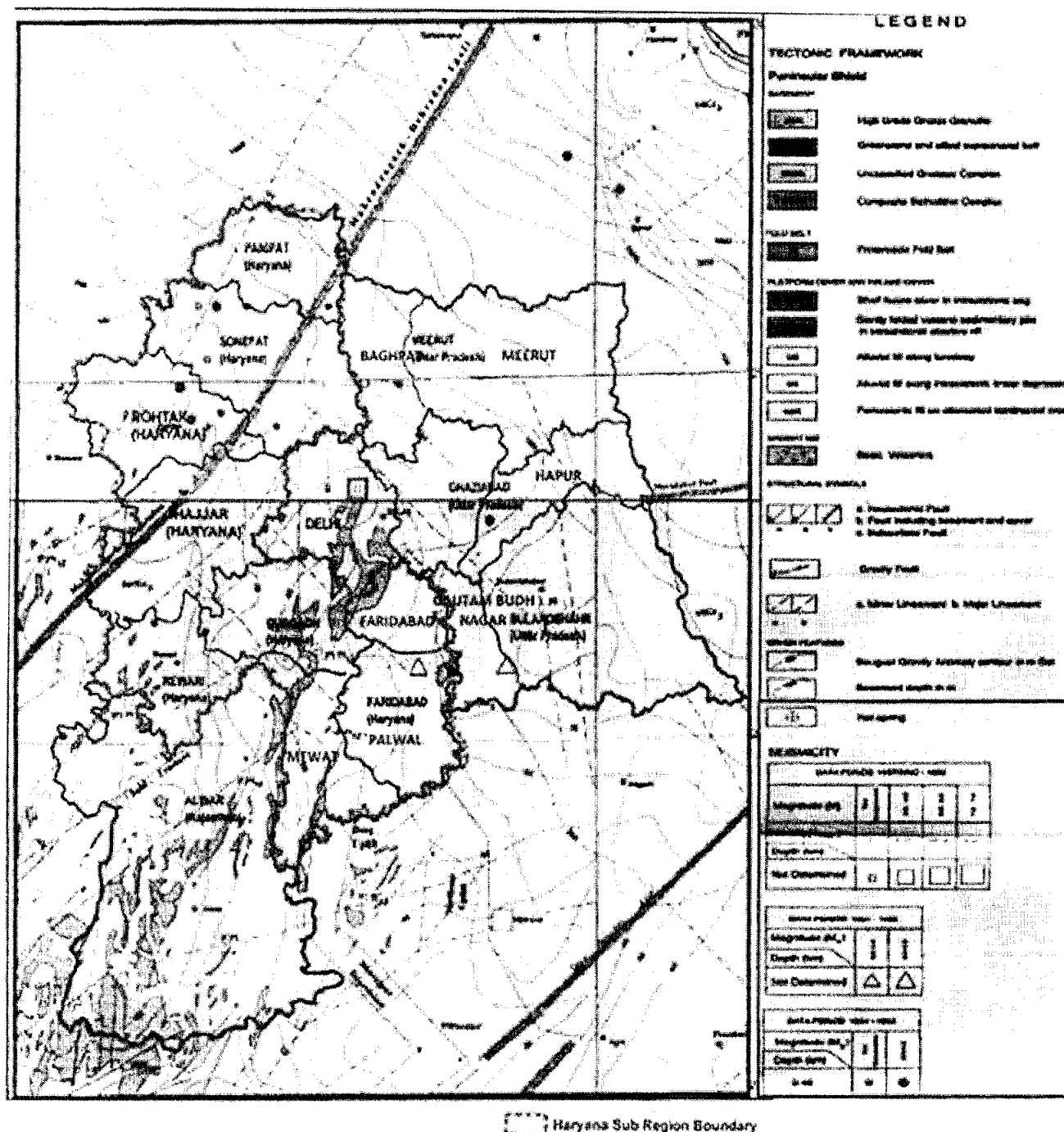


FIGURE 3. 1 SEISMIC TECTONIC FEATURES IN HARYANA SUB-REGION

b) Flood

Major flood areas where disaster in the past was experienced were in Faridabad, Palwal and Panipat district. The gauge level of the Yamuna had risen up to 205-207 mm. The floods in the district of Palwal are mainly due to heavy rains and over flow of River Yamuna. The districts of Palwal consist of hillocks, valleys and undulated terrain.

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3.5 PHYSICAL ENVIRONMNET

The study has been done for the entire district through published literature for general idea which also covers the project area.

3.5.1 TOPOGRAPHY

Palwal district of Haryana lies between 27° 50' : 28° 15'40" north latitudes and 77°05' : 77° 33' east longitudes between the eastern bank of Yamuna river and the western flank of Aravalli mountain range. The alluvial plains have been divided into two units. Khadar that is the low lying flood plain of newer alluvium and Banger, an upland plain made of older alluvial and is spread towards west. Total geographical area of the district is 1364.55 sq.km. Administratively, Palwal is the district Headquarter of the district. It is divided into 4 development blocks namely Palwal, Hathin, Hodal and Hassanpur. The district area is bounded on western side Mewet district, Eastern side by U.P. state and northern side by Faridabad district and falls in survey of India toposheets no. 53H/3, H/4, H/7,H/8, H/9, H/12, and 54E/5 and E/9. The Average elevation of the district is 194 m, minimum elevation is 179 m, maximum elevation is 211 m. There are two main canals Agra canal and Gurgaon canal which passes through western and central part of the district respectively from north to south.

3.5.2 GEOLOGY

Major parts of Palwal district is occupied by alluvial plains of recent to sub-recent age, which include older (Banger) and newer (Khadar) alluvial and kankar. The kankar occurs mainly in the northern part and is poor in calcareous matter on the other hand NuH district occupied by scattered isolated strike ridges of old rocks, former Aravali mountain chain of Pre-cambrian and alluvium, sand of recent to sub-recent orign and the subsurface which forms the clay between 90% and 95% of gross lithology in Firozpur-Jhirka, and Nagina areas. Furthermore, the area between Firozpur Jhirka and Mandkola ridge, the bedrock below the alluvium is quartzite and limestone.

The basement of the area is composed of quartzite and slate of Delhi Supergroup of Achaeon age. It is overlain by sediments of older alluvium (upland unit of the area) of the Pleistocene age. Lowland areas near the flood plain are newer alluvium of Holocene age overlain on older alluvium. Newer alluvium is confined within floor plains of Yamuna River and unconformable overlies the older alluvium. The newer alluvium is devoid of calcareous nodules, while the older alluvium consists of calcareous Kankar. The northwest part of the area is covered by quaternary eolian sediment. The regional geology of District Palwal (Haryana) is represented by varieties of formation belonging to Delhi Super Group. Stratigraphic ally the rock formations of Delhi super group are composed of

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arenaceous, argillaceous & calcareous sediments. These sediments have been placed by Heron (1923) in the Alwar & Ajabgarh series of Delhi system & intruded by basic granitic rocks.

TABLE 3. 3 REGIONAL STRATIGRAPHIC SEQUENCE

Series	Rock Types
Recent intrusive	Alluvium, dune sand, soil, ankerite, chert, quartz veins, younger basic dykes. Granites, Pegmatites, Quartz veins Older basic rocks
Ajabgarh series	Carbonaceous phyllites&schists etc. (Local).
	Massive Quartzites
	Phyllites, Mica-shists (Local).
	Marble, calc-gneiss, 23mphibolites etc
	Schist with or without garnet. Staurolite, Kyanite, Sillimenite, Andalusite, phyllites, sandy phyllites
Alwar series	Amphibole quartzite, marble, Amphibolites
	Arkosic quartzites, quartzites & Interealatedphyllite & schists. Magnetite & Hametitequartzites etc.
	Phyllite&schists

3.5.3 HYDROGEOLOGY

The district is occupied by Indo-Gangetic alluvial plain of Quaternary age, and falls in Yamuna sub-basin of Ganga basin. The Central Ground Water Board has drilled 21 exploratory boreholes to delineate and determine potential aquifer zones, evaluation of aquifer characteristics. Out of 21 exploratory boreholes 13 boreholes were abandoned due to poor quality of ground water. The permeable granular zones comprising fine to medium grained sand and occasionally coarse sand and gravel. Their lateral and as well as vertical extent is limited. The borehole data reveals that clay group of formations dominate over the sand group in the district area. Ground water occurs in alluvium and the underlying weathered/fractured quartzites. Alluvium comprises sands silt, Kankar and gravel. Which form the principal ground water bearing horizon. In Quartzite formation, occupying the north-western part of the district, ground water occurs in weathered and jointed fractured horizons. Weathering and fracturing has resulted in formation of semi-consolidated sand beds (BADARPUR SANDS) which form potential aquifer zones. This quartzite formation has not been explored for ground water occurrence. In alluvium, granular zones are evenly distributed in entire thickness which is negligible near the quartzite outcrops to over 350 m in the eastern parts near Yamuna River. The

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discharge of the wells ranges from 750 lpm to 900 lpm at a drawdown of 5.5 to 7.00m. The transmissivity 'T' value ranges between 55 to 200 m²/day was determined. Shallow tube wells for irrigation use are generally constructed upto a depth of 40 m. The discharge of these shallow tube wells ranges 360 -600 litres per minutes.

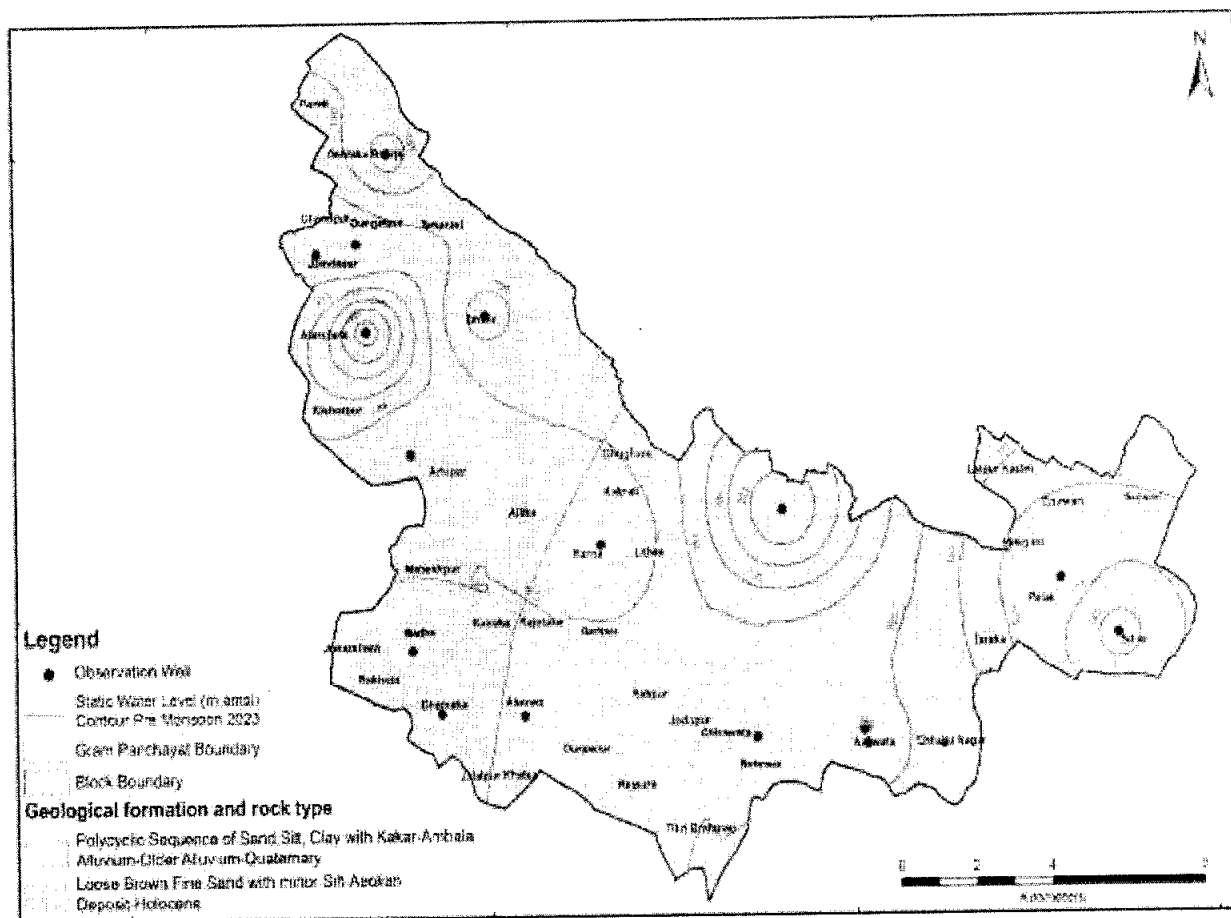


Figure 3. 2 : Hydrogeological map of Palwal District

3.5.4 WATER LEVEL BEHAVIOUR

As per Central Ground Water Board, North-western region, the depth of water level (May,2011) in Palwal district ranges from 2.00 to 10.75 meter below ground level (mbgl) during pre-monsoon season whereas the depth of Water (November, 2011) in the district ranges from 2.00 to 9.40 meter below ground level (mbgl) during post monsoon. The water level trend during pre-monsoon period indicates average fall of 0.20m/year. The long term water level trend is show small decline and other places rise in Palwal district.

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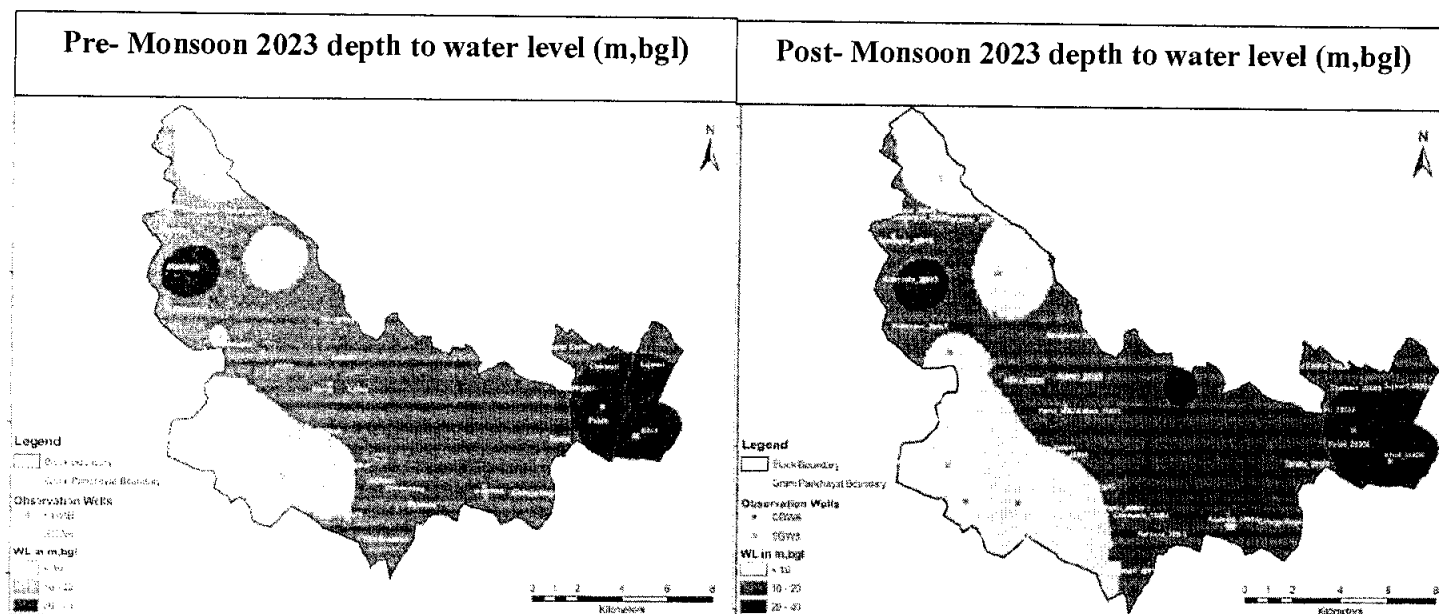


FIGURE 3. 3 WATER TABLE LEVEL DURING PRE-MONSOON AND POST-MONSOON

3.5.5 DRAINAGE

The district is occupied by Indo-Gangetic alluvial plain of Quaternary age, and falls in Yamuna sub-basin of Ganga basin. There are two main canals Agra canal and Gurgaon canal which passes through western and central part of the district respectively from north to south. In the northern part of the district Budia nala is flowing from east to west and discharges its rainy water in river Yamuna. The Gaunchi main drain passes through north south direction of the district running in between Agra canal and Gurgaon canal. Palwal districts have mountainous physiography and have alluvium deposits. The alluvial plains have been divided into two units. Khadar that is the low lying flood plain of newer alluvium and Banger, an upland plain made of older alluvial and is spread towards west. There are also few artificial lakes namely Surajkund, Badhkal, Peacock and Dhauj Lake etc.

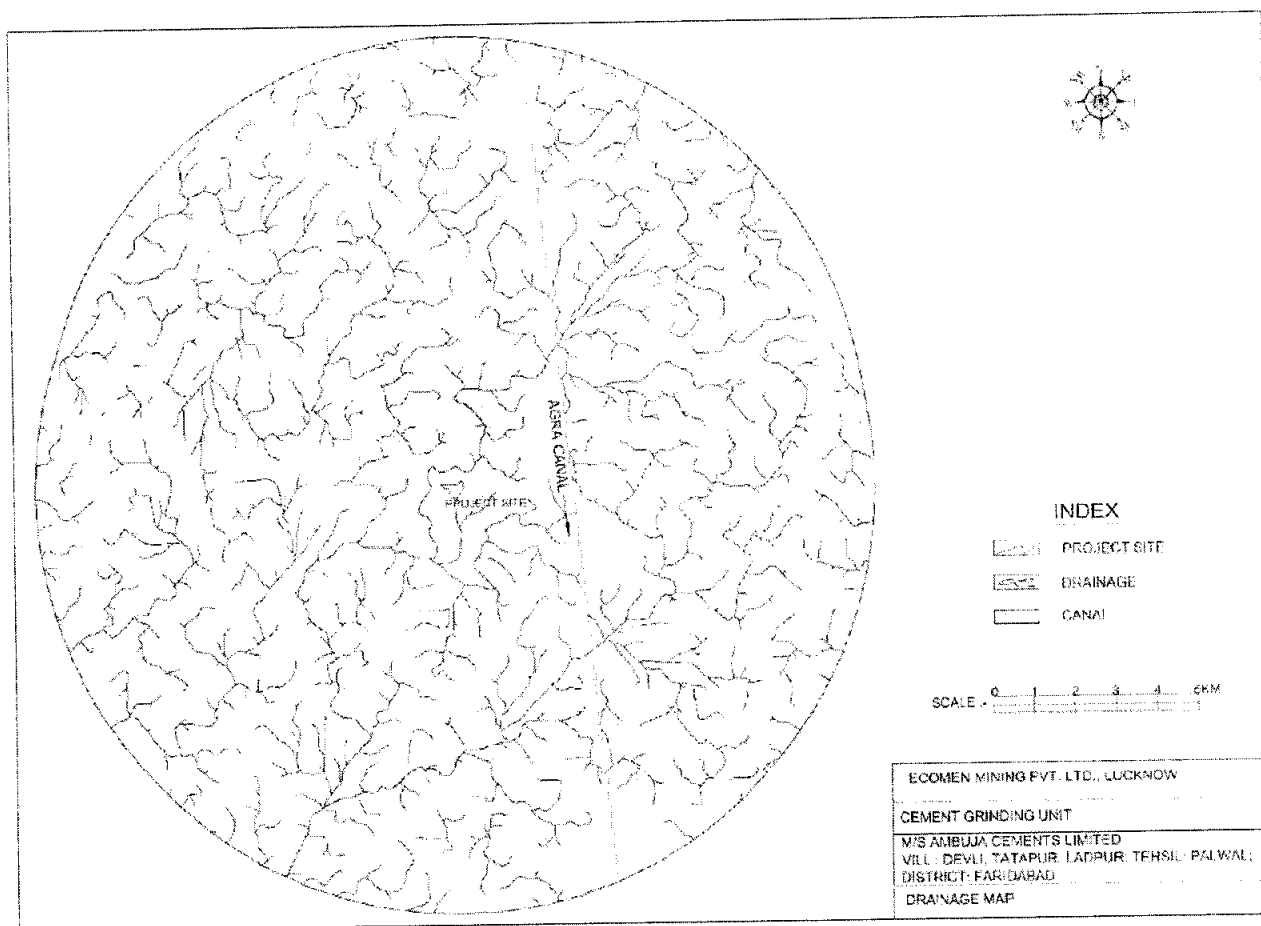


FIGURE 3. 4 DRAINAGE MAP OF THE STUDY AREA

3.6 LAND USE

Land Use/ Land Cover mapping (using Remote Sensing & GIS):

3.7 INTRODUCTION

The land use/land cover information relates to the status, spatial distribution & area extent of different land cover/land use categories. Land cover and land use are terms that are often used interchangeably; however, they have different meanings. Land cover results from a complex mixture of natural and anthropogenic influences and is the composition and characteristics of land surface elements (Cihlar, 2000). In contrast, land use is characterized by economic uses of land and people's relationships with the environment (Avery and Berlin, 1992). For example, a land cover of forest, when considered as a land use, could be a park. To classify land use with satellite imagery often requires the use of supplementary information such as fieldwork. The land cover/ land use classification system is based on the methodology given in 'Manual of Nationwide land use/land cover mapping using Digital Techniques'.

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Remote sensing is the science and art of obtaining information about an object, area or phenomena through the analysis of data acquired by a device that is not in contact with the object, area, or phenomena under investigation. The data analysis process involves examining the data using various image processing techniques by a digital computer. Its application in the field of environmental management is of great prominence. The inherently digital nature of remotely sensed data, supporting quantitative & statistical analysis of spectral measurement, led to rapid advancement in the field of digital techniques. With a view to facilitate utilization of this modern technology in the management of the resources, a chain of digital image processing steps has been carried for the land use/land cover mapping. The entire investigations have been carried out using ERDAS digital image processing software and Geographic Information System (ARC GIS).

3.7.1 DATA INPUT

A) SATELLITE DATA

LISS-IV composite band of visible and near infrared B2, B3 and B4 with spatial resolution of 5.0 m of 07/04/2024 is used for the land use land cover study.

B) COLLATERAL DATA USED

- Survey of India Topographical Map
- Ground Truth Information
- Other Collateral Information

Methodology

The research on remote sensing has been directed for several decades towards image processing & development of methods for digital map generation especially on land use/land cover. The primary aims were to produce thematic maps that could be quickly updated. However, maps obtained from digital automatic classification fails to fully satisfy the purpose for which it is generated. Therefore, digital classification procedure has been used for generation of maps on land use/land cover from satellite data. The technique is based on stratified approach.

The overall methodology for land use/land cover map generation is explained in the flowchart in **Figure 3.5**.

Eradas Image Processing Software was used for digital processing of the spatial data. Digital image processing techniques were applied for the mapping of the land use/land cover classes of the provided area from the satellite data (Refer **Plate 3.8**). The methodology applied comes under following steps:

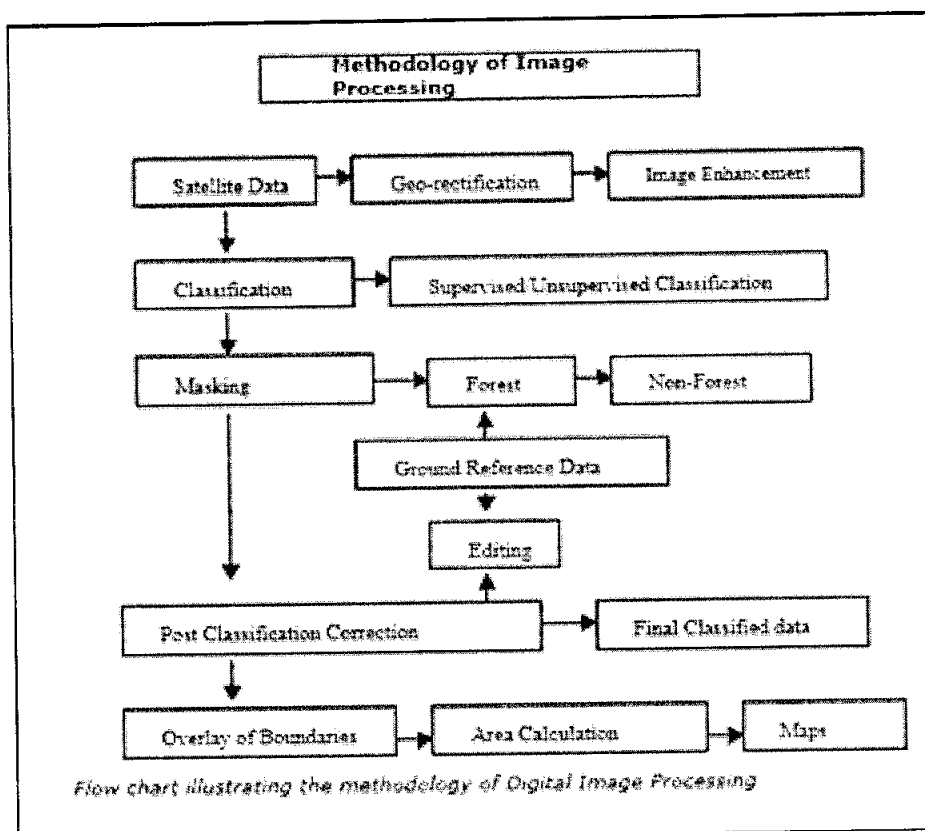


FIGURE 3. 5 METHODOLOGY OF IMAGE PROCESSING

3.7.2 IMAGE ENHANCEMENT

Image enhancement is one of the important image processing functions primarily done to improve the appearance of the imagery to assist in visual interpretation and analysis. Various options of image enhancement techniques were tried out to get the best image for visual interpretation. Histogram equalized stretch enhancement techniques were applied to the imagery of the study area for better interpretation of different features in the satellite imagery.

The LISS-IV of 5.0m (Plate.3.7) has been used for digital classification of land use categories. The subset area of 10 kms radius area has been stratified by generating forest mask from topographical map. In non-forest area, the un-supervised classification has been applied. In this particular type of classification spectral classes are grouped first, based solely on the numerical information in the data, and are then matched by the analyst to information classes. Unsupervised classifiers do not utilize training sets as the basis for classification. Rather it involves algorithms called clustering algorithms, that examine the unknown pixels in an image and aggregate them into a number of classes based on the natural groupings or clusters present in the image values. The analyst specifies the desired number

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of classes. Thus unlike supervised classification, it does not start with a pre-determined set of classes, however it is neither done completely without human intervention. The cultural features like roads, villages and forest boundaries have been drawn from the existing maps.

The land use classified through supervised classification of the area and the cultural features of roads, rail and village locations have been overlaid. The land use/ land cover map of the area has been extracted using 10 km radius mask and area statistics have been generated.

3.7.3 RESULTS AND DISCUSSIONS

GENERAL LAND USE/ LAND COVER

The land use/ land cover map has been generated on 1:50,000 scale using digital classification of LISS-IV. Based on the methodology developed for the present land use/ land cover, categories have been grouped under the following major land use/land cover categories.

TABLE 3. 4 MAJOR LAND USE/LAND COVER CATEGORIES OF STUDY AREA

SL No	Category	Area in Ha	% of the Study Area
1	Agricultural Land	9429.36	27.57
2	Fallow Land	14730.62	43.07
3	Water bodies/Canal/Nala	206.69	0.60
4	Plantation	3757.76	10.99
6	Settlements/Built-up Land	6077.67	17.77
	Total	34202.1	100.00

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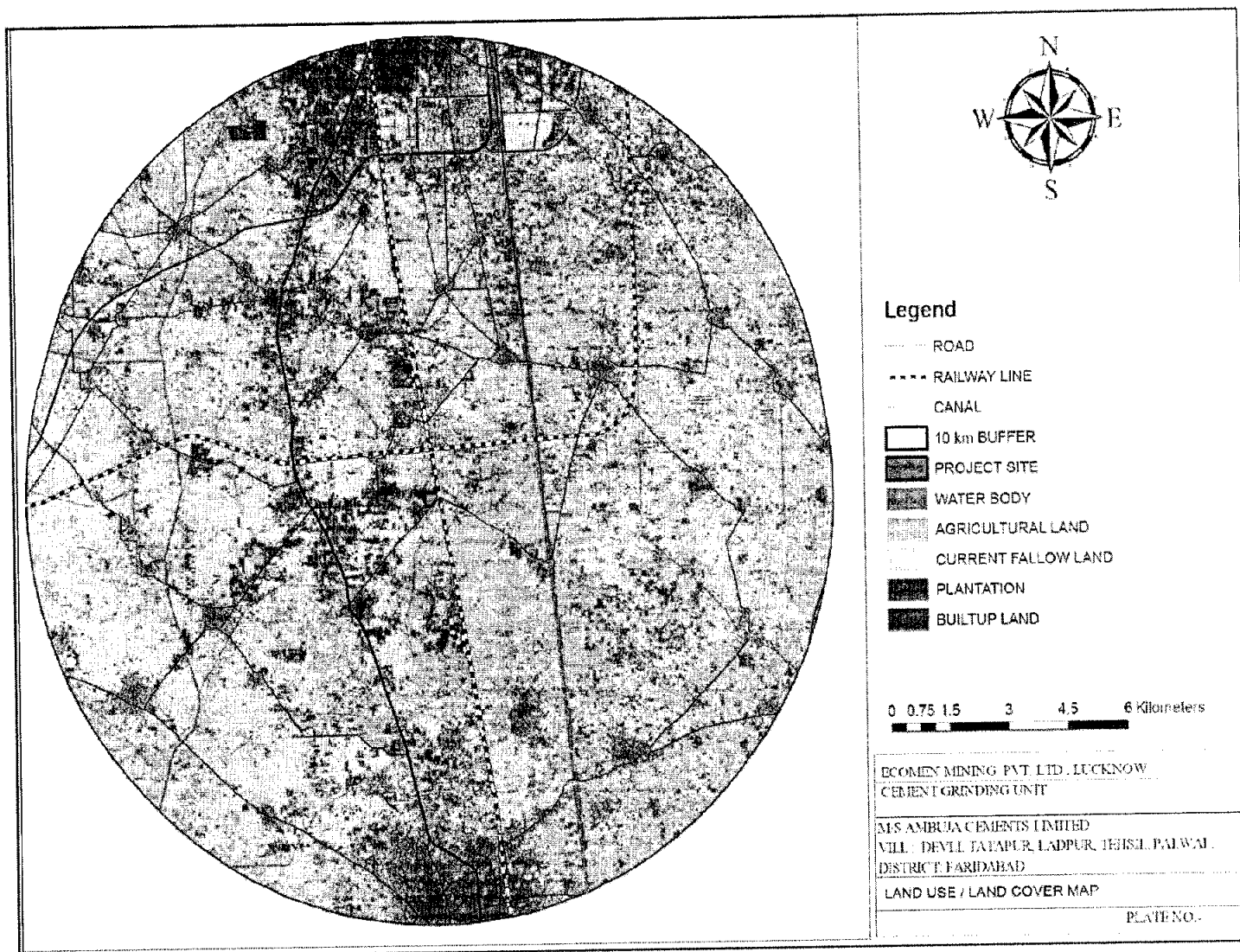
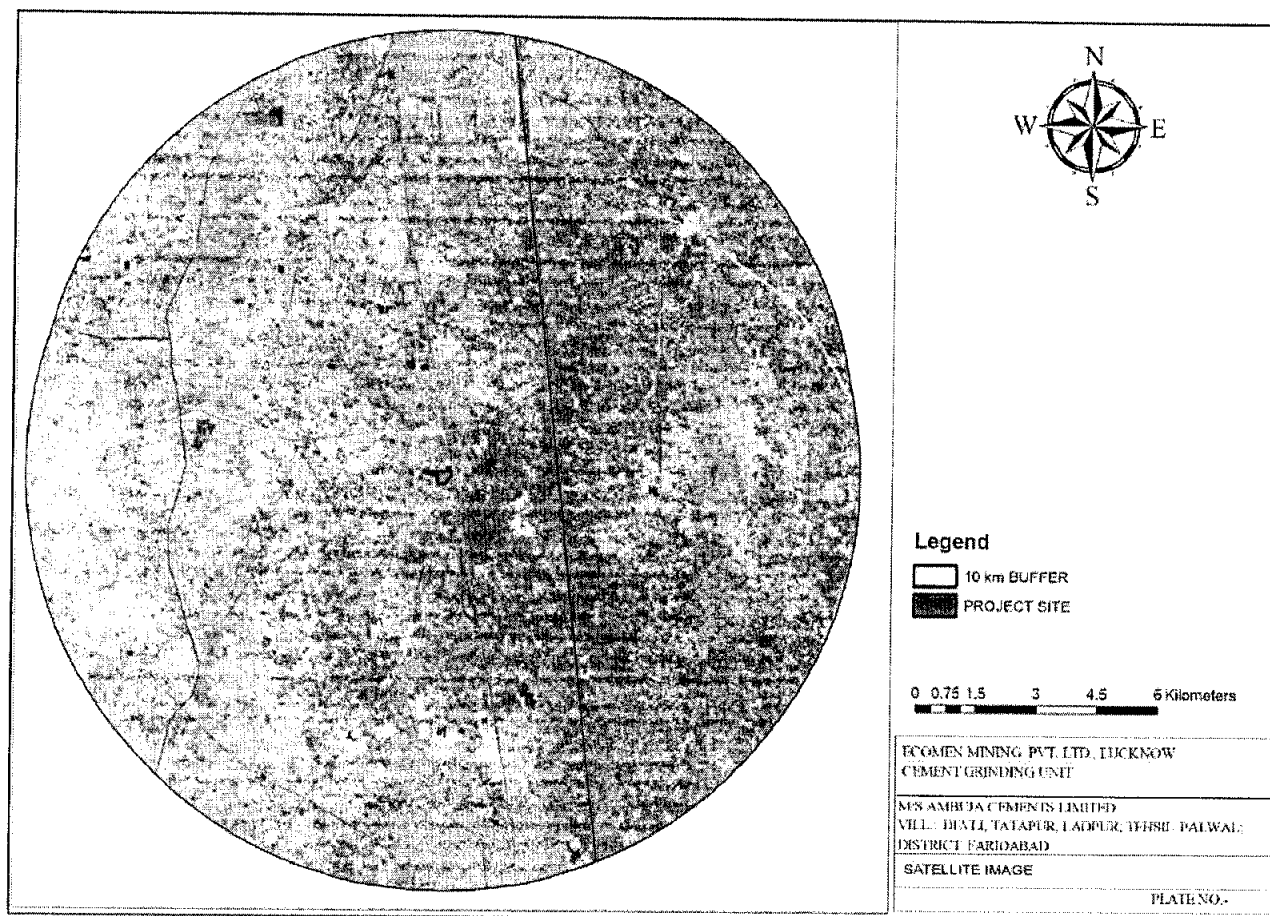


FIGURE 3. 6 LAND USE AND LAND COVER MAP OF THE STUDY AREA

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**FIGURE 3. 7 SATELLITE IMAGE MODEL FOR RADIUS 10 KM INDICATING
ELEVATION VALUES OF PROJECT SITE AND ADJOINING AREAS**

➤ **Agricultural land**

Based on satellite data and ground truth, the total agricultural crop land, are classified by using image classification techniques. Existing agricultural area were depicted by utilizing multispectral satellite data. The total agricultural area is about 9429.36 Ha which is 27.57 percent of the total study area.

➤ **Fallow land**

Based on satellite data and ground truth, the total fallow land, are classified by using image classification techniques. Existing fallow land area were depicted by utilizing multispectral satellite data. The total fallow land is 14730.62 Ha area which is about 43.07 percent of the total study area.

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➤ Water bodies/Canal/Nala

No major river is found in study area. Based on satellite data, the canal, water bodies and water-logged areas are giving the same tone and texture so it is very difficult to discriminate water logged areas with the water bodies. Presently old water logged is also being considered as water body in the study area. The total area falling within the river/ water bodies' area is about 206.69 Ha which is about 0.60 percent of the study area.

➤ Plantation Area

The total plantation area is classified by using image classification techniques. Plantation area were depicted by utilizing multispectral satellite data. The total area is about 3757.76 Ha which is 10.99 percent of the total study area.

➤ Built-up land/Settlements

Built-up land includes the settlements, roads and railway line etc. The village locations and their area extent have been extracted from the satellite data of high resolution and also from the existing topographical maps. The area occupied by built-up class shown in the classified image is therefore based on the visual interpretation of high-resolution satellite data and also topographical maps. The major built-up area is about 6077.67 Ha which is 17.77 percent of the total study area.

3.8 METEOROLOGICAL DATA

Meteorological data were recorded hourly in the study. A Temporary Weather Monitoring Station was installed at the plant site to record temperature, relative humidity, wind direction, wind speed, rainfall, etc. in post monsoon season from 1st October 2023 to 31st December 2023. Meteorological conditions observed during the Study Period are summarized in Table 3.5 below:

The maximum & minimum temperature, relative humidity (%) & Rainfall (mm) recorded during the season are given below:

TABLE 3. 5 METEOROLOGICAL DATA AVERAGES DURING THE STUDY PERIOD

Parameters		Three months study		
		October, 23	November, 23	December , 23
Temperature (°C)	Max.	34.87	33.21	30.56
	Min.	23.93	22.24	18.45
Humidity (%)	Max.	100	100	100
	Min.	28	31	37
Rain fall (mm)	Total	119.82		

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Meteorological data was recorded hourly for three months. Calm condition prevailed over 7.9 % of the time of the study period. The predominant wind directions were NW and the average wind speed is 1.9 m/s. The seasonal wind rose diagram for 24 hours' period is given in Figure 3.8.

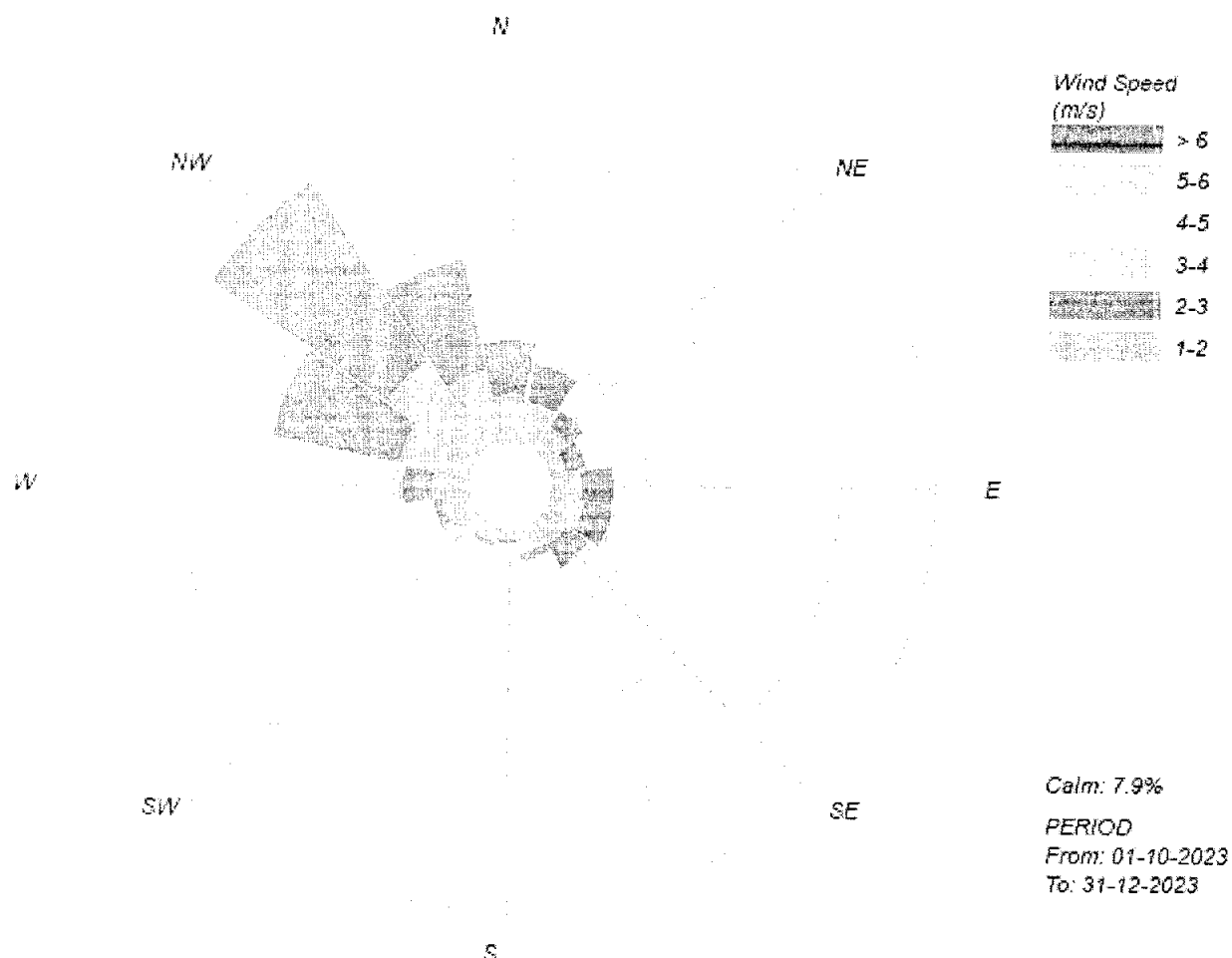


FIGURE 3. 8 THE WIND ROSE DIAGRAM BASED ON THE METEOROLOGICAL DATA DURING THE STUDY PERIOD

3.9 GENERAL CLIMATIC CONDITION (SECONDARY DATA):

3.9.1 CLIMATIC CONDITIONS

Palwal is located in the southern part of Haryana and the western part of India, being a part of the National Capital Region. It shares a geographical boundary with Mewat, Aligarh, Gurgaon, Faridabad and Delhi. National Highway – 2 passes through the Palwal district. Apart from the perennial river Yamuna flowing, a 136 km long Kundli – Manesar – Palwal Expressway is being planned to run through the district. Alike Delhi, Palwal also has an extreme climate. The climate of Palwal district can be classified as tropical steppe, semiarid and hot which is mainly characterized by the extreme dryness of the Air except during monsoon months. During three months of south west monsoon from

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last week of June to September, the moist air of oceanic penetrate into the district and causes high humidity, cloudiness and monsoon rainfall. During the summer months of April (latter half), May, June and July, the temperature is 36 deg C on an average. During the rainy months, majorly in August, the rainfall peaks to 184 mm and temperature is 22 deg C on an average. During the winters, the temperature swings at 15 deg C on an average. The period from October to December constitutes post monsoon season. The cold weather season prevails from January to the beginning of March and followed by the hot weather or summer season which prevails up to the last week of June.

a) Rainfall

The normal annual rainfall in Palwal district is about 542 mm spread over 27 days. The south west monsoon sets in the last week of June and withdraws towards the end of September and contributes about 85% of the annual rainfall. July and August are the wettest months 15% of the annual rainfall occurs during the non-monsoon months in the wake of thunder storms and western disturbances. The data reached an all-time high of 97.300 mm in 19 Jul 2021 and a record low of 0.000 mm in 09 Jun 2024. Palwal typically receives about 13.7 millimetres (0.54 inches) of precipitation and has 20.64 rainy days (5.65% of the time) annually. The rainy period of the year lasts for 9.1 months, from January 16 to October 18, with a sliding 31-day rainfall of at least 0.5 inches. The month with the most rain in Palwal is August, with an average rainfall of 6.5 inches.

Normal Annual Rainfall-542 mm

Normal Monsoon Rainfall-460 m

Temperature-41° C (May & June)

b) Temperature

Located at an elevation of 197.03 meters (646.42 feet) above sea level, Palwal has a Subtropical steppe climate (Classification: BSh). The district's yearly temperature is 30.43°C (86.77°F) and it is 4.46% higher than India's averages. Palwal typically receives about 13.7 millimetres (0.54 inches) of precipitation and has 20.64 rainy days (5.65% of the time) annually.

The hot season lasts for 2.8 months, from April 13 to July 6, with an average daily high temperature above 96°F. The hottest month of the year in Palwal is June, with an average high of 101°F and low of 83°F. The cool season lasts for 2.2 months, from December 7 to February 13, with an average daily high temperature below 75°F. The coldest month of the year in Palwal is January, with an average low of 48°F and high of 69°F. The table below depicts the climatological data.

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TABLE 3. 6 CLIMATE REPORT FOR PALWAL DISTRICT, HARYANA STATE

Month	Avg. Temperature (°C)	Min. Temperature (°C)	Max. Temperature (°C)	Precipitation / Rainfall mm	Humidity (%)	Rainy days (d)	Avg. Sun hours (hours)
January	14.4	3.9	25	13.5	52.7	1.2	8.47
February	17.05	4.9	29.2	16.9	51.86	1.2	11.02
March	22.15	8.6	35.7	3.4	36.23	0.5	11.36
April	28.7	14.5	42.9	8.2	21.1	0.6	12.4
May	32.05	19.1	45	22.7	17.13	1.7	13.62
June	33.3	21.6	45	79.2	27.62	4.3	13.86
July	32.05	23.5	40.6	135.5	49.37	7.6	13.27
August	30.6	23.1	38.1	211.4	62.63	8.5	12.43
September	29.5	21.8	37.2	120.2	57.97	5.5	11.18
October	24.2	13.2	35.2	15.9	31.47	1.3	9.31
November	20.05	7.3	32.8	10.7	31.53	1.0	8.51
December	15.05	3.5	26.6	11.0	36.73	0.8	8.63

IMD Gurugram**c) Wind**

The average hourly wind speed in Palwal experiences significant seasonal variation over the course of the year. The windier part of the year lasts for 5.5 months, from February 15 to July 31, with average wind speeds of more than 6.8 miles per hour. The windiest month of the year in Palwal is June, with an average hourly wind speed of 8.1 miles per hour. The calmer time of year lasts for 6.6 months, from July 31 to February 15. The calmest month of the year in Palwal is October, with an average hourly wind speed of 5.2 miles per hour. The predominant average hourly wind direction in Palwal varies throughout the year. The wind is most often from the west for 4.3 months, from March 4 to July 14 and for 1.1 months, from August 23 to September 26, with a peak percentage of 61% on May 22. The wind is most often from the east for 1.3 months, from July 14 to August 23, with a peak

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percentage of 41% on July 29. The wind is most often from the north for 5.3 months, from September 26 to March 4, with a peak percentage of 41% on January 1.

d) Humidity

Palwal experiences extreme seasonal variation in the perceived humidity. The muggier period of the year lasts for 5.1 months, from May 18 to October 21, during which time the comfort level is muggy, oppressive, or miserable at least 25% of the time. The month with the muggiest days in Palwal is August, with 30.7 days that are muggy or worse. The month with the fewest muggy days in Palwal is January, with 0.0 days that are muggy or worse.

e) Precipitation

A wet day is one with at least 0.04 inches of liquid or liquid-equivalent precipitation. The chance of wet days in Palwal varies very significantly throughout the year. The wetter season lasts 2.9 months, from June 18 to September 13, with a greater than 28% chance of a given day being a wet day. The month with the most wet days in Palwal is July, with an average of 15.6 days with at least 0.04 inches of precipitation. The drier season lasts 9.1 months, from September 13 to June 18. The month with the fewest wet days in Palwal is November, with an average of 0.6 days with at least 0.04 inches of precipitation. Among wet days, we distinguish between those that experience rain alone, snow alone, or a mixture of the two. The month with the most days of rain alone in Palwal is July, with an average of 15.6 days. Based on this categorization, the most common form of precipitation throughout the year is rain alone, with a peak probability of 54% on July 21.

3.10 AMBIENT AIR QUALITY

The prime objective of the ambient air quality study is to assess the existing air quality of study area and to establish the existing ambient air quality within the study area and its conformity to NAAQS. The observed sources of air pollution in the study area are industrial, traffic and domestic activities. Ambient air quality was monitored at 8 locations within 10 km. radius of the project site.

The baseline status of the ambient air quality has been established through a scientifically designed ambient air quality monitoring network considering the followings:

- Meteorological condition on synoptic scale;
- Topography of the study area;
- Representatives of regional background air quality for obtaining baseline status;
- Location of residential areas representing different activities;
- Accessibility and power availability

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Eight (8) monitoring locations were set up in the study area for assessment of the existing ambient air quality. Sampling locations in the downwind and upwind direction were selected for AAQ Monitoring keeping in view the pre-dominant wind direction prevailing in the area during the study period and as per the IMD data. Monitoring locations/stations selected for Ambient Air Quality Monitoring during the study periods are given in Table below.

The ambient air quality was monitored at locations in 1st October to 31st December 2023 for 8 location monitoring. The details of Air monitoring studies are discussed hereunder and shown in Table 3.7. Photographs of air quality monitoring are shown as Figure-3.10.

TABLE 3. 7 AMBIENT AIR QUALITY MONITORING LOCATIONS

AAQ Station Code 1st Mar to 31st May 2023	AAQ Station	Distance from Project (km)	Direction from Project	Co-ordinates
A1	Within project site	-	-	
A2	Devli village	0.5	SW	Lat : 28°13'42.57"N Long:77°19'25.13"E
A3	Medhapur village	0.9	NW	Lat: 28°14'16.74" N Long: 77°18'24.28"E
A4	Asoati village	0.9	NW	Lat : 28°14'58.41" N Long: 77°19'9.36" E
A5	Pahaladpur village	2	NE	Lat: 28° 8'17.83" N Long:77°28'23.34"E
A6	Baghaura village	2.7	SW	Lat: 28°12'33.85" N Long:77°18'21.40"E
A7	Mandkaul Village	2.9	SE	Lat: 28°12'58.40" N Long:77°21'11.53"E
A8	Badram	6	SE	Lat: 28°11'46.36" N Long:77°22'35.27"E

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Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District: Palwal, State: Haryana.

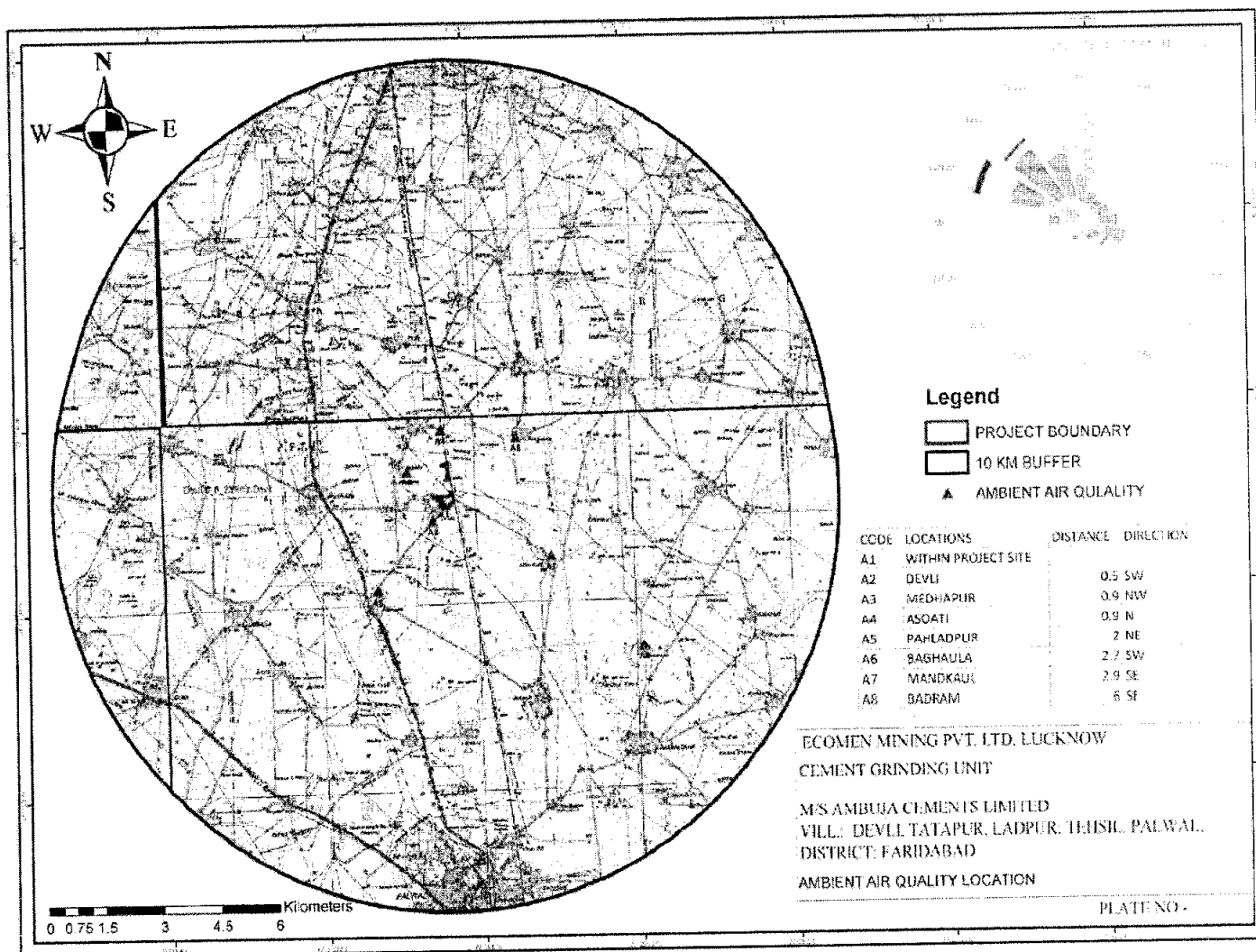
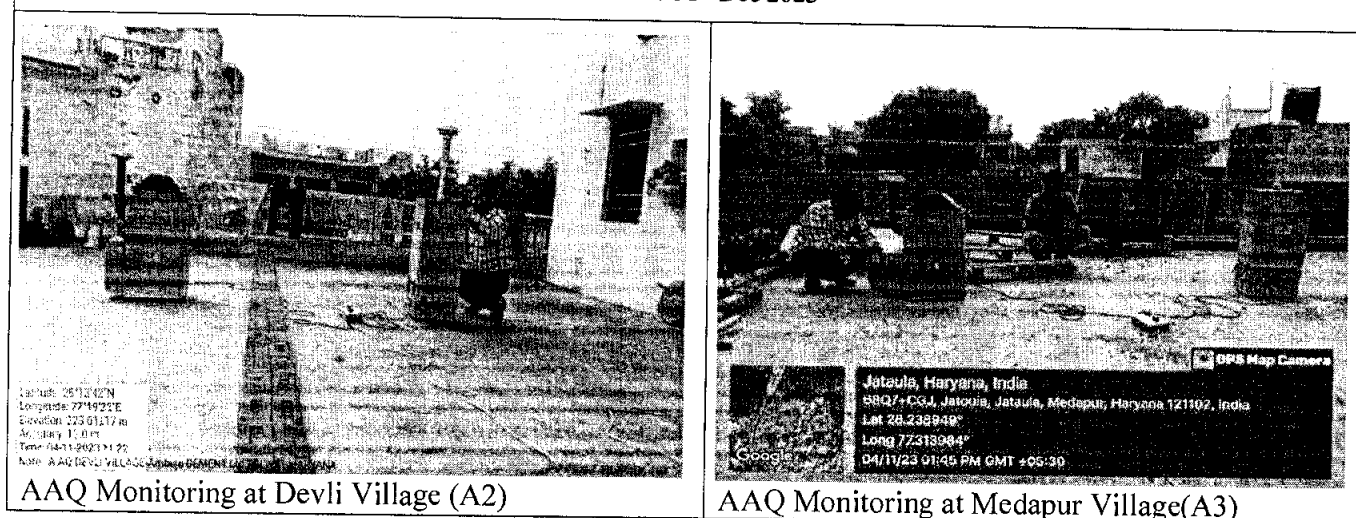


FIGURE 3. 9 TOPOMAP SHOWING THE AIR QUALITY MONITORINNG LOCATION MAP

**CHAPTER-3 of
Draft EIA/EMP**

Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District: Palwal, State: Haryana.

1st Oct to 31st Dec 2023**FIGURE 3. 10 PHOTOGRPHS OF AIR QUALITY MONITORINNG LOCATION****TABLE 3. 8 METHODOLOGY OF SAMPLING AND ANALYSIS FOR AAQ MONITORING**

Sl.No	Parameter	Instrument /Apparatus Used	Methodology
1.	SO ₂ (µg/m ³)	RDS with Impinger Tube, Colorimeter	Improved West & Gaeke Method; IS:5182 (Part II)
2.	NO ₂ (µg/m ³)	RDS with Impinger Tube, Colorimeter	Modified Jacobs & Hoccheiser Modified (Na-Arsenite) Method; IS:5182 (Part VI)
3.	PM ₁₀ (µg/m ³)	Respirable Dust Sampler	Gravimetric IS:5182 (Part 23)
4.	PM _{2.5} (µg/m ³)	PM _{2.5} Fine-Dust Sampler	Gravimetric IS:5182 (Part 24)
5.	CO (µg/m ³)	CO Analyzer	NDIR Method

TABLE 3. 9 NATIONAL AMBIENT AIR QUALITY STANDARDS

	Parameter	Time Weighted Average	Concentration in Ambient Air	
			Industrial, Residential, Rural & Other Areas	Eco-sensitive Area (Notified by Central Govt.)
1	SO ₂ ; (µg/m ³)	Annual*	50	20
		24 Hours**	80	80
	NO ₂ (µg/m ³)	Annual*	40	30

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2		24 Hours**	80	80
3	PM10;(µg/m ³)	Annual*	60	60
		24 Hours**	100	100
4	PM2.5; (µg/m ³)	Annual*	40	40
		24 Hours**	60	60
5	Carbon Monoxide (CO); (mg/m ³)	8 Hours**	2	02
		1Hours **	04	04
*	Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals			
	24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be compiled with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days.			

TABLE 3. 10 VALUES OBTAINED AT THE SAMPLING LOCATIONS

SN	Site	PM10 (µg/m ³)		PM2.5(µg/m ³)		SO2 (µg/m ³)		NO2 (µg/m ³)		CO (mg/m3)	
		Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
A1	Within Project site	74.24	54.25	37.08	23.62	15.66	10.72	35.24	21.57	1.06	0.35
A2	Devli	63.93	49.41	35.57	23.74	14.29	9.28	28.50	16.32	0.80	0.26
A3	Medhapur	54.45	35.04	26.50	17.83	16.32	8.52	24.51	14.16	0.74	0.23
A4	Asoati	62.62	43.85	33.92	20.31	16.84	10.19	34.82	18.21	1.20	0.27
A5	Pahladpur	55.14	38.15	27.76	17.20	14.35	8.03	31.15	19.94	0.79	0.26
A6	Baghaura	53.97	31.67	32.45	20.64	15.62	10.18	23.56	12.63	0.63	0.24
A7	Mandkaul	57.35	43.05	26.24	17.67	17.30	10.54	26.37	16.07	0.60	0.28
A8	Badram	52.97	32.85	27.36	19.77	15.66	6.79	27.75	16.91	0.51	0.16

3.10.1 OBSERVATION OF THE STUDY

Ambient Air Quality Monitoring reveals that in post-monsoon season, the concentrations of average PM10 and PM2.5 for all the 8 stations was found in the range of 31.67 µg/m³ (Baghaura Village) to 74.24 µg/m³ (within project site) and 17.20 µg/m³ (Pahaladpur Village) to 37.08 µg/m³ (within project site) respectively. During the study period, SO₂ and NO_x were found to be in the range of 8.03 µg/m³ (Pahaladpur Village) to 17.30 µg/m³ (Mandkaul Village) and 12.63 µg/m³ (at Baghaura village) to 35.24 µg/m³ (Within the project site) respectively. CO concentration was observed in the range of 0.16 mg/m³ (Badram) to 1.20 mg/m³ (Asoati).

3.10.2 INTERPRETATION OF AMBIENT AIR QUALITY

The baseline air quality conditions of the region are majorly associated with the type of anthropogenic activities taking place within the area and also depend upon the prevailing natural weather conditions of the area. Based on the primary and secondary data collection the ambient air quality monitoring results were analyzed and observed that the anthropogenic source of air pollution within the 10 km study area were mainly due to point and line sources. Major contributors of air pollutants in the study area are industrial activities, human activities such as construction and vehicular transportation etc. Movement of heavy-duty vehicles used for raw material and finished product transportation for the nearby located cement industry, vehicular traffic, movement of private and public vehicles as well as tractors and trolley movement for agricultural and construction activities will cause pollution. The baseline result shows that the maximum concentration of PM10 & PM2.5 was found within the project site. Similar is the case for higher concentration of SO₂ and NO_x at Asoati and within the project site.

3.11 NOISE ENVIRONMENT

Noise is often defined as unwanted sound, interferes with speech communication, causes annoyance, distracts from work and disturbs sleep, thus deteriorating quality of human environment. There are several sources of noise in the 10 km radius of the study area, which contributes to the local noise level of the area. Ambient noise sources in the vicinity of the plant include noise from the nearby cement plant, vehicular traffic on road, human activities in villages and agricultural fields.

3.11.1 SOURCE OF NOISE

There are several sources of noise in the 10 km radius of study area, which contributes to the local noise level of the area. Ambient noise sources in the vicinity of the Plant site include the noise from traffic on road, human activities in villages and agricultural fields.

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3.11.2 AMBIENT NOISE LEVEL

In order to know the baseline noise levels, in and around the plant site, noise levels were measured at site and villages in the study area.

Monitoring Schedule

The sampling was done during day time & night time once in the study period

3.11.3 METHODOLOGY ADOPTED FOR NOISE LEVEL OBSERVATION

For measurement of Ambient Noise level in the Study area, a Digital Sound Level Meter (Make & Model: Lutron SL-4001) was used. The instrument was calibrated with a Standard Acoustic calibrator before using in the field. The measurements were carried out continuously for the 24- hour period to obtain hourly equivalent sound pressure level, which is equivalent to the same sound energy as the fluctuating sound measured in the same period.

The noise monitoring was done on following CPCB protocol of Noise Monitoring, July 2015, which inter alia include the following cardinal principles:

- The Noise measurements shall be made with a Type 1 integrating sound level meter. The station should be located at the ambient level i.e., away from the direct source, away from any vibration and any obstruction.
- Microphone must be placed 1.2 -1.5m above the ground level. • The instrument should be isolated from strong vibration and shock.
- The monitoring should be carried out minimum 75% of the prescribed Day time (06.00 am to 22.00 pm) and Night-time (22.00 pm to 06.00 am).
- During ambient noise monitoring sound comes from more than one direction, it is important to choose a microphone and mounting which gives the best possible directional characteristics.
- Noise measurements should not be made in fog and rain.
- A wind shield will always be used to prevent interference of reflecting noise.

**TABLE 3. 11 GUIDANCE FOR ASSESSMENT OF REPRESENTATIVENESS AND
RELIABILITY OF BASELINE ENVIRONMENTAL ATTRIBUTES**

Attributes	Sampling		Measurement Method	Remarks
	Network	Frequency		
Noise				
Hourly equivalent noise levels	Identified study area	Once in each season	Instrument: Noise level meter	IS:4954-1968 as adopted by SPCB

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Hourly equivalent noise levels	In plant (1.5 m from machinery)	Once	Instrument: Noise level meter	SPCB/OSHA
Hourly equivalent noise levels	Highways	Once in each season	Instrument: Noise level meter	SPCB/IS:495 4-1968

Noise monitoring was carried out at eight locations in initial study and at same location monitoring has been done in our additional study. Sampling location have been selected in the proposed grinding unit. Industrial, Commercial & Residential areas of 10 Km radius have been selected for monitoring Purpose. Study details are given below: (refer Table 3.12, Figure 3.11). Photographs of noise monitoring are shown as Figure-3.12.

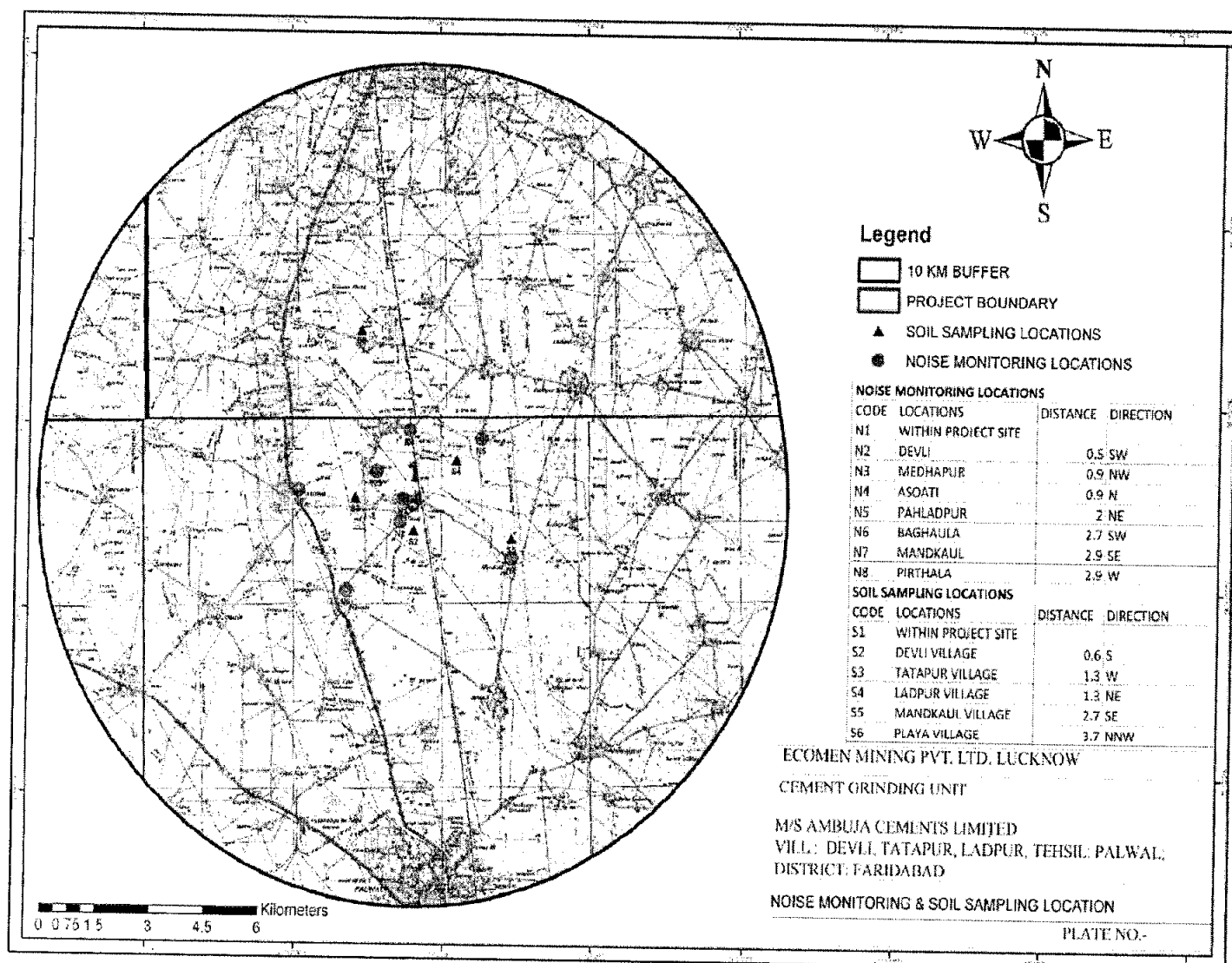


FIGURE 3. 11 TOPOMAP SHOWING NOISE AND SOIL QUALITY MONITORING LOCATIONS

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TABLE 3. 12 NOISE LEVEL MONITORING STATIONS

Station Code	Noise Level Monitoring Station	w. r. t. Ambuja cements		Co-ordinates
		Distance	Direction	
N1	Within project site	-	-	-
N2	Devli	0.5	SW	Lat : 28°13'42.57"N Long:77°19'21.13"E
N3	Medhapur	0.9	NW	Lat: 28°14'16.15" N Long: 77°17'24.28"E
N4	Asoati	0.9	N	Lat : 28°14'58.41" N Long: 77°19'9.36" E
N5	Pahaladpur	2	NE	Lat: 28° 8'17.83" N Long:77°28'23.34"E
N6	Baghaura	2.7	SW	Lat: 28°12'33.85" N Long:77°18'21.40"E
N7	Mandkaul	2.9	SE	Lat: 28°12'58.40" N Long:77°21'11.53"E
N8	Pirthala	2.9	W	Lat: 28°13'53.14"N Long: 77°17'30.29"E

1st Oct to 31st Dec 2023

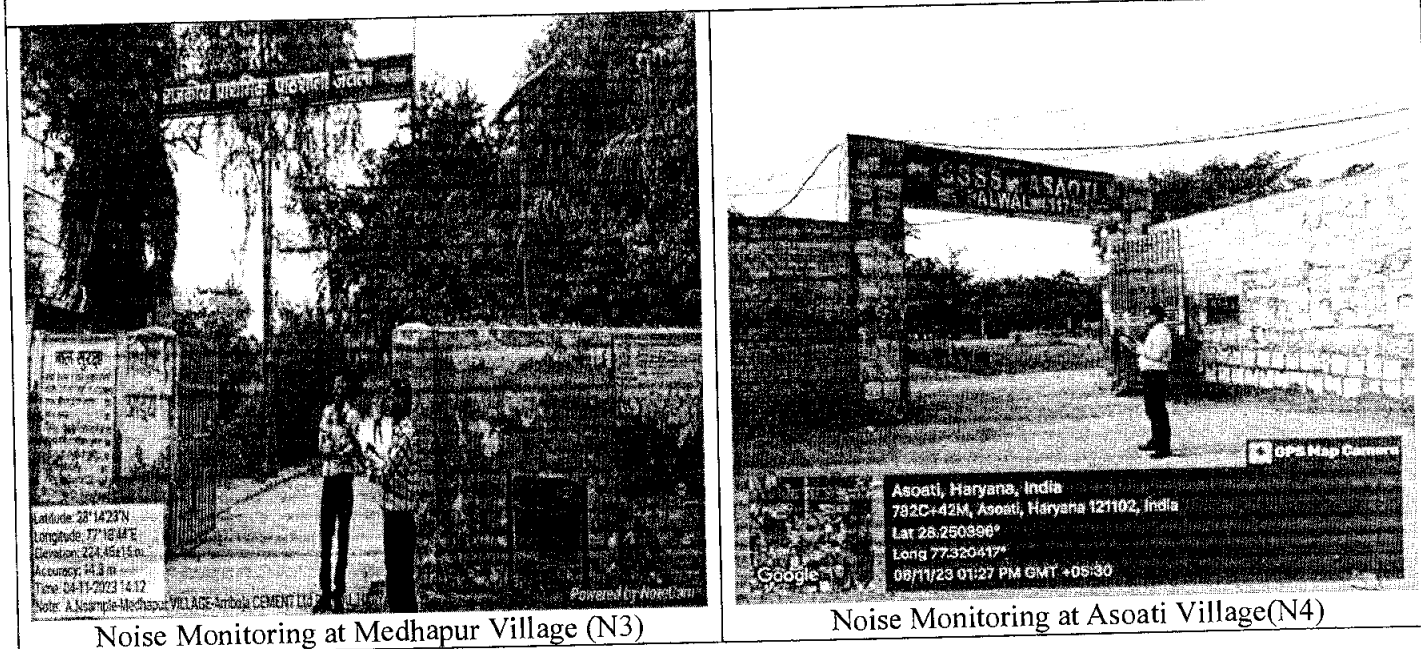


FIGURE 3. 12 PHOTOGRAPHS OF THE NOISE MONITORING LOCATIONS

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Ecomen Mining Pvt Ltd

M/s Ambuja Cements Limited

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The Central Pollution Control Board has stipulated specific standard for ambient noise level in industrial, commercial, residential and silence zones for both day and night time. These are given below in Table-3.13

TABLE 3. 13 AMBIENT NOISE STANDARDS

Sl.No	Category of the area	Limits (Leq in dB (A))	
		Day Time (6.00 AM – 10.00 PM)	Night Time (10.00 PM -6.00 AM)
1	Industrial Area	75	70
2	Commercial Area	65	55
3	Residential Area	55	45
4	Silence Zone	50	40

- Day Time is from 6.00 AM to 10.00 PM.
- Night Time is reckoned between 10.00 PM to 6.00 AM
- Silence Zone is defined as an area up to 100m around premises of Hospitals, Educational Institutions and Courts. Use of vehicle horn, loudspeaker and bursting of crackers is banned in these zones.

3.11.4 MEASURED NOISE DURING STUDY PERIOD

TABLE 3. 14 MEASURED NOISE VALUES DURING BASELINE STUDY

Location		Type of Area	Norm Noise level in dB (A)		Noise level in dB (A)	
			Day (Leq.)	Night (Leq.)	Day (leq)	Night (leq)
N-1	Within Project Site	Industrial	75	70	70.4	59.6
N-2	Devli Village	Residential	55	45	51.6	52.4
N-3	Medhapur Village	Residential	55	45	52.8	44.6
N-4	Asoati Village	Residential	55	45	53.9	43.5
N-5	Pahladpur Village	Residential	55	45	54.2	44.2
N-6	Baghaula Village	Residential	55	45	53.5	42.0
N-7	Mandkaul Village	Residential	55	45	57.7	46.1
N-8	Pirthala Village	Residential	55	45	54.5	43.1
Day Hours: 6:00 AM to 10:00 PM			Night Hours: 10:00 PM to 6:00 AM			

3.11.5 OBSERVATION

- The noise levels were monitored at 8 locations in and around the project site during the day and night time for the study period.

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- The noise level monitoring for the study period was done considering the maximum residential area and the commercial area and around the small and medium scale industries.
- Within the 10km radius of the study area, the noise levels at the sampling locations are under the prescribed limits as given by the CPCB.
- Average day-time noise levels vary from 51.6 Leq dB(A) at N-2 (Devli village) to 70.4 Leq dB(A) at N1 (at Project Site).
- Average night-time noise levels vary from 42.0 Leq dB(A) at N-6 (Near Baghaula Village) to 59.6 Leq dB(A) at N1 (at Project Site).

3.11.6 INTERPRETATION

The noise levels monitored at Plant are within the norms prescribed for Industrial Zone. The noise levels monitored at all residential areas are within the norms prescribed for Residential Zone. However, it is observed that background noise levels are high, due to the movement of vehicles and other activities in the commercial areas of villages, station area and therefore it is essential that the noise levels from the plant, once it is in operation do not travel to long distances and add to the background values.

3.12 SOIL QUALITY STUDY

Analysis of various soil properties, their characteristics and quantitative determination of soil in Project Site and its surrounding have been done. Such analysis has been carried out for surface soil only. Among the various soil properties, the following are accounted for.

- Soil mechanical analysis
- Soil reaction(pH)
- Organic matter content
- Nitrogen content
- Phosphorous content
- Base Exchange capacity.

The soil is generally formed due to slow process of weathering of rocks. The normal mineral compositions of plant are altered by alteration in soil condition. Existence of flora & fauna depends upon the quality of soil in the area. The soil characteristics like physical, chemical, erosion index, soil fertility has bearing on the surrounding environment. Therefore, the quality of soil plays a major role in planning proper mitigating measures like plantation program and green belt development by the project proponent and also for the construction of building for different purposes. The normal mineral

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composition of plants is altered by alteration in soil condition. Soil could well represent the topsoil cover, which is rich in nutrient content. Soils of the area are classified as tropical and brown soils, existing in major parts of the district. Organic contents of the area are 0.2 to 0.4 percent and falls in Low category.

3.12.1 SAMPLE LOCATION DETAILS

Soil is the net result of the action of climate and organisms especially plant on the earth crust. Soil samples were collected from Project core & Buffer area. Soils of Palwal district are classified as tropical and brown soils, existing in major parts of the district. Follow land, Agriculture land and Plantation soil samples have been taken from Buffer area to represent all type soil of study area. he data analysis of the soil monitoring results collected from 8 different places S1: within the project site, S2: Devli village, S3: Tatapur village, S4: Ladpur Village, S5: Mandkal Village, S6: Playa Village.

TABLE 3. 15 DETAILS OF THE ANALYSIS; SAMPLING STATION LOCATION AND DISTANCE FROM PROJECTS SITE

Station Code	Soil Quality Monitoring Station	w. r. t. Ambuja cements		Co-ordinates
		Distance	Direction	
S1	Within the project site	-	-	
S2	Devli village	0.6	S	Lat: 28°13'24"N Long:77°19'8"E
S3	Tatapur village	1.3	W	Lat:28°13'38.17"N Long:77°18'44.47"E
S4	Ladpur village	1.3	NE	Lat: 28°14'28.29"N Long: 77°20'6.56"E
S5	Mandkaul Village	2.7	SE	Lat: 28°12'58.54"N Long:77°21'17.40"E
S6	Playa Village	3.7	NNW	Lat: 28°16'4.46"N Long:77°18'56.95"E

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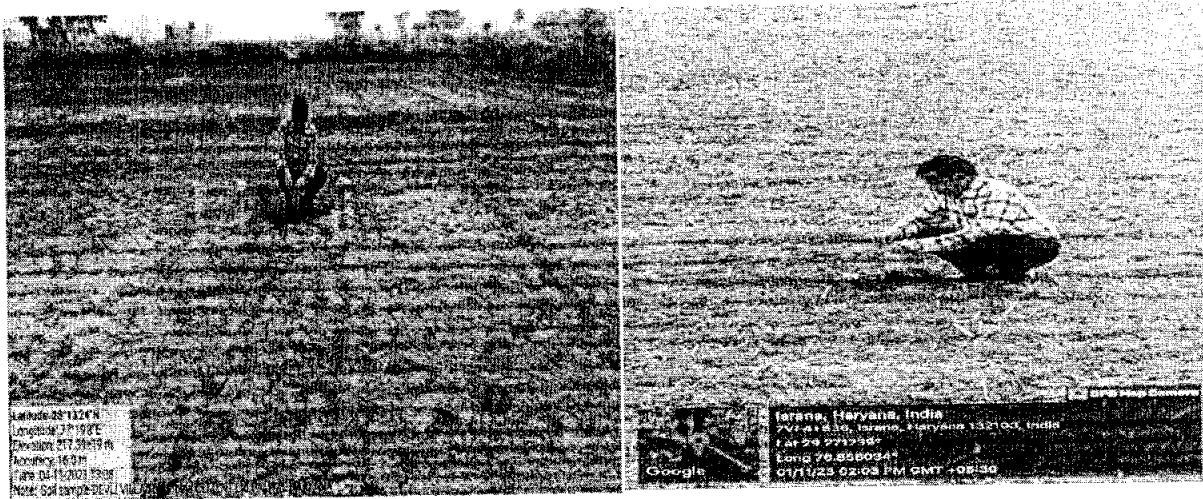


FIGURE 3. 13 PHOTOGRAPHS OF SOIL MONITORING LOCATIONS

TABLE 3. 16 MEASURED SOIL VALUES DURING BASELINE STUDY

S. No	Parameters	Unit	Sampling Location					
			S1	S2	S3	S4	S5	S6
1.	pH(Ratio 1:5)	-	8.88	8.61	6.99	6.68	8.05	8.12
2.	Electrical Conductivity(Ratio 1:5)	μ mhos/cm	249	454.0	265.0	502.0	411.0	376.0
3.	Moisture	%	3.4	8.8	2.2	9.7	15.0	12.9
4.	Bulk Density	gm/cc	1.2	1.21	1.19	1.21	1.27	1.24
5.	Av. Calcium(Ca)	mg/kg	180.0	124.0	136.0	136.0	146.0	156.0
6.	Av. Magnesium (Mg)	mg/kg	44.0	66.0	78.0	38.0	56.0	64.0
7.	Av. Potassium(K ₂ O)	Kg/ha	78.0	64.0	96.5	16.7	54.6	67.5
8.	Av. Phosphorous(P ₂ O ₅)	Kg/ha	156.0	124.0	165.0	172.0	148.0	202.0

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9	Zinc (Zn)	mg/kg	2.12	3.22	1.98	2.87	2.66	3.07
10	Iron asFe ₂ O ₃	mg/kg	17.2	23.2	26.2	23.5	24.2	24.2
11	OrganicCarbon	%	0.87	1.23	0.85	0.95	0.74	0.72
12	Boron (B)	mg/kg	1.06	1.23	1.32	1.28	1.87	1.34
13	Sodium (Na)	mg/kg	76.2	56.2	63.0	45.0	82.0	72.0
14	Total Porosity	%	17.24	9.70	20.67	23.90	13.01	20.51
15	Water HoldingCapacity	%	24.2	25.2	23.8	24.7	23.8	21.6
16	OrganicMatter	%	1.32	1.87	1.29	1.44	1.12	1.09
17	Available Nitrogen asN	Kg/ha	98.00	154.00	112.0	132.00	102.00	117.00
18	Sodium Absorption ratio (SAR)	%	1.32	1.01	1.06	0.88	1.46	1.22
19	Cation Exchange capacity(CEC)	meq/100gm	19.85	23.22	21.18	23.63	24.99	17.92
Grain Size Distribution								
A	TexturalClass	-	Silty clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay
B	Sand	%	43.0	41.0	45.0	44.0	40.0	43.0
C	Silt	%	33.0	32.0	29.0	27.0	28.0	35.0
D	Clay	%	24.0	27.0	26.0	29.0	32.0	22.0

3.12.2 INTERPRETATION AND CONCLUSION

The soil quality is good enough for agriculture with additional macro and micro nutrients by way of fertilization through organic/inorganic means. As the soil parameters shows varying nutrient contents,

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acidic to basic soil parameters and organic carbon contents, slightly basic pH soil, varying organic carbon, soil amendments as well addition of fertilizers may be needed to make the soil amenable to chosen agricultural crop or plantation.

3.13 WATER QUALITY STUDY

The water resources in the study area were divided into two categories for getting ideal upshot of baseline status of the water quality of the region. These two major categories as determined are:

- Surface water resources: Streams, Nala, Pond, River, Canal
- Ground water resources: Tube well, Open well, bore well etc

3.13.1 GROUND WATER QUALITY

The ground water samples have been collected and analysed for various parameters like pH, Suspended Solids, Total Dissolved Solids, Temperature, Total Hardness, Calcium Hardness, Magnesium hardness, Alkalinity, Fluoride, Chloride, Sulphates, Nitrates, COD, BOD, Phenolic compounds, Heavy metals etc. and is compared with the standards to know the water quality.

The sources of potable water are the tube well and bore well in the area. The quality of ground water was studied at 8 locations from the available water resources around the project site during the post-monsoon season (October to December).

TABLE 3. 17 GROUND WATER LOCATIONS

Ground Water Locations				
Station Code	Ground Water Quality Monitoring Station	w. r. t. Ambuja cements		Co-ordinates
		Distance	Direction	
GW1	Tatapur	0.8	W	Lat:28°13'36.73"N Long:77°18'43.22"E
GW2	Devli	0.5	SW	Lat:28°13'46"N Long:77°19'27"E
GW3	Medhapur	0.9	NW	Lat:28°14'21"N Long:77°18'54"E
GW4	Asoati	0.9	N	Lat:28°15'10"N Long:77°19'24"E
GW5	Pahladpur	2	NE	Lat:28°14'45.51"N Long:77°20'49.88"E
GW6	Baghaula	2.7	SW	Lat: 28°12'32.09"N Long:77°18'24.43"E
GW7	Mandkaul	2.9	SE	Lat: 28°12'55.68"N Long:77°21'18.21"E

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GW8	Pirthala	2.9	W	Lat:28°14'8"N Long:77°17'26"E
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FIGURE 3. 14 PHOTOGRAPHS OF THE GROUND WATER MONITORING

CHAPTER-3 of **Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3**
Draft EIA/EMP **Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli,**
Tehsil+ District: Palwal, State: Haryana.

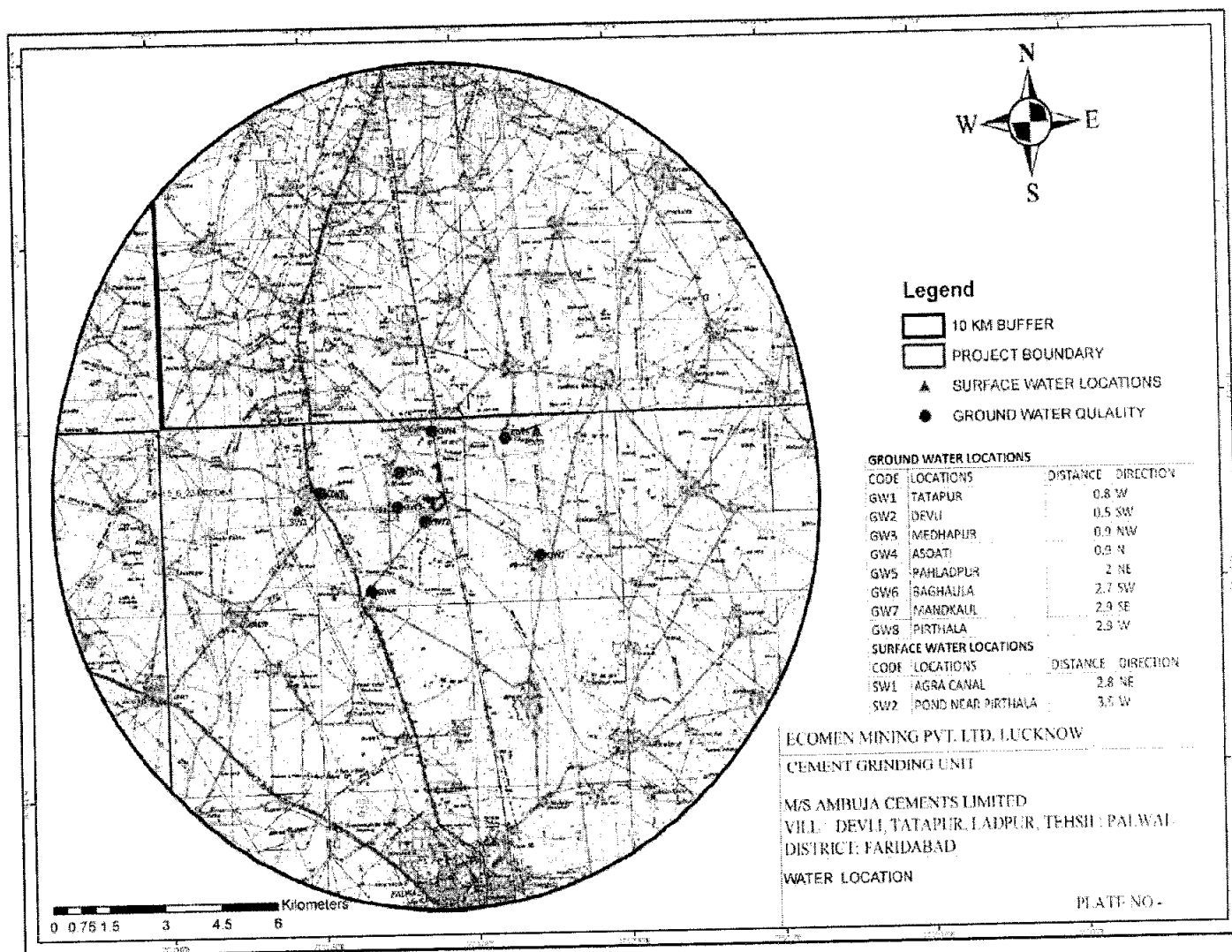


FIGURE 3. 15 TOPOMAP SHOWING GROUND WATER AND SURFACE WATER MONITORIN LOCATIONS

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TABLE 3. 18 GROUND WATER MONITORING RESULTS

Sl. No.	TESTS	Unit	INDIAN STANDARDS as per IS 10500:2012		RESULT							
			Desirable	Permissible	Tatapur Village (GW-1)	Devli Village (GW-2)	Medhapur village (GW-3)	Asoati Village (GW-4)	Pahladpur Village (GW-5)	Baghaul Village (GW-6)	Mandkaur Village (GW-7)	Pirthala Village (GW-8)
1	Colour	Hazen	5	15	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Turbidity	NTU	1	5	1.24	1.31	1.39	1.21	1.38	1.34	1.56	1.26
5	Electrical Conductivity	Us/cm	-	-	1166.0	1228.0	1294.0	1106.0	922.0	880.0	1025.0	1126.0
6	pH	-	6.5-8.5	No Relax	7.09	7.13	7.22	7.34	7.5	7.34	7.52	7.44
7	Total Dissolved Solids as TDS	mg/l	500	2000	711.0	749.0	789.0	675.0	562.0	537.0	625.0	687.0
8	Alkalinity as CaCO ₃	mg/l	200	600	248.0	260.0	272.0	240.0	208.0	204.0	228.0	240.0
9	Total Hardness as CaCO ₃	mg/l	200	600	264.0	276.0	280.0	264.0	212.0	216.0	240.0	248.0
10	Calcium as Ca	mg/l	75	200	75.2	72.0	76.8	67.2	64.0	60.8	67.2	75.2
11	Magnesium as Mg	mg/l	30	100	18.47	23.33	21.38	23.33	12.64	15.55	17.50	14.58
12	Sodium as Na	mg/l	-	-	45.4	47.6	56.4	36.7	34.2	26.2	36.5	47.2

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13	Potassium as K	mg/l	-	-	4.01	2.65	2.19	1.55	2.01	1.91	2.76	4.12
14	Chloride as Cl	mg/l	250	1000	46.0	50.0	48.0	42.0	34.0	28.0	36.0	36.0
15	Sulphate as SO4	mg/l	200	400	38.6	43.8	56.5	36.2	26.2	24.5	33.8	48.5
16	Nitrate Nitrogen asNO3	mg/l	45	No Relax	15.3	11.23	9.22	12.2	7.12	8.22	9.22	14.1
17	Fluoride as F	mg/l	1	1.5	0.54	0.41	0.43	0.51	0.42	0.48	0.43	0.62
18	Iron as Fe	mg/l	1	No Relax	0.29	0.13	0.22	0.23	0.17	0.18	0.21	0.19
19	Copper as Cu	mg/l	0.05	1.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Manganese as Mn	mg/l	0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
21	Zinc as Zn	mg/l	5	15	0.16	0.07	0.14	0.09	0.12	0.11	0.13	0.13
22	Arsenic as As	mg/l	0.01	No Relax	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
23	Total Chromium asT. Cr.	mg/l	0.05	No Relax	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
24	Phenolic Compound asC6H5OH	mg/l	0.001	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
25	Free Residual Chlorine as FRC	mg/l	0.2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
26	Boron as B	mg/l	0.5	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

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27	Anionic Detergent as MBAS	mg/l	0.2	1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
28	Mercury as Hg	mg/l	0.001	No Relax	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
29	Cadmium as Cd	mg/l	0.003	No Relax	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
30	Lead as Pb	mg/l	0.01	No Relax	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
31	Aluminum as Al	mg/l	0.03	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
32	Selenium as Se	mg/l	0.01	No Relax	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
33	Mineral Oil	mg/l	0.5	No Relax	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
34	Cyanide as CN	mg/l	0.05	No Relax	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
35	Total coliform	Cfu/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
36	E.coli	Cfu/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

3.13.1.1 INTERPRETATION OF GROUND WATER MONITORING RESULTS

- The pH of water bodies was found to vary from 7.09 (Tatapur Village) to 7.52 (GW-6 Mandkaul Village), indicating moderately alkaline to alkaline in nature. The colour was observed to be below 5 Hazen at all the locations.
- The turbidity of the samples were observed from 1.21 NTU (Asoati Village) to 1.56 NTU (Mandkaul Village).
- Total Dissolved Solids ranged between 537 mg/l (at GW-6 – Baghaula Village) to 789.0 mg/l (at GW-3 – Medhpur Village). All samples are well below the permissible limit of 2000 mg/l, indicating acceptable levels of dissolved minerals.
- Total Hardness was observed to vary from 212 mg/l (at GW-5 – Pahladpur Village) to 280 mg/l (at Medhpur Village). Hardness levels exceed the desirable limits in most samples, they remain within permissible limits, meaning the water is moderately hard but still acceptable for consumption.
- Iron content ranged from 0.13 mg/l (GW-2 Devli Village) to 0.23 mg/l (GW-4 at Asoati Village).
- Chloride ranged from 28 mg/l (GW-6 Baghaula village) to 50 mg/l (GW-2 at Devli Village).
- Sulphates varied from 24.5 mg/l (at GW-6 Baghaula village) to 56.5 mg/l (at GW-3 Medhpur Village), and
- Nitrates varied from 7.12 mg/l (at GW-5 Pahladpur Village) to 15.3 mg/l (at GW-1 Tatapur). Nitrate levels are within permissible limits, suggesting no significant contamination from these sources.

3.13.1.2 CONCLUSION OF GROUND WATER MONITORING RESULT

Groundwater pollution is usually traced back to four main origins: Industrial, Domestic, agriculture and environmental pollution. The contaminants are carried by the aquifers and results in the groundwater pollution. The groundwater from all the tested villages is generally safe for drinking as per the IS 10500:2012 standards. Although some parameters, like turbidity and hardness, slightly exceed desirable levels, they are still within permissible limits, indicating the water is of acceptable quality. The proposed grinding unit will be based on the dry process thus no discharge of waste water is envisaged from the proposed project. Hence, major impact is not envisaged by the proposed project and the ground water quality will be monitored regularly and maintained

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3.13.2 SURFACE WATER QUALITY

There is no water body within the project site. The two locations selected for surface water monitoring is Agra canal and a pond near Pirthala. Agra canal is 2.8 km from the project site towards north east direction. Samples have been drawn from upstream and downstream of this canal. Samples were homogenized before preserving the same and transporting the samples to the in-house lab at Lucknow. The SOPs for preservation, transportation; receipt of samples at lab, coding and analysis of the samples were followed as per the CPCB guidelines and the SOPs of the QMS of the company. The sampling locations were selected based on reconnaissance survey with the following considerations:

- Location of water sources;
- Location of residential areas representing different activities
- Drainage Pattern of the Study area

TABLE 3. 19 SURFACE WATER LOCATIONS

Station Code	Surface Water Quality Monitoring Station	w. r. t. Ambuja cements		Co-ordinates
		Distance	Direction	
SW1	Agra canal	2.8	NE	Lat:28°15'34.18"N Long:77°21'5.12"E
SW2	Pond near pirthala	3.5	W	Lat:28°13'43.77"N Long:77°17'28.84"E

**FIGURE 3. 16 PHOTOGRAPH OF SURFACE WATER MONITORING LOCATION**

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TABLE 3. 20 SURFACE QUALITY MONITORING RESULTS

Sl. No.	TESTS	Unit	IS	Result	
			2296 Class-C	Agra Canal (SW-1)	Pond Near pirthala (SW-2)
1	pH	-	6.0-9.0	7.53	7.57
2	Colour	Hazen	300	20.0	45.0
3	Electrical Conductivity	Us/cm	-	723.0	891.0
4	Dissolved Oxygen as DO	mg/l	4	5.9	4.1
5	Biological Oxygen Demand as BOD (mg/l) 5 days at 20 °C	mg/l	3	3.5	9.0
6	Chemical Oxygen Demand as COD	mg/l	-	16.0	60.0
7	Total Suspended Solids as TSS	mg/l	-	11.2	31.6
8	Total Dissolved Solids as TDS	mg/l	1500	470.0	579.0
9	Oil & Grease as O & G	mg/l	-	<2.5	<2.5
10	Alkalinity as CaCO ₃	mg/l	-	176.0	192.0
11	Total Hardness as CaCO ₃	mg/l	-	184.0	208.0
12	Calcium as Ca	mg/l	-	49.6	56.0
13	Magnesium as Mg	mg/l	-	14.58	16.52
14	Sodium as Na,	mg/l	-	21.2	36.7
15	Potassium as K,	mg/l	-	1.78	1.89
16	Chloride as Cl	mg/l	600	22.0	38.0
17	Sulphate as SO ₄	mg/l	400	20.1	32.5
18	Nitrate Nitrogen as NO ₃	mg/l	50	7.98	11.3
19	Fluoride as F	mg/l	1.5	0.32	0.49
20	Iron as Fe	mg/l	0.5	0.15	0.32
21	Copper as Cu	mg/l	1.5	<0.05	<0.05
22	Zinc as Zn	mg/l	15	0.1	0.08
23	Arsenic as As	mg/l	0.2	<0.05	<0.05
24	Total Chromium as T. Cr.	mg/l	-	<0.05	<0.05
25	Phosphate as PO ₄	mg/l	-	<0.1	<0.1
26	Phenolic Compound as C ₆ H ₅ OH	mg/l	0.005	<0.005	<0.005
27	Anionic Detergent as MBAS	mg/l	1	<0.02	<0.02
28	Boron as B	mg/l	-	<0.5	<0.5
29	Cadmium as Cd	mg/l	0.01	<0.01	<0.01
30	Mercury as Hg	mg/l		<0.01	<0.01

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31	Lead as Pb	mg/l	0.1	<0.01	<0.01
32	Manganese as Mn	mg/l	-	<0.1	<0.1
33	Free Residual Chlorine as FRC	mg/l	-	<0.05	<0.05
34	Aluminum as Al	mg/l	-	<0.01	<0.01
35	Selenium as Se	mg/l	0.05	<0.005	<0.005
36	Cyanide as CN	mg/l	0.05	<0.04	<0.04
37	Total coliform	MPN/100 ml	5000	70.0	141.0

3.13.2.1 INTERPRETATION

- The pH levels for both water bodies (7.53 and 7.57) are within the acceptable range of 6.0-9.0 for Class-C waters, indicating that the water is neither too acidic nor too alkaline.
- The color levels for both water bodies are significantly below the maximum limit of 300 Hazen units, suggesting that the water appears clear and is not heavily polluted by substances that affect color.
- The DO level for Agra Canal (5.9 mg/l) is above the minimum requirement of 4 mg/l, indicating sufficient oxygen for aquatic life. However, the DO for the Pond near Pirthala (4.1 mg/l) is just above the minimum requirement, which might suggest some stress on aquatic life.
- The BOD for Agra Canal (3.5 mg/l) is slightly above the permissible limit of 3 mg/l, indicating mild organic pollution. The BOD for the Pond near Pirthala (9.0 mg/l) significantly exceeds the limit, suggesting a high level of organic pollution, which can deplete oxygen levels and harm aquatic life.
- The Pond near Pirthala has a much higher COD of 60 mg/l, indicating a substantial amount of organic matter and chemical pollutants, corroborating the high BOD findings.
- The TSS levels are low for Agra Canal (11.2 mg/l) but higher for the Pond near Pirthala (31.6 mg/l). While there are no set limits for TSS in Class-C standards, higher levels in the pond suggest the presence of more particulate matter, possibly from runoff or sediment.
- Chloride varied between 7.8 mg/l (at SW-4) to 20.4 mg/l (at SW-8), Sulphates varied from 8.4 mg/l (at SW-7) to 15.1 mg/l (at SW-2), and Nitrates varied from 2.68 mg/l (at SW-8) to 3.92 mg/l (at SW-5)

3.13.2.2 CONCLUSION

The water quality is mostly within acceptable limits for Class-C waters, with only a slight exceedance in BOD. This indicates minor organic pollution but generally safe conditions for primary water contact and aquatic life. The water quality shows significant signs of organic pollution, with BOD levels well

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above the permissible limit and a slightly high COD. This suggests presence of decomposing organic matter, potentially from domestic or agricultural runoff, which could harm aquatic life and reduce the suitability for recreational activities. The proposed grinding unit will have adopted zero liquid discharge technique. Hence, major impact is not envisaged by the proposed project and the surface water quality will be monitored regularly and maintained

3.14 BIOLOGICAL ENVIRONMNET

The Biological Environment study has been carried out as a part of the EIA study report to understand the present status of ecosystem prevailing in the study area and to study the floristic and fauna diversity of the terrestrial and aquatic environment of the study area within the 10 km radius of the plant site. Biological environment is a good bio-indicator of changing environmental quality. Reconnaissance survey was undertaken around the proposed project site. In the present survey 10 km radius area around the project site was considered as study area. Both terrestrial and aquatic ecological analysis was carried out in the field. Assessment of flora and fauna was undertaken in the study area.

In addition to the field study, literature review /desk research was carried out to determine the existing conditions within the study area and to identify habitats and species of potential importance that may be affected by the Project.

The following parameters were primarily considered in the study.

- Assessment of present state of vegetation, flora and fauna in the study area.
- Collection of data from literature about the flora and fauna accounts
- Identification of rare, endangered plants and animal species (if any).
- Identification of important plants/animals' species having diverse economic values.

3.14.1 OBJECTIVE OF THE STUDY

The main objectives of biological study were:

- To collect the baseline data of the existing flora and fauna.
- To assess the scheduled (rare, endangered, critically endangered, endemic and vulnerable) species.
- To identify the anticipated Impacts on the ecology and biodiversity
- To assess the biodiversity of Plantation ecosystems, present in the study area;

3.14.2 STUDY APPROACH & METHODOLOGY ADOPTED

The baseline study for existing ecological environment was carried out during Post-Monsoon Season – 2023 (Oct to Dec. 2023). A participatory and consultative approach was followed. Field visits were under taken for survey of the vegetation and animals in the study area. The study area is divided into

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two parts as project area consideration as Core Zone and the Buffer Zone in the 10 km radius of the project site.

• **METHODOLOGY**

The study area taken for the study is 10 km radius with the Core Zone Boundary as centre. The present study on the floral assessment for the project activity is based on the field survey of the area. By the following forest inventory methodology, the survey of biological parameters has been conducted within the core zone and buffer zone (10 km radial distance) from project site at village- Devli, Tehsil & District- Palwal, Haryana, in accordance with the guidelines issued by the ministry of Environment, Forest and Climate Change, CPCB and SPCB during the study period. A preliminary survey of the study area has been performed to get a general picture of the landscapes in vegetation. Traverses have been taken within different zone of the study area to note major vegetation patterns and plant communities including their growth form and dominant species. The different methods adopted were as follows:

• **Scope**

1. To assess the flora and fauna present in the Core (Ambuja Cements) and Buffer zone (10 km radius of above areas).
2. To document flora and fauna species occurring in the core zone and buffer area
3. Check the occurrence of species protected by specific legislation (Rare, endangered, critically endangered, endemic and vulnerable).
4. To identify designated location and features of ecological significance.

• **Activities undertaken during the study**

The present study is based on field studies conducted during Pre monsoon season (March to May 2023). The biotic environment is studied / investigated with respect to the following biotic components in the study area and at the project site

(i) **Flora survey**

- Tree, shrub, herb species etc. identification
- Diversity of species
- Analysis of Rare-Endangered-Threatened flora

(ii) **Fauna survey**

- Documentation of Avian, Reptilian, Mammal and other faunal diversity

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- Observations by direct and indirect evidences (Direct evidence- Sighting and hearing, Indirect evidence- Pug marks, nests and other signs)
- Analysis of Scheduled species
- (iii) Habitat/microhabitat diversity in the project zone and surrounding areas.
- (iv) Photos of some species encountered during the study.
- **Survey Limitation**

This study records the evidence of flora and fauna present during the site visit and field survey. It does not record any floral or faunal species that may appear during other times of the year, and as such, were not evident at the time of visit. The report represents ecological status of the area during the particular period of the study.

- **Approach of the study**

To assess the ecological issues and document flora and fauna associated with the project, following tasks were undertaken:

1. Preliminary site visit
2. Desk Study
3. Core zone (Ambuja cements CGU) and Buffer Zone Survey

- **Desk Study**

The purpose of desk study is to identify habitats and species of local conservation value which may not have been present or apparent during the survey visit e.g. spring/monsoon periods. Desk study is also helpful in understanding the historical biodiversity and ecological status of the site. The information has been collected specific to the region and quoted in the report accordingly.

- **Habitat Survey**

This survey involves collection of flora and fauna under various strategies which differed as per habit and habitat of concerned group of species.

3.14.3 GENERAL INFORMATION ABOUT DISTRICT

Palwal district of Haryana lies between 27°50'00": 28°15'40" North latitudes and 77°05'00": 77°33'00" East longitudes. Total geographical area of the district is 1364.55 km². Administratively, Palwal is the district Headquarter of the district. It is divided into 4 development blocks namely Palwal,

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Hathin, Hodal and Hassanpur. The district area is bounded on western side Mewet district, Eastern side by U.P. state and northern side by Faridabad district and falls in survey of India toposheets no. 53H/3, H/4, H/7, H/8, H/9, H/12, and 54E/5 and E/9. There were two main canals Agra canal and Gurgaon canal which passes through western and central part of the district respectively from north to south. The normal annual rainfall in Palwal district is about 542 mm spread over 27 days. Forest Department is running two schemes namely a forestation and soil Conservation Land Reclamation. As per the National Forests Policy of MOEF&CC, Govt. of India about 1/3 of the geographical area should be under tree cover. In order to achieve this objective various special project large scale plantation on community, Panchayat, Government and Private land were undertaken in last 20 years and saplings of Eucalyptus, Shisham, Neem and other fruit plant were distributed free of costs to farmers to plant in their field.

➤ Flora

Project area has been explored during the field visit and documented as checklist of floral diversity of core and buffer zone. Plants have systematically identified and listed in field area however, photograph of unidentified vegetation from all kinds of habitats and vegetation's have been taken and followed standard herbarium techniques for identification (Jain & Rao 1977). Micro-floral study (Lower Plants) Pteridophytes have been studied. The correct nomenclature has been provided after consulting large number of recent literature and different websites like GRIN, IPNI, ILDIS, The Plant List, Wikipedia, Tropicos, etc. RET Category of flora and fauna has been confirmed by Red Data Book IUCN checklist and Wildlife Protection Act, 1972 status. The structure and composition of vegetation / forest cover was studied by using Phytosociological methods. In each quadrat, Plants with more than 30 cm CBH at breast height (1.37 m) have been considered as tree species and all individuals with circumference ≥ 30 cm CBH at breast height (1.37 m) have been counted and measured for basal area (BA) calculation.

Field surveys were undertaken to analyse and estimate diversity, density, dominance and frequency of different members of plant population. Observations were made in the forest area as well as in non-forest areas by laying plots and adopting quadrat method. The quadrat method includes preparation of square sample plots or units for quantitative analysis of vegetation. The sample plot method given by Clements (1898), EIA Hand Book (ch.7, pp.44) was followed.

➤ Fauna and Avifauna

The assessment of wild fauna was made based on random sightings. For terrestrial and aquatic faunal study, we have identified birds, reptile, amphibians, fishes and animals by field guide. The secondary

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evidences were also recorded through calls, dung boles, scats, and spoor, rub signs, signs of debarking, drag mark etc. for identification of fauna. Bird field guides (eg. Grimmette et al. 2003) has been used for bird identification. For birds, actual counts at each sampling site were made, by walk through in a chosen one kilometer stretch of the site and the number of birds were directly counted and listed. Species list was prepared along with taxonomic position of each species.

3.14.4 OBJECTIVES OF THE STUDY

The present study was undertaken with the following objectives:

- To assess the nature and distribution of vegetation in and around the project within the study area.
- To assess the biodiversity of natural system, present in the study area.
- Details of flora and fauna, Endemic, Rare, Endangered and Threatened (RET Species) separately for core and buffer area based on such primary field survey and secondary secures and clearly indicating the Schedule of fauna present. In case of any scheduled -I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department.
- To study the likely impact of the proposed expansion project on the Biological Environment and to suggest mitigation measure, if required

TABLE 3. 21 DESCRIPTION OF PROJECT SITE & STUDY AREA

Location	Devli, Palwal, Haryana
Climate & Rainfall	Moderate and dry
Soil type	Tropical and brown soils
Crops grown in the study area	Vegetables, Cereals, Pulse, Fruit, spice, oilseed
Project area and ecologically sensitive areas within 10 km radius from the project site.	Nil
Reserve Forest within the study area	Nil

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Diversion of forest land	Nil
Rivers and streams	Agra Canal-2.6 km

3.14.5 STUDY AREA

Biological communities are the indicator environmental condition and resource of its distribution and survival. Biotic component comprises of both plants (Flora) and animals (Fauna) communities, which interact not only within and between them but also with the Abiotic components, viz. physical and chemical components of the environment. The changes in biotic community are studied in the pattern of distribution, abundance and diversity. The study area is divided into two parts i.e.:

a) **Core Zone:** Project Site

b) **Buffer Zone**

Area within 10 Km radius from the Core boundary. The Biological study of proposed Sanitary Landfill facility at Devli village of Palwal district at Haryana state has been done during Oct, 2021 in following monitoring locations of 10 km radius study area

3.14.6 ECOLOGICAL FEATURES DESCRIPTION

A. Project Site: The project site is studied for the following:

- Vegetation present
- Fauna and Avi-fauna present

B. Study Area: The study area is studied for the following:

- Agricultural land
- Barren area with weeds
- Vegetation around Human Settlements
- Plantation in the Study Area
- Wildlife and Avifauna
- Endangered Animal & Bird Species: Schedule - I & II
- Scheduled Plant Species

The study area including project site is high populated and land use is Plane area as agriculture land and habitation.

3.14.7 PROJECT SITE: ECOLOGICAL FEATURES

The proposed project is located at Village Devli, Tehsil and District: Palwal, State- Haryana. Devli is a tiny village and the surrounded 10 Km radius area is Plane with habitation and Agriculture area. The

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project site vegetation has small shrubs and herbs but no trees.

Vegetation present

The project site is a ground covered by vegetation dominated by grass, shrubs and herbs with little or no tree cover. Some of the vegetation found in the project site is given in the table below

3.14.8 STUDY AREA'S ECOLOGICAL FEATURE

The extent of forest cover of Haryana is 1603.48 km² forests/tree cover area is recorded in the State from total Geographical area (44,212 km²) which is about 3.63% of the total state's geographical area (FSI 2021). The forest type found in the study area is Dry Deciduous Type Forest as per Champion and Seth Classification (1968). The recorded forest cover of the state is 1559 sq. km, which is 3.53% of its geographical area. The reserved, protected, and unclassified forests are 249 sq. km, 1158 sq. km and 152 sq. km respectively of the recorded forest area. (India State of Forest Report, 2021).

3.14.9 BIO-CLIMATIC FEATURES OF THE STUDY AREA

The National Agricultural Research Project (NARP) delineated agro climatic zones based on soil type, temperature, rainfall (agrometeorological characteristics) and geologic constraints. Haryana is divided into 3 agro-climatic zones; Palwal District falls under the Agro-climatic Zone II.

The district is classified in to Agro-climatic / Ecological Zone by different agencies as given in Table 3.22

TABLE 3. 22 AGRO-CLIMATIC/AGRO-ECOLOGICAL CLASSIFICATION OF STUDY AREA IN PALWAL DISTRICT1

Agro Ecological Sub Region (ICAR)	Northern Plain(and central highlands) Agro Ecoregion-4
Agro-Climatic Zone (Planning Commission)	Trans Gangetic Plain Region (VI)
Agro Climatic Zone : National Agricultural Research Project (NARP)2	Eastern Zone (HR-1)
Climatic Region (Koppen's)2	Subtropical climate
Bio-geographic Zone (Wildlife Institute of India)	6. Deccan Peninsula
Bio-geographic Province (Wildlife Institute of	6 Deccan Peninsula–Eastern Highlands

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India)

The Palwal district the major crops are paddy, jowar, bajra, makai and sugarcane in kharif seasons, while that of Rabi seasons crops are wheat, barley, sunflower, arahar, mung, chana, masoor, rapeseed, pea and bar seem. The other crops grown are sugarcane, oilseeds and pulses. Horticultural and vegetable crops are also cultivated in the district. Cereals like Vegetables, Cereals, Pulse, Fruit, spice, oilseed, are common in agricultural practices at Palwal district. Brinjal, Tomato, Cauliflower, Cabbage, Ginger, Onion and other vegetables which are largely produced at Palwal district.

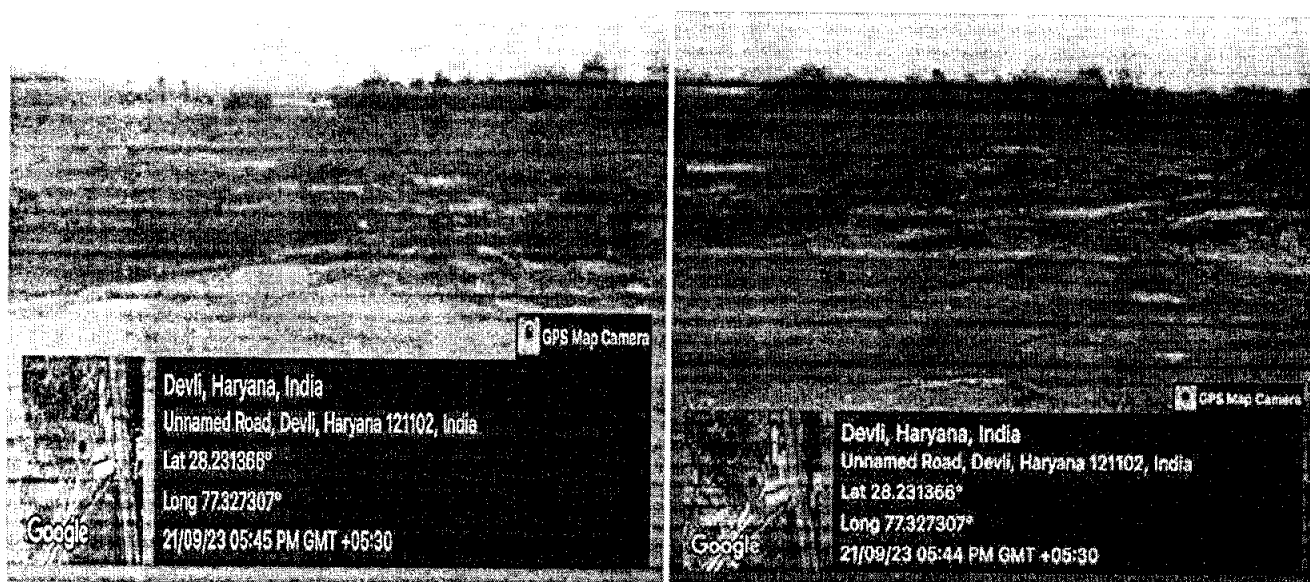


FIGURE 3. 17 PHOTOGRAPHS OF FLORA IN THE PROJECT SITE

TABLE 3.33: FLORAL DIVERSITY IN CORE ZONE

S.No	SCIENTIFIC NAME	LOCAL NAME	FAMILY
Tree			
1	<i>Prosopis juliflora</i>	Vilayati Babul	Fabaceae
Shrub			
1	<i>Euphorbia tirucalli L.</i>	Saptala	Euphorbiaceae
2	<i>Flacourtia indica (Burm.f.) Merr.</i>	Baincha	Salicaceae
3	<i>Lantana camara L.</i>	Raimuniya	Verbenaceae
Herb			

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15	<i>Abutilon hirtum (Lam.) Sweet.</i>	Kanghi	Malvaceae
16	<i>Argemone maxicana (Linn.)</i>	Peelikatheli	Papaveraceae
17	<i>Acalypha indica L.</i>	Kuppikhokhali	Euphorbiaceae
18	<i>Aeschynomene indica L.</i>	Laugauni	Fabaceae
19	<i>Ageratum conyzoides (L.) L.</i>	Sahdevi	Asteraceae
20	<i>Amaranthus viridis L.</i>	Jangli Choulai	Amaranthaceae
21	<i>Crotalaria juncea L.</i>	Indian Hemp	Fabaceae
22	<i>Mimosa pudica L.</i>	Mimosa	Fabaceae
Climbers			
30	<i>Ipomoea cairica (L.) Sweet.</i>	Railway Creeper	Convolvulaceae
31	<i>Ipomoea coccinea L</i>	Gowri Beeja	Convolvulaceae
32	<i>Tinospora cordifolia L.</i>	Giloy	Menispermaceae
33	<i>Ipomoea cairica (L.) Sweet.</i>	Railway Creeper	Convolvulaceae
Grasses			
34	<i>Apluda mutica L.</i>	Mauritian Grass	Poaceae
35	<i>Chloris barbata Sw.</i>	Grass	Poaceae
36	<i>Cynodon dactylon (Linn.) Pers.</i>	Doob	Poaceae
37	<i>Dendrocalamus strictus (Roxb.) Nees</i>	Bans	Poaceae
38	<i>Saccharum munja Roxb.</i>	Munj	Poaceae
39	<i>Saccharum spontaneum L.</i>	Kaans	Poaceae
40	<i>Apluda mutica L.</i>	Mauritian Grass	Poaceae

3.14.10 FAUNAL DIVERSITY IN THE CORE ZONE

The faunal composition generally with arboreal and semi arboreal based animals. The assessment of wild life fauna has been carried out on the basis of information collected from primary as well as secondary sources (Forest Officer, and local inhabitants). The study area has mammals like Neelgay Hanuman Monkey or Langur, Fruit Bat, etc. The assessment of fauna has been done by extensive field survey of the area. During survey, the primary as well as presence of wildlife was also inhabitants depending on animal sightings and the frequency of their visits in the project area which was later confirmed from forest department, Wildlife Department etc. Total 36 faunal species have been encountered in the study area out of which 5 Mammals, 8 Butterfly and 23 aves species were recorded

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from the 10 km study area which are given in below Table-3.23

TABLE 3. 23 FAUNAL DIVERSITY IN THE CORE ZONE

S. No	Scientific Name	English Name	Schedule as per amended (WCP)2022
Mammals			
1	<i>Bandicota indica</i>	Greater bandicota rat	II
2	<i>Funambulus pennanti</i>	Five striped palm squirrel	II
3	<i>Lepus nigricollis</i>	Indian Hare	II
4	<i>Mus booduga</i>	Indian field rat	II
5	<i>Sus scrofa</i>	Indian wildboar	II
Butterflies			
1	<i>Acraea issoria</i>	The yellow caster	II
2	<i>Cynthia cardui</i>	The Painted lady	II
Aves			
1	<i>Acridotheres tristis</i>	Common Myna	II
2	<i>Apus affinis</i>	House swift	II
3	<i>Apus apus</i>	Common swift	II
4	<i>Bubulcus ibis</i>	Cattle Egret	II
5	<i>Centropus sinensis</i>	Mahokha	II
6	<i>Chrysocolaptes guttacristatus</i>	Greater flameback	II
7	<i>Columba livia</i>	Rock Pigeon	-
8	<i>Coracias benghalensis</i>	Indian roller	II
9	<i>Corvus splendens</i>	House Crow	II
10	<i>Dicrurus macrocercus</i>	Black Drongo	II
11	<i>Egretta garzetta</i>	Little Egret	II
12	<i>Mesophoyx intermedia</i>	Intermediate egret	II
13	<i>Microcarbo niger</i>	Little cormorant	II
14	<i>Passer domesticus</i>	House Sparrow	II
15	<i>Ploceus philippinus</i>	Baya	II
16	<i>Acridotheres tristis</i>	Common Myna	II
17	<i>Apus affinis</i>	House swift	II

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18	Apus apus	Common swift	II
19	Bubulcus ibis	Cattle Egret	II
20	Centropus sinensis	Mahokha	II
21	Chrysocolaptes guttacristatus	Greater flameback	II
22	Coracias benghalensis	Indian roller	II

TABLE 3. 24 FLORISTIC DIVERSITY OBSERVED IN BUFFER ZONE OF PROJECT AREA (BASED ON PRIMARY & SECONDARY DATA)

Sr.No.	Botanical Name	Common Name	Family
Trees			
1	<i>Acacia nilotica</i>	Kikar	Fabaceae
2	<i>Acacia catechu</i>	Khair	Fabaceae
3	<i>Aegle marmelos</i>	Bel	Rutaceae
4	<i>Albizia lebbek</i>	Kala siris	Fabaceae
5	<i>Albizia procera (Roxb.) Benth.</i>	Safed Siris	Fabaceae
6	<i>Alstonia scholaris</i>	Saptaparni	Apocyanaceae
7	<i>Artocarpus heterophyllus Lam.</i>	Kathal	Moraceae
9	<i>Ailanthes excelsa</i>	Arusa	Simaroubaceae
10	<i>Anthocephalus cadamba</i>	Kadamb	Rubiaceae
11	<i>Azadiracta indica</i>	Neem	Meliaceae
12	<i>Bauhinia purpurea</i>	Kachnar	Caesalpiniaceae
13	<i>Bauhinia variegata L.</i>	Kachnar	Leguminosae
14	<i>Butea monosperma (Lam.) Taub.</i>	Dhak	Fabaceae
15	<i>Bombax ceiba</i>	Semal	Malvaceae
16	<i>Cassia fistula</i>	Amaltas	Fabaceae
17	<i>Cassia siamea Lam.</i>	Cassia	Leguminosae
18	<i>Ceiba pentandra (L.) Gaertn.</i>	Kapok	Malvaceae
20	<i>Callistemon viminalis</i>	Bottle Brush	Myrtaceae
21	<i>Dalbergia sissoo</i>	Shisham	Fabaceae
22	<i>Delonix regia</i>	Gulmohar	Fabaceae

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23	<i>Ehretia laevis</i> Roxb.	Chamror	Boraginaceae
24	<i>Erythrina indica</i>	Roringe	Fabaceae
25	<i>Eucalyptus spp</i>	Safeda	Myrtaceae
26	<i>Ficus benghalensis</i>	Bargad	Moraceae
27	<i>Ficus religiosa</i>	Pipal	Moraceae
28	<i>Ficus glomerata</i>	Gular	Moraceae
30	<i>Hymenodictyon excelsum</i> (Roxb.) Wall.	Bairang	Rubiaceae
Shrubs and Herbs			
1	<i>Achyranthes aspera</i>	Unga, Keora	Amaranthaceae
2	<i>Agave americana</i>	Ram Baas	Agavaceae
3	<i>Aloe vera</i>	Gwarpatha	Liliaceae
4	<i>Cannabis sativa</i>	Bhang	Cannabaceae
5	<i>Cassia tora</i>	Puwad, Panwar	Fabaceae
6	<i>Cassia glauca</i>	Bathu	Fabaceae
7	<i>Chenopodium album</i>	Goosfoot	Amaranthaceae
8	<i>Parthenium hysterophorus</i>	Gajar Ghaas	Asteraceae
9	<i>Tephrosia purpurea</i>	Sarpankha	Fabaceae
10	<i>Tribulus terrestris</i>	Gokharu	Zygophyllaceae
11	<i>Tridax procumbens</i>	Kumru	Asteraceae
12	<i>Asparagus racemosus</i>	Shatavari	Asparagaceae
13	<i>Cuscuta reflexa</i>	Amarbel	Convolvulaceae
14	<i>Momordica charantia</i>	Jungli Kerala	Cucurbitaceae
15	<i>Tinospora cordifolia</i>	Neem Giloy	Menispermaceae
16	<i>Cullen corylifolium</i> (L.) Medik.	Babchi	Fabaceae
17	<i>Cyanotis axillaris</i> Roem. & Schult. F.	Baghanulla	Commelinaceae
18	<i>Cyanthillium cinereum</i> (L.) H. Rob.	Sahadevi	Asteraceae
19	<i>Desmodium triflorum</i> (L.) DC.	Desmodium	Leguminosae
20	<i>Emilia sonchifolia</i> (L.) DC. Ex Wight.	Hirankuri	Asteraceae
21	<i>Euphorbia hirta</i> L.	Dudhi	Euphorbiaceae
22	<i>Euphorbia thymifolia</i> L.	Chhotidudhi	Euphorbiaceae
23	<i>Evolvulus nummularius</i> (L.) L.	Onkranta	Convolvulaceae

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24	<i>Hyptis suaveolens (L.) Poit.</i>	Ban Tulsi	Lamiaceae
25	<i>Launaea nudicaulis (Linn.) Hook. f.</i>	Ban Gobhi	Asteraceae
26	<i>Launaea procumbens (Roxb.) Ramayya & Rajagopal</i>	Van Gobhi	Asteraceae
27	<i>Leucas aspera (Willd.) Link</i>	Gumma Buti	Lamiaceae
28	<i>Ludwigia adscendens (L.) H. Hara</i>	Water Primrose	Onagraceae
29	<i>Merremia emarginata (Burm. f.) Hallier f.</i>	Muskani	Convolvulaceae
30	<i>Mollugo cerviana (L.) Ser.</i>	Carpetweed	Molluginaceae
31	<i>Ocimum sanctum L.</i>	Tulsi	Lamiaceae
32	<i>Oxalis corniculata L.</i>	Amrul Sak	Oxalidaceae
33	<i>Parthenium hysterophorus L.</i>	Gajar Ghass	Asteraceae
34	<i>Pedaliium murex Linn.</i>	Kadva Gokkru	Pedaliaceae
35	<i>Persicaria orientalis (L.) Spach</i>	Knot Plant	Polygonaceae
36	<i>Phyllanthus amarus Schumach. & Thonn.</i>	Bhui Aonla	Phyllanthaceae
37	<i>Physalis minima L.</i>	Bandhapariya	Solanaceae
38	<i>Portulaca oleracea L.</i>	Khulpha	Portulacaceae
39	<i>Scoparia dulcis L.</i>	Meethibuti	Plantaginaceae
40	<i>Senna tora (L.) Roxb.</i>	Panwar	Caesalpinaceae
Grasses, Hedges and Climbers			
1	<i>Apluda mutica</i>	Tachula	Poaceae
2	<i>Brachiaria ramosa</i>	Makra	Poaceae
3	<i>Cuscuta reflexa</i>	Amarbel	Cuscutaceae
4	<i>Cenchrus ciliaris</i>	Anjan grass	Poaceae
5	<i>Cyperus rotundus</i>	Dilla	Cyperaceae
6	<i>Cynodon dactylon</i>	Doob	Poaceae
7	<i>Digitaria ciliaris</i>	Wild Crab grass	Poaceae
8	<i>Erianthus munja</i>	Kana	Poaceae
9	<i>Heteropogon contortus</i>	Black Spear Grass	Poaceae
10	<i>Saccharum munja</i>	Moonj	Poaceae

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FIGURE 3. 18 PHOTOGRAPHS OF THE VEGETATION IN THE BUFFER ZONE HAS BEEN GIVEN BELOW

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3.14.11 FAUNAL DIVERSITY IN BUFFER ZONE

The Buffer Zone is 10 km radius of Plant area. Buffer zone is foothill Plain area. The Faunal diversity is limited in the buffer zone because no forest area occurred in buffer zone. Only Agroforestry and monoculture plantation of Mango, Eucalyptus sp. and Populus sps occurs in different Patches. Based on Secondary data & Primary data, the Fauna diversity observed in buffer zone is given in Table 3.25.

TABLE 3. 25 FAUNAL DIVERSITY OBSERVED IN BUFFER ZONE OF PROJECT AREA (BASED ON PRIMARY & SECONDARY DATA)

S.No	Common Name	Scientific Name	Schedule as per Amended (WCP) 2022
Mammals			
1	Rhesus Macaque	Macaca mulatta	II
2	Common Mongoose	Herpestes edwardsii	II
3	Common Langur	Presbytis entellus	II
4	Jungle Cat	Felis chaus	I
5	Hanuman Langur	Semnopithecus entellus	II
6	Nilgai	Boselaphus tragocamelus	II
7	Wild pig	Sus scrofa	II
8	House Mouse	Mus musculus	-
9	Little Indian Field Mouse	Mus booduga	-
Avifauna			
10	House Crow	Corvus splendens	II
11	Rock Pigeon	Columba livia	-
12	Jungle babbler	Turdoides striatus	II
13	Common Myna	Acridotheres tristis	II
14	Indian roller	Coracias benghalensis	II
15	Black Drongo	Dicrurus macrocercus	II
16	Common swift	Apus apus	II
17	Cattle Egret	Bubulcus ibis	II
18	Little Egret	Egretta ganeua	II
19	Pond heron	Ardeola grayii	II
20	Spotted Dove	Streptopelia chinensis	II
21	White Breasted Kingfisher	Halcyon smyrnensis	II
22	Asian Koel	Eudynamys scolopacea	II

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23	House Sparrow	Passer domesticus	II
24	Red Vented Bulbul	Pycnonotus cafer	II
25	Bank Myna	Acridotheres ginginianus	II
26	Common Babbler	Turdoides caudatus	II
27	Baya	Ploceus philippinus	II
28	Red-wattled lapwing	Vanellus indicus	II
29	Hoopoe	Upupa epops	II
30	<i>Pavo cristatus</i>	Indian peafowl	I
Amphibians			
31	Indian pond frog	Phrynowaderia hexadactyla	II
32	Common Indian Toad	Duttaphrynus melanostictus	-
33	Indian Bull Frog	Hoplobatrachus tigerinus	II
34	Toad	Bufo bufo	II
35	Common Frog	Rana tigrina	II
Reptiles			
36	House gecko	Hemidactylus flaviviridis	II
37	Brahminy skink	Mabuya carinata	-
38	Indian Cobra	Naja naja	I
39	Garden Lizard	Calotes versicolor	-
40	Common Indian Krait	Bungarus caeruleus	II
41	Common Indian Monitor	Varanus benghalensis	I
Butterflies			
42	White orange tip	Ixias marianne	-
43	Common map	Cyrestis thyodamas	II
44	Common mormon	Papilio polytes	II
45	Common Grass Yellow	Eurema hecabe	-
46	Stripped Tiger	Danaus genutia	II
47	Danaid Egg Fly	Hypolimnastis misippus	II
48	Common Bush Brown	Mycalesis perseus	II

Fishes:

The fishes found in the study area are given in table 3.28. There is no organized fishing activity within study area. **Table 3.26.**

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TABLE 3. 26 LIST OF FISHES IN THE STUDY AREA

S.no.	Common name	Scientific name
1	Chital	<i>Notopterus chitala</i>
2	Pholus	<i>Notopterus notopterus</i>
3	Chela	<i>Salmostoma bacaila</i>
4	Catla	<i>Catla catla</i>
5	Rahu	<i>Labeo nolita</i>
6	Bata	<i>Labeo bata</i>
7	Mrigal	<i>Cirrhina mrigala</i>
8	Punti	<i>Puntius sophor</i>
9	Catfish	<i>Mystus seenglala</i>
10	Rita	<i>Rita rita</i>
11	Magur	<i>Clarius batrachus</i>
12	Nandus	<i>Nardus nardus</i>
13	Cyprinus cemp	<i>Cyprinus carpio</i>
14	Lata	<i>Channa punctatus</i>
15	Cylindrical fish	<i>Sinolia cylindica</i>

TABLE 3. 27 LIST OF SCHEDULE I SPECIES

Sl.No	Common name	Scientific name	Schedule species
Mammals			
1	Jungle Cat	Felis chaus	Schedule-I
Birds			
2	Pavo cristatus	Indian peafowl	Schedule-I
Reptiles			
3	Indian Cobra	Naja naja	Schedule-I
4	Common Indian Monitor	Varanus benghalensis	Schedule-I

Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/Elephant Reserves (existing as well as proposed), if any, within 10 km of the mine lease.

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As per study conducted in the study area and as per information collected from Divisional Forest Officer, Palwal it is found that there are no National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/Elephant Reserves/(existing as well as proposed) within 10 km of the site area. The diversity survey indicated that the diversity of trees, shrubs and herbs were high in buffer zone compare to core zones due to natural vegetation occurring in study area. The nearest protected areas Asola Bhatti Wildlife sanctuary which is ~29 km away from project site.



FIGURE 3. 19 LOCATION MAP OF THE DISTANCE OF WILD LIFE SANCTUARY FROM PROJECT SITE

3.15 SOCIO ECONOMIC SCENARIO

Every industrial project that is undertaken has a ripple effect on the surrounding social and economic fabric. This impact can range from subtle to significant, influenced by a variety of factors including the project's scale and the dynamics of the local environment. The arrival of outsiders during project phases can even reshape the cultural identity of the community. Additionally, the project's financial flow can both disrupt existing socio-economic activities and introduce new ones, often deeply intertwined with the community's established practices and traditions.

The proposed cement grinding project is poised to influence the socio-economic landscape of its vicinity, with impacts varying in magnitude. The extent of these effects hinges on a multitude of social and

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environmental factors and the degree of disruption to the existing equilibrium. Additionally, the influx of external personnel during different project phases may reshape the cultural identity of the local community. Our comprehensive assessment, conducted through sociological surveys within a 10-kilometer radius of the project site, aims to delineate these impacts accurately.

i) Objectives

Given the anticipated impact of the proposed project on the social and economic conditions of the region, including aspects such as direct and indirect employment, skill diversification, infrastructure development, and business growth, the current study is oriented towards achieving the following objectives:

- i) To assess the impact of the cement grinding project on pattern of demand;
- ii) To examine the impact of the grinding project on consumption pattern;
- iii) To examine the employment and income effects of the project;
- iv) Assessment of the educational status of the people and to explore the impact of the project on education;
- v) To examine the impact of the project on community development activities;
- vi) To analyze peoples' perception regarding impact of the project;

ii) Methodology Adopted for the Study

The methodology adopted for the study is based on the following process:

• Review of Secondary Data

Baseline data on socio-economic were gathered from various government agencies and census sources, including the latest District Statistical Handbook, 2011 Census data, and subsequent updates based on the 2011 census. This data encompasses demographic details such as household count, population, social demographics, literacy rates, and occupational distribution within the project's vicinity (within a 10 km radius of the project site). Additionally, secondary data augmented the primary dataset collected through a focused field survey.

• Field Survey

Socio-economic survey was carried out covering the villages / towns of the study area to record awareness, opinion, apprehensions, quality of life and expectations of the local people about the proposed mining project. The opinion of local people about the proposed project were obtained through Socio-economic questioner survey of the villages / towns in the study area.

A brief about the sampling design adopted for the field survey is described below. The survey has been conducted through specially designed questionnaire covering the main aspect of the present study. In addition to the field data, secondary data / information collected, compiled and published by different

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Governmental agencies / departments were also collected and utilized appropriately.

• Sampling Design

For selection of respondents from the study area, Two Stage Random Sampling has been adopted. In the first stage, villages are selected and in the second stage, households / respondents are selected. From each selected village, the respondents are selected randomly to account intra-village variability among the respondents for the character under study. As the variability of the characters in each study strata does not vary widely among the households, a smaller sample size is expected to represent the population. Samples of about 50 respondents from 10 villages were drawn from the study area.

Composition of the Questionnaire

Households / respondents were interviewed with the structured questionnaire specifically designed for this study keeping in view the objectives of the study. The questionnaire consists of following major sections:

- Demographic profile of the households
- Educational status
- Health status
- Information on agricultural situation.
- Employment (sources of employment)
- Income (income from various sources)
- Information on family budget
- Consumption and saving
- Availability of Basic amenities such as drinking water, electricity etc.
- Respondents' perception about the project

iii) Existing Socio-Economic Scenario

The information on socio-economic aspects of the study area as defined in this Chapter has been compiled from secondary sources, which have been taken by many authentic sources. The sociological aspects of this study include human settlements, demography, social, such as Scheduled castes, Scheduled Tribes and literacy levels besides infrastructure facility available in the study area. The economic aspects include occupational structure of workers. The salient features of the demographic and socio-economic details are presented in the following sections.

iv) Demographic features of study area:

As per the 2011 census, the population of the district is 10,42,708. The initial provisional data released by census India 2011, shows that density of Palwal district for 2011 is 767 people per sq. km. In 2001, Palwal district density was at 607 people per sq. km. Palwal district administers 1,359 square

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kilometres of areas. As per the 2011 census the literacy rate for male and female literacy were 82.66 and 54.23 respectively. With regards to Sex Ratio in Palwal, it stood at 880 per 1000 male compared to 2001 census figure of 862.

The villages falling within the study area (10km radius) along with their demographic profile based on 2011 census data are listed in Table No.3.28 and 3.29.

Primary survey was conducted during October to December 2023 and primary data was collected based on specific designed questionnaire and focused group discussion. There are about 20 villages in the 0-5 km radius and 56 villages in 5-10 km radius. Some of the Villages covered in rural area Devli village, Medhapur Village, Pahaldpur Village, Baghaura Village, Mandkaul village, Badram village.

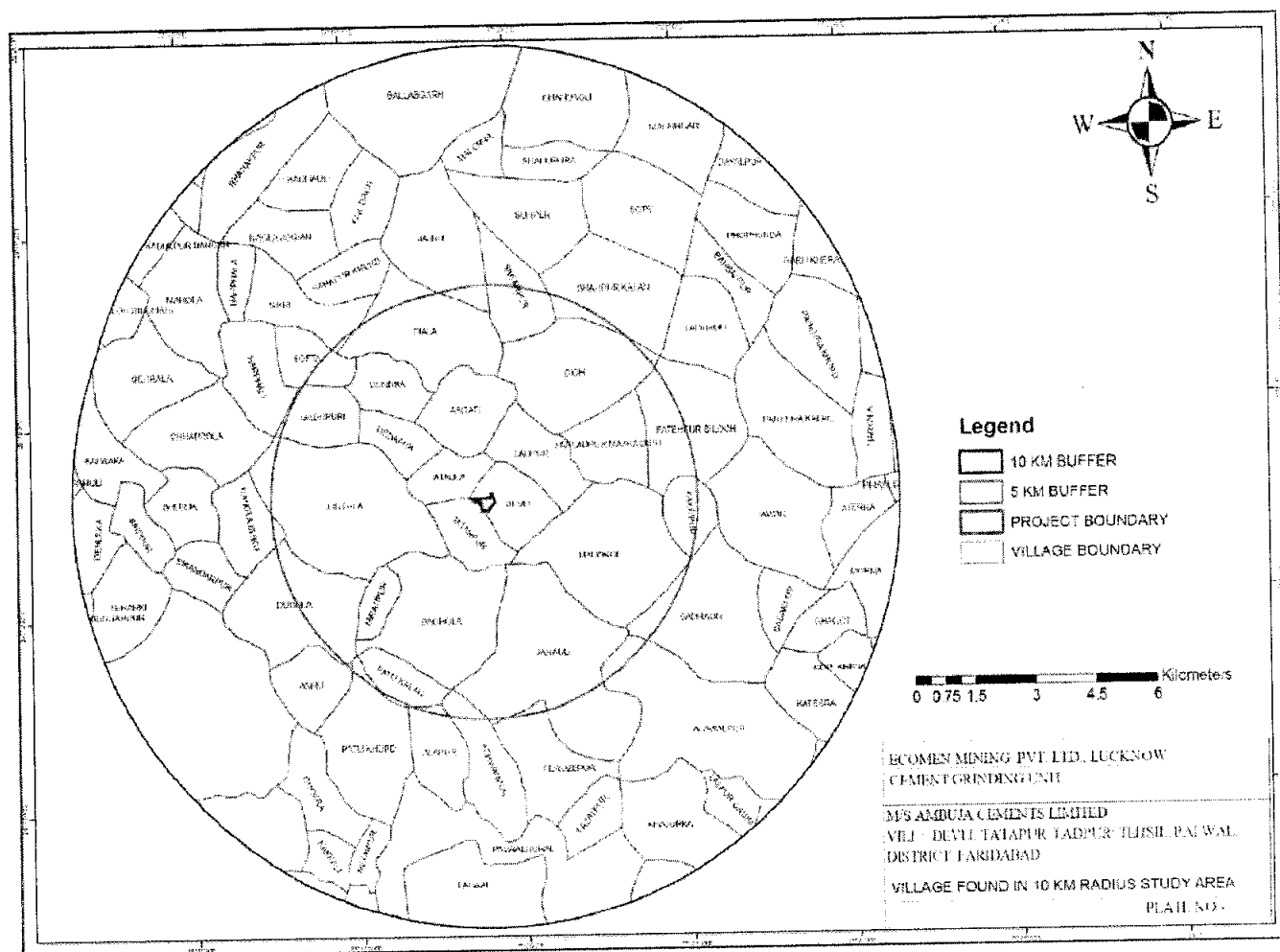


FIGURE 3. 20 VILLAGE MAP OF THE PROJECT AREA

v) Demographic features of study area: Rural area

• Population

The total population in Rural Villages of Study area population of 864230 of which males are 460316

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while 403914 are females as per report released by Census India 2011. The district population density is 767 per sq.km in 2011. The population density within 5 km is 649 and 5-10 km is 419 and a total of 534 Nos/Sq km.

The ratio of Schedule Caste (SC) and Schedule Tribe (ST) to the total population is 22.25 % and no Schedule tribe in the study area. The total number of households in the area of 0-5 km is 6418 and 5-10 km is 142443 with total of 148861.

vi) Village and Household Size

The total households in Rural Villages of Study area are 148861. The average household per village is 1744. The average household size is 5.4 in rural.

vii) Sex Ratio

The sex ratio in the Palwal district is 880 females per 1000 males whereas in the study area is 866 females per 1000 males. The percentage of male and female population to the total population is 53.6 % and 46.4 %, respectively.

viii) Literacy

Average literacy rate of Palwal in 2011 were 69.32 % while in study area the overall literacy rate is 64 %. The % male and female literacy to the total population 39.7% and 24.2% respectively.

TABLE 3. 28 DEMOGRAPHIC PROFILE OF RURAL POPULATION IN THE STUDY AREA (2011 CENSUS)

S N.	Population Data	Radial Distance from Plant Centre in km		
		0-5 km	5-10 km	Total (0-10 km)
1.	Area sq km	56.51	1977.3	2033.81
2.	Number of House Hold	6418	142443	148861
3.	Total Population	36669	827561	864230
4.	Average Family Size	5.4	5.5	5.45
5.	Average no. of house hold per village	458	3030	1744
6.	Average population per village	2619	17607	10113
7.	Female per 1000 Males	853	879	866
8.	% of male population to total population	53.9	53.3	53.6
9.	% of female population to total population	46.03	46.7	46.4
10.	Total Males	19790	440526	460316
11.	Total Females	16879	387035	403914
12.	Population Density (Nos/sq. km)	649	419	534

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S N.	Population Data	Radial Distance from Plant Centre in km		
		0-5 km	5-10 km	Total (0-10 km)
13.	% of SC population to the total population	21.6	22.9	22.25
14.	Schedule Cast Total Population	7936	190310	198246
15.	Schedule Cast Male Population	4250	100725	104975
16.	Schedule Cast female Population	3686	89585	93271
17.	% of ST population to the total population	0	0	0
18.	Schedule Tribe Total	0	0	0
19.	Schedule Tribe Males	0	0	0
20.	Schedule Tribe Females	0	0	0
21.	Total Literates	23831	522355	546186
22.	Literates Males	14967	320788	335755
23.	Literate Females	8864	201567	210432
24.	Literacy Percent (%)	64.9	63.1	64
25.	Literacy Percent (%) Males	40.8	38.7	39.7
26.	Literacy Percent (%) Females	24.1	24.3	24.2
27.	Total Illiterates	23831	522355	546186
28.	Male Illiterates	14967	320788	335755
29.	Female Illiterates	8864	201567	210431
30.	% of main worker to the total population	22.06	21.5	21.8
31.	Total Main Worker	8090	178678	186768
32.	% of marginal worker to the total population	6.04	7.15	6.59
33.	Total Marginal Worker	2218	59242	61460
34.	% of non-worker to the total population	71.8	71.2	71.5
35.	Total Non-worker	26361	589641	616002

ix) Occupational Structure

The occupational structure of residents in the study area is analysed with reference to main workers, marginal workers and non-workers. The main workers include 10 categories of workers defined by the Census Department consisting of cultivators, agricultural labourers, those engaged in live-stock, forestry, fishing, mining and quarrying; manufacturing, processing and repairs in household industry; and other than household industry, construction, trade and commerce, transport and communication and other services.

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The marginal workers are those workers engaged in some work for a period of less than six months during the reference year prior to the census survey. The non-workers include those engaged in unpaid household duties, students, retired persons, dependents, beggars, vagrants etc.; institutional inmates or all other non-workers who do not fall under the above categories.

TABLE 3. 29 THE OCCUPATIONAL STRUCTURE OF RURAL POPULATION IN THE STUDY AREA

S. No.	Population Data	Radial Distance from Plant Centre in km		
		0-5	5-10	Total (10 km ²)
1.	Total Population	36669	827561	
2.	Total Worker (Main + Marginal) Population	10308	237920	24916
3.	% Total Workers (Main + Marginal) to Total Population	28.1	28.7	28.25
4.	Total worker male (main + marginal) population	8831	195918	20829
5.	Total worker female (main + marginal) population	1477	42002	4087
6.	Total Working Male Population % to Total Male Population	44.6	44.4	23.9
7.	Total Working Female Population % to Total Female Population	8.5	10.8	4.29
8.	Main Workers Total	8090	178678	19097
9.	Main Workers Male	7359	158179	17177
10.	Main Workers female	731	20499	1920
11.	Total Main Workers (%) to Total Population	22.0	21.5	22.2
12.	Total Male Main Workers (%) to Total Male Population	37.1	36	37.25
13.	Total Main Workers Female (%) Total Female Population.	4.3	5.2	4.7
14.	Total Cultivators	2129	47329	3174
15.	Total Cultivators Male	2007	42357	2843
16.	Total Cultivators female	122	4972	662
17.	Main Agricultural Labour	1253	21484	2627
18.	Main Agriculture Labour Male	959	17618	2365
19.	Main Agriculture Labour Female	294	3866	562
20.	Main Household Industry Labour Total	136	6291	372
21.	Main Household Industry labour Male	118	5010	329
22.	Main House Hold Industry Labour Female	18	1281	43
23.	Main Other Workers Total	4572	103574	6450
24.	Main Other Workers Male	4275	93194	8797
25.	Main Other Workers Female	297	10380	653
26.	Marginal Worker Total	2218	59242	5819

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S. No.	Population Data	Radial Distance from Plant Centre in km		
		0-5	5-10	Total (10 km ²)
27.	Marginal Worker Male	1472	37739	3652
28.	Marginal Worker Female	746	21503	2167
29.	Total Marginal Workers % to Population	6.04	7.15	6.005
30.	Male Marginal Workers % to Male Population	7.4	8.5	7.35
31.	Female Marginal Workers % to Total Female Population	4.4	4.8	4.4
32.	Non-Working Population Total	26361	589641	62387
33.	Non-Working Population Male	10959	244608	25966
34.	Non-Working Population Female	15402	345033	36421
35.	Total Non-workers % to Total Population	71.8	71.2	71.6
36.	Male Non-workers % to Total Male Population	55.3	55.5	55.25
37.	Female Non-workers % to Total Female Population	91.2	89.1	84.2

x) Infrastructure Facilities

The infrastructure and amenities available in the area denotes the economic wellbeing of the region. The area as a whole possesses moderate level of infrastructural facilities. A review of infrastructure facilities available in Palwal District have been done based on the information available at the websites of Directorate of Economics and Statistics, Department of Medical and Family Welfare, National Health Mission, Medical Health and Family Welfare Department, Government of and by limited field survey.

Apart from collecting data from secondary sources, a review of infrastructure facilities available in the area has also been given on the basis of field survey of the study area. In this exercise the villages which fall within 10 km radius around the site have been considered. Infrastructure facilities available in the area are presented below.

xi) Educational Facilities

Education is a very important determinant of socio economic development of any area. Universal primary education is one of the essential development strategies of a developing country like India, which focus mainly over raising the Net Enrolment Ratio (NER) in primary education. As per Government of India norms, the education facilities available should be as follows:

- Availability of primary school within one kilometer of habitation,
- Availability of middle school within 3 kilometer of habitation and
- Availability of high school and secondary education within 5 kilometer of habitation

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Most of the villages in the study area, Anganwadis and schools up to primary level in both district. Schools up to Middle Level are found in some villages / panchayats. Hence there is a need to develop the educational facilities by establishing more number of secondary and higher secondary level schools in the area. Availability of Educational Institution are given below in **Table 3.30 & 3.31.**

TABLE 3. 30 AVAILABILITY OF EDUCATIONAL INSTITUTION WITHIN STUDY AREA

SI No	Educational institution	Distance in km
1	Vats International Academy	1.10
2	Bhartiyam College of Pharmacy	7.78
3	Bhartiyam College of Education. B.Ed. College	7.72
4	Shivalik educational academy	1.66
5	Sri Vishwakarma Skill University	5
6	JBT College, Janauli	6.23

TABLE 3. 31 AVAILABILITY OF SCHOOLS WITHIN 10 KM RADIUS

SI No	Educational institution	Distance
1	Government Middle School , DIG	2.8
2	Governmmnet High School Deoli	0.27
3	Primary school Pehladpur	2.2
4	Hari Ram memorial high school	3.07
5	Aggrawal Public High School	4.2
6	Deep sr.sec.school	1.51
7	KR college of education	4.23
8	Sraswati school	3.80
9	Sanskar global school	4.13
10	JBT College	6.22
11	Dharma public school	7.84
12	SND Public school	8.71

xii) Transportation

Adequate provision of transport is a prerequisite for economic development in general and rural development in particular. It acts as a catalyst both for production and distribution system of the economy. The economic development requires a well-developed transport network. Roadways are the principal mode of transport in the district. There has been phenomenal increase in road transport in the district during 11th plan period. Though passenger service is made available to all the Community Development Block Headquarters (HQs) and Taluk HQs. Despite all these measures some of the rural

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roads in the district are not all weather roads.

In the study area adequate roads and bus services are available near the State Highways which are well connected with roads connected to the villages. Mode of Transportation to the villages within 10Km Radius are given in Table 3.32.

TABLE 3. 32 MEANS OF TRANSPORTATION TO THE VILLAGES

Sl. No.	Mode of Transportation	Distance
1	Asoati - Train station	2.20

xiii) Sanitation and Water Supply Facilities

The information based on the sampled survey, reveals that the problem of open defecation doesn't exist in the study area. Moreover, as per the water supply is concerned most of the villages are dependent on traditional source of water resources (hand-pumps and open well) in both district. Very few villages have public or private supply of water to their home through tap. Additionally, the nearby companies at times do provide drinking water through tankers. The scarcity of clean drinking water facility exists in the study area.

xiv) Electricity Status

Haryana have achieved more than 95% electrification of households. In primary survey we found that, all of the villages in the study area are sufficiently electrified and also having solar panels for street light. However, there is a serious problem among these villages regarding frequent power cuts, load shedding and during rainy season where solar panels are the only source of electricity.

xv) Agricultural Situation

Agriculture is an important source from which people of the area derive their income. The climatic condition, irrigation facilities and the quality of soil, in the both district are suitable for developed agriculture. Cropping intensity in the Palwal district are given in. Table 3.33

TABLE 3. 33 CROPPING INTENSITY AT PALWAL DISTRICT

SN.	Agriculture Land-use	Palwal	
		Area (in 000'ha)	Cropping Intensity (%)
1	Net sown area	115	187
2	Area sown more than once	100	
3	Gross Cropped Area	215	

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SN.	Agriculture Land-use	Palwal	
		Area (in 000'ha)	Cropping Intensity (%)
	(GCA)		

Generally, majority of crops are produced during the kharif and rabi season in Palwal district. Cereals like Rice, Wheat, Pearl millet, Rapseed mustard and other crops are grown in the district. Radish, Cauliflower, Carrot, Tomato Peas and other vegetables which are largely produced in the district.

Total arrivals of agricultural produce during 2010-11 in these principal agricultural markets and sub-yards in the district were 4.6 lakh tonnes. Heaviest arrival was of wheat which accounted for 4,77,700 tonnes, paddy arrival was 1,13,800 tonnes, barley 3,300 tonnes, bajra 7,100 tonnes, maize 1,500 tonnes, gram 3,900 tonnes, groundnut 1,700 tonnes, chillies 400 tonnes, potatoes 72,800 tonnes, onions 18,700 tonnes, gur, shakkar, khandsari 2,700 tonnes, pulses 13,100 tonnes, vegetables and fruits 1,35,700 tonnes and other agricultural produce 48,600 tonnes.

Agriculture is dependent on rain in the study area, except for some areas irrigated with canals from dams. Main crops are Rice, Wheat, Pearl millet, Rapseed mustard. The main Rabi and Kharif crops grown in the study area along with productivity per ha in Palwal District is given in Table 3.34.

TABLE 3. 34 STATUS OF AGRICULTURE IN THE PALWAL DISTRICT STUDY AREA

Major Crops Grown	Productivity (kg/ha)	
	Kharif	Rabi
Rice	3113	-
Wheat	-	3706
Pearlmillet	1764	
Rapeseed mustard	-	1493
Radish	10545	
Cauliflower	19930	
Carrot		14970
Tomato		10964

xvi) Irrigation Facilities

The irrigation based classification of the crop land in Palwal districts are given in Table 3.35. The irrigated area is given in two heads, as gross irrigated area and net irrigated area. Source of Irrigation

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for Agriculture in both District are given in Table 3.36.

TABLE 3. 35 THE IRRIGATION BASED CLASSIFICATION OF THE CROP LAND

Area in '000 ha.		
Gross Irrigated	Net Irrigated	Rain-fed
200	115 36.7 (Kharif) 109 (Rabi)	Nil

TABLE 3. 36 SOURCE OF IRRIGATION FOR AGRICULTURE IN PALWAL DISTRICTS

Sources of Irrigation	Area ('000 ha)
Canals	16
Tanks	-
Open well	-
Bore well	99

xvii) Health Care System

The State government has managed to achieve certain Millennium Development Goals through specific measures such as establishment of Health Task Force, State Health Policy initiatives etc. The medical facilities are provided by different agencies like Govt., Private individuals and voluntary organizations in the district. For nearly 62 per cent of the villages, health facilities such as hospital/primary health centres are accessible at a distance of less than 5 km. Family welfare centres/sub centres exist in nearly one-third of villages in the district. These centres are situated at a distance of 1-3 km in case of another 30 per cent of the villages. For the remaining one-tenth villages, the facility is located beyond 5 km. There are about 95 sub centers, 18 public health centres 7 community health care centres and one district hospitals in Palwal district. The health facility in village within 10 km is given in the below Table 3.37.

TABLE 3. 37 HEALTH FACILITIES IN VILLAGES WITHIN 10 KM. RADIUS

S. No.	Health Centre	Distance
1	Goyal hospital, sunper	5.5 km
2	OM premia Hospital, Palwal	7.3
3	Sub center	5.85

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4	Shanti Hospital	2.20
5	Bareja Hospital	4.63
6	Apex hospital	8.56
7	Government hospital	8.16

• **Public Distribution System (PDS)**

Public distribution system is a government-sponsored chain of shops entrusted with the work of distributing basic food and non-food commodities to the needy sections of the society at very cheap prices. PDS shops are available in all villages of the study area. The following items are distributed every month through the PDS shops:

- Wheat
- Rice
- Kerosene oil
- Industrialization

Status of industrialization in the study area in districts are given in **Table 3.38**

TABLE 3. 38 EXISTING MICRO & SMALL AND ARTISANS UNITS IN THE PROJECT AREA (2010-11)

SN.	Type of Industry	Number of Units
1.	Agro based	6
2.	Cotton textile	4
3.	Ready-made garments & embroidery	3
4.	Wood/wooden based furniture	2
5.	Paper & Paper products	3
6.	Chemical/Chemical based	7
7.	Mineral based	7
8.	Metal based (Steel Fab.)	5
9.	Engineering units	27
10.	Electrical machinery and transport equipment	6
11.	Repairing & servicing	2
12.	Others	1
13.	Eco-Tourism	12
14.	Others	1
	Total	86

Source: DIC, Palwal

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• **People Perception About the Project**

The results of the opinion poll are analysed and furnished in **Table 3.39**. The major advantages and disadvantages shown by the people are given in **Table 3.39**. It is observed that 50% of them have identified creation of employment opportunity as the main advantage. People are hopeful of getting employment in the project and through other indirect employment opportunities. About 60% of the respondents are expecting improvement in business. About 70% of the respondents are of the view that the living standard of those employed will improve. About 60% of the respondents are of the view that the infrastructure facilities in the area will improve. Around 30% of the respondents feel water scarcity in the area. The major disadvantage is that about 20% of the respondents are showing concern to health due to environmental pollution.

Perception is based on primary data collection based on questionnaire from Nine villages.

TABLE 3. 39 PEOPLES' PERCEPTION ON THE PROJECT

Perception	No. of Respondents	Distribution (%)
ADVANTAGES		
Employment opportunity	25	50
Business development	30	60
Improvement in Living Standards	35	70
Improvement in infrastructure	30	60
DIS-ADVANTAGES		
Water scarcity	15	30
Damage to health	10	20
Total Respondents	50	

➤ **Perceptions on Major Advantage:**

- Present project may generate more employment, directly and indirectly, and major portion of it may be provided to the local people.
- Development of business opportunity in the area.
- Improvement in living standard.

➤ **Perceptions on Major Disadvantage:**

- Deforestation is the major cause of proposed Cement project
- Water scarcity in the study area is expected due to drawl of ground water by the project.
- Health damage due to pollution arising from the project

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• Basic Needs of the People

People feel that the project has positive impact on their lives. The project will provide them employment and hope for better future. The Project Proponent to some extent will address the issues of poverty, unemployment, and drinking water under its CSR policies in the nearby areas for meeting the social infrastructure demand.

It appears that the expectations and needs of the villagers are quite moderate. The people in the study require basic minimum amenities wherever they are not available and improving these facilities wherever these are inadequate

Basic issues which needs to be addressed are related to the following:

- a) Education & communication
- b) Health care and enhancement of drinking water source.
- c) Alternative livelihood and environmental protection
- d) Infrastructure development including drainage
- e) Financial inclusion through enhanced banking facilities
- f) Enhancement of sports and cultural activities

➤ Conclusion

The socio economic study of surveyed villages gives a clear picture of its population, average household size, literacy rate and sex ratio etc. It was also found that a part of population was suffering from lack of earning source to run their day to day life. Their expectation is to earn some income for their sustainability on a long-term basis.

The infrastructure and amenities available in the area denotes the economic wellbeing of the region. The study area as a whole possesses an average level of infrastructural facilities. This area lacks higher level of amenities like higher education, health, drinking water and communication network. In terms of education and health facilities, the area is less than moderate. The area needs more medical facilities as it has not even one maternity and child care center. Though the area is well connected with road transport and communication facilities, still more frequent bus service is required.

The overall socio-economic status of the target population is average in terms of literacy, work participation rate etc.

3.16 TRAFFIC STUDY

The traffic survey is essential to realistically and accurately assess the prevailing traffic volumes and travel characteristics by undertaking classified volume count. The objective of traffic volume count survey is to assess the traffic intensity on the most vulnerable section of the road under question.

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The proposed location is surrounded by planned road network. The project has direct access to NH-02(19). The traffic study locations and surrounding road network as shown below in Figure 3.12.

3.16.1 MODE OF TRANSPORT OF RAW MATERIALS

Clinker

Clinker shall be sourced from ACL in house Clinker production unit in Marwar Mundwa, Rajasthan and any other in house sources further it would be transported by rail/road and would be stored at Devli GU plant.

Gypsum

Gypsum may be sourced from Bikaner, Rajasthan or nearby market and will be stored at available facility within the plant. It will be transported through road/rail and unloaded by truck tippler to Bulk Reception Unit. The required quantity of gypsum shall be fed to steel hoppers through series of belt conveyors.

Fly ash

Fly ash will be sourced most preferably from NTPC Dadri/Harduaganj/NTPC Jhajjar or from any other nearby thermal power station and fly ash would be stored at 6000t fly ash silo and 2000 t CFA/WFA stockpile.

3.16.2 EXISTING TRANSPORTATION DETAILS

The site is well connected to NH-02(19). Measurements of traffic density was made continuously for 8 hours by visual observation and counting of vehicles for the seven categories, viz., motor cycle/scooter, passenger car/ van / Auto rickshaw, tractors, trucks, bus, trailer and cycle. The traffic survey monitoring was done in the month of October 2023., to project the future traffic growth and the load on the NH- 02(19) and the nearby connecting minor roads due to the proposed grinding unit. Total numbers of vehicles per hour under the seven categories were determined.

The traffic survey is essential to realistically and accurately assess the prevailing traffic volumes and travel characteristics by undertaking classified volume count. The objective of traffic volume count survey is to assess the traffic intensity on the existing roads NH 2(19). M/s Ambuja Cements Ltd situated in Industrial area. Industrial area road is linked with NH-2(19). NH-2(19) is situated 2.6 km away in West direction from Project.

Twenty-four hours' continuous volume count was manually undertaken during November 2023. The analysis of traffic counts provides an estimate of average daily traffic (ADT). In order to convert

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recorded vehicles into a common scale, the passenger car unit (PCU) equivalent factor as per IRC:64 have been adopted. The **Table 3.40** reveals ADT (Average daily Traffic) in terms of number which translates into PCU (Passenger Car Unit).

TABLE 3. 40 TRAFFIC VOLUME COUNT SURVEY

Type of Vehicle	Total No. of Vehicles/Day	PCU factor	No. of Vehicles in PCU/hour
Car	700	1	700
Buses	150	3	300
Truck	80	3	240
Two wheelers	750	0.5	375
Three wheelers	400	1	400
Agricultural tractors/LCV	70	1.5	105
Total	2150		2120
PCU/hr=(PCU/day)/8=265			

Existing Traffic Scenario and LOS (Level of Service)

V (Volume in PCU/hr)	C (Capacity in PCU/hr.)	Existing V/C Ratio	LOS
265	1500	0.17	A

The Level of Service (LOS) and the capacity of the Roadway segments computed is based on the Indian Roads Congress (IRC) standards sourced from Guidelines for Capacity of Rural Roads in Plain Areas IRC 64-1990. Following table provides the LOS standards adopted based on the volume to capacity (V/C) ratios at the intersections and its performance.

CAPACITY AS PER IRC: 64-2011

V/C	LOS	Performance
0.0-0.2	A	Excellent
0.2-0.4	B	Very good
0.4-0.6	C	Good/Average/Fair

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0.6-0.8	D	Poor
0.8-1.0	E	Very poor

Considering 100 % transportation through Road. Both raw and finished materials will be majorly transported by the road. Adequate parking facilities will be provided to accommodate additional trucks within the plant premises. Additional Traffic during operation of the plant due to raw material and finished products transportation has been given Table 3.41.

TABLE 3. 41 INWARD TRAFFIC DUE TO THE ROAD TRANSPORTATION ROAD

Sl.No	Raw material	Quantity			Type of Vehicle & Capacity	Number of Trips / Day (approx.)
		MTPA	TPA	TPD		
1	Clinker	1.8	1800000	5454	Truck-30 T	181
2	Gypsum	0.3	300,000	909	Truck-25 T	36
3	Fly ash	1.8	1800000	5454	Truck-30 T	181
4	Slag	1.5	1500000	4545	Truck-30 T	151
5	Coal (For HAG)	0.06	60,000	181	Truck-25 T	7
Total						556

**Considering 100% by Road to Calculate Maximum Pollution Load with 330 working days*

TABLE 3. 42 OUTWARD TRAFFIC DUE TO THE FINISHED PRODUCT TRANSPORTATION

Material	Quantity			Type of Vehicle & Capacity	Number of Trips / Day (approx.)
	MTPA	TPA	TPD		
Cement	6	6000000	18181	Truck, 30 T	606

**Considering 100% by Road to Calculate Maximum Pollution Load with 330 working days*

Total No. of increased trucks / bulkers per day (raw materials) = 556

Total No. of increased trucks / tankers per day (finished product) = 606

Total No. of increased trucks / bulkers per day (raw material + finished product) = 1162

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Total No. of increased trucks / bulkers per day (Inward + outward) = $1162 \times 2 = 2324$

Increase in PCU / day = $2324 \times 3 = 6972$

Increase in PCU/Hr. = $6972/24 = 290.5$

Existing V/C Ratio = $436/1500 = 0.19$

LOS=A

Due to the project, there is an addition of heavy and light motor vehicles in the existing traffic. Accordingly, the LOS value is 0.17 which is in the category of excellent scenario. The present road capacity is good enough to bear the increased traffic load due to proposed project. However, internal roads and feeder roads will be maintained to facilitate transportation.

CHAPTER -4**ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES****4.1 INTRODUCTION**

Environmental impact is defined as: “any change to the environment, whether adverse or beneficial, wholly or partially resulting from any activities, products or services”. Impact prediction is a way of foretelling the environmental consequences of the significant aspects from a proposed activity. The objective of Impact Assessment process is to identify, characterize and evaluate the potential impacts arising out of the proposed project and prioritize them, so that they can be effectively addressed through proper Environmental Management Plan. The anticipated environmental impacts of the proposed project would be mainly due to the construction and operational activities. The environmental parameters likely to be affected are related to many factors, viz. physical, social, and economic, agriculture and aesthetic. The industrial operations can disturb the environment in various ways, such as change in air, noise level, water and soil quality of that particular area. While for the purpose of development and economic up-liftment of people, there is need for establishment of industries, but the development needs to be environmental friendly and more sustainable. Therefore, it is essential to assess the impacts of proposed project on different environmental and socio-economic parameters, so that, abatement measures could be planned in advance to minimize/ reduce, mitigate, offset or compensate for adverse impacts; and to enhance positive impacts wherever practicable. Through, this EIA/EMP Report, an attempt has been made to identify and list all possible aspects, which could generate significant impact on different environmental attributes during various phases of implementation of the Project. Some of these impacts are less threat or insignificant and don't need further analysis. The objective is to identify and list only the significant impacts, which shall require detailed analysis to the extent of decision-making purposes. The major construction activities will be of short duration and will have very few lasting impacts. The operations will have the potential of major impacts, which has been analysed in detail. Based on the impacts identified, most affected environmental attributes have been considered for detailed evaluation.

4.2 ANTICIPATED IMPACTS DURING CONSTRUCTION PHASE & OPERATIONAL PHASE

For the proposed plant, during construction, the activities related to land, levelling of site and construction of building structures and installation of machineries and equipment will lead to emission of particulate matter. Construction activities during this stage will temporary and does not have

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potential to alter the environment of the nearby area due to movement of heavy machineries and vehicles.

4.2.1 IMPACT ON TOPOGRAPHY AND LAND USE DURING CONSTRUCTION PHASE

Topography of the plant site is undulating to almost flat. Total land available with company is 10.97 Ha. There will be minimal or no loss of top soil due to levelling of parcel of land. The current land use of the site is agriculture fallow land. For the levelling of land, soils from within the site would be enough and no soil will be transported from outside, thus reducing impact of fugitive emission outside the site due to transportation. The land is quite undulated and devoid of any kind of agriculture and has scattered patches of shrubs. And since, the project is a Greenfield Project, the land use pattern of the area will be converted to Industrial Land.

4.2.1.1 EMBEDED CONTROL AND MITIGATION MEASURES

There are only one tree present on the identified land however few herbs and grasses needs clearing. The land use of the site will be changed into industrial. The development of greenbelt would help in preventing soil erosion. The construction of proposed plant will change the land use of the project site. However, the green belt plantation along project boundary will improve the aesthetic appeal of the site.

4.2.2 IMPACT ON AIR QUALITY DURING CONSTRUCTION PHASE & MITIGATION MEASURES

4.2.2.1 ASSESSMENT

During the construction period, fugitive dust generated can temporarily affect ambient air quality. However, this impact is not permanent and is expected to subside once construction activities are completed. For phase-1, the majority of the civil work is anticipated to be finished within 10 months, after which the air quality is expected to improve as the dust emissions will significantly decrease. The impact on air quality due to this dust is therefore considered reversible. Below, we discuss the various construction activities that may contribute to environmental impacts, including:

4.2.2.2 SOURCES

- **Excavation and Earthmoving:** The disturbance of soil and earth during excavation and grading can release dust ((Particulate Matter) and NOx concentration.
- **Material Handling and Storage:** The handling, storage, and transport of construction materials such as sand, cement, and gravel can also contribute to dust emissions.
- **Vehicle Movement:** The movement of construction vehicles and heavy machinery on unpaved roads and surfaces can increase the levels of SO₂, NO₂, PM, CO and un-burnt hydrocarbons.
- **Site Preparation and Landscaping:** Activities such as site levelling and landscaping can result in the generation of dust.

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These activities are typical during the construction phase, and measures can be implemented to minimize dust emissions and their impact on air quality. This will be confirmed within the plant boundary and is expected to be negligible outside the plant boundary. The impact will, however, be reversible, marginal and temporary in nature.

4.2.2.3 EMBEDDED CONTROL AND MITIGATION MEASURES

- Regular water sprinkling on the construction site and unpaved roads to reduce dust.
- Development and maintenance of adequate vegetation to minimize soil erosion and dust dispersion.
- Use of construction equipment with valid Pollution Under Control (PUC) certificates to limit exhaust emissions.
- Regular upkeep and maintenance of vehicles to ensure they meet emission standards.
- Proper alignment and stabilization of stockpiles, maintaining a controlled maximum height to minimize dust.
- Covering all vehicles transporting materials with tarpaulin or plastic sheets to prevent dust from escaping. Only vehicles with valid PUC certificates will be permitted on site.

4.2.2.4 RESIDUAL IMPACT

- Increased PM value generation may lead to respiratory problems like occupational respiratory diseases, asthma etc. to workers.
- Increased dust generation due to construction activity may lead to degradation of air quality which would be harmful for workers & nearby people.
- Handling of C&D waste can cause the generation of dust which can cause problems in breathing to the construction workers and nearby population. Emission of VOCs from paints can cause irritation in eyes, nose and throat, and can cause difficulty in breathing and nausea.

4.2.3 IMPACTS ON NOISE ENVIRONMENT AND MITIGATION MEASURES

4.2.3.1 ASSESSMENT

The major activities which are likely to increase ambient noise levels during construction phase is foundation work, fabrication of structures, operations of construction equipment and movement of vehicles. The study area may likely to experience increment in ambient noise level due to the above- mentioned activities. The areas closer to the site will have slight increase in noise level. However, as there are no settlements in the immediate vicinity of the proposed plant, the impact of noise will be negligible.

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4.2.3.2 SOURCE

During construction phase, noise will be generated due to following activities/processes

- Movement / operation of transport and construction vehicles / equipment.
- Transportation of equipment, materials and people.
- Other important activities involved in construction stage such as excavation, earthmoving, compaction, concrete mixing, crane operation, steel erection, mechanical / electrical installation.
- Piling work during laying down of foundation for infrastructure.
- The noise generation during construction phase will be temporary and will be limited to the project site.

TABLE 4. 1 IMPACT EVALUATION FOR AMBIENT NOISE LEVEL

Impact Evaluation Element	Change in Noise Level due to the Proposed Project			
Potential Effect/Concern	Impact on health of human and biological factors/receptors due to noise generated due to propose project during day and night time and also on occupational health of the workers exposed to noise			
Characteristics of Impacts				
Nature	Positive	Negative	Neutral	
		√		
	Direct	Indirect	Cumulative	
	√			
Extent	Plant area	Local	Zonal	Regional
Duration	Short term		Long term	
			√	
Intensity	Low	Medium	High	
		√		
Frequency	Remote (R)	Occasional (o)	Periodic (P)	Continuous (C)
				√
Significance of Impact				

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Significance	Insignificant	Minor	Moderate	Major
			√	

4.2.3.3 EMBEDDED MITIGATION MEASURES

- Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce generation of noise.
- All the vehicles entering into the project site will be informed to maintain speed limits and not to blow horns unless it is required.
- The workers involved in operating major noise generating equipment will be provided with personal protective equipment like ear plugs/ear muffs etc.
- Construction equipment will be properly lubricated to minimize the noise level.

4.2.4 IMPACT ON WATER AND MITIGATION MEASURES

4.2.4.1 ASSESSMENT

The water required for activities during the construction phase of the proposed plant will be sourced from existing surface or groundwater supplies. The water requirement of about 200 KLD will be sourced from Agra Canal/Treated water from Palwal. The construction will be sustaining about 18-month approx. This need is temporary and will be confined to a short period, ensuring minimal impact on the region's groundwater availability. Additionally, drinking water facilities will be provided for construction workers. Domestic wastewater will be treated on-site using septic tanks followed by soak pits. This setup ensures that there will be no discharge from the site, thereby preventing any negative impact on the surrounding water quality.

4.2.4.2 SOURCE

- Fresh water abstraction for domestic use of construction worker,
- Sewage generation maximum 5.0 KLD from construction workers,
- Runoff from construction activity during rainy season,
- Stagnation of sewage and construction wastewater if any.

4.2.4.3 RESIDUAL IMPACT

For construction activities, water will be required. Utilisation of fresh water may impact the water demand of the vicinity. -During the construction period, stagnation of water & run off water may lead to breeding of mosquitoes & water runoff can lead to soil erosion and soil runoff if comes in contact to water body, may deteriorate its quality.

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4.2.4.4 EMBEDDED AND MITIGATION MEASURES

- The waste water will be initially disposed of in soak pit via septic tank.
- Storm water drains will be made immediately after starting construction activity. The drains will be properly aligned in conformity with the site drainage pattern so that the alteration is kept to the minimum and flooding or soil erosion does not occur.
- Sedimentation pits will be provided at appropriate location to trap the silt laden runoff water and prevent excessive silt from going outside. The storm water drains will be diverted to a water reservoir to collect the runoff. This stored water will be utilized for civil construction purpose

4.2.5 IMPACTS ON SOCIO-ECONOMIC ENVIRONMENT AND MITIGATION MEASURES

4.2.5.1 ASSESSMENT

About 1530 nos. of people will get employment during the construction stage resulting in the ancillary development and growth. Unskilled/semi-skilled manpower will be sourced from the local area and skilled manpower will be sourced from outside/local. Local people will be given preference for employment on the basis of their skill and experience.

- Further due to proposed project, influx of working community will generate an indirect employment through development of nearby market/ shops, trade centres, activities, transportation etc.
- Population influx during the construction phase might introduce various water and vector borne diseases or will lead to other unhygienic conditions in the area by disturbing existing sanitation infrastructure.
- Rapid diverse population influx at the project site might create unusual behavioural activity such as worker-community conflicts, increase violence such as theft/ stabbing, and increased consumption of drugs/alcohol within the area.
- Impacts on the health of nearby villagers can be envisaged due to the short-term exposure to fugitive dust generated during transportation activities resulting in increased eye irritation, nausea, headache etc.

TABLE 4.2 QUALITATIVE EFFECTS ON SOCIO-ECONOMIC ENVIRONMENT

Parameter	Local	Regional	Direct	Indirect	Reversible	Irreversible
Employment	+	•	+	+	•	+
Income	+	•	+	+	•	+

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Transport	+	+	+	+	.	+
Education	+	.	+	.	.	+
Medical facilities	+	.	+	.	.	+
Communication	+	+	+	.	.	+
Sanitation	-	.	-	.	.	-
Housing	+	.	+	.	.	+
Health	-	.	-	-	.	-
Recreation	+	+	.	+	.	+

4.2.5.2 EMBEDDED CONTROLS AND MITIGATION MEASURES

- Awareness programme will be conducted before the monsoon season regarding the spread of water borne/ vector diseases.
- Mosquito repellents will be provided in the nearby villages and at construction site to avoid the spread of diseases.
- To overcome behavioural impact, proper site in charge with timely supervision will be done. In advance, facilities with equipped medical and safety services will be provided to take a control over the incident/violence if any caused.
- To control the dust emissions during the construction phase, the site boundary will be covered by the curtains.
- Whenever necessary, collaboration between project authority and local bodies will be done on regular basis with an objective to build and maintain a good relationship which is necessary for smooth functioning of the project as well as progress and welfare of the people in the study area
- Job oriented training courses will be organized through industrial/technical training institutions for educated youth like electrical, tailoring, plumbing, type writing, shorthand and machine repairing, welding fabrication, and other skill developing trades.

TABLE 4.3 SOCIO-ECONOMIC IMPACTS OF PROPOSED PROJECT AREPREDICTED

Sl. No.	Impact Parameter	Predicted Impacts		Budget Allocation/ Remark
		Positive	Negative	
1	Human Settlement	No displacement of people or habitations would occur.	Nil	

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2	Livelihoods	No loss of existing livelihoods. Direct or indirect employment is expected to occur.	An insignificant influx of people in project construction and operation phases.	Priority will be given to local people in employment
3	Employment Generation	Creation of additional employment of skilled, semi-skilled & unskilled workers during project operation.	Nil	----
		Indirect employment of persons during construction phases of the project. Majority of them will be local women and youth.		
4	Income and Revenue	Improvement of incomes of locals engaged in tertiary businesses.	Nil	----

4.2.6 IMPACT ON SOIL & MITIGATION MEASURES

4.2.6.1 ASSESSMENT

At the time of construction, there will be soil and debris generation. The disturbed slopes will be well stabilized before the onset of the monsoon. Top soil shall be safely kept aside and restored after completion of work. The levelling operation will also involve piling up of backfill materials. Use of dust suppressant spraying to minimize fugitive dust during construction activities is recommended.

4.2.6.2 IMPACTS

Soil erosion may occur if soil is disturbed, left bare, and exposed to the abrasive action of wind and water.

4.2.6.3 EMBEDDED CONTROLS AND MITIGATION MEASURES

Construction wastes will be segregated as much as possible at site itself to increase the feasibility of recycling concrete and masonry as filling material and steel pieces as saleable scrap. Litter disposal and collection points will be established around the work sites. Empty packaging materials, drums, glass, tin, paper, plastic, pet bottles, wood, thermocol and other packaging materials, etc. will be disposed through local recyclers. The construction spoils will be temporarily stored at designated

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located inside the plant premises. Discharge of any kind of pollutant will be strictly prohibited during construction period.

4.3 IMPACT ON TOPOGRAPHY AND LAND USE DURING OPERATION PHASE

The proposed project has been planned over an area of 10.97 Acres. Greenbelt / plantation will be developed over an area of 3.67 Ha. within the project boundary. Only the land use pattern will be changed to Industrial use for cement production. There is no impact land due to operational activities

4.3.1 MITIGATION MEASURES

- All earth work will be completed in such a way so that the soil erosion and carryover of the materials in other areas are protected.
- Excavated soil will be stored properly to avoid the spread of wind-blown dust and shall be reused for greenbelt maintenance.
- Proper disposal of construction debris, the packaging materials which may consist of wooden boxes and jute wrappers will be stored at suitable place and disposed of suitably.
- Change in existing Land use\Land cover from agricultural fallow land into industrial uses will be for longer duration and this change in Land use\Land cover shall confined to project site only.
- There will be no change in Land use\Land cover outside the plant area.

4.3.2 IMPACT ON AIR QUALITY DURING OPERATIONAL PHASE & MITIGATION MEASURES

The operational phase of the proposed project involves several activities that could lead to an increase in air pollution, including fugitive emissions and stack emissions of sulphur dioxide (SO₂), nitrogen oxides (NO_x), and particulate matter (PM). The key activities contributing to these emissions include:

4.3.2.1 SOURCE

- Raw Material Stacking: The storage and handling of raw materials can release dust and particulate matter into the air, contributing to fugitive emissions.
- Cement Grinding: The grinding process can generate fine particulate matter, which can escape into the atmosphere as both fugitive and stack emissions, depending on the equipment used.
- Product Handling: The transfer and packaging of finished products can also release dust, adding to the overall fugitive emissions.
- Packaging: Dust can be generated during the packaging process, which contributes to fugitive emissions.

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- **Vehicular Movement:** The movement of vehicles within the site, including trucks for raw material delivery and product transport, can stir up dust from unpaved surfaces and release exhaust emissions, further impacting air quality.

Each of these activities has the potential to deteriorate air quality due to the release of pollutants. Therefore, it is crucial to implement appropriate control measures to manage and mitigate these emissions, ensuring compliance with air quality standards and protecting public health and the environment.

4.3.2.2 EMBEDED CONTROL AND MITIGATION MEASURES

- All major areas of air pollution (Cement Mill, Package plant) will be provided with Bag houses & Bag filters to maintain emissions within the prescribed norms i.e.30 mg/Nm³ for particulate matter emission from the stacks.
- Clinker will be transported by truck/conveyor and fed directly/through Bulk Reception Unit; Gypsum and slag will be stored in covered shed at proposed plant and cement in cement silo at GCCP. Fly ash will be transported through bulkers / trucks and stored in fly ash silo / stockpile.
- Adequate stack will be provided in order to minimise the GLC
- Regular cleaning and sweeping of roads and nearby area of storage facilities will be done by vacuum sweeping machine.
- Greenbelt/plantation will be done in 33% of the total project area to attenuate the air pollution
- Efficient Air Pollution Control Equipment (APCE) like bag house in cement mill; bag filters at various transfer points and at all the major stacks will be installed to keep the emissions within the permissible limit.
- Vehicles and machineries will be regularly maintained. Proper upkeep and maintenance of vehicles will be done.
- Routine maintenance of APCE.
- Automatic shutdown will take place due to non-working of APCE.
- The overall quality of the ambient air will be maintained within the limit prescribed by CPCB after the commencement of the operation of proposed project
- All the personnel working in dust/noise prone areas are provided with appropriate personal protective equipment (PPE) such as helmets, safety shoes, safety goggles, industrial grade gloves, safety harnesses, nose masks.

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TABLE 4. 4 AIR POLLUTION CONTROL EQUIPMENTS

Name of Unit	Air pollution control system
Clinker Silo	Bag Filter
Fly ash Silo	Bag Filter
Gypsum/Wet fly ash Stacker	Bag Filter
Cement Mill	Bag Filter
Cement Silo	Bag Filter
Gypsum Crusher	Bag Filter
Packer	Bag Filter

4.3.2.3 AIR QUALITY PREDICTIONS**Emission from Point Source (Stacks)**

Dust and gaseous emission from flue gases stacks emit pollutants like PM, SO₂, NO_x into atmosphere.

Emission from Area Source (Fugitive Emission)

Fugitive emissions are expected from storage, handling and conveying of coal, clinker, gypsum, fly ash, and during handling and transportation of cement. Dust is generated during unloading, loading, transportation of material through conveyor belts, crushing and screening. Fugitive emission is also generated due to vehicular movement in the premises.

4.3.3 AIR POLLUTION DISPERSION MODELING STUDIES**4.3.3.1 MODEL INPUT**

Atmospheric dispersion modelling is the mathematical simulation of how air pollutants disperse in the ambient atmosphere. It is performed with computer programs that solve the mathematical equations and algorithms which simulate the pollutant dispersion. The dispersion models are used to estimate or to predict the downwind concentration of air pollutants emitted from sources such as industrial plants and vehicular traffic. Such models are important to governmental agencies tasked with protecting and managing the ambient air quality. The models are typically employed to determine whether existing or proposed new industrial facilities are or will be in compliance with the National Ambient Air Quality Standards (NAAQS). The models also serve to assist in the design of effective control strategies to reduce emissions of harmful air pollutants. In the present study prediction of impacts on the air environment has been carried out employing U.S. EPA AERMOD Cloud, Envitrans Version 24.0.0.64 and designed for multiple sources for predicting the maximum ground level concentration (GLC). The major air emissions at the site is PM, SO₂ and NO_x from process and DG set stacks. The Proponents have proposed to install Bag filters to control PM in flue gas emissions. The site-specific monitored

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data was used as input to the software AERMOD Cloud, Envitran Version 24.0.0.64 is used for prediction of GLC emission in ambient air. The proposed stack and emission data for model study is given in Table-4.5

TABLE 4. 5 PROPOSED STACK EMISSION DATA

	Vol.Flow rate(Nm3/hr)	Stack height(m)	Stack dia, (m)	Stack temp,(K)	Stack velocity(m/s)	Stack emission rate PM
Stack 1	454223.7	42	2.8	310	21.66	1.2
Stack 2	1379.38	11	0.23	318	10	0.019
Stack 3	618.935	12	0.15	315	10.45	0.02

4.4 METEOROLOGICAL DATA

For the prediction of rise in Ground Level concentrations of pollutants, the actual hourly meteorological data recorded at the site during the study period (1st October 2023 to 31st December 2023) is converted to mean meteorological hourly data as specified by CPCB and the same is used in the model.

4.4.1 PRESENTATION OF RESULTS

The simulations were made to evaluate incremental short-term concentrations due to proposed project. In the short-term simulations, the incremental concentrations were estimated to obtain an optimum description of variations in concentrations within study area of 10 km radius. The predicted (maximum) concentration levels & the incremental concentrations at various locations due to the proposed industry are shown in Isopleths. Isopleths showing stack & baseline monitoring locations (8 receptors/blacks square dots) are appended subsequently. The plotted Wind rose is also shown vide same the images

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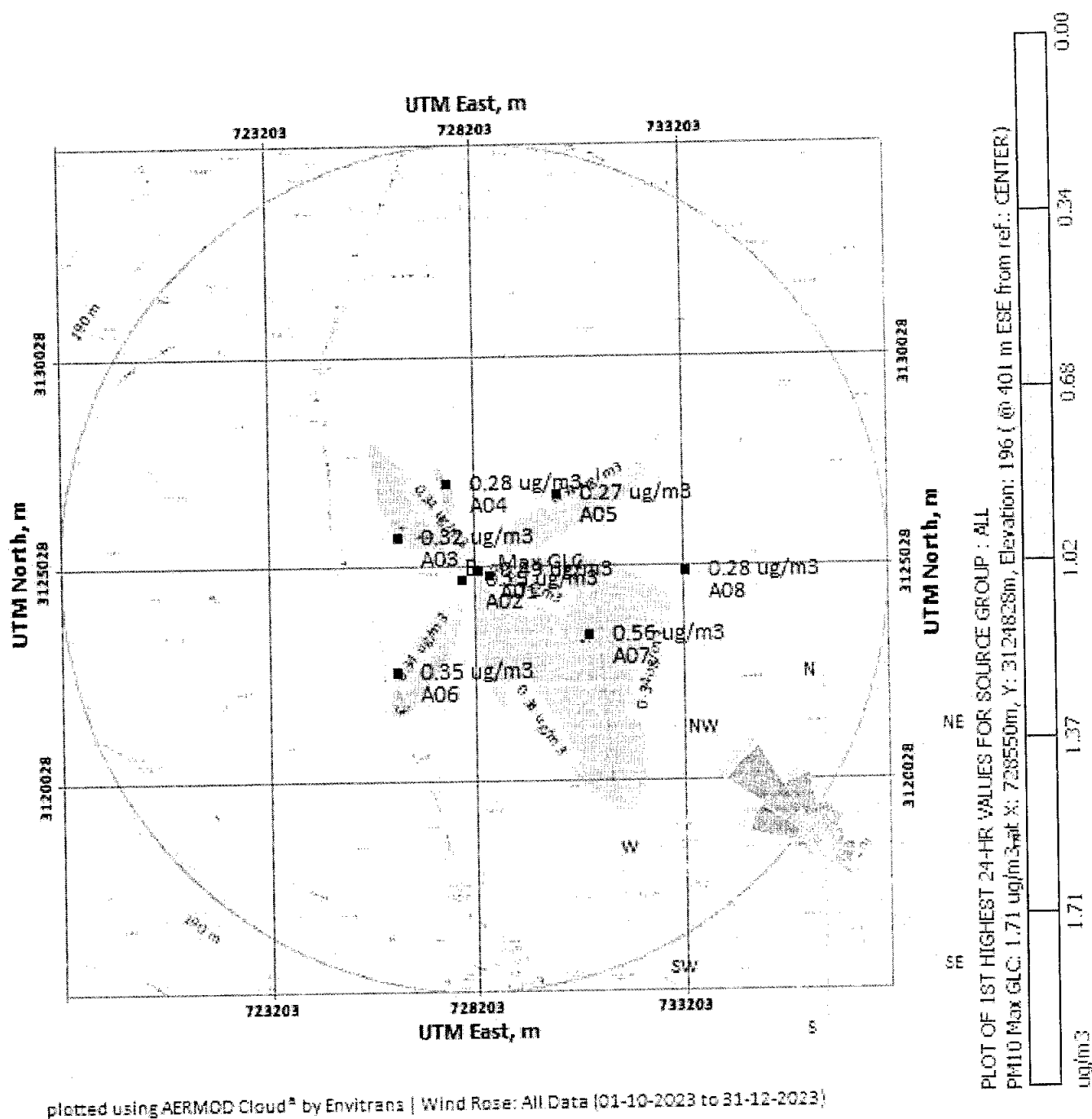


FIGURE 4.1 PREDICTED 24-HRS GLC'S OF TPM FOR THE PROPOSED PROJECT

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TABLE 4. 6 AS PER THE ISOPLETHS, NET RESULTANT CONCENTRATION

Pollutant	Receptor location	Max. Baseline conc.(ug/m3)	Estimated max incremental conc. (ug/m3)	Net resultant conc.(ug/m3)	NAAQ standards (ug/m3)
TSP	1	74.24	0.49	74.73	100
	2	63.93	0.15	64.08	
	3	54.45	0.32	54.77	
	4	62.62	0.28	62.9	
	5	55.14	0.27	55.41	
	6	53.97	0.35	54.32	
	7	57.35	0.56	57.91	
	8	52.97	0.28	53.25	

From above Table 4.6 it is evident that the total concentration for TPM are within NAAQ for all receptor locations analysed.

4.4.2 INTERPRETATION OF RESULTS

Under controlled conditions, the predicted cumulative concentrations of PM10 at all baseline monitoring locations were found to be meeting the prescribed standards. The predicted cumulative concentrations of SO₂ at all baseline monitoring locations were found to be meeting the prescribed standard of 80 µg/m³. – The predicted cumulative concentrations of NO₂ at all baseline monitoring locations were found to be meeting the prescribed standard of 80 µg/m³

4.4.3 CONCLUSION

From the results of the model, it is concluded that the maximum cumulative concentrations of PM10 due to proposed project are expected to comply with the prescribed NAAQ Standards. This also indicate that if we operate pollution control equipment holistically than there is enough assimilation capacity available for industries in this space.

4.4.4 AIR POLLUTION CONTROL AND MONITORING PHILOSOPHY

- All pollution control equipment as detailed already shall be checked on half yearly basis for any wear and tear and suitable repair/maintenance shall be carried out.
- System shall be put in place to report equipment failure immediately. Emergency plan shall be laid out tackle pollution control equipment failures. All equipment failures shall be reported to CPCB/SPCB/Regional Office of MoEF&CC on 6 monthly bases with investigation report and

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corrective actions. Guidelines / Code of Practice for pollution prevention for Plants (GSR 414 dated 30th May 2008) and GSR277(E) dated 31st March, 2012 shall be implemented

- The site environmental/designated officer shall certify the emission data on daily basis. The records shall be maintained and submitted as part of half yearly compliance report.
- Asphaltting of all roads/surfaces within the plant premises.
- Covered conveyor belts gallery to prevent fugitive emissions
- All conveyor transfer points in material handling areas will have a provision of dust extraction systems – connect to ducts, dust extraction across a bag filter.
- Greenbelt development is/shall be done within the project area along the boundary walls and any other suitable areas.
- Regular ambient air quality monitoring by third party shall be performed at all baseline stations for checking compliance with NAAQ standards. Online monitoring systems – 2 Nos continuous emission monitoring systems on stacks connected to process and 3 Nos Continuous Ambient Air Quality monitoring systems shall be established as per MoEF&CC guidelines. These continuous emission and ambient monitoring systems will be connected to the state PCB network.

4.5 IMPACT ON NOISE QUALITY IN OPERATIONAL PHASE ASSESSMENT

The high noise generating machineries are Crusher, Ball Mill, Packing Plant, compressors, pumps and motors etc. The noise level near the machinery will be maintained below 85 dB (A) and the expected noise levels at the plant boundary will be maintained below 75 dB (A) during day time and 70 dB (A) during night time. Ambient noise levels will be increased during operation phase due to machineries and other industrial activities. However, the impacts of noise during this phase will be confined within plant boundary or within the source of generation.

4.5.1 SOURCE

Increase in noise levels within the plant area, which will be generated from:

Machineries and equipment such as Cement mill, compressors, pumps and motors etc. due to poor lubrication, worn out parts, loosened nuts/ bolts, improper foundation and mountings, flattened springs support etc.

Hence, the noise generated will cause a significant impact on workers and surrounding residents and if exceeds the permissible levels for a continuous period of time, this will reduce the labour productivity and would also lead to loss of attention/concentration resulting in accidents.

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4.6 PREDICTION OF IMPACTS DUE TO NOISE

Noise will be produced during grinding, materials handling, vehicular movement and DG sets. With increasing distance from the source, the noise level decreases due to wave divergence. Additional decrease also occurs due to atmospheric effects and interaction with objects in the transmission paths. Baseline Ambient Noise levels recorded at village outside the plant was found to be more than 30 dBA but less than 55 dBA during daytime and less than 45 dBA during night time, which is well within the permissible residential area limit. The predicted noise level at 500 m distance from source is 30 dBA. Therefore, there will be insignificant impact on the ambient noise quality of the surrounding villages. The standards for occupational exposures - tolerable level is 90 dB(A) for 8-hour exposure. To avoid over exposure found inside working area, workers will be provided with ear plugs/ earmuffs for use. The predicted main source of sound from the Plant is mentioned below:

TABLE 4. 7 MAIN SOURCE OF SOUND FROM THE PLANT

Source ID	X Coordinate	Y coordinate	SPL dB(A)
Grinding mill	28°13'46.95"	77°19'29.91"	90
Ball mill	28°13'56.03"	28°13'56.03"	88
Blower	28°13'53.47"	77°19'37.95"	84
Compressor	28°13'53.12"	77°19'28.47"	78

4.6.1.1 RESULT AND DISCUSSION

The Noise Contour Map prepared using the baseline data and Point sources is plotted below

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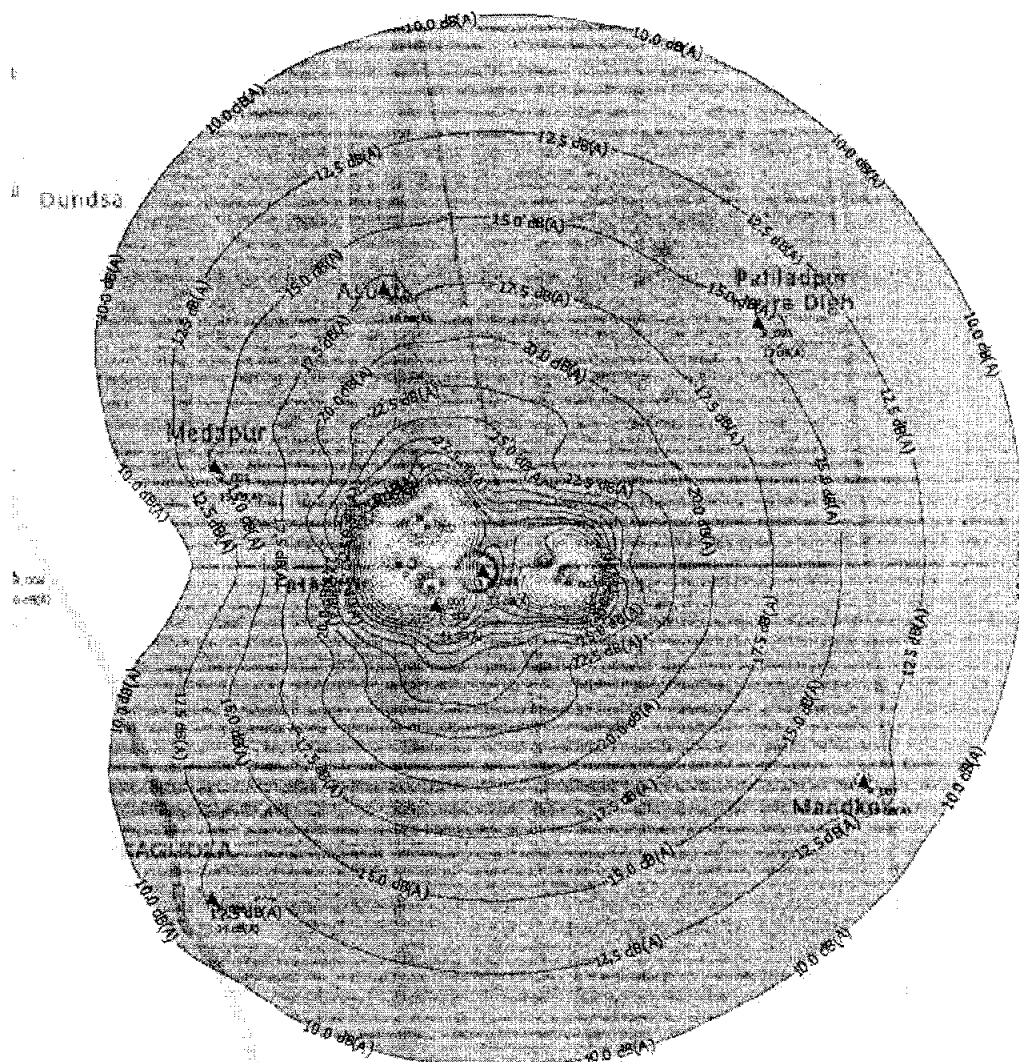


FIGURE 4. 2 NOISE CONTOUR MAP OF THE PLANT IN DAY

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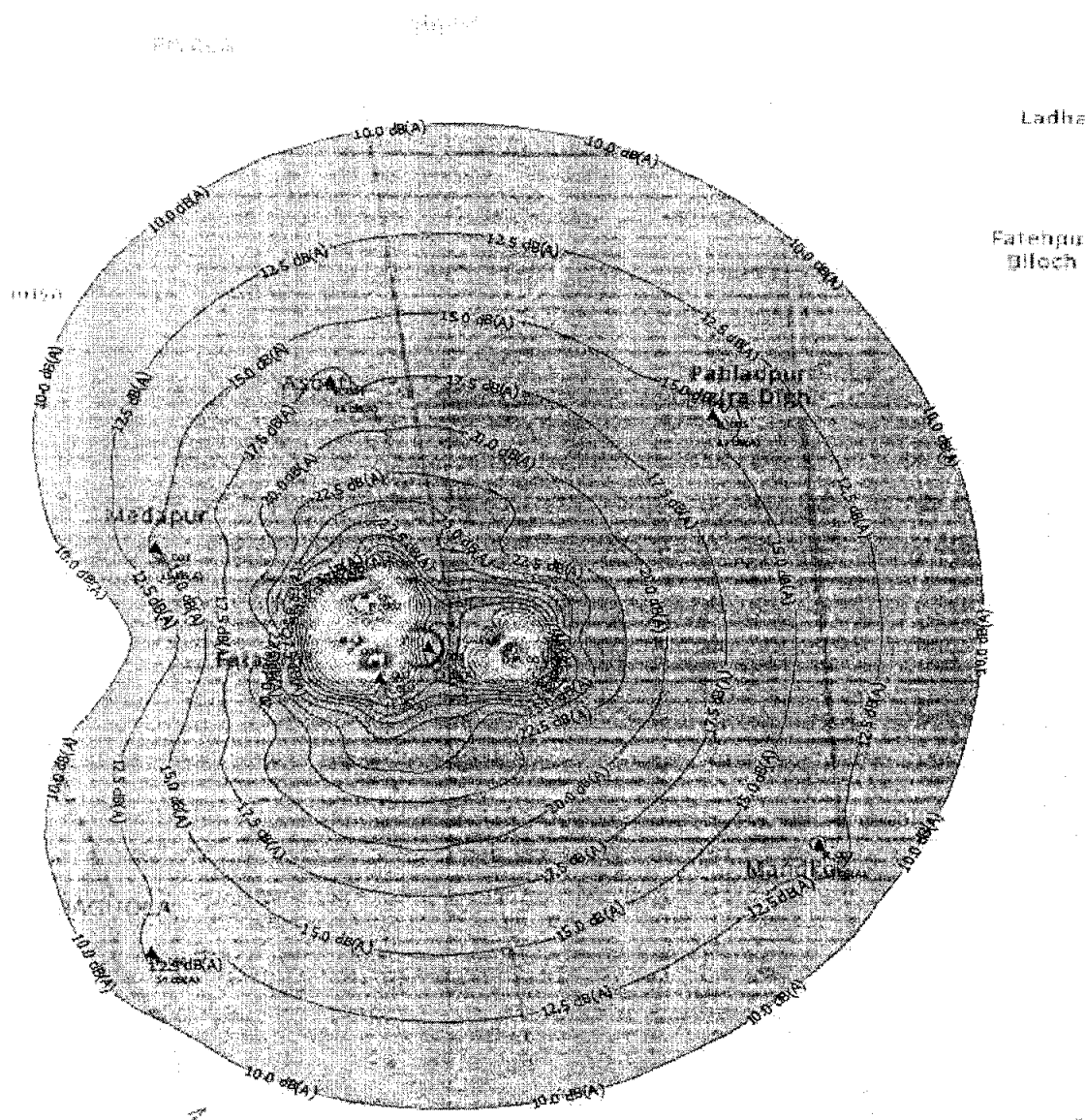


FIGURE 4.3 NOISE CONTOUR MAP OF THE PLANT IN NIGHT

TABLE 4.8 RESULT OF NOISE MODELING DAY AND NIGHT

Receptor ID	X-Coordinate	Y-Coordinate	Predicted Level dB(A)
DAY TIME			
N1	28°13'50.36"	77°19'33.52"	33.3
N2	28°13'42.57"N	77°19'21.13"E	41.4
N3	28°14'16.74" N	77°18'24.28"E	15.3
N4	28°14'58.41" N	77°19'9.36" E	18.4
N5	28° 8'17.83" N	77°28'23.34"E	16.6
N6	28°12'33.85" N	77°18'21.40"E	13.8

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N7	28°12'58.40" N	77°21'11.53"E	15.2
N8	28°13'53.14"N	77°17'30.29"E	6
NIGHT TIME			
N1	28°13'50.36"	77°19'33.52"	33.3
N2	28°13'42.57"N	77°19'21.13"E	41.4
N3	28°14'16.74" N	77°18'24.28"E	15.3
N4	28°14'58.41" N	77°19'9.36" E	18.4
N5	28° 8'17.83" N	77°28'23.34"E	16.6
N6	28°12'33.85" N	77°18'21.40"E	13.8
N7	28°12'58.40" N	77°21'11.53"E	15.2
N8	28°13'53.14"N	77°17'30.29"E	6

The predicated level of Noise for the greenfield project is not impacting selected location. The noise levels monitored at all residential areas are within the norms prescribed for Residential Zone. The results of our noise modelling study indicate that the noise levels from the cement grinding unit do not significantly impact the surrounding areas. The predicted noise levels are well within the regulatory limits, ensuring minimal disturbance to nearby communities and the environment. However, it is recommended to use hearing protection equipment during drilling operations and while operating heavy machinery.

4.6.2 EMBEDED CONTROL AND MITIGATION MEASURES

- Regular maintenance of plant machinery and equipment will be carried out.
- Better work habit will be adopted.
- An acoustic enclosure will be provided to DG set.
- PUC certified vehicles will be used.
- Necessary safety and personal protective equipment such as ear plugs, earmuffs will be provided to the workers.
- Noise levels generated will be maintained to comply with the Factories Act & Rules and will not exceed 75 dB (A) at 1 m distance.
- 33% of the total plot area will be under green cover. This will help to control the noise pollution.
- Rotation of workers in high noise areas will be done.

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4.7 IMPACT ON WATER ENVIRONMENT& MITIGATION MEASURES IN OPERATIONAL PHASE

The grinding unit's water consumption will be minimal, primarily used for the cooling system. The system is designed to recirculate water in a closed loop, significantly reducing the need for additional water intake. Only a small amount of makeup water will be required to compensate for evaporation losses in the cooling circuit. This approach ensures efficient water use and minimizes the environmental impact. The necessary water will be sourced from existing surface or groundwater supplies, ensuring a sustainable and reliable supply for the facility's needs. The water requirement will be 2 x 300 KLD (600 KLD). Major quantity of water in Cement grinding process requires for water spray in the mill to stabilize the material bed and to control the cement temperature.

4.7.1 SOURCE

- Ground water abstraction through Tube wells.
- Sewage Generation from industry
- Run off storm water.
- Wastewater discharge outside the premises

4.7.2 MITIGATION MEASURES

- Wastewater will be not being discharged outside the plant premises. Therefore, operation of Grinding Unit will not pose any adverse impact on the ground water resources of the area.
- The company will install roof top rainwater harvesting structures inside the plant premises to recharge the groundwater
- The domestic wastewater generated from the toilets, washrooms and canteen of the plant shall be treated in STP.
- The network of storm water drains and wastewater drains inside the plant will be made separate.
- The storm water drain will have sedimentation pits and oil

4.7.3 SIGNIFICANCE OF IMPACT SCENARIO

The overall impact on the water resources and quality is assessed to be negligible considering the mitigation measures to be taken and optimum use of resources.

TABLE 4. 9 IMPACT SIGNIFICANCE-WATER RESOURCE

Aspect	Scenario	Extent	Duration	Intensity	Likelihood	Significance
Water Resources	Without Mitigation	Local	Long term	Medium	Definite	Moderate
	With Mitigation	On site	Temporary	Negligible	Likely	Negligible

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4.8 MANAGEMNET OF SOILD WASTE

Most of the process waste generated in cement industry is reused in process. Dust collected from air pollution control equipment will be totally recycled in process. Sludge from Modular Sewage Treatment Plant (STP) will be used as manure for green belt development. A part of used oil will be utilized for lubrication purpose & remaining will be sold to authorized PCB vendors. Following type of waste will be generated.

TABLE 4. 10 SOLID WASTE GENERATION AND MANAGEMENT

Waste	Quantity(kg/day)	Collection method	Treatment /disposal method
	Proposed		
Organic	65	Bins	Organic waste is composted and used as manure for greenbelt development
In organic	40	Bins	Authorized PCB vendors

TABLE 4. 11 HAZARDOUS WASTE GENERATION AND MANAGEMENT

Sl.No	Name of material	Schedule	Proposed quantity	Handling & storages	Method of disposal
1	Used Oil	5.1	1 TPA	In isolated area with non-permeable concrete flooring	Through CPCB/SPCB authorized agency Recycler
2	Cotton rags	33.2	2 TPA	In isolated area with non-permeable concrete flooring	Through CPCB/SPCB authorized agency (TSDF/CHWIF)
3	VRLA (sealed battery)	-	0.5 TPA	In isolated area with non-permeable concrete flooring	To OEM through buy-back/ through authorized recycler
4	Used Oil Containers @20L capacity	33.1	0.4 TPA	In isolated area with non-permeable concrete flooring	Through CPCB/SPCB authorized agency Recycler

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4.8.1 MITIGATION MEASURES

- Dust collected from various pollution control equipment will be recycled into the process.
- No industrial wastewater discharged from Cement Grinding Plant.
- Domestic wastewater generated from office toilets will be treated in modular STP and used for dust suppression and plantation.
- No solid waste generation from cement manufacturing process in Grinding Plan.

4.8 IMPACTS ON OCCUPATIONAL HEALTH AND MITIGATION MEASURES

The cement industry presents a variety of hazards that can affect workers' health and safety. These hazards can be broadly categorized as follows:

- Exposure to dust
- Exposure to high temperature
- Noise exposure
- Physical hazard
- Chemical hazard and other industrial hygiene

➤ Exposure to Dust

Exposure to fine particulates associated with operational activities in most of the dust generating stages of grinding unit. Workers with long term exposure to fine particulate dust are at risk of pneumoconiosis, emphysema, bronchitis, and fibrosis. Methods to prevent and control exposure to dust include the following:

- Control of dust through implementation of good housekeeping and maintenance
- Use of air-conditioned, closed cabins
- Use of dust extraction and recycling systems to remove dust from work areas, especially in grinding mills
- Use of PPE, as appropriate (e.g. masks and respirators) to address residual exposures following adoption of the above-referenced process and engineering controls.

➤ Noise exposure

Noise exposure in a grinding unit can come from exhaust fans, grinding mills, compressors, and motors. The risks associated with this noise include hearing impairment, hypertension, increased pulse rate, annoyance, tinnitus, and sleep disturbances. To mitigate these risks, several measures can be implemented: using silencers for ID fans, enclosing rooms for mill operators, using noise barrels,

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providing personal hearing protection (ear plugs/muffs) in high noise level areas, ensuring proper maintenance of machinery and DG sets, installing compressors in closed buildings, regularly monitoring noise levels, displaying noise levels with corresponding permission levels, posting instructions for using personal protective equipment (PPE) in high noise areas, and conducting periodic health check-ups, including audiometry, for workers exposed to high noise levels.

➤ **Fire and Explosion**

The risks involved in certain work environments include electrical shock, electric burns, fires, explosions, falls from height, and the dropping of tools and objects. These hazards can be caused by insulation failure, equipment failure, poor maintenance, improper work methods, substandard materials and workmanship, unauthorized personnel, and lack of training and knowledge. To mitigate these risks, the following protection measures will be implemented: proper earthing according to IS 3043 standards, ensuring a low voltage supply, using isolating transformers, employing double insulated tools, providing overload protection, protecting against leakages with Ground Fault Circuit Interrupters (GFCIs), using flame-proof equipment, implementing lightning protection, safeguarding against static electricity, and ensuring the safe use of ladders and scaffolds.

➤ **Physical Hazards**

Injuries during Project operation are typically related to slips, trips, and falls; contact with falling / moving objects; and lifting / over-exertion. Other injuries may occur due to contact with, or capture in, moving machinery (e.g., dump trucks, front loaders, forklifts). Activities related to maintenance of equipment, including crushers, mills, mill separators, fans, coolers, and belt conveyors, represent a significant source of exposure to physical hazards. Such hazards may include the following:

- Falling / impact with objects
- Transportation and;
- Contact with allergic substances.

Following management measures will be ensured to prevent the physical hazards in the plant:

- Any person working on equipment with moving parts personally ensures the equipment is de-energized, isolated and locked/tagged out.
- Any person working from a position with the potential risk for a fall from height uses fall protection.
- Prescribed PPE will be provided to all workers exposed to open processes or systems.
- In case of any accident immediate & proper medical care will be provided at the plant site.

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4.9 GREEN BELT DEVELOPMENT

4.9.1 GUIDELINES FOR GREENBELT DEVELOPMENT

According to the guidelines of the Ministry of Environment, Forest and Climate Change (MoEF&CC), a green belt will be established around the entire industry perimeter, covering approximately one-third (33%) of the plant area. This will include the laydown area, which will later be converted into green space. The Greenbelt Development Plan for the project area will follow these guidelines

- Trees will be planted to create a greenbelt, with an expected survival/growth rate of 80-85% due to favourable soil and environmental conditions.
- Trees that grow to a height of 5 meters or more will be planted in alternating rows to prevent horizontal pollution dispersion.
- Additionally, trees will be planted along roadsides to mitigate auto-exhaust and noise pollution, ensuring there is no direct line of sight to the installation from outside the foliage perimeter.
- Since tree trunks are usually devoid of foliage up to 3 meters, shrubs will be planted to cover this portion.
- Fast-growing trees with thick, perennial foliage will be prioritized, as they will take several years to reach full height.
- Local species will be preferred, avoiding monoculture and invasive species. A three-tier plantation system will be implemented along the entire plant boundary.

4.9.2 PROPOSED ACTION PLAN FOR GREEN BELT DEVELOPMENT IN THE PROJECT AREA

Out of total land about 3.67 hectare of which ~33.5 % of the area will be developed as greenbelt area & plantation. A thick greenbelt all along the roads and plant will be developed. The total number of species planted is 9175. Mango, Neem, Sagun, Guava, Jamun, Sisu, Bel, puthranjeeva

- Plantation will be done in and around the plant premises.
- 80-85% survival rate will be maintained with all possible efforts.
- The trees will be planted at suitable grid spacing to encourage proper growth.
- Local plant species will be preferred

4.9.3 GREENBELT / PLANTATION MANAGEMENT PLAN

- In order to facilitate the proper growth of plants, limited measures involving preparation of seed bed with suitable number of fertilizers and treatment with mulches will be taken. The topsoil will be used for greenbelt development.
- The following characteristics will be taken into consideration while selecting plant species for greenbelt development and tree plantation:
 - They should be fast growing and tall trees.
 - They should be mix of perennial evergreen and deciduous trees.
 - They should have thick canopy cover.
 - The planting should be in appropriate alternate rows around the site to prevent lateral pollution dispersion.
 - The trees should maintain regional ecological balance and confirm the soil and hydrological conditions. Indigenous species will be preferred
 - Company will provide all necessary facilities/equipment for greenbelt development.
 - Horticulturist will be assigned for proper management and care.
 - Timely use of fertilizers for the healthy and dense greenbelt development will be done.
 - For plantation, if required, company will acquire sapling from local private/government nursery.

4.10 IMPACT ON TERRESTRIAL AND AQUATIC HABITAT

As the land identified for the project is a non-Agriculture area without vegetation, cutting of any trees is not envisaged. Therefore, no major loss to biomass is envisaged during construction phase. There may not be any significant impact on soil in general. These impacts are, however, restricted to the early phase of construction. The construction activities lead to inward migration of labour force in the area and thus, there would be pressure on trees in the area due to increase in domestic fuel demand. In order to prevent felling of trees in the neighbouring areas, alternate fuel will be arranged to meet the fuel requirement of the labor force. There is a positive impact on terrestrial habitat as greenbelt of appropriate width will be developed and maintained by the company in future. The increased vehicular traffic coupled with higher noise level due to various constructional activities will drive away the fauna from the project site to the neighbouring area.

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There is no discharge of industrial effluent into water bodies. The domestic waste water will be used for the greenbelt development within the plant premises. Hence, there will not be any impact on aquatic ecosystem in the region.

4.10.1 ANTICIPATED IMPACT DUE TO TRANSPORTATION OF RAW MATERIAL AND FINISHED PRODUCT AND MITIGATION MEASURES

- Increase in the Road traffic density which will result in deteriorating the ambient air quality.
- Rapid Movement of heavy-duty vehicles will cause in increase noise level.
- No direct impact is envisaged on the flora and fauna of the vicinity area due to noise/or the vibrations, slight impact could be observed on the nearby biodiversity.
- Increased traffic volume may increase the probability of accidental incidences in the area.
- Increased transportation can also lead to impacts on public health.

4.10.2 MITIGATION MEASURES

- Vehicles with PUC Certificate will be hired and allowed inside the plant premises.
- Vehicles will be covered with a tarpaulin and not over loaded.
- Un- necessary blowing of horn will be avoided.
- Roads will be maintained in good condition to reduce noise due to traffic.
- Greenbelt & Plantation in 36% of plant area is developed along the periphery and inside the plant premises.
- To avoid accidents, the speed of vehicles will be low near habitation areas.

4.11 TRAFFIC MANAGEMENT

The activities which would probably be responsible for traffic congestion would be transportation of raw material for which trucks and tempo used. Traffic to the different sites during construction/installation will be intensive and heavier than at present in normal operating conditions. The aspect of the activities would be generation of dust from movement of vehicles are likely to cause some impacts on the working population within the immediate vicinity of the project site. In turn, it will subject existing roads to more stress. To control the impact, dust suppression systems (water spray) will be used as per requirement at the construction site. Construction materials will be fully covered during transportation to the project site by road. Vehicle flow during shift changes will be regulated by allowing exits in a phased manner. The present road conditions are reasonably good for proposed

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movement of traffic. Preventive maintenance will be carried out for vehicles and pollution checks on a periodic basis will be mandatory. All the activities will be done for a limited period of time

- Vehicles with PUC certificate will be hired
- Vehicles will be covered with a tarpaulin and not overloaded.
- Un-necessary blowing of horn will be avoided.
- Roads from NH-2 to Plant Site will be maintained in good condition to reduce noise due to traffic.
- Greenbelt of appropriate quality and width will be developed.
- To avoid accidents, the speed of vehicles will be low near habitation areas

4.12 ASSESSMENT OF SIGNIFICANCE OF ENVIRONMENTAL IMPACTS

4.12.1 GENERAL

When assessing the effects of a particular action, it is crucial to determine whether these effects are "significant." The concept of significance is inherently relative, as it reflects the level of importance attributed to a particular impact. After identifying the events related to the proposed activity and their potential consequences, the next step is to evaluate the environmental significance of these impacts. This evaluation involves using criteria outlined in various guidelines for determining the level of environmental impact. The criteria include two primary components: The Predictability Criterion and the Manageability Criterion. The Predictability Criterion assesses the level of certainty in predicting the potential environmental consequences of each event associated with the activity. This involves evaluating how likely it is that the predicted impacts will occur, based on the information available.

The Manageability Criterion, on the other hand, focuses on the extent to which these potential environmental consequences can be controlled or mitigated. It considers whether the negative effects can be avoided entirely or minimized in terms of their size, scope, and duration. The principle behind this criterion is that reducing the environmental impact of an activity primarily involves managing its consequences, either by preventing them from happening or by reducing their severity as much as possible. By scoring the predictability and manageability criteria, one can determine the overall level of environmental significance for each potential event associated with the proposed activity. These levels are typically categorized as High, Medium, or Low on an environmental significance matrix. This matrix helps in prioritizing issues, guiding decision-making, and identifying where mitigation measures are most needed.

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TABLE 4. 12 EVENTS AND THEIR ENVIRONMENTAL CONSEQUENCES

Aspect of Environment	Category of Impact	Type of Event	Likely Consequences
Natural Environment	Soil Impact	Soil earthworks	Reduction in visual amenity of area.
	Air Impacts	Emissions to air (eg. Dust, SO ₂ , NO _x gases etc)	Health risk to local community;
			Greenhouse effect.
	Surface & Ground Water Impacts	Water extraction	Water shortage to local community, agriculture and ecosystem.
		Spills into water bodies (eg. Oil or chemical spills)	Inconsumable water to the local community and ecosystem.
		Altering drainage patterns	Reduced water capacity of natural water bodies. Increased soil erosion.
	Fauna Impacts	Disturbing terrestrial or aquatic species	Endangering species; Displacing species
	Flora Impacts	Disturbing native flora Clearing native vegetation	Threaten biological diversity Destroy fauna habitats; Threaten biodiversity
	Sensitive Area Impacts	Disturbance of National or Conservation Parks	Loss of conservation value
		Disturbance of World Heritage areas	Loss of world heritage value of area
		Disturbance of areas under national or international registers /conventions	Loss of register/convention values
Social Environment	Community Resource Impacts	Use of public resources	Degradation of public infrastructure (eg. Roads)
		Change in land use	Disadvantage groups within the community; Loss of recreational amenity of a region
		Change visual attributes of area	Reduction in aesthetic and recreational value of area
	Cultural Impacts	Change demographic structure of an area	Changes to community make up;
			Changes in community cultural identity and values
	Heritage Impacts	Disturbance to natural or manmade features of an area	Changes to aesthetic value of area;
			Changes to historical value of area
		Disturbance to aboriginal sites	Loss of aboriginal affiliation with an area
	Community Health	Air emissions	Health problems in the community
		Noise and vibration	Discomfort to local community;

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Economic Environment	Impacts	Water contamination	Health risk to local community
		Potentially hazardous operations (eg. High pressure pipelines, hazardous substance storage)	Health and safety risk to local community
	Community	Altering economy of a region	Changes to the standard of living in the region;

4.12.2 CRITERIA FOR DETERMINING SIGNIFICANCE

Issues considered under the predictability criterion are given in table

TABLE 4. 13 ISSUES CONSIDERED UNDER PREDICTABILITY CRITERION

a)	Size of event(s) & consequence(s):
	The accuracy of the predicted quantity of potential pollution discharge on a unit or total basis, the amount of population, land, fauna and flora disturbed, and the size of the potential consequences of such events.
b)	Scope of consequence(s):
	For example, the accuracy of the predicted extent to which the potential consequences extend beyond the confines of the area or region of direct disturbance.
c)	Duration of event(s) & consequence(s):
	This includes the accuracy of the predicted timeframe (i.e. short or long term) over which the event and their potential consequences are expected to last.
d)	Likelihood of events
	The likelihood at which the events that can potentially result in the consequences are estimated to occur.
e)	Stakeholder Concerns of event(s) & consequence(s)
	The extent to which the stakeholder perceptions, views and concerns of the events and their consequences associated with the activity is known.

As a first step, the level of certainty in the prediction of these issues has been determined as either low, medium or high as defined below.

TABLE 4. 14 LEVEL OF CERTAINTY IN THE PREDICTION OF ACTIVITY EVENTS AND THEM ASSOCIATED CONSEQUENCES

Low	Extreme uncertainty in the prediction of the issue. Well-informed decision-making is very difficult to make.
Medium	Some uncertainty in the prediction of the issue. Sufficient confidence in the accuracy of the data to make informed decision-making possible.

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High	Insignificant uncertainty in the prediction of the issue. Confidence in making an informed decision is very high.
Identify events associated with the proposed activity and any potentially environmentally adverse consequences associated with these events	

Predictability Criterion

Assess the level of certainty in the prediction of the activity events and their associated adverse environmental consequences in relation to their:

- Size
- Scope,
- Duration,
- Likelihood and

Manageability Criterion

Assess the level to which any adverse consequences for each event can be managed in relation to:

- Being avoided
- Likelihood of occurring;
- Duration;
- Size and scope;
- Cumulative effects;

Determine the environmental significance scores for each event against the predictability and manageability criterion (Table 4.11 and 4.14 respectively).



Ascertain the level of environmental significance (Low, Medium or High) for each event (environmental significance matrix: Table 4.16).



Classify level of Environmental Impact of the overall proposed activity on the basis of the level of environmental significance of each event.

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FIGURE 4. 4 STEPS FOR ASSESSMENT OF SIGNIFICANCE OF ENVIRONMENTAL IMPACT

4.12.3 ENVIRONMENTAL SIGNIFICANCE AGAINST PREDICTABILITY CRITERION

Once the level of certainty of each of the issues is determined, it is then possible to assess the environmental significance of each of the events associated with the activity against the predictability criterion. the environmental significance is determined and assessed on a scale of 1 to 5 as described in table 4.16. the significance score can then be tabled into the "significance score" column of the predictability criterion table 4.15

TABLE 4. 15 PREDICTABILITY CRITERION SIGNIFICANCE SCORE

Significance Score	Predictability Criterion
1	All of the issues outlined in Table 4.4 have been fully addressed; all events and their consequences associated with the activity have been accurately predicted to a high level of confidence.
2	There is a mixture of high and medium certainty of the issues. No issue is of low certainty.
3	All issues are of medium certainty.
4	There is low certainty in at least 1 of the issues for either the events or their potential environmental consequence(s).
5	There is low certainty in all of the issues for either the events or consequences.

TABLE 4. 16 PREDICTABILITY CRITERION TABLE

Step 1 Each of the events of the proposed activity and their associated consequences are assessed against certainty (Low, Medium or High as described) in the prediction of: •the size; •scope; •duration; •likelihood; and •stakeholder concerns Step 2 Significance Score of 1 to 5 is assigned for each event		Size	Scope	Duration	Frequency	Stakeholder Concerns	Significance score
NATURAL ENVIRONMENTAL IMPACTS							
Impact on Soil	Earthworks	High	High	High	High	High	1
	Contamination (eg spills)	High	High	High	High	High	1
Air Impacts	Air emissions	Med.	Med.	Med	Med.	High	2
Surface/Ground Water Impacts	Water contamination	Med.	Med.	Med.	Med.	High	2

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	Water extraction	High	High	High	High	High	1
	Altering drainage patterns	High	High	High	High	High	1

Step 1 Each of the events of the proposed activity and their associated consequences are assessed against certainty (Low, Medium or High as described in the prediction of: •the size; •scope; •duration; •likelihood; and •stakeholder concerns Step 2 Significance Score of 1 to 5 is assigned for each event	Size	Scope	Duration	Frequency	Stakeholder Concerns	Significance score
NATURAL ENVIRONMENTAL IMPACTS						
Fauna Impacts						
Disturbance to species	High	High	High	High	High	1
Disturbance to habitats	High	High	High	High	High	1
Flora Impacts						
Disturbing native flora species	High	High	High	High	High	1
Clearing extensive areas of native vegetation	High	High	High	High	High	1
Sensitive Area Impacts						
Disturbance to National Parks	High	High	High	High	High	1
Disturbance to World Heritage Areas	High	High	High	High	High	1
National and/or worldwide register or	High	High	High	High	High	1
SOCIAL IMPACTS						
Community Resource Impacts						
Public infrastructure	High	High	High	High	High	1
Land use	High	High	High	High	High	1
Changes to visual attributes of area	High	High	High	High	High	1
Cultural Impacts						
Changes to demographic structure of area	High	High	High	High	High	1
Heritage Impacts						
Disturbance to natural features	High	High	High	High	High	1
Disturbance to manmade features	High	High	High	High	High	1
Disturbance to aboriginal sites	High	High	High	High	High	1
Community Health Impacts						
Air quality changes	Medium	Med.	Med.	Med.	High	2

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Noise and vibration	High	High	High	High	High	1
Changes to water quality	High	High	High	High	High	1
Hazardous operations introduced	Medium	Med.	Med.	Med.	High	2
ECONOMIC IMPACTS						
Community Welfare Impacts						
Wealth and employment	High	High	High	High	High	1
Natural Resource Impacts						
Disturbance of natural resources of other industries	High	High	High	High	High	1
NATURAL ENVIRONMENTAL IMPACTS						
Altering existing land use	High	High	High	High	High	1

4.12.4 MANAGEABILITY CRITERION

This criterion focuses on the extent to which the potential environmental consequences can be either avoided or minimized in terms of size, scope and duration. It is based on the recognition that minimizing the environmental impact of an activity primarily entails managing the environmental consequence(s) of those activities by either avoiding them in the first place or by mitigating them to as low as reasonably practical. That is, any event will have an impact of some sort on the natural, social or economic aspects of the environment within which it occurs. However, the severity of the impact(s) depends on the extent to which the consequences to the environment can be eliminated or minimized. Therefore, the manageability criterion assesses the level to which the environmental consequences of each event can be either avoided or mitigated.

4.12.4.1 ISSUES UNDER MANAGEABILITY CRITERION

In assessing the level to which the environmental consequences can be managed the issues given in table 4.17 may need to be addressed.

TABLE 4. 17 ISSUES CONSIDERED UNDER MANAGEABILITY CRITERION

a)	Avoidance of Consequences
	The extent to which the associated consequences of the various activity events can be totally avoided.
b)	Likelihood of Event Occurring

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	The likelihood or probability of an event occurring must also be addressed. If the likelihood of such an event or sequence of events occurring has been managed so as to be very low and acceptable to other stakeholders, then it could be said that this is being managed appropriately and therefore of low significance
	If the likelihood of such an event or sequence of events occurring has been managed so as to be very low and acceptable to other stakeholders, then it could be said that this is being managed appropriately and therefore of low significance
C)	Duration of Consequences
	Whether the consequences can be managed to be short-term needs to be addressed – short-term needs to be defined in the context of the environment within which the potential consequences are likely to occur. That is, concepts such as the resilience of the environment would come into consideration.
D)	Size and Scope
	Consideration should be given to the extent to which the size and scope of the consequences can be managed, for example area of land, amount of flora and fauna or number of people affected by an activity. Consideration should be given to the size and intensity of the impacted environment relative to the undisturbed surroundings. Also whether the consequences are potentially catastrophic in terms of human and environmental wellbeing, for example wide scoping and irreversible consequences.
E)	Cumulative Effects
	This includes any cumulative effects of the consequences, for example, the number of individual activities, which individually may not pose a significant environmental risk but collectively their potential consequences may be very significant in a particular region.
F)	Stakeholder Concerns
	The level of severity of the environmental consequences perceived by stakeholders (e.g. the outrage effect).

TABLE 4. 18 QUESTIONS FOR ADDRESSING ISSUES UNDER MANAGEABILITY CRITERION

Issues	Questions
Avoidance of consequences	Can the potential adverse environmental consequences be avoided; or are there is no such consequence? (Yes or No)

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Likelihood of event	What is the probability of an event occurring, which may result in the adverse environmental consequence(s)? (Low, Medium or High on the basis of the results of the risk assessment carried out in accord with relevant standards)
Duration of consequences	Are the consequences likely to be Short, Medium or Long term?
Size and scope	Can the consequences be managed so as to be small or confined to a designated area? (Small or Confined?) If they are not small or confinable are the consequences potentially catastrophic? (wide Scoping and Irreversible).
Cumulative effects	Is it likely that the potential consequences of the proposal in conjunction with those of other existing activities are likely to pose a higher and unacceptable risk to the environment than if the individual activities were carried out on their own?
Stakeholder concerns	Is there any major concern of other stakeholders on any of the consequences of the proposed activity?

4.12.1 ENVIRONMENTAL SIGNIFICANCE AGAINST MANAGEABILITY CRITERION

Once the potential environmental consequences have been addressed in relation to the above issues, the level of environmental significance of each of the events associated with the proposed activity can then be assessed against the manageability criterion. as with the predictability criterion, the environmental significance for the manageability criterion is assessed on a scale of 1 to 5 as described in table 4.19.

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TABLE 4. 19 MANAGEABILITY CRITERION SIGNIFICANCE SCORE

Insignificance Score	Manageability Criterion
1	Adverse consequences of the various events associated with the proposed activity can be totally avoided, or it is highly unlikely that the events will ever occur.
2	Adverse consequences can be managed to be short-term. Short-term needs to be defined in the context of the environment within which the potential consequences are likely to occur.
3	Adverse consequences are not or cannot be managed to be short-term, but they can be confined so as to be insignificant in terms of size and scope relative to the surroundings.
4	Adverse consequences in conjunction with those of existing activities pose significant cumulative effects. Or Consequences are significant in terms of duration and/or size and scope relative to surroundings.
5	Consequences are potentially catastrophic. Or There is high stakeholder concern on the severity of the consequences. Catastrophic in this context means wide scope and long term or irreversible consequences such as death or serious injury to many individuals or permanent adverse change to the environment.

A step-by-step outline to assess the level of environmental significance for each of the events associated with the proposed activity against the manageability criterion is suggested as follows.

Step1: Where potential adverse consequences can be totally avoided; or where there are no adverse consequences associated with the events of the activity; or where there is a low likelihood of an event occurring which would lead to adverse consequences being minimized, then the event can be considered as being of low significance. in this case a significance score of 1 should be assigned.

Step 2: Where potentially adverse consequences cannot be totally avoided or where their likelihood of being minimized is not low, consideration needs to be given to the duration of the consequences. if the consequences can be managed to occur only for short term in the context of the environment within which they will occur. in such cases a significance score of 2 should be assigned.

Step 3: If the consequences are not short term, then the question of whether or not they can be confined within a designated area, which is relatively small, compared to the surrounding environment needs to be addressed. if they can be confined to being small, then a significance score of 3 is assigned. if

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they cannot be confined to being small and are significant in terms of size and scope relative to surroundings and/or duration, then a significance score of 4 is assigned.

Step 4: Before assigning a 2 or 3 significance score, the question as to whether the consequences may pose a significant risk to the environment as a result of the cumulative effects with the consequences of other existing activities needs to be considered. If it is considered that the cumulative effects are a significant risk, a significance score of 4 should be assigned.

Step 5: In the case where the consequences are potentially catastrophic in terms of being wide scoping and irreversible, or where there are major concerns by other stakeholders of the consequences, then a significance score of 5 should be assigned. The significance score can then be entered into the "significance score" column of the manageability criterion.

TABLE 4. 20 MANAGEABILITY CRITERION TABLE

<p><i>Step 1</i> The associated consequences of each of the impacts are assessed against the following issues:</p> <ul style="list-style-type: none"> •the extent to which they can be avoided; •the likelihood of events occurring which result in the impacts being realized •their duration; •the size and scope the consequences; •the cumulative effects of the consequences; and •stakeholder concerns <p><i>Step 2</i> Each of these issues are addressed using the questions <i>Step 3</i> Significance Score of 1 to 5 is assigned for each impact-using Table 4.11.</p>	Avoidance	Likelihood	Duration	Size & Scope	Cumulative Effects	Stakeholder Concerns	Significance Score
Soil Impacts							
Earthworks	Yes	Low	Med.	Small	No	No	2
Contamination (eg spills)	Yes	Low	Med.	Small	No	No	2
Air Impacts							
Air emissions	Yes	Low	Med.	Small	No	No	2
Surface/Ground Water Impacts							
Water extraction	No	Low	Med.	Small	No	No	1
Water contamination	Yes	Low	Med.	Small	No	No	2
Altering drainage patterns	No	-	-	-	-	-	1
Fauna Impacts							
Disturbance to species	No	-	-	-	-	-	1
Disturbance to habitats	No	-	-	-	-	-	1
Flora Impacts							
Disturbing native flora species	No	-	-	-	-	-	1

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Clearing extensive areas of native vegetation	No	-	-	-	-	-	1
Sensitive Area Impacts							
Disturbance to National Parks	No	-	-	-	-	-	1
Disturbance to World Heritage Areas	No	-	-	-	-	-	1
National and/or worldwide register or convention areas	No	-	-	-	-	-	1
SOCIAL IMPACTS							
Community Resource Impacts							
Sxe3Public infrastructure	No	-	-	-	-	-	1
Land use	No	-	-	-	-	-	1
Changes to visual attributes of area	No	-	-	-	-	-	1
Cultural Impacts							
Changes to demographic structure of area	No	-	-	-	-	-	1
Heritage Impacts							
Disturbance to natural features	No	-	-	-	-	-	1
Disturbance to manmade features	No	-	-	-	-	-	1
Disturbance to aboriginal sites	No	-	-	-	-	-	1
Community Health Impacts							
NATURAL ENVIRONMENTAL IMPACTS							
Air quality changes	Yes	Low	Med.	Small	No	No	2
Noise and vibration	No	-	-	-	-	-	1
Changes to water quality	Yes	Low	Med.	Small	No	No	2
Hazardous operations introduced	Yes	Low	Med.	Small	No	No	2
ECONOMIC IMPACTS							
Community Welfare Impacts							
Wealth and employment	No	-	-	-	-	-	1
Natural Resource Impacts							
Disturbance of natural resources of other industries	No	-	-	-	-	-	1
Altering existing land use	No	-	-	-	-	-	1

4.12.2 ENVIRONMENTAL SIGNIFICANCE

From the significance scores for the predictability and manageability criteria, the level of environmental significance for each of the potential events associated with the proposed activity can

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then be determined as either High, Medium or Low on the basis of environmental significance matrix presented in table 4.21.

TABLE 4. 21 MATRIX FOR DETERMINING LEVEL OF ENVIRONMENTAL SIGNIFICANCE

	Scores	Manageability Criterion				
		1	2	3	4	5
Predictability Criterion	1	L	L	L	M	H
	2	L	L	L	M	H
	3	L	M	M	H	H
	4	L	M	M	H	H
	5	L	M	M	H	H

As observed in table 4.23, it is proposed that where adverse environmental consequences can be avoided or where it is very unlikely that an event will occur which would result in such consequences (i.e a score of 1 against the manageability criterion), then the significance of the individual event associated with the proposed activity can be considered to be low regardless of the predictability score. the significance matrix provided for the proposed project can be developed so as to set the three levels of significance at other positions within the matrix.

Table 4. 22 ACTIVITY ENVIRONMENTAL SIGNIFICANCE TABLE

NATURAL ENVIRONMENTAL IMPACTS	Predictability Criterion Score 1-5 (Table 4.8)	Manageability Criterion Score 1-5 (Table 4.12)	Level of Environmental Significance H: High M: Medium L: Low (Table 4.13)
Soil Impacts			
Earthworks	1	2	L
Contamination (eg spills)	1	2	L
Air Impacts			
Air emissions	2	2	L
Surface/Ground Water Impacts			
Water extraction	1	1	L
Water contamination	2	2	L
Altering drainage patterns	1	1	L
Fauna Impacts			

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Disturbance to species	1	1	L
Disturbance to habitats	1	1	L
Flora Impacts			
Disturbing native flora species	1	1	L
Clearing extensive areas of native vegetation	1	1	L
Sensitive Area Impacts			
Disturbance to National Parks	1	1	L
Disturbance to World Heritage Areas	1	1	L
National and/or worldwide register or convention areas	1	1	L
SOCIAL IMPACTS			
Community Resource Impacts			
Public infrastructure	1	1	L
Land use	1	1	L
Changes to visual attributes of area	1	1	L
Cultural Impacts			
Changes to demographic structure of area	1	1	L
Heritage Impacts			
Disturbance to natural features	1	1	L
Disturbance to manmade features	1	1	L
Disturbance to aboriginal sites	1	1	L
Community Health Impacts			
Air quality changes	2	2	L
Noise and Vibration	1	1	L
Changes to water quality	1	2	L
Hazardous operation introduced	2	2	L

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ECONOMIC IMPACTS			
Community Welfare Impact			
Wealth and employment	1	1	L
Natural Resources Impacts			
Disturbance of natural resources of other industries	1	1	L
Altering existing land use	1	1	L

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CHAPTER -5

ANALYSIS OF ALTERNATIVES (TECHNOLOGY & SITE)

5.1 ANALYSIS OF ALTERNATIVES

As per EIA Notification dated 14th September, 2006, as amended from time to time, this chapter on "Analysis of Alternatives (Technology & Site) provides the selection criteria of the proposed location of the Project Site and process technology to be adopted.

5.2 NO PROJECT SCENARIO

The "No Project" scenario acts as a key reference point for evaluating whether the proposed activity would significantly improve or degrade environmental and social conditions. Under this scenario, the current situation remains unchanged, ensuring that resources like land, water, ecology, soil, infrastructure, health, and education are preserved in their present state. The ministry requires all project proposals to explore every possible alternative, including the option of not proceeding with the project at all. In doing so, it's essential to conduct thorough assessments of the current environmental and social landscape using both primary and secondary data. Existing environmental laws are designed to protect natural resources and promote the restoration of ecosystem services by encouraging the use of eco-friendly technologies, which ultimately benefit the national economy. India's Environmental Impact Assessment (EIA) framework is stringent, ensuring robust protection of the environment while supporting local communities, with expert involvement and innovative technology playing critical roles. Project developers are also urged to improve basic infrastructure, provide local employment, and enhance education and healthcare services through the use of Corporate Environmental Responsibility (CER) and Corporate Social Responsibility (CSR) initiatives, which are expected to extend benefits both before and after project completion.

5.3 SITE SELECTION ALTERNATIVES

With respect to site, analysis of three sites has been done by M/s. Ambuja Cements Limited for the proposed cement grinding unit. An assessment to identify the most suitable site out of the three alternatives sites was carried out. The Site Suitability Analysis was undertaken for the three sites. Following points were considered to access the most suitable site:-

The selected site is partly (6.594 Acres) owned by Adani Logistics Limited (ALL) and party (20.513 Acres) by Adani Agri Logistics Limited (AALL). Further, individual MOU is signed by Ambuja Cements Limited with both the group companies i.e Adani Agri Logistics Limited (AALL) and Adani

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Logistics Limited (ALL) to acquire the land on lease to setup cement grinding unit on the said land. Based on market to be served, we have found out Devli as a strategically best suitable location due to nearest site from Railway Line compare to other site & having low human settlements near the selected site. Three alternative site has been studied for the proposed project viz. Site 1, Site 2 and site 3, comparison between the site shown in below Table.5.1

TABLE 5.1 SITE SUITABILITY ANALYSIS

S N	Particular	Site 1	Site 2	Site 3
1	Distance from Railway line	4.2 KM, E	Adjacent	1.0 KM, E
2	Human Settlement surrounding the Selected Site	Low Human Settlements	Very low human settlements	High Human Settlements
3	Forest (RF)	NA	NA	NA
4	NP/WLS	NA	NA	NA
5	Ecological sensitive zone	NA	NA	NA
6	State Boundary / International Boundary	UP state 20 Km, E	UP state ~16.4 Km, E	UP state ~ 18.4 Km, E
7	Drains/Nalas passing through land	No	No	No
8	Water Body in study area (river/canal/lake/dam)	NA	NA	NA
9	Ground Water table (Block wise Ground Water Resource Assessment- 2020)	Safe	Safe	Safe

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SITE 1:Village Amaru, Tehsil +District: Palwal; State: Haryana	SITE 2:Village: Devli, Tehsil+District: Palwal; State: Haryana	SITE 3:Village: Pyala, Tehsil+District: Palwal; State: Haryana
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FIGURE 5. 1 GOOGLE MAP OF ALTERNATIVE SITE

Out of all the available three options the selected site stands out best for following reasons:

- To avoid maximum road transportation for chunk of the raw material i.e. clinker, flyash & gypsum
- Availability of land with no forest land involved.
- Condition of approach road is good and metalled.
- Ease of connection to existing railway line.
- Availability of ground water in the vicinity of the Project Site.
- No involvement of agricultural land / private land.
- Area free from environmental sensitive features viz. requiring minimum clearance of vegetation, water bodies etc

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5.4 TECHNICAL CONCERNS

Cement Grinding Unit technical concept of the plant has been developed keeping in view the state-of-art technology for effective pollution control for the cement grinding unit. The selection of the most optimum process route for the installation of cement plant needs critical analysis and evaluation. The evaluation process is more relevant due to the emergence of large number of new competitive technologies in various fields of cement manufacturing. This section evaluates the technologies and suggests the optimum one for installation of proposed expansion cement grinding unit. Such an evaluation involves an analysis of past achievements, present status and future prospects of each technology under consideration keeping in view the following criteria:

- Adoption of indigenous technology
- Capacity of the Plant
- Selected product mix
- Conservation of scarce and costly energy input
- Suitability of available raw materials
- Cost Considerations For this proposed greenfield project
- Vertical Roller Mill (VRM) Technology is selected

5.5 SOCIAL CONCERNS

The site has been selected by keeping in view the social concerns i.e., site is at a proximal distance to NH 2(19) (Adjacent to the project site) thereby reducing the impact on village road due to non-availability of highway, free from any habitation, free from environmental sensitive features viz. requiring minimum clearance of vegetation, water bodies, non-involvement of any forest area etc., has adequate ground water at the proposed site and has availability of reliable power. The major social concerns in the study area are (1) Unemployment (2) Industrial growth (3) Health related. The details to address the social concerns are given in Chapter- 8 of this EIA/EMP Report.

5.6 CONCLUSION

M/s ACL Pvt Ltd. has analyzed all the aspects related to alternative technology and site in terms of environment and social consideration and it has been found that the proposed technology is best suited for this project. Based on the analysis, VRM is the best proven technology which is best and economically feasible for grinding units with less production capacities. It will result in cost effective

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project and will lead to minimum social concern as all the environment aspects has been analyzed by the company before selecting the suitable and efficient technology and site for this proposed cement Grinding unit project.

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CHAPTER -6 ENVIRONMENTAL MONITORING PROGRAMME

6.1 INTRODCUTION

Regular monitoring of environmental parameters is crucial for assessing the status of the environment during the operation of a project. Understanding baseline conditions allows the monitoring program to act as an early warning system, indicating any deterioration in environmental conditions caused by project activities. This early detection is essential for implementing timely and effective mitigation measures to protect the environment.

Monitoring is as vital as pollution control because the success of control measures can only be verified through continuous monitoring. Typically, impact assessment studies are conducted over short periods, providing limited data that may not capture all variations induced by natural or human activities. Consequently, a regular and comprehensive monitoring program is necessary to account for changes in environmental quality over time.

Such a program should include the systematic collection, analysis, and interpretation of data on various environmental parameters, including air and water quality, soil conditions, biodiversity, and noise levels. By consistently monitoring these factors, potential environmental impacts can be identified early, allowing for prompt and effective responses to prevent or mitigate harm.

Furthermore, regular environmental monitoring provides valuable data that can inform future project planning and decision-making, ensuring that sustainable practices are adopted. It also helps build public trust by demonstrating a commitment to environmental stewardship and transparency. In summary, a robust and ongoing environmental monitoring program is essential for safeguarding the environment and ensuring the long-term sustainability of project operations.

6.2 ENVIRONMENTAL MONITORING

Monitoring shall confirm that commitments are being met. This may take the form of direct measurement and recording of quantitative information, such as amounts and concentrations of discharges, emissions and wastes, for measurement against corporate or statutory standards, consent limits or targets. It may also require measurement of ambient environmental quality in the vicinity of a site using ecological/biological, physical and chemical indicators. Monitoring may include socio-economic interaction, through local liaison activities or even assessment of complaints.

6.2.1 OBJECTIVES OF MONITORING PROGRAMME

The objectives of environmental monitoring plan for proposed grinding unit

- To follow the trend of concentration values of the parameters which have been identified as critical

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- To check or assess the efficiency of the mitigation measures; and
- To ensure that new parameters, other than those identified in the impact assessment study, do not become critical at proposed project activities.

The environmental monitoring is the primary tool for assessing the prevailing quality of air, water, noise, land etc. The environmental monitoring helps in suggesting and taking corrective measures during project activity. The monitoring of various environmental parameters for ambient air quality, water quality, noise levels, soil quality will be carried out on a regular basis at and around the proposed VFH area to ascertain the following:

- Pollution caused due to operations of proposed project activities.
- Change in environmental quality within and outside the proposed project activities
- To assess environmental impacts after set up of proposed project activities.
- Evaluate the efficiency of pollution control measures installed. The environmental monitoring shall be periodic and comply with the promulgated standards.

6.3 ENVIRONMENTAL MONITORING/MANAGEMENT CELL

In order to maintain the environmental quality within the standards, regular monitoring of various environmental components is necessary. A full-fledged Environmental Management Cell (EMC) already exist at ACL, Bathinda and it will be further strengthened. The EMC team takes care of pollution monitoring aspects and implementation of control measures. A group of qualified and efficient engineers with technicians have been deputed for maintenance, up keeping and monitoring the pollution control equipment, to keep them in working at the best of their efficiencies. Environmental monitoring schedules are prepared covering various phases of project advancement, such as constructional phase and regular operational phase.

6.3.1 FORMATION OF ENVIRONMENT MANAGEMENT CELL (EMC)

In order to maintain the Environmental Quality within the standards, regular monitoring of various environmental components is necessary. The company shall form Environmental Management Cell (EMC) for environmental monitoring and management. The EMC team shall take care of environmental pollution monitoring aspects and implementation of control measures. A group of qualified and efficient engineers and officers with technicians have shall be deputed for maintenance, up keeping and monitoring the pollution control equipment, to keep them in working at the best of their efficiencies.

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6.3.2 RESPONSIBILITIES OF EMC

The responsibilities of the EMC include the following: - Environmental monitoring of the surrounding area through third party. - Timely Commissioning of pollution control equipment and facilities. - Ensuring that applicable standards are maintained. - Schedule maintenance of pollution control equipment. - Development & Maintenance of the greenbelt & plantation. - Proper implementation of the Environmental Management Plan. - Co-ordination for all statutory requirements like submission of application/reports for obtaining Consents, & authorization etc

6.4 PERFORMANCE MONITORING SCHEDULE FOR ALL POLLUTION CONTROL DEVICES

The post-project monitoring will include details of any major/minor impact in the core zone and area within buffer zone for the following parameters:

- Micro-meteorological data
- Ambient air quality monitoring
- Fugitive emission monitoring
- Stack emission monitoring
- Noise level monitoring
- Groundwater quality and level monitoring
- Waste water quality monitoring (inlet and outlet)
- Medical check-up of the employees

Instrumentation to be used

The following instruments will be used for data collection work in post-project monitoring schedule:

- Respirable dust sampler (RDS) – PM10
- Fine Particulate Sampler (FPS) – PM2.5
- Stack Monitoring Kit / Continuous Emission Monitoring Systems (OCEMS)
- Sound Level Meter
- Water Level Indicator
- Global Positioning System (GPS)
- Weather monitoring station

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6.5 MONITORING SCHEDULE DURING CONSTRUCTION & OPERATIONAL PHASE

Monitoring during operational phase is considered as an essential part to check the impact of any project activities. Hence monitoring of various environmental parameters will be carried out on a regular basis to ascertain the following:

- To know the status of Pollution within the project site and in its vicinity.
- To generate data for predictive or corrective purpose in respect of pollution.
- Examine the efficiency of pollution control system adopted at the site.
- To ascertain environmental impacts.
- Monitoring will be carried out at the site as per the norms of CPCB/ SPCB.

During operational stage, particulates may be emitted during clinker manufacturing facilities from both point sources and fugitive emissions. Along with the D.G. sets are also a potential source of emission. The various environmental components and pollution sources, which would be monitored under Environmental monitoring programme, are: -

- Stack emission
- Ambient air quality
- Domestic waste water
- Groundwater levels and ground water quality;
- Noise levels (equipment and machinery noise levels, occupational exposures and ambient noise levels);
- Afforestation.

TABLE 6. 1 POST ENVIRONMENTAL MONITORING DURING OPERATIONAL PHASE

S. No	Potential impact	Action to be followed	Parameters for monitoring	Frequency of monitoring	Location
1	Air Emissions	Ambient Air Quality Monitoring 4 locations inside the project boundary.	PM10, PM2.5, SO ₂ , NO _x & CO	Twice in a week.	At least four locations
		Online Continuous Ambient Air Quality Monitoring	PM10, PM2.5, SO ₂ , NO _x & CO	Online Continuous	At one location (Already Provided)
			Vehicle logs to be	--	--

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			maintained		
		Stack Emission Monitoring of stack attached Cement Mill, Packaging Area	PM (Ball Mill, FAD, Roller Press, Packaging Plant, Wagon Tripler) PM, SO ₂ , NO _x , (for DG)	Once in a month	
2	Noise	Noise generated from various plant operations, vehicular to be optimized and monitored	Spot Noise Level recording; Leq (night), Leq(day), Leq (dn)	Once in a month	Noise measurement at the source & boundary of the project
		Generation of vehicular noise	Maintain records of vehicle	Periodic during operation phase	--
3	Wastewater Discharge	No untreated discharge of sewage to be made to surface water, groundwater or soil.	No discharge hoses in vicinity of watercourses.	Periodic during operation phase	--
4		Take care in disposal of sewage generated such that soil and groundwater resources are protected	Discharge norms for sewage will be maintained	Discharge norms for sewage will be maintained	STP discharge water
5		Compliance of treated sewage usage/ discharge to standards	pH, TSS, TDS, BOD, COD, Oil Grease Coliforms count	Periodic during operation phase	One location (Treated Wastewater)
6	Drainage and effluent Management	Ensure drainage system and specific design measures are working effectively. Design to incorporate existing drainage pattern and avoid disturbing the	Visual inspection of drainage and records thereof	Periodic during operation phase	

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		same.			
7	Water Quality and Water Level	Monitoring used water quality & groundwater quality and levels	Comprehensive monitoring as per IS: 1050 Groundwater	Quality-twice a year Level-Monthly.	Four locations surrounding project site
8	Energy Usage	Energy usage for air-conditioning and other activities to be minimized Conduct annual energy audit for the buildings	Energy audit report	Annual audits and periodic checks during operational phase	--
9	Emergency preparedness, such as fire fighting	Fire protection and safety measures to take care of fire and explosion hazards, to be assessed and steps taken for their prevention.	Mock drill records, on site emergency plan, evacuation plan	Periodic during operation phase	--
10	Maintenance flora and fauna	Vegetation, greenbelt/ green cover development.	No. of plants, species	Periodic during operation phase	--
11	Solid a Hazardous Waste Management	Implement waste management plan that identifies and characterizes every waste arising associated with proposed activities and which identifies the procedures for collection, handling & disposal of each	Records of solid waste generation, treatment and disposal	Periodic during operation phase	--
12	Health	Employees and migrant labour health check ups	All relevant parameters like Routine Blood Examination, Microscopic, Biochemistry Routine	Regular check ups	All workers

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			Urine Examination, Lung function test, Sputum examination, Audiometry, X-ray, ECG		
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6.5.1 ENVIRONMENTAL MONITORING SCHEDULE DURING CONSTRUCTION PHASE

The following routine monitoring programme as detailed in as under will be implemented at site. Besides, to this monitoring, the compliances to all environmental clearance conditions and regular permits from SPCB/ MoE&F will be monitored and reported periodically.

TABLE 6. 2 POST ENVIRONMNETAL MONITORING SCHEDULE DURING CONSTRUCTION PHASE

S. No	Potential Impact	Action to be Followed	Parameters for Monitoring	Frequency of Monitoring
1	Air Emissions	All equipment's are operated within specified design parameters.	Random checks of equipment logs/ manuals	Periodic
		Vehicle trips to be minimized to possible extent	Vehicle logs	Periodic during site clearance & construction activities
		Any dry, dusty materials stored in covered shed/sealed containers or prevented from blowing.	Absence of stockpiles or open containers of dusty materials.	Regularly construction activities during
		Ambient air quality within the premises of the proposed unit to be monitored.	The premises of the proposed unit to be monitored. PM10, PM2.5, SO2, NOx, CO	As per CPCB/ SPCB guidelines
2	Noise	List of all noise generating machinery onsite to be prepared. Equipment to be maintained in good working order	Equipment noise logs, reading	Regular during construction activities

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	Noise level will be maintained within limits.	Adhere preventive to maintenance schedule	Equipment operational records
	Generation noise of vehicular	Maintenance of records of vehicles	
	Implement good working practices(equipment selection and siting) to minimize noise and also reduce its impacts on human health (ear muffs, safe distances, and enclosures).	Ensure use of PPEs by construction workers	Periodic inspection by safety officers during construction activities
	No machinery running when not required.		Periodic during construction activities
	Acoustic mufflers/enclosures to be provided in large engines.	Mufflers/ enclosures will be in place.	Prior to use of equipment.
	Noise to be monitored in ambient air within the plant premises.	Spot Noise recording	As per CPCB/ SPCB requirement or on quarterly basis whichever is earlier
	Acoustic mufflers/ enclosures to be provided in large engines	Mufflers/ enclosures will be in place.	Prior to use of equipment.
	Noise to be monitored in ambient air within the plant premises.	Spot Noise recording	As per CPCB/ SPCB requirement or on quarterly basis whichever is earlier
	All equipment's operated within specified design parameters.	Random checks of equipment logs/ manuals	Periodic during construction activities
	Vehicle trips to be minimized to the extent possible	Vehicle logs	Periodic during construction activities

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3	Wastewater Discharge	Sewage treatment before discharge	Toilet blocks to be provided with septic tanks and soak pit.	Periodic during construction activities
4	Soil Erosion	Minimize area extent of construction site by staying within the defined boundaries	Construction site boundaries not extended / breached as per planned document	Periodic during construction activities
5	Waste Management	Implement waste management plan for source segregation of wastes, collection, storage and disposal.	Integrate with waste management plan	Periodic check during construction activities
6	Non-routine events an accidental releases	Plan to be drawn up, considering likely emergencies and steps required to prevent/limit consequences.	Mock drills and records of the same	Periodic during construction activities
7	Health	Employee and migrant labour health check ups	Undertake Pre-Health for relevant parameters	Regular check up
8	Flora and fauna	Undertake green area development	No. of plants, species	During site clearance and construction phase

6.6 POST MONITORING OF ENVIRONMENT MANAGEMENT SYSTEM

- Examination of all air pollution control system with due respect to its performance regularly. A record shall be maintained and will be shown to regulatory authority as and when required.
- Examination and regular cleaning of raw material and chemical handling area.
- Examination of rainwater harvesting systems and storm water drains.
- Checking water contamination by drawing regular samples of runoff water/ wastewater.
- Collection and analysis of water samples from surface water body.
- Regular measurement of ground water level and quality.
- Checking the quality of air by drawing regular air samples and getting them analysed.
- Maintenance of record of plantation to monitor plantation scheme, area of plantation, observance of growth rate and survival of plants.

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- Noise monitoring inside the plant requiring maintenance, which produce excess noise, and to study likely impact on workers.

6.6.1 REPORTING SCHEDULE

Environmental Monitoring Programme will be conducted for various environmental components as per the stipulated conditions. The Environment Monitoring Cell (EMC) will co-ordinate all monitoring programmes at site and data thus generated will be regularly furnished to the State regulatory agencies. Six monthly compliance reports will be submitted on regular basis to the local state PCB officials and to Regional Office of MoEF&CC. The Environmental Audit reports will be prepared for the entire year of operations and will be regularly submitted to regulatory authorities

6.6.2 PLANNED PREVENTIVE MAINTENANCE

Maintenance programmes will be established at the facility for the following equipment systems:

- Process equipment
- Environmental process equipment
- Continuous monitors
- Laboratory equipment
- Sampling equipment Procedure
- Routine round the clock maintenance programme for the plant equipment
- Annual maintenance or Half yearly shutdown Revision of Emergency Procedure The emergency procedure will be reviewed and updated as necessary to reflect legislative changes or changes to the company's operation. These changes will be communicated to all the employees through directors, managers, supervisors or environmental communications.

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CHAPTER -7 ADDITIONAL STUDIES

7.1 INTRODUCTION

As per EIA Notification dated 14th Sept., 2006 and as amended thereof; Standard Terms of Reference (ToR) has been issued by MoEFCC New Delhi vide SIA/HR/IND1/449852/2023 dated 27/08/2024 for the Proposed Standalone Grinding Unit with Production Capacity of 6 MMTPA at Village: at Village- Devli, Tehsil + District: Palwal, State- Haryana.

1. Public Consultation
2. Risk Assessment
3. Emergency Response & preparedness

7.2 RISK ASSESSMENT

Risk is the potential that a chosen action or activity will lead to a loss of human or property. Risk assessment is a step for Risk Management. Risk assessment is the determination of qualitative and quantitative value of risk related to a situation or hazard. Hazard is a situation that poses a level of threat to life, health or environment. Accidental risk involves the occurrence or potential occurrence of some accident consisting of an event or sequence of events resulting into fire, explosion or toxic hazards to human health and environment. Disaster is a natural or man-made hazard resulting in an event of substantial extent causing significant physical damage or destruction, loss of life or drastic change in environment.

7.2.1 METHODOLOGY

Risk involves the occurrence or potential occurrence of some accidents consisting of an event or sequence of events. The risk assessment study covers the following:

- Identification of potential hazard areas;
- Identification of representative failure cases;
- Visualization of the resulting scenarios in terms of electrical shock and hazards, fire (thermal radiation) and possibility of explosion etc.;
- Assess the overall damage potential of the identified hazardous events.
- Furnish specific recommendations on the minimization of the worst accident possibilities; and
- Preparation of broad Disaster Management Plan (DMP), On-site and Off-site Emergency Plan, which includes Occupational and Health Safety Plan.

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7.2.2 HAZARD IDENTIFICATION & RISK ASSESSMENT (HIRA) FOR CEMENT GRINDING UNIT

Hazard Identification and Risk Analysis (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 risk to employees, the public, or the environment are consistently controlled within the organization's risk tolerance. Cement manufacturing industry is labor intensive and uses large scale and potentially hazardous manufacturing process. These industries experiences risk of a number of hazards inherent to the cement production process. Possible hazards in Grinding Unit are as follows:

- Exposure to High Temperatures, Physical Hazards, Events pertaining to Manufacturing process, Fire, Electrocution, Explosion, Natural & Manmade Hazards

There are many impacts on those working within the industry, although health hazards can also impact immediate surroundings. These Hazards, mainly impact on those working within the industry, although health impacts can also be envisaged on local communities. The potentially hazardous areas and the likely incidents with the concerned area have been enlisted below in Table - 7.1 Details of Possible Hazards, their Cause and safety measures to be adopted is given in table 7.1

TABLE 7. 1 POSSIBLE HAZARDOUS LOCATION

S.No	Hazardous area	Hazard/Impact
1	Electrical room	Fire and electrocution
2	Transformer area	Fire and electrocution
3	Cable tunnel	Fire and electrocution
4	Coal storage yard	Sliding and fire
5	Clinker silo	Collapse and material spillage
6	Grinding unit	Fatal accident, High noise
7	Chimney	Structure failure, Leakage/Air Pollution
8	Coal handling	Fire
9	Fuel storage area	Fire and spillage
10	Packing plant	Fire collapse and material spillage

TABLE 7.2 HAZARD IDENTIFICATION AND RISK ASSESSMENT (HIRA) AND SAFETY MEASURES ADOPTED AT GRINDING UNIT

Activity/Product s/Services	Sub- activity	Hazards	Risk	Severity (5)	Probability of Occurrence (5)	Risk Rating	Control & Influence
Cement Mill (VRM) Maintenance	Classifier Repair	Exposure to dust	Dust causing respiratory issues	3	3	9	Usage of PPE (Nose Mask, Safety Goggles, Hand Gloves, Safety Helmet, Safety Shoes).
		Injury due to rotor movement	Injury due to permanent Disability	4	3	12	Care to be taken
		Fall from height from rotor	Injury due to permanent Disability	4	3	12	Care to be taken
		Impact due to sharp edges	Minor impinge on body due to injury	3	2	6	Use of appropriate PPE (Nose mask goggles, and hand gloves) and Proper training about behavioral safety & maintain of mutual understanding among crew members.
	Stator blade replacement	Exposure to high temperature	Burns on skin	2	2	4	Usage of apron as per requirement, Deploy trained personnel.
		Slip of tools	injury to others	2	3	6	Use proper PPE (Safety Net, Safety Goggles, HandGloves, Safety Helmet, Safety Shoes)
		Slip of man while climbing	Fall / hurt on body parts	3	2	6	Use of appropriate climbing ladders

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	Less space constraint	Spinal pain due to continuous bend	3	2	6	Platform should be made little lower to ease work as per ergonomics
	Slip of man while tightening	Fall / hurt on body parts	4	2	8	Use of Standard Full body harness
	Suffocation	Fainting of man inside the grid	4	2	8	Entry with CSE standards & use of appropriate breathing apparatus
	Fall of Men	Injury leading to Permanent	3	3	9	Deploy trained personnel for scaffolding
	Fall of Material	Injury leading to Permanent disability	3	3	9	Usage of Proper lifting tools
	Fall of Dust	Respiratory problems & skin	2	4	8	Cleaning of the vessel before workmen entry
	Fall of Hot metal	Burn injury	3	3	9	Below cutting & welding works, one should be allowed
	Fall of Men	Injury leading to Permanent disability	3	3	9	Deploy trained personnel for scaffolding
	Fall of Material	Injury leading to Permanent disability	3	3	9	Usage of Proper lifting tools
	Fall of Dust	Respiratory problems & skin injury	2	4	8	Cleaning of the vessel before workmen entry
Scrapper chamber Blade replacement	Fall of Hot metal	Burn injury	3	3	9	Below cutting & welding works, no one should be allowed
	Mill body casing liners replacement/ Welding					

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HAG operation	Briefing of the activity (Hag operation)	miscommunication	Injury to body part	2	4	8	Allot trained workmen
	Starting of fuel pump for recirculation	Oil spillage	Fire	1	4	4	confirm good housekeeping/ Fuel pump area barication
	HAG light up	Back fire	Burn injury	2	4	8	Use of appropriate PPE (Nose mask, goggles, and hand gloves) and Proper training about behavioral safety & maintaining of mutual understanding among crew members. During light, up process HAG should be pressurized, interlock provided
	Monitoring of HAG	Fire, slip & fall	Burn injury/injury to body part	2	4	8	Use of appropriate PPE (Nose mask, goggles, and hand gloves) and Proper training about behavioral safety & maintaining of mutual understanding among crew members.
	Temp. control	Back fire	Burn injury	2	4	8	-
Bag filter maintenance	Cage replacement	Fall from heights	Injury Required Hospitalization.	3	3	9	-
		Fall of objects	Injury required First Aid	1	3	3	Use of proper Tested Lifting tools. Deploy trained personnel.
		Dust inhalation	Minor ill-ness.	3	3	9	Use proper PPE (Nose mask, goggles, and hand gloves) and trained personnel
	Bag replacement	Fall from heights	Injury Required Hospitalization	3	3	9	-
		Fall of objects	Injury required	1	3	3	Use of proper Tested Lifting tools. Deploy trained personnel.

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	Bearing replacement		First Aid						
		Dust inhalation	Minor ill-ness.	3	3	9			Use proper PPE (Nose mask, goggles, and hand gloves) and trained personnel
		Fall of object	Injury required First Aid	1	5	5			Use of proper tools. Deploy trained personnel.
		Slip of tools while working	Injury required First Aid	1	3	3			Use of proper Tested Lifting tools. Deploy trained personnel.
		Fall of tools	Injury required First Aid	1	3	3			Visual Inspection of tools & hammers before use. Use correct tools.
STP Maintenance work	Hopper jam x cleaning	struck on coating & cleaning tool	Finger injury	1	3	3			Use of proper Tested tools. Deploy trained personnel. Ensure communication between working personnel.
	Operation of STP plant	Electric hazard	Fatal	5	4	20			Ensure proper tagging for each and every equipment.
		Guidness/uneasyness	Injury requiring hospitalization.	3	3	9			Use of nose mask and all essential PPEs. Ensure blowring for excess oxidation to avoid flaw smell.
Cooling tower maintenance work	Inspection of fan Blades	Slip & fall of person from height	Injury requiring hospitalization.	3	3	9			Use of safety belt and proper tagging. Ensure Proper approach is made for the inspection/ Maintenance of fan blades
		Entangle in rotating part	Injury requiring hospitalization.	3	3	9			Ensure the fan is locked at one point, to check the blade angle. Deploy trained personnel.
	Replacement of Cooling Fills	Slip & fall of person from height	Fatal	5	4	20			Use of safety belt and proper tagging. Life line rope tagging over the working area. Fills holding base to be strengthened. Deploy trained person who can swim.

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Fly ash Bulker Unloading	Flying chips	Injury requiring hospitalization.	3	3	9	Usage of Barricade/Covers. Deploy trained personnel. Use proper PPE like goggles.
	Fire during work	Burns	4	3	12	fills can catch fire, ensure the fills are stored away from fire area.
	Cleaning replacement of fills	First Aid injury	2	3	6	Ensure use of PPES Like hand gloves.
	Replacement of Cooling tower drive Motor	Fatal	3	3	9	Ensure the use of test tools for dismantling of motor. Ensure the use of lowering lifting equipment like hydra for replacement of the drive.
	Slip and fall injury	Injury requiring hospitalization.	5	4	20	Ensure proper tagging for each and every equipment.
	Slip of tool while tightening	Injury Causing First aid	3	3	9	use of proper tool and hand gloves
	Hitting the person standing nearby while reversing	Injury requiring hospitalization.	3	3	9	Strict supervision with signaling
	Fall of hose	minor injury	3	3	9	Mechanical move bale Support for hoses provide
	Connecting of airline and material hose to bulker					

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Natural and Manmade Calamities which can lead to Emergency

(a) Earthquake

The project site under Jajpur district area falls under the seismic zone-III, which is the moderate risk quake and may trigger into a technological disaster, includes collapse of old structures, buildings leading to fire and explosion. Earthquake cannot usually be forecasted and therefore precautions immediately prior to such event are not usually possible. Apart from some of the counter-measures to be taken in foreseeable cases, emergency recovery plan has been considered by the emergency management team as per the situation and site conditions as follows:

TABLE 7. 3 EMERGENCY RECOVERY PLAN

Steps	Activity	Action by
Preparedness	Identify and constitute emergency Response Team Identify ECC, if the identified ones are damaged Control centers to be equipped with Communication Facilities Emergency vehicles/ equipment List of emergency contacts & suppliers Medical Facilities	
Action during effective period	Do not panic. Raise alarm avoid standing near to windows, external walls Stand near the column or duck under sturdy furniture. Assemble at emergency assembly point as there may be aftershocks	Individual(s)
Action after effective Period (Establish Emergency Control Center. Site Main Controller to direct all activities)	Take head count Activate emergency plan as situation demands Assess situation and initiate shut down of plants (if required) Initiate search & rescue (if required) Provide first aid to victims. Remove casualties Key persons to report to site Assess damage Undertake	Site Incident Controller Site Main Controller Coordinators – Fire & Security, Safety, Material, Medical, and Plant Key Person

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(b) Storm

The contingency actions during storm will be based on the weather forecasts obtained from meteorological stations and the local meteorological department. Some of the important actions to be carried out are as follows:

Prior to Storm

- Set up a communication protocol with the local meteorological department to receive timely and accurate updates on the storm's progress.
- Assess and establish key distances from the anticipated path of the storm to streamline the execution of preparatory actions.
- Conduct a thorough appraisal of factory operations and installations to understand how the storm might impact them.
- Carefully review all operational systems to identify those that are vulnerable to storm damage.
- Confirm the readiness of first aiders, emergency vehicles, medical centers, and necessary medicines.
- Properly secure all metallic sheets, loose materials, empty drums, and other lightweight objects that could become projectiles or cause damage during the storm

c) Flood

- In case of a landslide, earthquake or any other natural calamity, the Emergency Controller will immediately inform the Sr. Management who shall contact the Local Municipal Administration and police for remedial actions.
- The staff on duty or other personnel as given under plant personnel emergency notification list shall be called for alertness.
- Emergency vehicles shall be kept ready.
- Medical staff at the Medical Centre shall be alerted.
- Fire & Safety staff shall be alerted.
- All shift supervisors of the site shall be alerted

d) Air raid

Air raid warning would be obtained from the District Emergency Authority or Defense Authorities, during which total blackout of the entire complex should be considered. Some of the contingency actions to be considered during an air raid are as follows:

- The Aviation Lights installed on highest point inside the factory should be switched off.
- All the lighting on the Streets should be put off.

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- All the plant lighting should be put off.
- Brown curtains should be provided for all windows inside the building.
- Other emergency actions should be followed in addition as per the general procedure

7.3 DISASTER MANAGEMENT PLAN

7.3.1 INTRODUCTION

Disaster Management Plan for an industrial unit is necessarily combustion of various actions which are to be taken in a very short time but in a pre-set sequence to deal effectively and efficiently with any disaster, emergency or major accident with an aim to keep the loss of men, material, plant/ machinery etc. to the minimum. Creation and establishment of a cell within the industrial unit is a pre-requisite for an effective implementation of any Disaster Management Plan. The main functions of the Disaster Management Cell are to prepare a detailed Disaster Management Plan, which includes:-

- Identification of various types of expected disaster depending upon the type of the industrials unit;
- Identification of various groups, agencies, departments etc. necessary for dealing with a specific disaster effectively
- Preparation – by intensive training – of relevant teams/ groups within the organization to deal with a specific disaster and keep them in readiness;
- Establishment of an early detection system for the disasters;
- Development of a reliable instant information/ communication system; and
- Organization and mobilization of all the concerned departments/ organizations/ groups and agencies instantly when needed;

7.3.2 SCOPE

The aim of hazard control and disaster management is concerned with preventing incidents through good design, operation, maintenance and inspection, by which it is possible to reduce the risk of an incident, but it is not possible to eliminate it. Since, absolute safety is not achievable; an essential part of major hazard control must also include mitigating the effects of a major incident. An important element of mitigation is emergency planning i.e. identifying accidents as soon as possible, evaluating the consequences of such incidents and selection of the emergency procedures, both on-site and off-site, that should be adopted in the event of an emergency. Objective The objectives of the emergency plan will be:

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- To protect grinding unit personnel and general public.
- To prevent and minimize damage to property and to the environment.
- To help persons at site in a systematic manner meeting a disaster situation.
- To restore the affected areas back to normal as soon as possible.
- To review accident after it has occurred and to evaluate company's efforts in order to improve emergency management response in the future.

Elimination of the disaster requires prompt action and work emergency personnel with fire-fighting equipment, water sprays, etc. Minimizing the impacts may include rescue, first aid, evacuation, rehabilitation and providing information promptly to people living nearby To deal with the below emergencies, the Emergency Plan has been prepared.

7.3.3 ONSITE DISASTER MANAGEMENT PLAN

Disaster management plan are prepared with an aim of taking precautionary step to control the hazard propagation, avert disaster, take action after the disaster which limits the damage to the minimum and follow the on-site emergency planning. The onsite emergency is an unpleasant situation that causes extensive damage to plant personnel and surrounding area and its environment due to in operation, maintenance, design and human error.

Fires: Fire at fuel storage yard, Trash catching fire, diesel fire, cable fire, Paint fires, construction waste fires, electrical fire in panels, transformer oil fire, Fire in administrative building, combustible gas fire, and flammable liquid fire, etc.

Explosion: LPG cylinder explosion in canteen, air receiver cylinder bursting, etc. Leakage: Leakages of gases, combustible gases etc.

Spillage: Spillages of acids / chemicals / flammable liquids/ non-flammable liquids etc.

Contamination: Drinking water contamination.

Construction disasters: Building collapse, form work collapse, rubbish chute choke, scaffolding collapse, tower crane collapse, mobile crane/crawler crane topple, Major electrical shutdown (during night time) Road emergencies: Road accidents

Others: Cyclonic winds, Flooding, Food poisoning, epidemics, earthquake, Landslides etc.

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7.4 ONSITE EMERGENCY CONTROL PLAN (ECP) FOR GRINDING UNIT

The fundamental need of an Emergency Control Plan (ECP) is to establish two control centres, one at the affected site as Emergency Control Centre (ECC) and the other one reasonably away from the affected site as Central Control Centre (CCC).

Emergency Control Centre (ECC)

This centre will seek the services of the Emergency Task Force and also contact the personnel IC & SC for any assistance during the emergency. The important telephone numbers for contacting various essential services during the emergency are kept in the centre, listed in the plan. The residential address of important persons to be contacted for communicating the emergency situation, are also kept. This centre is the communication link between the Emergency services and Central Control Centre.

The Department-In-Charge takes control of this centre and acts as an Incident Controller.

ICC shall be equipped with:

- Telephones
- Site Master Plan
- A list of internal / external telephone numbers of site personnel

Central Control Centre (CCC)

CCC is located in the office of Manager (Personnel) at the main gate of the factory. This centre is utilized for receiving and assessing information regarding the situation, directing the resources to Incident Control Centre, at the demand of Incident Controller located at ICC, calling in assistance from External Fire Services, ambulance etc. The Site Controller will be stationed in the office of Manager (Personnel & Administration) and will communicate with the Incident Controller and the Corporate Office according to need. CCC shall be equipped with:

- Internal / External emergency communication telephone nos.
- Site-Master Plan
- List of important person's onsite, authorities outside along with their names and telephone numbers.

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Roles and Responsibility

A team of following Essential persons shall be taking necessary action during the event of emergency. The roles and responsibilities of these personnel are defined:

Head of the Department / Section In-Charge or Incident Controller

- Quickly assess cause/source of the hazards and its effects.
- Discuss with the Site Controller and coordinate the necessary action required to control/contain the emergency situation.
- Continuously monitor the work of firefighting personnel and other persons engaged in the emergency actions so that all actions are carried out safely.

Site Controller – VP (Works)

- Responsible for the overall control of the emergency.
- Discuss with the Incident Controller about the situation and evaluate the Major Emergency situation. The concerned HOD does the initial assessment of the situation immediately after the incident happens.
- Ensure communication to the following authorities if necessary:-
 - Fire Brigade
 - Local Hospitals
 - Civil Authorities
 - Electricity Board
- Ensure communication to the neighboring industries of the incident, if required. • Maintain a speculative continuous review of possible developments and assess these to determine most probable course of events.
- Ensure proper preservation of evidence for subsequent investigation. Inform the Company Officers at the Corporate Office.

Safety Officer

- Ensure overall safety of the Emergency Operations.
- Assist in controlling the Emergency.
- Keep Central Control Center (CCC) informed of the developments from time to time.

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- Mobilize all available resources for controlling the incident.
- Help in carrying out search and rescue operations, if required.

Security Officer

- Ensure that unauthorized persons do not enter the emergency area.
- Ensure cordoning off the prohibited area.
- Ensure availability of the firefighting personnel.
- Act as per the instructions of the Incident controller.

Process & Maintenance Personnel of Affected & Non-Affected Areas

- Persons of the unaffected area shall ensure the smooth operation of their own areas and shall not create a crowd at the emergency site. They are to extend their full co-operation to the staff fighting with the emergency, if the need arises.
- Persons of the affected area shall not create hue and cry and before arrival of the Security Staff, should initiate first aid action against the emergency. They shall extend help to the firefighting staff as per their requirement. The maintenance staff shall ensure availability of crane, gas cutting and welding facilities to meet any emergency requirement. The electrical staff shall ensure electrical isolation of the area, if required, and shall arrange emergency lights to lighten the area.
- Persons are to remove the materials from emergency area prone to fire / explosion etc.
- Conduct emergency control operations as per the instructions of the Incident Controller

General Building Evacuation Plan

At recognition of Fire / hearing the shouting "Fire", it is the responsibility of all building occupants to evacuate immediately and proceed to predetermined assembly points, away from the building. Building occupants are also responsible for ensuring that their visitors/customers follow the evacuation procedure described herein, and leave the building along with all other occupants. Designated essential personnel needed to continue or shut down critical operations, while an evacuation is underway, are responsible for recognizing and/or determining when to abandon the operation and evacuate themselves. Contract workers will be made familiar with the procedures outlined herein, and are expected to leave the building when the alarm same.

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Evacuation Instructions

On ringing of the building alarm or upon information of a general building emergency, following instructions are to be followed:

- Do not panic.
- Do not ignore alarm.
- Leave the building immediately, in an orderly fashion.
- Follow quickest evacuation route from where you are (see posted floor evacuation diagram/map).
- Do not go back to your office area for any reason.
- Proceed to the designated emergency assembly point for your area. If the designated assembly point/area is unsafe or blocked due to the emergency, proceed to the alternate assembly point.
- Report to your Work Area Reporting officer at the assembly point to be checked off as having evacuated safely; also report any knowledge you may have of missing persons.
- Return to the building only after emergency officials or building monitors give the all-clear signal. Silencing the Alarm doesn't mean the emergency is over.

➤ Alarm and Communication Systems

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. Alarm system varies and depends on the size of the proposed project. There shall be an adequate number of points for an audible warning, alarm shall be alert the people to implement appropriate emergency procedures. In areas where a high level of noise; it may be necessary to install more than one audible alarm transmitter or flashing lights.

➤ Firefighting system

In view of vulnerability to fire, effective measures will be taken to minimize fire hazard. Fire protection is envisaged through hydrant and sprinkler system, designed as per the

recommendation of Tariff Advisory Committee. The following areas in the power station are mainly susceptible to fire:

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- Cable galleries
- Electrical switchgear/ MCC room
- Transformers and turbine oil tank

For containment of fire and preventing it from spreading in cable galleries, section wise fire barriers with self - closing fire resistant doors will be provided. The ventilation systems, if any, provided in cable galleries will be interlocked with the fire alarm system, so that in event of a fire, the ventilation system will be automatically switched off. In order to avoid spreading of fire all cable entries opening in cable galleries, tunnels, channels, floors, barriers etc. will be sealed with non-inflammable/Fire resistant sealing materials.

For detection and protection of the project against fire hazard, any one or a combination of the following systems will protect susceptible areas:

- Hydrant system
- Automatic high velocity water spray system
- Medium velocity water spray system
- Portable fire extinguishers
- Fire Detection & alarm systems

Fire hydrant points will be provided throughout the premises. Automatic high velocity spray system will be provided for protection of transformers and cable galleries. Manual medium velocity spray system will be provided for protection of fuel oil and turbine oil storage tanks. Water for hydrant, spray and sprinkler system will be supplied from the firewater pumps located in firewater pump house adjacent to Raw Water Reservoir. Adequate number of portable and mobile chemical fire extinguishers will be provided at strategic locations throughout the project. Fire detection and alarm system will be provided at strategic locations throughout the project. Fire detection and alarm system will be provided to detect fire/ smoke in vulnerable areas of the grinding unit through smoke /heat detectors. The firefighting equipment's are listed below .

TABLE 7. 4 LIST OF EXTINGUISHER TO BE USED AS CASE SPECIFIC

Chemical Name	Type of extinguisher
Coal	Use: Water fog, CO2, Foam, Dry Chemical
HSD	Use: Foam, Carbon dioxide, Dry Chemical Powder. Water may be used to cool fire-exposed containers
LDO	Use: water fog, foam, dry chemical or carbon dioxide (CO2) to

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	extinguish flames
Fly ash	Non Flammable
Gypsum	Non Flammable

TABLE 7. 5 LIST OF EXTINGUISHER TO BE USED AS SITE SPECIFIC

S.No	Location	Type of Extinguisher
1	Cable galleries	CO2 and Foam type, Dry chemical powder
2	High voltage panel	CO2 and Foam type, Dry chemical powder
3	Control rooms	CO2 and Foam type, Dry chemical powder
4	MCC rooms	CO2 and Foam type, Dry chemical powder
5	Pump houses	CO2 and Foam type, Dry chemical powder
6	Guest houses and offices	Dry chemical powder, foam type
7	Empty bag godown	Hydrant, Automatic type water sprinkler
8	Bunkers, silo, enclosed dust collector	CO2 type, N2 type, automatic sprinkler, fixed spraynozzle (unless water reactive)

➤ **First Aid**

First aid centre with adequate facilities are provided. It is to be maintained round the clock by a compounder cum dresser and a doctor. An ambulance is to be made available for emergency scenario. It is to be used at site to carry affected people to hospital.

➤ **Mock Drill**

As per the Industrial Major Accident Hazard Rules,

- The plant is to ensure that a mock drill of the on-site emergency plan is conducted every six months.
- A detail report of the mock drill conducted is to be made immediately available to all the concerned authority
- Onsite disaster mock drills are conducted once in six months.
- Also, Major Fire and Minor Fire mock drills are conducted once in three months and one month respectively.

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➤ **Training**

On job training to the engineers on various stages of risk analysis and preparedness during emergency to reflect in the operation of terminal, especially from the safety stand point. The fire team belonging to the firefighting department is to be intensively trained for the use of all equipment and in various firefighting methods for handling different types of job.

7.5 OFF-SITE EMERGENCY PREPAREDNESS PLAN

The task of preparing the Off-Site Emergency Plan lies with the District Collector; however the Off-Site Plan shall be prepared with the help of the local district authorities. The proposed plan shall be based on the following guidelines.

7.5.1 INTRODUCTION

Off-Site Emergency Plan would follow the On-Site Emergency Plan. When the consequences of an emergency situation go beyond the plant boundaries, it becomes an Off-Site Emergency. Off-Site Emergency is essentially the responsibility of the public administration. However, the plant management will provide the public administration with the technical information relating to the nature, quantum and probable consequences on the neighboring population.

The off-site plan in detail will be based on those events, which are most likely to occur, but other less likely events, which have severe consequence, will also be considered. Incidents which have very severe consequences yet have a small probability of occurrence would also be considered during the preparation of the plan. However, the key feature of a good off-site emergency plan is flexibility in its application to emergencies other than those specifically included in the formation of the plan.

The role of the various parties who will be involved in the implementation of an off-site plan are described below. Depending on local arrangements, the responsibility for the Offsite plan would either rest with the plant management or with the local authority. Either way, the plan would identify an emergency co-ordinating officer, who would take the overall command of the off-site activities. As with the On-Site Plan, an Emergency Control Center would be setup within which the emergency co-ordination officer can operate. An early decision will be required in many cases on the advice to be given to people living "within range" of the accident - in particular whether they should be evacuated or told to go indoors. In the later case, the decision can regularly be reviewed in the event of an escalation of the incident. Consideration of evacuation may include the following factors:-

- In the case of a major fire but without explosion risk only houses close to the fire are likely to need evacuation, although a severe smoke hazard may require this to be reviewed periodically; and

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- If a fire is escalating and in turn threatening a store of hazardous material, it might be necessary to evacuate people nearby, but only if there is time; if insufficient time exists, people should be advised to stay indoors and shield them from the fire. This latter case particularly applies if the installation at risk could produce a fireball with very severe thermal radiation effects.

Although the plan will have sufficient flexibility built in to cover the consequences of the range of accidents identified for the on-site plan, it will cover in some detail the handling of the emergency to a particular distance from each major hazard work.

7.5.2 ROLE OF THE EMERGENCY COORDINATING OFFICER

The various emergency services would be coordinated by an Emergency Coordinating Officer (ECO), who will be designated by the District Collector. The ECO would liaison closely with the Site Main Controller. Again depending on local arrangements, for very severe incidents with major or prolonged off-site consequences, the external control would be passed to a senior local authority administrator or even an administrator appointed by the Central or State Government. The ECO will be equipped with address and phone numbers of important agencies.

7.5.3 ROLE OF THE LOCAL AUTHORITY

The duty to prepare the off-site plan lies with the local authorities. The Emergency Planning Officer (EPO) appointed should carry out his duty in preparing for a whole range of different off site in handling the emergency, know of their role and are able to accept it by having for example, sufficient staff and appropriate equipment to emergencies within the local authority area. The EPO should liaison with the plant, to obtain the information to provide the basis for the plan. This liaison should ensure that the plan is continually kept up to date. It shall be the responsibility of the EPO to ensure that all those organizations which shall be involved cover their particular responsibilities. Rehearsals for off-site plans should be organized by the EPO.

7.5.4 ROLE OF FIRE AUTHORITIES

The control of a fire should be normally the responsibility of the senior fire brigade officer who would take over the handling of the fire from the Site Incident Controller on arrival at the site. The senior fire brigade officer should also have a similar responsibility for other events, such as explosions. Fire authorities in the region should be appraised about the location of all stores of flammable materials, water and foam supply points, and firefighting equipment. They should be involved in on-site emergency rehearsals both as participants and, on occasion, as observers of exercises involving only site personnel.

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7.5.5 ROLE OF HEALTH AUTHORITIES

Health authorities, including doctors, surgeons, hospitals, ambulances, and so on, should have a vital part to play following a major accident, and they should form an integral part of the emergency plan. For major fires, injuries should be the result of the effects of thermal radiation to a varying degree, and the knowledge and experience to handle this in all but extreme cases may be generally available in most hospitals. Major off-site incidents are likely to require medical equipment and facilities additional to those available locally, and a medical "mutual aid" scheme should exist to enable the assistance of neighboring authorities to be obtained.

7.5.6 ROLE OF GOVERNMENT SAFETY AUTHORITY

This shall be the factory inspectorate available in the region. Inspectors are likely to satisfy themselves that the organization responsible for producing the off-site plan has made adequate arrangements for handling emergencies of all types including major emergencies. They may wish to see well-documented procedures and evidence of exercise undertaken to test the plan. In the event of an accident, local arrangements regarding the role of the factory inspector shall apply. These may vary from keeping a watching brief to a close involvement in advising on operations.

7.6 EXPOSURE CONTROLS AND PERSONAL PROTECTION

- Control of dust through implementation of good housekeeping and maintenance;
- The bag filters will be installed to control dust emission;
- Use of PPE, as appropriate (e.g. masks and respirators);
- Use of mobile vacuum cleaning systems to prevent dust buildup on paved areas.

➤ PERSONAL PROTECTIVE EQUIPMENT

TABLE 7. 6 PERSONAL PROTECTIVE EQUIPMENT

S. No.	Particulars	Details
I.	Respiratory Protection	When the dust level is beyond exposure limits or when dust causes irritation or discomfort use Respirator.
II	Clothing	Wear impervious abrasion and alkali resistant gloves, boots, long sleeved shirt, long pants or other protective clothing to prevent skin contact.
III	Eye Protection	Wear Safety goggles to avoid dust contact with the eyes. Contact lenses should not be worn when handling the materials.

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IV	First Aid Eye Contact	Rinse eyes thoroughly with water for at least 15 minutes, including under lids, to remove all particles. Seek medical attention for abrasions and burns
V	Skin Contact	Wash with cool water and a pH neutral soap or a milk skin detergent. Seek medical attention for rash, burns, irritation and dermatitis.
VI	Inhalation	Move person to fresh air. Seek medical attention for discomfort or if coughing or other symptoms.
VII	Ingestion	Do not induce vomiting. If conscious, have person drink plenty of water. Seek medical attention.

7.7 OTHER SAFETY MEASURES

- Safety training to the workers shall be given.
- PPE shall be provided to the workers.
- The maintenance and cleaning of bag filters shall be carried out regularly.
- The dust removal efficiency of bag filters shall be checked regularly.
- Work place environment monitoring shall be carried out regularly and records shall be maintained. The monitoring of cement dust and silica in the work place shall be carried out.
- Good housekeeping shall be implemented in the plant.
- First aid box shall be provided.
- The industry shall provide adequate lighting facility inside the plant premises.
- General dilution ventilation shall be provided to control dust levels below applicable exposure limits.
- Fire extinguishers shall be provided to withstand the fire or explosion condition.
- Pre-employment and Periodical Medical Examination of workers shall be done by government approved medical practitioners and the details will be recorded as per the Regulations.
- The industry shall prepare On-Site Emergency Plan.
- Two main gates shall be provided for entry and exit of the workers.
- Work place environment monitoring for cement dust shall be carried out.

CHAPTER -8 PROJECT BENEFIT

8.1 INTRODUCTION

M/s. Ambuja cements limited believes holistic socio-economic development of the local community is the need of the hour. It truly believes that a company's prosperity is linked with that of its neighboring communities. The proposed 6.0 MMTPA capacity grinding unit will result in improvement of the infrastructure as well as overall socio-economic development in that area. The people residing in the nearby areas will be benefited directly or indirectly due to the proposed benefits for the locals in two phases i.e. during construction phase as well as during operation stage of the grinding unit.

8.2 PROPOSED PROJECT BENEFITS

The proposed project will improve overall socio-economic growth of the regions & provide various benefits across the nearby areas which are attributed below:

- 1) Improvement in the Physical Infrastructure
- 2) Improvement in the Social Infrastructure
- 3) Employment potential - skilled; semi - skilled and unskilled
- 4) Other tangible benefits

8.2.1 IMPROVEMENTS IN THE PHYSICAL INFRASTRUCTURE

The proposed project is anticipated to have a substantial positive impact on civic amenities once it begins. By enhancing essential community services, the project aims to significantly improve the quality of life for local residents. Key initiatives include expanding healthcare facilities, constructing and upgrading roads, and ensuring access to clean drinking water and proper sanitation. The project also includes the implementation of a comprehensive Water Security Plan and the installation of rainwater harvesting systems to address water scarcity issues. Additionally, plans for pond renovation will support local fisheries, while the provision of solar energy solutions will promote sustainable living. Collectively, these efforts are expected to uplift the living standards in various villages, fostering a healthier, more resilient, and self-sufficient community.

8.2.2 IMPROVEMENTS IN ENVIRONMENTAL INFRASTRUCTURE

A 10.97 ha Cement Grinding Unit will allocate 3.67 ha (~33%) for greenbelt development, including a 50m wide native tree greenbelt as per CPCB guidelines. This greenbelt will serve as an environmental buffer, reducing air and noise pollution, preventing soil erosion, recharging groundwater, and improving aesthetics. Horticultural experts will manage the planting and

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maintenance, while educational initiatives will promote tree care and environmental awareness among local villagers. Strengthening/ development of greenbelt/ plantation quality within the area will help in better harnessing of the run-off thereby helpful in potential recharging of the groundwater and also help in reducing the soil erosion. The development of greenbelt/ plantation within the plant will be helpful in capturing the fugitive emissions, attenuate the noise generated thereby maintaining the air quality and noise levels and will also improve the aesthetic beauty of the surrounding.

8.2.3 IMPROVEMENT IN THE SOCIAL INFRASTRUCTURE

With the implementation of the proposed Grinding unit employment scenario of the area will change leading to various socio-economic developments. The direct and indirect employment opportunities generated from the plant will help in uplifting the existing social status and living standards of the people.

Special emphasis on financial and social benefits will be given to the local people including tribal population, if any, in the area. Development of social amenities will be in the form of medical facilities, education to underprivileged and creation of self-help groups

8.2.4 EMPLOYMENT BENEFITS (DIRECT & INDIRECT) & BUSINESS OPPORTUNITY

The proposed project will generate employment opportunities to the local populace during construction phase and operational phase. The total manpower requirement during construction phase is about 1530 people. This will last for approximately 18 months. Unskilled/semi-skilled labour for the plant would be drawn locally or from nearby places. The employment of local personnel in skilled and executive staff category would depend on availability and suitability of individuals. In addition to the direct employment in the construction of grinding unit, an indirect employment will generate in truck transport operation, repair garages, other ancillary units, markets/shops etc.

The total manpower requirement during operation phase is estimated to be 155 people excluding contract labour required for auxiliary services like loading of cement bags, unloading of store and miscellaneous materials and general cleaning work and security. Unskilled/semi-skilled labour for the plant would be drawn locally of from nearby places. The table below shows the details of employment provided.

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TABLE 8.1 MANPOWER REQUIREMENT

Description		Construction phase	Operation phase
Proposed	Permanent	30	30
	Contract	1500	125
Total (A)		1530	155
Period of employment in days(B)		545	365
Total Man-days (A*B)		833850	56575

8.2.5 OTHER TANGIBLE BENEFITS

The other tangible benefits include demonstrating process and system cost savings, compliant inspections and customer audits, faster product approvals and manufacturing throughput, less rejected material, reduced non-conformance issues, and more efficient continuous improvement and project implementation. Intangible benefits include improved staff morale, faster, more accurate transparent decision making, less employee turnover, increased staff accountability, and an enhanced culture of quality throughout the organization.

8.2.6 CORPORATE SOCIAL RESPONSIBILITY

Social and community infrastructure and services would be provided in response to the need of communities. This will help in enhancement of the overall quality of life in the area. The company will also undertake community development in surrounding villages in the field of sport, drinking water, road development and greenbelt development in Panchayat land with consultation of the Gram Panchayat. M/s Ambuja Cement Limited (ACL) is fully conscious of its Corporate Social and Environment Responsibility towards community as well as environment. ACL has already planned to play a leading and meaningful role in bringing qualitative improvement in the life of community and the surrounding environment. Following strategies / methodology have been adopted for social study by ACL.

- Detailed questionnaire / Interview checklist / Observation / Group discussion
- Reconnaissance surveys to observe environmental and social characteristics surrounding villages within 3 km area.
- Establishment of environmental and social baseline conditions around the project site / project

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affected persons

- Discussions with the local community / local bodies and identification of hot spots and issues raised by people and to understand their perceptions about the project, anticipated changes due to the proposed power plant
- Livelihood / work alteration, Agricultural dependent Rural & SC / ST communities
- Employment, Income, Cultural, Bank & Other sources of credit
- Educational Institutes & skill level
- Environment (the quality of air & water people uses, the availability & quality of food they eat, the level of hazard or risk, dust & noise they are exposed to, the adequacy of sanitation, their physical safety, & their access to & control over resources.)
- Health nutritional status & well-being (health is a state of complete physical, mental, social & spiritual wellbeing & not merely the absence of diseases)
- Influx of work force / Pressure on infrastructure / Roads etc.
- Role of NGO (if any) in welfare & development schemes

PROPOSED CER ACTIVITIES AND ANNUAL ALLOCATION OF FUNDS

As per the MOEF&CC Office Memorandum vide letter F. No. 22-65/2017-IA.III dated 30th September 2020. Budgetary allocation will be made after public hearing/consultation by M/s Ambuja Cements Limited. CER fund will be spent under the part of Environmental Management Plan. As per the issues that will be raised during PH and agreed by ACL management, the activities to be taken up and the deadline will be listed in the Final EIA

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CHAPTER -9 ENVIRONMENT COST BENEFIT ANALYSIS

9.1 INTRODCUTION

The cement sector is a hard-to-abate sector in terms of greenhouse gas emissions, but it is an equally critical contributor to the economic development of the country. Cement industry is addressing the importance of a balance between economic growth and sustainability, as the cement industry takes the challenge of technology and innovation head on. Emphasizing the critical role of a well-established infrastructure network in the pursuit of India's ambitious US\$ 5 trillion economic targets, India is making substantial investments in large-scale projects aimed at bolstering economic resilience and unlocking new avenues for investments. India is experiencing rapid growth through improved connectivity, enhanced logistics, and the initiation of residential and commercial projects to meet both present and future needs.

Project economic analysis is based on estimating and comparing costs and benefits during the economic life of the project. Analysis is usually limited to those costs and benefits internal to the project. Occasionally, external costs and benefits of projects dealing with natural resources have been valued and included in the analysis. Inclusion of environmental benefits and costs would improve significantly the reliability of the economic analysis. More comprehensive environmental cost-benefit analysis would: Improve the estimate of a project's development impact; provide information to project proponent on the benefits associated with specific environmental investments; and enlarge the information base available to public by estimating the benefit and identifying the beneficiaries of environmental investments.

This chapter assess the environment and economic viability of the project. It looks at:

- Net present value of the project
- Internal rate of return due to the project
- Benefit to cost analysis ratio
- Cost effectiveness analysis

9.2 OBJECTIVE OF THE STUDY

The main objective of the study was to investigate the feasibility of developing a practical method to calculate, in economic terms, the major impacts of environmental investment undertaken by the proposed project.

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9.3 INVESTMENT COSTS

The total investment cost estimate for the project works out to be around INR 1400 Crores. This includes the capital costs for the stand-alone grinding unit project and the working capital requirements. The estimated Investment Cost for the project has been based on the requirement of fixed and non-fixed assets.

- Environment Management Protection Cost:
- Capital Cost for EMP: 70.2 Crores
- Recurring Cost/annum: Rs 4.8Crores/annum

9.4 LAND AND SITE DEVELOPMENT

M/s Ambuja Cements Limited is proposing a stand-alone grinding unit with cement production capacity of 6.0 MMTPA at Village- Devli, Tehsil + District: Palwal, State: Haryana. The Proposed Grinding Unit will be setup in an area of 10.97 Ha. Present land use of the project site is Non agriculture land it converted to industrial land. There are three alternative site selected for the project site.

9.5 EFFECTS ON ENVIRONMENTAL PARAMETERS

The environmental impact assessment of potential effects from plant site activities and operations on various environmental parameters is primarily based on a thorough study of the grinding unit's operations and the surrounding environment. To mitigate any negative impacts, effective control technologies have been proposed. The company plans to install state-of-the-art air pollution control equipment and adopt best practices across the industry to ensure air quality remains within prescribed limits. For water management, the company will maintain a Zero Liquid Discharge (ZLD) system and implement artificial recharge structures to enhance groundwater resources, although the area's groundwater is currently categorized as safe. Noise-generating equipment, such as machinery and generators, will be housed in enclosed buildings to minimize noise impact on the nearby area. Existing local trees will be preserved, and the area's biodiversity will be enhanced by converting the currently barren project site into an ecological habitat. This greenbelt development and tree planting initiative will contribute to climate change mitigation and improve the local ecological footprint.

9.6 EFFECTS ON SOCIAL ASSESSMENT

The proposed project will create job opportunities for local residents, providing a stable and permanent source of income for their families. In addition to direct employment, the project will also generate various indirect employment opportunities for the local community, such as through the growth of small businesses and service providers in the surrounding area. After evaluating all

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potential impacts and considering the planned mitigation measures for environmental parameters like air quality, water management, and noise control, it has been determined that the construction and operation phases of the project will have minimal effects on the environment. This ensures that the stand-alone grinding unit by M/s. Ambuja Cement Ltd. will operate in an environmentally friendly manner, contributing positively to both the local economy and ecological sustainability.

PLANT OPERATIONS

The operational costs have been worked out considering the following assumptions:

General

- Total cement production capacity per annum: 6.0 MMTPA
- Indian government has set a target to invest INR 100 Billion on developing infrastructure from 2019-2025. The target investment on infrastructure is to double the investment made during 2014-19. In view of INR 100 billion investment on infrastructure, Indian cement industry is estimated to have cement consumption of 593 MTPA and industry consumption is expected to cross 85% capacity utilization after 2022-23. 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 593 MT by 2024-25 in high growth scenario.
- The current market demand for the cement is likely to grow at a CAGR of around 5%-6% pa. for the next 5-10 years and is likely to reach to around 36.40 MTPA by FY 32.

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9.7 COST EFFECTIVE ANALYSIS

Cost – effective analysis is way to compare the costs of different intervention to achieve environmental objective. following steps have been followed for conducting a cost effectiveness analysis.

1. collected data on the costs of management measures.
2. quantified the effect of each management measure on the environment.
3. calculated the average cost of each management measure for each environment impact
4. select the most cost- effective management strategy.

so the method used for cea depends on the environmental problem, the availability of data and the uncertainty of the cost and effectiveness information.

9.8 CONCLUSION

The proposed Project will not cause any negative impacts on the land use, water resources, air quality, noise level, natural habitat of the area. The project will create revenue to Government in the form GST at the full operational capacity. Project will provide Job opportunity to the local people, attract business opportunities and indirect employment which will improve the Socio-economic status of the area. The local trees will be protected and further the biodiversity of the area will be increased by changing the present barren land use of the project site into ecological habitat for many tree species. 33% of the area will be developed under greenbelt development/plantation which will help in mitigation of climate change and will improve the local ecological footprint. Overall, it can be concluded that the Proposed Project will be economically, environmentally as well as financially viable.

CHAPTER -10**ENVIRONMENTAL MANAGEMENT PLAN****10.1 INTRODUCTION**

The Environment Management Plan (EMP) is a detailed, site-specific framework designed to ensure that a project is executed in an environmentally sustainable manner. This plan is critical in guiding all stakeholders—including project proponents, contractors, subcontractors, and consultants—through the identification and management of potential environmental risks associated with the project. The EMP requires that all parties involved take proactive and appropriate actions to mitigate these risks, thereby minimizing any adverse environmental impacts. To achieve this, the EMP integrates a comprehensive set of environmental management measures, which are to be implemented throughout all phases of the project, including planning, construction, and operation. These measures are essential to fostering the sustainable development of the area affected by the project. Furthermore, the EMP is designed to be dynamic and adaptable, with regular monitoring of relevant environmental parameters as specified in the post-project monitoring schedule. Should new facilities be introduced or existing ones modified in ways that pose additional environmental concerns, the EMP will be updated accordingly to address these changes. This proactive approach ensures that the environmental management strategies remain effective and responsive to evolving circumstances, thereby promoting long-term environmental stewardship and sustainability.

Environmental Management Plan is detailed under the following heads to meet the regulatory compliances:

- Air Quality Management plan
- Noise Level Management plan
- Waste Water (Effluent) Management plan - Storm Water Management plan
- Rainwater Harvesting plan
- Solid & Hazardous Waste Management plan
- Energy Conservation
- Greenbelt Development & Plantation Programme
- Occupational Health & Safety Management plan.
- Socio- Economic Management Plan (Brief description has been provided in Chapter –
- of this EIA/EMP Report)

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- Total capital cost and recurring cost/annum for environmental Pollution Control Measures

Elements of EMP:

EMP includes four major elements:

1. Planning: This includes identification of environmental impacts, legal requirement, commitments and policies, setting environmental objectives and environment, health, safety and social compliance requirements;
2. Implementation: This comprises of resources available for the project, accountability of employees, contractors and documentation of measures to be taken;
3. Checking (Measurement & Evaluation): This includes regular inspection, audits, monitoring corrective actions and record keeping; and
4. Management Review: Actions are taken to continually improve the environment, health, safety, and social performance of the organization. The following aspect has been considered to ensure proper implementation of EMP for the proposed Grinding Unit.

10.2 AIR QUALITY MANAGEMENT PLAN

The Air Quality Management for Construction and operation phase been prepared which described below –

Construction Phase

- Sprinkling of water at the construction site and on the nearby unpaved roads.
- Regular sweeping of paved roads to reduce the re-suspension of dust on road o Construction equipment having PUC certificate will be deployed during the activity to restrict exhaust emission.
- Proper upkeep and maintenance of vehicles will be done throughout the construction phase.
- To reduce the impact on air quality due to loading and unloading of construction waste, proper handling/ height for unloading material on the barren land will be maintained. o in addition to above, dust will also be generated from stockpiles of construction material (aggregates and sand). To prevent this, stockpiles will be aligned properly with slopes stabilized and maximum height will be maintained. Stockpile will also be covered.

**10.2.1 IMPLEMENTATION OF CPCB GUIDELINES FOR CONTROL OF
FUGITIVE EMISSIONS**

Fugitive Emissions Fugitive emissions are the air pollutants released in the air. Fugitive dust may be defined as “any solid particulate matter that becomes airborne by natural or man-made activities, excluding particulate matter emitted from an exhaust stack.

Factors that influence emissions

- Moisture content of the material
- Type of material processed
- Type of equipment
- Operating practices employed.

Measures to Control Emissions

- Transportation
- Transportation of clinker to the clinker silo will be done through covered conveyor belt in a very controlled manner; while that of the fly ash to fly ash silo will be done pneumatically from bulkers. This helps in reducing the fugitive emissions.
- Movement of heavy trucks/vehicles on the non-metallic road generates substantial quantity of dust emission. This is due to the presence of dust over the road, which is carried away by wind. To control the generation of dust, all the roads inside the plant premises will be concreted.
- Regular sweeping of all the roads and floors will be done by vacuum sweeping machine.
- Sprinkling of water through tankers will be done on bare lands and roads.
- Speed of vehicles within the plant premises will be limited to 10 km/hr.

Compliance as per CPCB guidelines

- For achieving effective prevention and control of potential fugitive emission sources in cement manufacturing plants, specific requirements along with guidelines have been laid down by CPCB, which will be followed specifically in the project operation.
- Regular inspection will be carried out for all fugitive control system and records will be maintained as per CPCB guidelines

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10.3 DESCRIPTION OF ADMINISTRATIVE ASPECT

Environment Management Cell

ACL Board committee periodically review compliance report of all norms, clauses, laws applicable to the company and the step taken by the company to rectify instances of non-compliance if any. Plant head provide & support training to implementation of the environmental policy, share good practices with unit head and ensure that environmental policy is implemented as per plant procedure. Plant head provide all resources for environmental function so that the system of compliances achieved. Manager Environment department is responsible for all the activities related to environmental issues and concerns and coordinates with unit head. Unit head shall report to the board of director on the important environmental issues and concerns with respect to compliances, clearances, and certification etc.

TABLE 10.1 UNLOADING SECTION (COAL & OTHER RELEVANT MATERIAL)

Sl.No	Guidelines	Control Measures to be Provided
1	The enclosures for the unloading sides could be flexible curtain type material covering up to height of dumpers discharge from the roof.	Enclosures of flexible curtain will be provided for all unloading operations covering height of dumpers from the roof.
2	A dust suppression system should be provided to spray water. The amount of water sprayed should preferably be optimized by employing proper design of spray system. Suitable systems may be adopted to reduce the problems like choking, jamming of the moving parts.	Water sprinklers proper design and suitable spray system will be provided for dust suppression.

TABLE 10.2 MATERIAL HANDLING SECTION (INCLUDING TRANSFER POINTS)

Sl.No	Guidelines	Control Measures to be Provided
1	The enclosures from all sides with the provision for access doors, which shall be kept, closed during operation Spillages should be periodically removed.	Transfer point locations will be fully enclosed for the project and spillage of cement will be removed regularly.

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2	Either water spray system should be provided for suppressing the air borne dust or dry extraction cum bag filter with adequate extraction volume should be installed.	Bag filters will be provided at all the material handling & transfer points and required locations to avoid fugitive emissions.
3	Spray sufficient quantity of water to moist the top layer to avoid wind blowing of fine particles.	Water will be periodically sprayed on the stockpiles, so as to retain some moisture in the top layer.

TABLE 10.3 COAL STORAGE SECTION

Sl.No	Guidelines	Control Measures to be Provided
1	A board should be erected to display the area earmarked.	Coal yard / storage area will be clearly earmarked with a display Board.
2	Proper pathways with entry and exit point should be provided.	The pathways with entry and exit point in coal yard for vehicle movement will be paved.
3	Any deposits of dust on the concrete roads should be cleaned regularly by sweeping machines.	Accumulated dust will be removed / swept regularly.
4	Wherever blending activity is carried out by chaining in open ground, covered shed should be provided to reduce the fine coal dust getting airborne. The enclosure walls shall cover minimum three sides up to roof level.	Coal other than coal stockpile will be preferably stored under covered shed. If, covered open area, enclosure wall covering three sides will be provided.
5	The enclosure should be from three sides and roof so as to contain the airborne emissions.	Enclosure from three sides and roof will be provided for coal and pet coke storage.
	Instead of dust extraction cum bag filter system, if dust suppression measure is used, following additional control measures should be provided.	
6	Coal should be sufficiently moistened to suppress fines by spraying minimum quantity of water, if possible.	Water sprinkler system will be provided to suppress fine dust before unloading.

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7	Water spray should also be applied at crusher discharge and transfer points.	Water spray system will be provided at crusher discharge and transfer points.
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TABLE 10. 4 CLINKER STOCKPILE SECTION

Sl.No	Guidelines	Control Measures to be Provided
1	Bag filter may be provided before venting out the gases.	Bag filter will be provided before venting out the gases.
2	The enclosures should have a venting arrangement located at transfer point where clinker is dropped to the stockpile. The extraction /venting should be sufficient enough. Clinker stockpile access door should be covered by mechanical gate or by flexible rubber curtain. The access doors shall be kept closed at all possible times.	Clinker will be stored in silo which will have venting arrangement along with a bag filter.
3	Extracted dust should be captured in bag filter and the collected dust should be avoided to feed back to the clinker stockpile, if layout permits. It may be recycled at last possible destination i.e., cement mill section through suitable arrangement, if possible.	The dust extracted and captured in bag filter will be avoided to feedback/recycled to the clinker stockpile, if possible.
	Generally open storage of clinker should be avoided. Only in case of emergency clinker would be stored in open with following control measures.	
4	After earmarking the open storage area of clinker, a board should be erected to display the area earmarked.	No open storage of clinker will be done and proper silo will be provided for storage of clinker.
5	During the period when the openly stored clinker is inactive, it should be covered fully by HDPE or tarpaulin type sheets to prevent wind blowing of fugitive	Cover will be provided if clinker would be stored in open to prevent wind blowing of fugitive dust.

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	dust.	
6	Install three sided enclosures, which extend to average height of the stockpile, where ever feasible.	Wind break walls on three sides of open stock piles will be provided
7	Flexible type wind breaking enclosure should be provided covering the clinker retrieval area as wind barrier to prevent dust carry over by wind. The enclosure could be of light weight material like molded plastic material or similar, which could be dismantled/assembled and shifted from one place to other.	Partial enclosure for retrieving area will be provided.
8	Travel areas path used by the front-end pay loader shall be paved with concrete. It should be regularly swept by high efficiency vacuum sweeper to minimize the material build – up.	The travel path of pay loaders would be paved and frequently swept by sweeping machine.
9	The possibilities especially in new cement plant may be explored for the following: An enclosure fitted with bag filter could be located at the most central place adjacent to the clinker storage area. The pay loader moves to the fixed loading area from one end of the enclosure and the truck/trailer enters the enclosure from another end.	Loading of clinker by pay loaders into trucks/trailers will be carried out in an enclosure fitted with a bag filter.

TABLE 10. 5 STORAGE OF GYPSUM, FLY ASH AND OTHER ADDITIVES

Sl.No	Guidelines	Control Measures to be Provided
1	The enclosure walls shall cover minimum two sides up to roof level.	The raw material and finished product storage

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		will be under covered shed and Silo respectively.
2	Fly ash shall be pumped directly from the tankers to silos pneumatically in closed loop or mechanically such that fugitive emissions do not occur.	Dry fly ash will be transported by closed tankers/ bulkers and will be pumped directly from the tankers to silos pneumatically / closed unloading hopper in closed loop.
3	The silo vent will be provided with a bag filter type system to vent out the air borne fines.	Dry Fly ash will be stored in silos only provided with a bag filter system to vent out air borne fines.
4	If possible, the dry fly ash should be sent to closed silos. Otherwise, fly ash should be transported through closed belt conveyors to avoid wind carryover of fly ash.	Fly ash will be sent to closed silos by pneumatically enclosed loop.

Cement Packing Section

S. No.	Guidelines	Control Measures to be Provided
1.	The packing machines should be equipped with dust extraction arrangement such that the packing operation is performed under negative pressure. The dust may be captured in bag filters.	Dust extraction arrangement for packing machines will be provided and dust collected in Bag filters will be recycled back to the process.
2.	Adequate ventilation for the packing hall should be provided for venting out suspended particulate thereby ensuring dust free work environment.	Adequate ventilation for the packing hall will be provided to ensure dust free work environment.
3.	The spilled cement from the packing machine should be collected properly and sent for recycling. The spilled cement on the shop floor should be swept by vacuum sweeping machines periodically. Proper engineering controls to prevent the fugitive emissions may include arrangements	The spilled cement from the packing machine will be collected properly and sent for recycling in the process. Spillage of cement on floor will be minimized and swept by vacuum sweeping machines

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	like providing guiding plate, scrapper brush for removing adhered dust on cement bag etc.	periodically to prevent fugitive emissions.
4.	The vibratory screen provided for screening/recycling spilled cement should be provided with a dust extraction arrangement to prevent fugitive emission from that section.	Emissions from the recycling screen will be prevented by installing appropriate dust extraction system.

Silo Section

S. No.	Guidelines	Control Measures to be Provided
1.	The bag filter should be operated and maintained properly, especially the cleaning of bags to avoid pressurization of silos thereby causing fugitive emissions from leakages etc.	The silo vent will be provided with a bag filter type system to vent out the air borne fines.

Roads

S. No.	Guidelines	Control Measures to be Provided
1.	The paved roads should be maintained as paved at all times and necessary repairs to be done immediately after damages to the road if any.	All roads in the plant premises on which vehicle movement of raw materials or products take place will be paved and will be repaired immediately after damage.
2.	Limit the speed of vehicle to 10 Km/h for heavy vehicles within the plant premises to prevent the road dust emissions.	Limit the speed of vehicle will be limited to 10 Km/hr for heavy vehicles within the plant premises to prevent the road dust emissions.
3.	Preventive measures include covering of trucks and paving of access areas to unpaved areas.	Preventive measures will be employed to minimize dust build up on roads.

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4.	Mitigative controls include vacuum sweeping, water flushing.	Regular sweeping of roads will be done to minimize fugitive dust emissions.
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TABLE 10. 6 CREP GUIDELINES

S. No.	CREP Guidelines	Action
1	Cement Plant which were not complying with notified standards: - Augmentation of existing Air Pollution Control Devices - by July 2003. Replacement of existing Air Pollution Control Devices - by July 2004.	This is a proposed grinding unit by Ambuja Cement Ltd., Devli. The industry will comply with notified standards and Air Pollution Control Equipment's to be installed for proposed project shall be designed to meet the PM emission of 30 mg/Nm ³ .
2	Cement Plant located in critically polluted or urban areas (including 5 Km distance outside urban boundary) will meet 100mg/ Nm ³ limit of particulars matter by December 2004 and continue working to reduce the emission of particulate matter to 50 mg/ Nm ³	Plant is neither located in critically polluted area nor in urban area, hence, this limit is not applicable. However, the pollution control devices will be designed to meet the PM emissions of 30 mg/Nm ³ .
3	The new Cement Kilns to be accorded NOC/ Environmental Clearance w.e.f. 01.04.2003 will meet the limit of 50mg/ Nm ³ for particulate matter emissions.	Not Applicable. The pollution control devices will be designed to meet the PM emissions of 30 mg/Nm ³ .
4	The Central Pollution Control Board (CPCB) will evolve load-based standards by December 2003.	Actions will be taken as per recommendation of CPCB.
5	CPCB and NCBM will evolve SO ₂ and NO _x emission standard by June 2004.	Ambuja Cements Pvt Ltd. will comply all the Stipulated standards given by MoEF&CC, New Delhi
6	The cement industries will control fugitive emissions from all the raw material and products storage and transfer points by December 2003. However, the feasibility for the control of fugitive emissions from limestone and coal storage areas will be decided by the National Task Force (NTF).	Silos for storage of Clinker, Fly Ash, and Cement will be provided. Covered storage for Gypsum will be provided. Water spray arrangement will be provided for raw materials at

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	The NTF shall submit its recommendation within three months.	identified locations. All material transfer points will be equipped with dust extraction systems. Floors in the plant and at main gate truck
7	CPCB, NCBM, BIS and Oil refineries will jointly prepare the policy on use of petroleum coke as fuel in cement kiln by July 2003.	Not Applicable.
8	After performance evaluation of various types of continuous monitoring equipment and feedback from the industries and equipment manufacturers, 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.	Continuous monitoring equipment (opacity meter) will be installed at the stacks to monitor particulate emissions.
9	Trappings in Kiln ESP to be minimized by July 2003 as per the recommendation of NTF.	Not Applicable. As the company has installed BagHouse in Ball Mill.
10	Industries will submit the target date to enhance the utilization of waste material by April 2003.	Ambuja Cement Ltd. will continuously put efforts to use waste materials: Dust collected in APCEs will be used back in the manufacturing of cement. Hazardous waste will be sold to CPCB authorized recyclers.
11	NCBM will carry out a study on hazardous waste utilization in cement kiln by December 2003	Not Applicable.
12	Cement industries will carry out feasibility study and submit target dates to CPCB for co-generation of power by July 2003.	Not Applicable.

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Noise Management

Exposures of workers to the high noise level for long duration may lead to certain occupational diseases. To mitigate the high noise levels, following measures will be adopted:

- Properly insulated enclosures will be provided to equipment generating excessive noise.
- Improved silencers within the equipment generating high noise
- Isolation of continuously vibrating structures/machines by proper and secured mountings.
- Noise proof cabins will be provided to operators of high noise generating machines/section, where acoustic enclosures can't be provided.
- Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce generation of noise.
- Personal Protective Equipment (PPEs) like earplugs and earmuffs will be provided to the workers exposed to high noise level.
- Adequate silencers will be provided in all the diesel engines.
- Greenbelt of appropriate width will be developed inside the project premises and at the project boundary.
- Regular monitoring of noise level will be carried out and corrective measures will be adapted accordingly

10.4 DECARBONIZATION

In India, Cement sector is one of the prominent contributors to GHG emissions. Each year more than 4 billion tonnes (in millions) of cement are produced, accounting for around 8% of global CO₂ emissions. The cement sector, analysed decarbonisation scenarios affecting the cement industry towards 2050. While carbon capture and storage is deemed unavoidable for deep decarbonisation due to the process emissions inherent to cement making, other decarbonisation options (e.g. electrification, higher use of biomass, circularity) are nonetheless expected to contribute to the decarbonisation ambition of the cement industry with their mitigation potential. Achieving the deep CO₂ emission reductions necessary will require major changes to the industry to deploy new low-CO₂ technologies, including carbon capture and storage, as well as circular economy solutions.

During September, 2021, Ambuja became the second company (after our subsidiary ACC being the first) in the Indian construction sector to sign the Net Zero pledge and join the "Business Ambition for 1.5°C" where they commit to set a long-term science-based target to reach net zero value chain greenhouse gas (GHG) emissions by no later than 2050 and to set interim science based targets (SBTs) in line with the criteria and recommendations of the Science Based Target

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Initiative (SBTi). As per validated SBT, Ambuja Cements Limited commits to reduce Scope 1 and Scope 2 GHG emissions by 21% per ton of cementitious materials by 2030 from a 2020 base year. With this target Ambuja commits to reduce scope 1 GHG emissions by 20% per ton of cementitious material and scope 2 GHG emissions by 43% per ton of cementitious materials in this timeframe.

Working towards achieving Scope-1 and Scope-2 targets, Ambuja has put consistent effort over the years on several initiatives which has helped to reduce specific CO₂ emissions significantly. Ambuja has taken CO₂ emission intensity reduction measures such as

- Clinker factor reduction
- Improving Thermal Substitution Rate (TSR)
- Installing Waste Heat Recovery System (WHRS)
- Reducing Thermal & Electrical Energy intensities
- Increasing renewable energy consumption
- Adoption of new technologies.
- Adoption of energy efficiency processes/ measures
- Development of 33 % green belt / plantation of the total plant area for both pollution abatement and carbon sequestration
- Usage of additives such as Gypsum & Dolomite to reduce the Clinker to Cement ratio
- Consideration of renewable energy consumption

10.5 WATER MANAGEMENT

The total water requirement for the proposed project is 600 KLD (includes cement grinding unit, plantation and domestic use) which will be sourced from ground water sources with due permission from the concerned authority.

- No industrial waste water will be generated from the cement grinding process.
- Domestic waste water generated will be treated in STP and the treated water will be used in greenbelt development.
- Rainwater harvesting will be practiced within the premises of proposed project.

10.5.1 PROPOSED RAINWATER HARVESTING

Rainwater harvesting / artificial groundwater recharge is to be done to minimize the undesirable effect on groundwater status. It is necessary that groundwater storage of an area must be arranged by rainwater harvesting so that the existence of any industry does not adversely affect the groundwater situation. The Rainfall runoff generated inside the plant is proposed to be

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stored in an artificial pond constructed inside the industry and the stored water will be reused for the greenbelt & plantation development and landscaping or housekeeping purpose etc.

TABLE 10.7 ANNUAL RUNOFF AVAILABLE FOR RAINWATER HARVESTING

Annual Runoff Available for Rainwater Harvesting					
S.No	Land use type	Area (Sq. m.)	Average Annual Rainfall (mm)	Runoff Coefficient	Quantity of Rainfall Runoff (Cum/annum)
1	Roof-top of building/shed	20000	508	0.85	8636
2	Green Belt	36700	508	0.06	1118
3	Open Land	34800	508	0.30	5303
Total					15057

Storm water Management Plan

- Rainwater harvesting will be done as per the elevation of the site as per the contours profile of the project site, and then the storm water will be directed towards the rainwater harvesting pond base on the elevation profile.
- Since the storm water collected on site will be harvested for direct use, proper management of this resource is necessary to prevent contamination.
- Regular inspection and cleaning of storm drains will be carried out. Use of fertilizers and pesticides will be avoided prior to and during monsoon months.

10.5.2 SEWAGE TREATMENT PLANT

There will be no effluent generation in the proposed project. The only wastewater generation will be sewage of quantity 15 KLD which will be treated in the proposed STP of total capacity of 20 KLD. Following the treatment, the treated sewage will be used for dust suppression and plantation purpose. Bar screen chamber followed by collection cum equalization tank followed by Fluidized Aerobic Bed Reactors will be provided with coarse air bubble diffusion system followed by Tube Settler Tank in the STP. The clear supernatant after disinfecting by chlorination will be passed through dual filter and activated Carbon filter before collection in the treated water tank. The sludge generated from the FAB will be passed through sludge digester and dried and the filtrate will be collected and sent back to the equalization tank and

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the dried cakes will be used as manure for greenbelt/plantation development. Sludge from Modular Sewage Treatment Plant (STP) will be used as manure for green belt development.

TABLE 10. 8 SEWAGE TREATMENT PLANT

Description	Proposed (KLD)
Sewage generation	15
Proposed STP capacity	20
Mode of disposal	Used for dust suppression and plantation after treatment

10.6 SOLID & HAZARDOUS WASTE MANAGEMENT PLAN

- No solid waste will be generated in the cement grinding unit process.
- Regular maintenance will be done to prevent spillage and leakage.
- Dust collected from various air pollution control equipment will be totally recycled in the process.
- Used oil & grease generated from the plant machinery maintenance, gear boxes and D.G Set will be stored in MS Barrels under covered shed with concrete floor and sold out to CPCB authorized recycler.
- Kitchen waste/domestic waste from canteen will be used as manure in greenbelt development

TABLE 10. 9 SOLID WASTE GENERATION AND THEIR END USE

S. No.	Type of Waste	End Use / Disposal Plan
1.	Dust collected from air pollution control equipment	Will be totally recycled back to process.
2.	Sludge from Sewage Treatment Plant (30 Kg/day)	Will be used as manure for greenbelt development
3.	Refractory bricks lining in the kiln having high recycling values	Disposed off to external vendors for their use in other industries
4.	Municipal waste (domestic and or commercial wastes (40 kg/day)	Waste will be collected & segregated into bio- degradable & non- degradable. Further, Bio- degradable waste will be converted into organic manure by installation of Organic Waste Converter (OWC) machine and manure will be used for greenbelt development & plantation

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		and non-degradable waste will be sent to authorized vendor from CPCB/SPCB as per scientifically in compliance of Solid Waste Management rules 2016, as amended thereof.
5.	Redundant machinery or equipment of (~250 tonnes/ annum)	Occasionally, scraps as and when generated segregated, stored & sold to vendors.
6.	Horticultural waste	Horticultural wastes generated from gardens/greenbelt will be composted.
7.	Construction and demolition waste	Will be utilized in levelling of land and construction of roads

The hazardous waste that will be generated shall be temporarily stored at earmarked place and handled as per hazardous and other waste (management & transboundary movement) rules, 2016 & amended thereof. details are given in table below:

TABLE 10.10 HAZARDOUS WASTE GENERATION

S. No.	Type of Waste	Waste Category	Treatment/Disposal Plan
1.	Used Oil /Spent oil / Grease	Schedule I, Category - 5.1	Will be generated per Schedule- I of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016; which will be sent to CPCB/ SPCB authorized recycler. Used Oil/ Spent oil will be filled in Empty barrels and further sent to
2.	Waste/ Residue containing oil	Schedule I, Category - 5.2 & 33.2	
3.	Empty barrels	Schedule I, Category - 33.1	
4.	Contaminated cotton rags	Schedule I, Category - 5.2 & 33.2	CPCB/ SPCB authorized recycler.
5.	E-Waste	-	Will be sent to registered vendors as per E- Waste Management Rules, 2016.
6.	Used Lead acid batteries	-	Will be stored in the designated storage area and will be disposed-off/ sent to registered

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			vendors as per Battery Waste Management Rules 2020.
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10.7 CONCEPT OF WASTE MINIMIZATION, 3R'S (REUSE, RECYCLE & RECOVER TECHNIQUES) WASTE MINIMIZATION – 3R'S

Reuse

- Waste generated from construction activity will be utilized in levelling of land.
- Domestic wastewater generated from plant (15 KLD) will be treated in STP (capacity of 20 KLD) and treated water will be utilized for greenbelt development and road washing purpose.

Recycle

- The dust collected from various pollution control equipment will be recycled in the process.

Recovery

- The sludge generated from the STP will be used as manure for greenbelt development/plantation.
- No Waste Heat Recovery Boiler (WHRB) is applicable for this plant as there will be no heat generated.

10.8 ACTION PLAN FOR E-WASTE MANAGEMENT

The E-Waste generated will be sent to registered vendors as per E- Waste Management Rules, 2016. Will be stored in the designated storage area and will be disposed-off/ sent to registered vendors as per Battery Waste Management Rules 2020.

10.9 ACTION PLAN FOR PLASTIC WASTE MANAGEMENT, CONSIDERING THE PLASTIC WASTE MANAGEMENT RULES 2016.

No plastic waste is directly generated from the project process, however, as per Plastic Waste Management Rules 2016 (and amendments), all plastic waste, shall segregate and store the waste generated by them in accordance with the Solid Waste Management Rules, 2016 and handover segregated wastes to authorized waste processing or disposal facilities or deposition

centers either on its own or through the authorized waste collection agency for recycling by registered plastic waste recyclers.

10.10 ENERGY AND NATURAL RESERVES CONSERVATION MEASURES

ENERGY CONSERVATION

Energy management encompasses two fundamental aspects: energy conservation and energy efficiency. Energy conservation involves implementing behavioural changes or process control measures to minimize resource wastage while incorporating strategies to capture or repurpose waste energy. In contrast, energy efficiency focuses on maximizing production output with the same amount of energy input, primarily through the adoption of advanced technologies. Shree Cement North Private Limited is committed to integrating both of these approaches by implementing a wide array of process control measures and adopting cutting-edge energy-efficient technologies. This dual strategy ensures optimal utilization and management of energy resources, leading to sustainable and cost-effective operations while reducing the environmental impact.

The following measures are proposed by Ambuja cements private limited for further reduction in specific energy consumption

- Regular energy audits will be conducted to assess and improve the efficiency of energy use across operations.
- power savings will be achieved by optimizing the start and stop timings of equipment, ensuring that machinery operates only when necessary
- Energy will be conserved by removing dampers from process fans and optimizing their operation with Medium Voltage Drives (MVDs), ensuring more efficient power use.
- Power Saver Bela P-20 lighting panel (Installation of Energy Saver (Power Boss) Panel in Lighting System).
- High Energy Efficient equipment will be installed after proper planning at design phase.
- APFC (Automatic Power Factor Control) panel for HT and LT line to improve power factor (Unity) of the system
- Installing low watt tube lights/LEDs.
- Minimizing idle running of vehicle, machines and electrical appliances
- Optimizing loads and periodic preventive maintenance and lubrication
- Prevention of leakages of compressed air
- Installation of Solar based LED lights instead of conventional lighting in Plant area.

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- Energy saving by using day light by installing light pipe and using transparent sheet [day light] in Workshop, Store and raw material storage yard
- Optimum pulley diameter of the identified D/C fans
- Switching off unnecessary lights by micro based timer
- Welding set energy saver
- Use of Optimum size and energy efficient Motors
- Energy conservation by stopping idle running hrs. of equipment
- Automatic Star Delta starter for load varying application like conveyer belts etc.
- Installation of Variable Frequency Drive for all the auxiliary bag filter fans for energy saving.
- Installation of power less bag diverters for packing plant instead of conventional motorized bag diverters
- Installation of Solar Geyser at guest house
- Internal & external training and awareness programs on energy conservation expand and reframe

10.11 AN ACTION PLAN FOR IMPROVING THE HOUSE-KEEPING ACTIVITIES IN THE RAW MATERIAL HANDLING AREA

The action plan for housekeeping in a cement grinding unit includes the following key steps:

- **Regular Cleaning:** Implement daily and weekly cleaning schedules for all areas of the facility, including floors, equipment, and workspaces, to maintain a clean and safe environment.
- **Dust Control:** Use dust suppression methods such as sprinkling water, installing dust collectors, and employing vacuum systems to minimize airborne dust and maintain air quality.
- **Waste Management:** Establish proper waste segregation and disposal procedures for construction debris, packaging materials, and other waste products. Ensure regular collection and recycling or disposal as per regulations.
- **Maintenance of Equipment:** Perform routine maintenance and inspections of machinery and equipment to prevent malfunctions and reduce dust generation. Ensure all equipment is cleaned and serviced regularly.
- **Spill Management:** Develop and implement procedures for the prompt cleanup of spills or leaks, including the use of absorbent materials and proper disposal methods.

- Emergency Preparedness: Establish and communicate procedures for handling emergencies related to housekeeping issues, such as spills or equipment failures, to ensure a swift and effective response.

10.12 GREENBELT DEVELOPMENT & PLANTATION PROGRAMME

10.12.1 OBJECTIVE

Greenbelt is a set of rows of trees planted such a way that they form an effective barrier between the plant and the surroundings. The main purpose of greenbelt development is to contribute to the following factors:

- To attenuate noise levels generated from the plant;
- To improve the aesthetics of the plant area;
- To trap the vehicular emissions and fugitive dust emissions;
- To maintain ecological homeostasis;
- To prevent soil erosion and to protect the natural vegetation; and
- To utilize the treated effluents. Provision of wide greenbelt around the plant has been foreseen to reduce any adverse impacts on the surrounding population due to emissions from the proposed activity. Plantation of grass, flowers, bushes and trees will be taken-up to reduce generation of dust from bare earth and to enhance the aesthetic/scenic value.

10.12.2 GUIDELINES FOR GREENBELT DEVELOPMENT

Following guidelines will be followed for the Greenbelt Development Plan in the project area:

- Soil and other environment should be very encouraging and the expected growth rate will be about 80 - 85%.
- Trees growing to a height of 5m or more will be planted.
- Plantation of trees will be undertaken in around the area in alternating rows to prevent horizontal pollution dispersion.
- Trees will be planted along road sides, to arrest auto-exhaust and noise pollution, and in such a way that there is no direct line of sight to the installation when viewed from a point outside the foliage perimeter.

Greenbelt & Plantation Programme

Out of the total project area 10.94 Ha, 3.67 ha. (i.e., ~33% of the total project area) will be developed under greenbelt & plantation in accordance with CPCB guidelines. It is proposed to plant about 87000 saplings per hectare considering the survival rate of 70%.

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10.12.3 GREENBELT/PLANTATION MANAGEMENT PLAN

In order, to facilitate the proper growth of plants, limited measures involving preparation of seed bed with suitable number of fertilizers and treatment with mulches will be taken. The topsoil will be used for greenbelt development. The following characteristics will be taken into consideration while selecting plant species for greenbelt development and tree plantation.

- They should be fast growing and tall trees.
- They should be mix of perennial evergreen and deciduous trees.
- They should have thick canopy cover.
- The planting should be in appropriate alternate rows around the site to prevent lateral pollution dispersion.
- The trees should maintain regional ecological balance and conform the soil and hydrological conditions. Indigenous species will be preferred.
- Company will provide all necessary facilities/equipment for greenbelt development & plantation.
- Horticulturist with the member of team will be assigned for proper management and care for the greenbelt development.
- Timely use of fertilizers for the healthy and dense greenbelt development will be done.
- For replantation, if required, company will acquire sapling from local private/government nursery.

10.13 OCCUPATIONAL HEALTH AND SAFETY**10.13.1 HEALTH AND SAFETY POLICY**

- Health, Safety and Environmental Protection (HSE) is a part of the company's vision, which encompasses commitment to conduct the activities in harmony with society and nature. The company expects all its employees to implement the HSE Policy.
- Integration process of H&S must start at the inception of a project since HSE consideration must be addressed at the design stage, which also helps in optimizing the support process.
- ACL has integrated Health, Safety and Environment Protection into the business strategies to add value to the enterprise, to manage risk and to enhance the reputation.
- The health and safety of the employees, neighbors, customers and consumers, and the protection of the environment are company's priorities consistently pursued throughout.

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- Each employee will be made to comply with the HSE guidelines and the laws applicable to her or his area of operational responsibility.

Expected Occupational Hazards in the Cement Grinding Unit

Sources of occupational health hazards are

- Raw Materials
- Manufacturing Process
- Products.

The raw materials of the proposed cement grinding unit are Clinker, Slag, Fly Ash & Gypsum. The hazards involved are dust from handling and grinding of raw material. The manufacturing process of proposed cement plant involves the following hazards:

- **Dust:** The Dust in the cement industry mainly arises at the unloading point of the raw materials like Clinker, slag, fly ash and gypsum and at the packing area. The main constituents of dust in a cement grinding plant are:
 - **Silica** - Inhaled Silica can cause respiratory diseases starting from allergies to upper respiratory congestion, and going up till the dreaded complication of Silicosis, in the terminal end of the lung alveoli. This occurs mostly in particles below the diameter of 0.5 mm.
 - **Calcium** - The Calcium dust is also capable of causing all the above complications, along with corrosion of skin, conjunctiva of the eyes and the respiratory and throat mucosa, as Calcium is an alkaline corrosive material, in its chloride form.
 - The other chemical components of the clinker, Gypsum and slag etc. are oxides of Magnesium, Aluminium and Iron in form of fine powder, which can cause the same health hazards like Silica which can lead to pneumoconiosis.
- **Noise:** Workmen in the high noise producing areas are susceptible to noise induced hearing loss, if stationed at the same work area for a long period.
- **Chemical Burns:** Cement burns on the skin and other exposed areas, may become a problem due to its corrosive property especially in the hot and humid seasons.
- **Water Contamination:** Fugitive dust may contaminate the nearby water bodies and may cause stomach disorder and kidney related diseases.

Hazards for workmen from the Raw Material:

Dust: Coal dust is the principal occupational hazard for the employees involved in the coal handling area during the process of receiving or unloading of coal in the plant from the suppliers, and during feeding the coal into the boilers as well. Dust can act as an allergen and

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cause Asthma and other Respiratory disorders. Coal dust contains a lot of Silica, which is very well known for "Silicosis", the notorious disease, this hazard produces.

The coal dust, inhaled over a period of time, during working hours, after a few years has a likelihood of producing an irreversible condition in the lungs termed as the "Coal Worker's Pneumonitis.

Management Plan

Adequate dust control systems will be implanted and good housekeeping will be practiced. Protective masks and respirators will be provided at areas where high dust exposure is going to be encountered even for a very short duration.

TABLE 10. 11 EXPOSURE LEVELS AS PER NORMS WILL BE MAINTAINED

Description	Personal Exposure, time weighted average 8 hr. RSPM in $\mu\text{g}/\text{m}^3$
	Norms
Cement dust	5000

Source: CPCB guidelines

Hazards for workmen from the Process:

The process of operation, in any Thermal Power Plant is burning a fuel, production of steam, the pressure of the steam used to turn the generator coupled to a turbine and produce electricity at the end. Hence the hazards expected are like as follows:

Electrical Hazards

A) Risks involved

Following risks are involved such as Electric Shock, Electric Burns, Fires and Explosions which can lead to loss of life/organs. These electric hazards can be caused due to:

- Insulation Failure, Equipment Failure, Poor Maintenance.
- Wrong Work Methods, Substandard Material and workmanship
- Unauthorized personnel & Lack of Training and Knowledge, etc.

B) Management Plan

Following protection measures will be taken:

- Proper Earthing as per IS 3043 will be done
- Low Voltage Supply will be ensured
- Isolating Transformers
- Double Insulated Tools
- Over Load Protection

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- Protection Against Leakages (G.F.C.I.)
- Flame- Proof Equipment
- Lightning Protection
- Protection against Static Electricity and safely using ladders and scaffolds

Fire and Explosion**A) Risks involved**

Fire catching in store, bag go-down, conveyors, cable tunnel, oil storage area, transformers and HT/LT substation etc. can results in facility/ material damage, loss of life.

B) Management Plan

- Suitable fire extinguisher, fire buckets and fire hydrant system. Dry power type in oil and fire buckets will be kept near transformer, cable, general store and office area. Hydrant line at all location in plant area, clinker storage area. Fire tender is to be kept ready at plant main gate.
- Oil and Flammable Gases storage area will be fenced and declared as "Fire Hazardous Area- No Smoking Area"
- Permit and safety instruction will be given to use welding / gas cutting in the area of oil, gas and bag go down.
- Predictive interlock in transformers so as to give alarm and trip the system.
- Adequate height of brick walls for separation of all transformers, soak pits for storage of oil leakages from transformers will be done.
- **Noise**

This is a chief hazard in the TG and ESP areas of any Thermal Power Plant. Increased levels of noise lead to Noise induced hearing loss. Exposure to noise in a regular basis over prolonged periods produces irritability, abnormal hyper -reaction to common problems and issues and work fatigue.

Management plan

- Proper maintenance of machineries
- Installation of compressors in closed buildings
- Regular monitoring of noise level
- Display of noise level with permission level
- Display instructions for using PPEs at high noise level area
- Periodic health check-up for Audiometry for the individuals working in high noise area

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TABLE 10. 12 EXPOSURE LEVELS AS PER NORMS WILL BE MAINTAINED

No	Area	dB(A)
1	Compressor house	dB(A) as per Factory Act1948
2	Cement mill	
3	Packing area	
4	D.G Sets	

- **Accidents:** Small or big accidents, during the daily operation of a power plant can occur due to inattentiveness, faulty or old or damaged machineries, and lack of technical knowledge regarding the use or operation of certain machineries. Such accidents cause minor or major injuries to the workers, which may produce temporary or permanent disability, loss of certain organs and even may lead to loss of life.

Hazards from the Waste Product:

- **Ash:** The main waste product in a Thermal Power Plant is ash coming out of the boilers. MHIPL proposes to carry ash by closed circuit pneumatic conveyer from the ESP and to use it to manufacture Cement. After the ESP filters out the main bulk of the ash, still quite a considerable quantity goes out to the surrounding atmosphere. The workmen in that area are likely to be exposed to the fly ash and run the risk of inhaling it. Ash like the coal dust is rich in silica and hence can produce the same diseases as discussed earlier.
- **Gases:** The burning of coal releases Sulphur Dioxide (SO₂) and to some extent oxides of Nitrogen and Carbon Monoxide (CO) and Carbon Dioxide (CO₂). Traces of these gases can be found in the ambient air, of the boiler and ESP areas.
- **Sulphur Dioxide:** It is an asphyxiate. It acts as an irritant in smaller concentrations and can produce giddiness and nausea if the subject is exposed for a longer period. It also produces Methaemoglobinaemia in the subject exposed to it.
- **Carbon Monoxide:** Mostly unstable, if it is released into a widely exposed area, since it is rapidly converted into Carbon Dioxide by taking up an extra oxygen atom from the air. But in a larger concentration and in a confined area, it can endanger the lives of the workers present in that area. It produces Carboxy Haemoglobin in the blood and hence is called the silent killer.

10.13.2 RECOMMENDATION FOR PREVENTION OF HAZARDOUS EFFECTS

Employee education and training

It is a legal requirement for an employer to provide health and safety training under the Factories Act 1948. No worker can be expected to assist in making a control programme effective if he/ she do not know the reasons for it in the first instance. It is important that employees know about dust and how to control their exposure. Their training and education should cover the following: -

- The health effects of exposure to dust.
- The importance of effective controls, safe work practices, and personal hygiene.
- The importance of airborne dust monitoring and how to interpret the results obtained.
- The importance of medical surveillance.
- How to use and care for personal respiratory protective equipment.
- Information on the health effects of smoking in exacerbating lung damage
- The early symptoms and signs of active tuberculosis (TB), which is a potential complication of silica exposure.
- Refresher training and additional training as appropriate for health and safety personnel involved with dust prevention.

Pre - Placement Medical Examination:

Pre - placement medical examination of all personnel going to be appointed for the project will undergo pre-placement medical examination

Periodical Medical Examination:

Medical examination of all personnel will be carried out at intervals as per their trade, varying from 6 months to 2 years to find out, if any health problem has occurred during the period of employment. Any health problem so identified will have to be analyzed to find out if it has originated from his occupation, during his period of employment with the company. Any health disorder detected will be treated adequately and the employee will be repositioned in a suitable area of the plant.

Personal Protective Equipment: The workmen in the plant will be trained, educated and issued with this equipment for safety.

- Face Masks: For the people working in the dust prone areas.
- Hand Gloves: For the workers dealing directly with Electrical Circuits, as well as mechanical staff, who possess a possibility of sustaining injury while handling machines.

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- Helmets, Shoes, Aprons and all such safety devices which would protect the personnel during the working hours shall be used by the workers in the corresponding areas, for safety.
 - Ear plugs: This is indispensable equipment for the workers engaged in or around the grinding and raw material handling area.
- There will be adequate provision of drinking water for the employees in the plant area at convenient places.
- The management will have a proper safety department with efficient, trained officers and other personnel to oversee all the safety procedures being implemented and enforce all the employees to obey these rules and use the protective equipment regularly.
- There will be a provision of toilets separately for male and female employee.
- There shall be a first aid room in the plant premises with the minimal requirements of first aid boxes and other first aid material and trained personnel to deal with it.
- Arrangements shall be made to satisfy the requirements of the provisions in Factories Act.
- There shall be a proper exhaust/ventilation system specifically in the raw material handling, grinding and product handling areas to ensure proper maintenance of Temperature and Ambient air. This facility may also be extended to the other areas of the plant.
- There will be a proper waste water and night soil management system along with a general waste management plan in the residential areas or colony of the employees to ensure a hygienic standard of living. This also will be maintained in the plant premises.
- Provisions will be made for planting trees around the plant. Buffer zones of trees, preferably in three such zones will be planted to absorb toxic gases and to prevent the spread of fly dust. Trees also act excellently in absorbing sound.
- The furniture, wall switches and doors and windows will be designed in such a way that these could be ergonomically beneficial for the maximum number of employees.
- The atmospheric levels of the hazardous materials shall be maintained at such levels in the ambient air, so that the T. W. A (Time Weighted Average) of the constituting materials remains within the limits as specified in the list given below.

Adequate designing and technical measures will be adopted to maintain the levels of the following hazardous substances at or below the figures indicated in each case, in the ambient air or the atmosphere. These are the maximum permissible limits of the individual substance, for achieving a comfort zone of working environment for the employ.

10.14 ORGANIZATION POLICY

The importance of environmental Management has been recognized by plant Management at very early stage and has taken necessary steps to identify environmental aspects and control those aspects which generate pollution in the plant, respond to impacts on its own captive population and also in the peripheral areas.

Ambuja Cement Ltd. (ACL) shall ensure following action items to be complied with throughout the life cycle of the project:

- Formulate/ implement Environmental Health & Safety Policy
- Document the organization structure, roles and responsibilities for implementation and for functioning of Environmental Management System (EMS) and Safety Management System (SMS) Procedures.
- Develop standard operating process and procedures to bring into focus any infringement / deviation / violation of the environment or forest norms/conditions.
- Obtain ISO 9001, 14001 and 18001 Certification - Carry out regular inspections, monitoring and auditing.
- Carry out periodical review and issuing amendments.
- Reporting and communication (including internal and external reporting);
- Coordination with regulatory agencies, external consultants, monitoring laboratories.
- Conducting Environmental Awareness Program for the employees on, Water management, and Energy conservation. The above objective will be attempted to be achieved through the following and improvement in the quality and appropriateness of raw materials as per design philosophy. - Using automation & Computer control to have improvement on technology and on working condition
- Pollution Monitoring and environmental management
- Implementation of occupational health set up including regular medical monitoring of employees - A well-developed safety management system
- Preparation of Emergency/Disaster Management Plan and a properly trained group to meet the emergency situations
- Green belt development inside the plant and township
- Development of awareness among employees and public including student population towards environmental conservation

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10.14.1 FORMATION OF ENVIRONMENT MANAGEMENT CELL (EMC)

In order to maintain the environmental quality within the standards, regular inspections, audits & monitoring of various environmental components is necessary. M/s. Ambuja Cements limited will have a full-fledged Environmental Management Cell (EMC) for environmental monitoring and control. The EMC team will be responsible for pollution monitoring aspects and implementation of control measures. A group of qualified and efficient engineers with technicians will be deputed for maintenance, up keeping and monitoring the pollution control equipment, to keep them in working mode at the best of their efficiencies.

10.14.2 STRUCTURE OF ENVIRONMENT MANAGEMENT CELL (EMC)

Structure of Environment Management Cell for the project is given in Figure below.

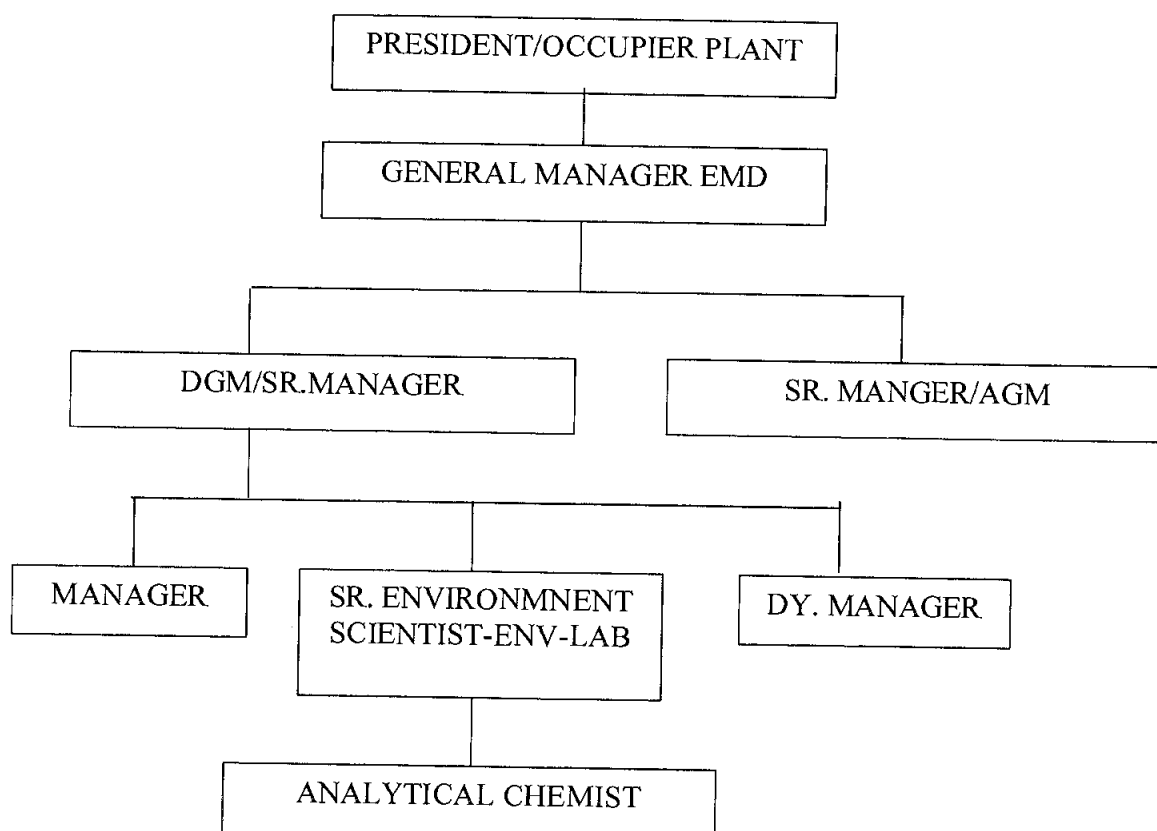


FIGURE 10. 1 STRUCTURE OF ENVIRONMENTAL MANAGEMENT CELL

10.14.3 RESPONSIBILITIES OF EMC

The responsibilities of the EMC include the following:

- Procurement and commissioning of Pollution Control/Monitoring Equipment's.

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- Environmental monitoring of the core and buffer zone and evaluation of results. Keeping of records to track the surrounding environment quality status.
- Timely calibration of pollution control equipment's and facilities.
- Specification and regulation of maintenance schedules for pollution control equipment.
- Ensuring that prescribed standards are maintained.
- Implementation of the mitigation measures.
- Ensuring greenbelt development/plantation & its maintenance.
- Compliance with guidelines and statutory requirements.
- Coordination with statutory bodies, functional groups of the unit, Corporate Project/Environment & Engineering department etc.
- Organizing meetings of the Environmental Management Committee.
- Interaction with engineering & operation team for implementation of any modification programmes intended to improve the availability / efficiency of pollution control devices / systems.
- Carry out proactive environmental studies and observe all precautions necessary to avert disasters and emergencies in the mining observations as well as nearby areas.
- Regular environmental review and performance appraisal (Internal) and organizing Environmental / Energy and Water Audits by independent agencies/ 3rd party 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.

10.15 CORPORATE ENVIRONMENTAL POLICY

To achieve the goals of EMP, it is necessary to formulate Corporate Environment policies and to fulfil the Socio-developmental activities and others rules & regulation, EMC has to be formed. Company will have well laid Corporate Environmental Policy adopted by Board of Directors indicating clear framework to become Environmentally Sustainable organization.

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The hierarchical system or administrative order of the company to deal with the environmental issues and for ensuring compliance with the conditions stipulated in various clearances and consents has been given in the Environmental Policy of the company.

The structure, process and monitoring have been significantly reshaped in past few years, keeping in view the need of the time and the company's objectives towards corporate sustainability. The effective execution and adherence to the policy principles are accorded high importance in the agenda of the board of the company.

As an integral part of our business philosophy, Ambuja Cements Limited part of Adani Group is committed to contribute towards ensuring a clean and sustainable environment by continually improving our environmental performance.

This policy is applicable to all units with operational and financial control and extends to our value chain, vendors, suppliers, and logistics partners. The suppliers and value chain partners are expected to adhere to the policy and develop an Environment Policy for their own operations. To achieve this goal, we wholeheartedly and proactively commit ourselves to:

- Conduct all our operations in an environmentally responsible manner that is better than statutory environment compliances and applicable standards.
- Ensure judicious use of resources including energy, water and raw materials. Adopt environmentally safe and advanced process technologies along with best practices for prevention & control of risks and adverse effects of the release of our pollutants to the environment (air, water, and soil) so as to protect health and safety of our employees, contract employees, and community.
- Continuously assess our environmental impacts and measure and improve our environmental performance by adopting best practices for prevention and control of pollution.
- Make continuous efforts to increase the use of non-carbonaceous raw material, renewable energy and fuels and co-processing of wastes to reduce our greenhouse gases (GHG) footprint as part of our Climate Change mitigation initiative.
- Promote circular economy through use of alternate fuels, raw materials and reuse and recycling of waste generated.
- Comply with applicable legal and other requirements including clearances of

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environment, forest and wildlife, consents, permits, licenses, standards, and leading industry initiatives. Make continuous efforts to reduce water intensity and fresh-water usage by increased use of harvested and recycled water in our operations.

- Assess biodiversity quality in all our extraction sites and strive to create a positive impact.
- Invest in research and development of environmentally sustainable products which have a low ecological footprint.
- Set targets and objectives to reduce environmental impacts of our operations and establish continuous monitoring mechanisms.
- Achieve No Net Deforestation as part of our operations.
- Encourage value chain partners to improve their environmental performances.
- Implement and continually improve the Environmental Management System across all our operations.
- Conduct regular training employees to understand the impacts of their work activities on the environment and on judicious use of resources.
- Raise awareness of environmental management policy and environmental impacts for internal and external stakeholders.
- Carry out Environmental Due diligence at the time of business mergers and acquisitions.
- Disclosure of our environmental performance to all applicable stakeholders on a regular basis.

Roles and Responsibilities

- Unit Heads of the respective sites are responsible for the implementation of this policy and EMS at unit level in consultation with Corporate Environment Head.
- Chief Sustainability Officer oversees and holds responsibilities of overall effectiveness of the system implementation, initiatives undertaken across the organizational boundaries.
- Environmental performance and issues are communicated to management and board of directors during quarterly meetings as per the requirement.

10.15.1 SUSTAINABILITY INITIATIVES BY AMBUJA CEMENTS LIMITED (ACL)

- We intend to become a carbon-neutral building materials and construction solutions business by 2050.
- Accordingly, we are investing in a whole range of sustainability initiatives – from Waste Heat Recovery System (WHRS) to clinker factor reduction, energy efficiency (thermal and electrical), and the use of renewable energy, especially waste-derived resources/ alternative fuels.
- We have also developed and validated our 2030 carbon emission reduction targets by the Science Based Targets initiative (SBTi), in alignment with the required reductions to limit global warming to well below 2°C.
- We are committed to reducing Scope 1 and Scope 2 GHG emissions by 21% per tonne of cementitious materials by 2030 from a 2020 base year. With this target, Ambuja Cement commits to reduce Scope 1 GHG emissions by 20% per ton of cementitious material and Scope 2 GHG emissions by 43% per ton of cementitious materials in this timeframe.
- It is imperative for us to push the decarbonisation agenda. Today, we have the knowledge and the means to combat climate change.
- To mainstream sustainability and effect impactful change for the benefit of the planet and its people, we have launched the 'Change The Story' platform. It showcases technology-led solutions that take us closer to realizing our vision of a better tomorrow.
- To begin with, we have taken the responsibility of addressing the pressing challenge of plastic pollution in India's rivers. Using the 'bubble curtain' technology, the pilot project at Yamuna River (Mantola canal) in Agra is expected to astate. Such bubble barriers can be extended to other rivers across the country.
- We will continue to focus on resource conservation, utilizing green/ clean energy sources, driving energy efficiency in all our plants and building an inclusive and equitable world.
- We are on the cusp of exciting change, and we are happy to play our role in strengthening the nation's ambitions while contributing to the concerted global efforts to create a sustainable future.
- The positive changes made through our sustainability efforts positioned us 5th in the Dow Jones Sustainability Index (DJSI) 2021 among construction materials companies globally.
- We are emerged as 8 times water positive and 3.5 times plastic negative. - Waste heat recovery projects in progress across plants.

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10.16 COST OF ENVIRONMENT MANAGEMENT PLAN

The budget proposed for the project and that for the Environmental Management Plan is given as below:

Cost for Environmental Protection Measures:

Capital Cost of the project is Rs. 70.2 crore

Recurring Cost of the project is Rs. 4.8 EMP Cost Break-up is given in table below.

TABLE 10. 13 ENVIRONMENTAL MANAGEMENT PLAN

Sl.No	Particulars	Estimated cost in INR	
		Capital	Recurring
1	Air pollution Control Measures	35.0	3.0
2	Water Pollution Control Measures	20	0.2
3	Occupational Health and Safety	3.0	0.4
4	Environmental Monitoring	10.0	1.0
5	Green Belt Development	2.2	0.2
	Total	70.2	4.8

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CHAPTER -11

CONCLUSION

11.1 INTRODUCTION

This chapter constitutes the summary of the EIA report. It will provide for overall justification for the implementation of the project and explain how the adverse effects of the proposed project are mitigated.

11.2 PROJECT BRIEF

M/s Ambuja Cements Limited (ACL) is planning to establish a Cement Grinding Unit with a substantial production capacity of 2 x 3.0 MMTPA, resulting in a total output of 6 MMTPA with an area of 10.97 Ha. This new facility is proposed to be located in the village of Devli, within the Tehsil and District of Palwal in the state of Haryana. According to the Environmental Impact Assessment (EIA) Notification of 2006 and its subsequent amendments, all standalone Cement Grinding Units are classified under Category 'B' of Schedule 3(b). However, it's important to note that the 'General Conditions' do not apply to this category. Consequently, the proposed Devli Cement Grinding Unit falls under "Category B" as per the notification issued on 14th September 2006 by MoEF& CC. SEAC granted TOR for the proposed project vide letter no SIA/HR/IND1/449852/2023 dated 27/08/2024.

The project will utilize various raw materials essential for cement production, including clinker, gypsum, fly ash, coal, and slag. And the configuration of the proposed project based on Vertical Roller Mill Technology. The baseline data has been collected during summer Season (October-2023 to March-2023). The EIA/EMP report has been prepared as per the EIA Notification 2006 and its amendments and as per the approved TOR for this project.

11.3 PROCESS TECHNOLOGY

The proposed cement grinding unit, with a capacity of 6.0 MMTPA, is planned to incorporate the advanced technology of a Vertical Roller Mill (VRM). VRM has become the industry standard for grinding raw materials in cement production due to its numerous advantages. One of the key benefits of VRM is its compact design, which significantly reduces the installation footprint and lowers civil engineering costs compared to traditional ball mill systems. Additionally, VRM is known for its relatively low power consumption, making it more energy-efficient than other conventional grinding technologies. Moreover, VRM offers a high raw material grinding capacity,

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further enhancing its appeal. Given these substantial benefits, the management has decided to implement VRM technology for the proposed grinding unit

11.4 DESCRIPTION OF ENVIRONMENT

The area falling within the radius of 10 km around the proposed steel Plant Project has been considered a study area. On-site environmental quality monitoring was carried out from October to December 2023.

11.4.1 Meteorology

The meteorological data recorded during the study period for proper interpretation of the baseline information as well as for input in modeling. During monitoring period, predominant wind direction was observed North West(NW).

11.4.2 Ambient Air

Eight (8) AAQ monitoring stations were established covering the predominant (upwind and downwind) directions of the proposed plant in the study area of 10 km radius. It is evident from the monitored results that maximum values for PM₁₀, PM_{2.5}, SO₂, NO_x & CO are in conformity with the norms of CPCB. Ambient Air Quality Monitoring reveals that in post-monsoon season, the concentrations of average PM₁₀ and PM_{2.5} for all the 8 stations was found in the range of 43.05 µg/m³ (Mandkaul Village) to 74.24 µg/m³ (within project site) and 17.20 µg/m³ (Pahaladpur Village) to 37.08 µg/m³ (within project site) respectively. During the study period, SO₂ and NO_x were found to be in the range of 8.03 µg/m³ (Pahaladpur Village) to 17.30 µg/m³ (Mandkaul Village) and 14.16 µg/m³ (at Mania Village & Byree High School) to 35.24 µg/m³ (Within the project site) respectively. CO concentration was observed in the range of 0.16 mg/m³ (Badram) to 1.20 mg/m³ (Asoati).

11.4.3 Ambient Noise

The noise levels monitored at the plant are within the prescribed norms for an Industrial Zone, and those in all residential areas comply with the standards for Residential Zones. However, background noise levels are elevated in commercial areas of villages and station areas due to vehicle movement and other activities. Therefore, it is crucial to ensure that the plant's operational noise does not travel long distances or contribute significantly to the existing background noise levels.

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- It was observed that the Average day-time noise levels vary from 51.6 Leq dB(A) at N-2 (Devli village) to 70.4 Leq dB(A) at N1 (at Project Site).
- Average night-time noise levels vary from 42.0 Leq dB(A) at N-6 (Near Baghaura Village) to 59.6 Leq dB(A) at N1 (at Project Site).

11.4.4 Soil quality

The soil quality is good enough for agriculture with additional macro and micro nutrients by way of fertilization through organic/inorganic means. As the soil parameters shows varying nutrient contents, acidic to basic soil parameters and organic carbon contents, slightly basic pH soil, varying organic carbon, soil amendments as well addition of fertilizers may be needed to make the soil amenable to chosen agricultural crop or plantation.

11.4.5 Ground water

Groundwater pollution is usually traced back to four main origins: Industrial, Domestic, agriculture and environmental pollution. The type of containment is carried by the aquifers and results in the groundwater pollution. The groundwater from all the tested villages is generally safe for drinking as per the IS 10500:2012 standards. Although some parameters, like turbidity and hardness, slightly exceed desirable levels, they are still within permissible limits, indicating the water is of acceptable quality.

Surface water

The pH of water bodies was found to vary from 7.22 to 7.72. Total Dissolved Solids ranged between 112 mg/l to 164 mg/l. BOD level ranged from 2.0 mg/l to 4.6 mg/l. COD level ranged from 5.1 mg/l to 12 mg/l. Dissolved Oxygen was observed to vary in the range of 6.1 mg/l to 7.1 mg/l. The water quality is mostly within acceptable limits for Class-C waters, with only a slight exceedance in BOD. This indicates minor organic pollution but generally safe conditions for primary water contact and aquatic life. The water quality shows significant signs of organic pollution, with BOD levels well above the permissible limit and a high COD. This suggests a substantial presence of decomposing organic matter, potentially from domestic or agricultural runoff, which could harm aquatic life and reduce the suitability for recreational activities.

11.4.6 Ecological features

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The detailed ecological assessment of the study area has been carried out. Survey has been carried out in the study area as per the guidelines of MoEF. Species of flora have been listed as agricultural crops, commercial crops, plantation, natural vegetation, grasses, endangered, endemic and others. The species of Fauna have been identified as per the Wildlife Protection Act, 2022 (and as amended subsequently) and have been listed as endangered, endemic, migratory and aquatic.

11.5 ANTICIPATED ENVIRONMENTAL IMPACT & MITIGATION MEASURES

11.5.1 Land Environment

Construction phase

The plant site is mostly flat with some undulating areas, covering 10.97 hectares of fallow agricultural land. Minimal topsoil loss is expected during leveling, as soil from the site will suffice, avoiding external soil transport and reducing fugitive emissions. The land is currently undulated with scattered shrubs and no significant agriculture. As a Greenfield Project, the land use will shift to industrial, with greenbelt development planned to prevent soil erosion and enhance the site's aesthetic appeal.

Operation Phase

The proposed project has been planned over an area of 10.97 Acres. Greenbelt / plantation will be developed over an area of 3.67 Ha. within the project boundary. Only the land use pattern will be changed to Industrial use for cement production.

Mitigation measures

- ☐ Earthwork will prevent soil erosion and material spread.
- ☐ Excavated soil will be stored to prevent dust and reused for greenbelt.
- ☐ Construction debris and packaging will be stored and properly disposed of.
- ☐ Land use will permanently change to industrial within the project site only, with no impact on surrounding areas.

11.5.2 Air environment

Construction phase

- Deterioration of air quality due to fugitive dust emissions from construction activities (especially during dry season) like excavation, back filling and concreting, hauling and

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dumping of earth materials and from construction spoils.

- Emission of gaseous pollutants due to operation of heavy vehicles and movement of machineries and equipment for material handling, earth moving, laying of sands, metal, stones, asphalt etc

Operational stage

During operation phase, major sources of air pollution are:

- Raw Material and product handling areas.
- Production process.
- Movement of Vehicles
- The operational phase of the project comprises of various activities each of which will have an impact Air Quality. Both Dust & Gaseous emissions are likely to be emitted. The key emissions from the proposed Project are emissions due to Particulate Matter, Sulphur dioxide (SO₂), Nitrogen dioxide (NO₂) & CO

Mitigation

- Proper maintenance of vehicles and construction equipment will help in controlling the gaseous emissions. Vehicle meeting PUC norms will be used to further control the gaseous emission. Water sprinkling on roads and construction site will prevent fugitive dust. Vehicles and machineries would be regularly maintained so that emissions conform to standards of Central Pollution Control Board (CPCB).
- Suitably designed Bag filters will be installed cement mill stacks which separate out the incoming dust in the dust laden gas and limit the dust concentration at its designed outlet concentration of 30 mg/Nm³
- The dust generated from coal handling plant will be insignificant because of handling of fine coal in closed circuit. For further suppression of dust adequate water spray shall be provided
- In the event of failure of any pollution control equipment, automatic tripping in the control system shall be provided.
- Regular preventive maintenance of pollution control equipment
- Materials will be stored in covered warehouses or enclosed spaces to prevent the windblown fugitive emissions.

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- Adequate dust suppression measures such as regular water sprinkling at vulnerable areas of construction sites will be undertaken to control fugitive dust during material handling and hauling activities.
- Monitoring of air quality at regular intervals will be conducted during construction phase.
- Construction workers will be provided with dust masks to protect them from inhaling dust.

11.5.3 Noise environment

The major activities which are likely to increase ambient noise levels during construction phase are foundation work, fabrication of structures, operations of construction equipment and movement of vehicles. The study area may likely to experience increment in ambient noise level due to the above- mentioned activities. The areas closer to the site will have slight increase in noise level. However, as there are no settlements in the immediate vicinity of the proposed plant, the impact of noise will be major activities which are likely to increase ambient noise levels during construction phase are foundation work, fabrication of structures, operations of construction equipment and movement of vehicles.

Operation phase

During the normal operation of various plants the ambient noise levels are expected to increase significantly with the attributes of the respective equipment, but this noise will be restricted close to the concerned equipment. Normally the equipment's are designed based on the OSHA standards and noise close to this equipment seldom exceeds the OSHA standards. Therefore, all the equipment in the plant will be designed/operated in such a way that the noise level shall not exceed 75 dB (A) as per the requirement of OSHA (Occupational Safety and Health Administration).

Mitigation measures

- Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce generation of noise.
- All the vehicles entering into the project site will be informed to maintain speed limits and not to blow horns unless it is required.
- Properly insulated enclosures will be provided to equipment's generating excessive noise.
- Improved silencers within the equipment generating high noise
- Isolation of continuously vibrating structures/ machines by proper and secured mountings
- Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce generation of noise.

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- Personal Protective Equipment (PPEs) like earplugs and earmuffs will be provided to the workers exposed to high noise level.
- Greenbelt of appropriate width will be developed inside the project premises and at the project boundary.

11.5.4 Water environment

Construction phase

The water required for activities during the construction phase of the proposed plant will be sourced from existing surface or groundwater supplies. The water requirement of about 200 KLD will be sourced from Agra Canal/Treated water from Palwal. The construction will be sustaining about 18-month approx. This need is temporary and will be confined to a short period, ensuring minimal impact on the region's groundwater availability. Additionally, drinking water facilities will be provided for construction workers. Domestic wastewater will be treated on-site using septic tanks followed by soak pits. This setup ensures that there will be no discharge from the site, thereby preventing any negative impact on the surrounding water quality.

Operation phase

The grinding unit's water consumption will be minimal, primarily used for the cooling system. The system is designed to recirculate water in a closed loop, significantly reducing the need for additional water intake. Only a small amount of makeup water will be required to compensate for evaporation losses in the cooling circuit.

Mitigation measures

- Wastewater will be not be discharged outside the plant premises. Therefore, operation of Grinding Unit will not pose any adverse impact on the ground water resources of the area.
- The company will install roof top rainwater harvesting structures inside the plant premises to re-charge the groundwater
- The domestic wastewater generated from the toilets, washrooms and canteen of the plant shall be treated in STP.
- The network of storm water drains and wastewater drains inside the plant will be made separate.
- The storm water drain will have sedimentation pits and oil

11.5.5 Solid & Hazardous Waste

- No solid waste will be generated from the grinding unit.
- Dust collected from the dust collectors will be recycled back to the process.
- STP Sludge will be used as manure for greenbelt development.

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- Hazardous waste like used oil/lubricants will be generated from the plant, which will be supplied to authorized re-processors as per Hazardous and other Waste Rules 2016

11.6 ANALYSIS OF ALTERNATIVES

Three sites were considered for the proposed cement grinding unit. An assessment to identify the most suitable site out of the three alternate sites was carried out. The Site Suitability Analysis was undertaken for the three sites. Following points were considered to access the most suitable site like physical settings, Environmental considerations and Social considerations. Also, after proper comparison and analysis of process technology to be used for cement grinding unit, Vertical Roller Mill technology was considered as it had several enumerated benefits over other available cement grinding technology.

11.7 ENVIRONMENTAL MONITORING PROGRAM

Environmental monitoring and audits will be conducted throughout both the construction and operation phases to ensure that environmental management measures are effectively implemented and achieving the desired level of environmental performance. Ambient Air Quality will be regularly monitored in compliance with Environmental Clearance (EC) conditions. Continuous monitoring of particulate matter (PM) levels will be conducted at the Cement Mill stack to ensure adherence to air quality standards. Noise levels will be monitored on a quarterly basis to assess the impact on the surrounding environment. Water levels will be measured twice a year to track any changes, while water quality will be regularly tested at nearby groundwater sources to ensure the safety and sustainability of water resources. Additionally, annual medical check-ups will be provided for all employees to monitor their health and well-being, ensuring a safe working environment.

11.8 PROJECT BENEFIT

Improvement in physical and social infrastructure, including enhanced communication, transport, education, community development, and medical facilities, will lead to increased employment potential across skilled, semi-skilled, and unskilled sectors, higher demand for rental housing, better cultural, recreational, and aesthetic facilities, and an overall boost in employment and income opportunities.

11.9 ENVIRONMENTAL MANAGEMENT PROGRAMME

ACL will develop various management activities for the Environmental Management Program which will meet all statutory requirements and help to improve environmental quality. In order to improve the aesthetic look of the area and enhance the land use as well as compensate for any loss

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in ecology during construction, adequate plantation programs around the project site have been planned and will be adopted. Development of the green belt will include plantation of trees along the boundary of the factory, roads, raw material yard and other available spaces without obstructing operation. Maximum attention shall be paid to the creation of greenery. Greenbelt will be created on 3.67 Ha of available land inside the plant and the plantation will be done as per CPCB Norm. The Forest Department shall also be consulted for the tree plantation campaign. Maintenance of planted areas will be carried out periodically. Detailed monitoring for different environmental parameters will be carried out as per the direction of the State Pollution Control Board. An environmental management cell will be formed to implement the management plan. The capital cost for EMP of the project is INR 70.2 crores

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CHAPTER -12

DISCLOSURE OF CONSULTANT

12.1 GENERAL

Ecomen Mining Pvt. Ltd., a multi-disciplinary professionally managed, environmental consultancy services organization with an environmental laboratory accredited by NABL and with over 30 years standing, operates in 18 States of India.

It has following accreditations to its credit:

1. National Accreditation Board for Education and Training, Quality Council of India (NABET-QCI).
2. Listed on NABET site at **S.No. 49 of List of ACOs (as on 13th Oct. 2023) with their Certificate No. NABET/EIA/2023/RA 0203 (Rev 02), Valid up to : 22nd March 2025** - NABET Accreditation Certificate enclosed as **Fig. 12.1** and detailed sector wise ECs and FAEs is attached as **Annexure 12.1, in Vol. II of EIA Report.**
3. National Accreditation Board for Testing and Calibration Laboratories (NABL) International Accreditation ISO-17025.
4. Recognized by CPCB/MOEF&CC as Environmental laboratory under the Environmental (Protection) Act-1986
5. Occupational Health and Safety Management System (OHSAS 18001:2007)
6. Uttar Pradesh Pollution Control Board (UPPCB) for Ambient Air Quality Monitoring and Testing.
7. Empanelled Consultant with State Pollution Control Board (SPCB), Odisha
8. Participates in Proficiency test conducted by CPCB & scored 100% many times.
9. CPCB had selected Ecomen's laboratory to analyze the samples of identified industries jointly along with them pursuant to Hon'ble NGT order.

12.2 OUR RANGE OF SERVICES INCLUDE

1. Preparation of Environmental Impact Assessment (EIA) & Environmental Management Plan (EMP) and subsequent Environment Clearance from MoEF&CC, SEIAA, NOC / Consent from Pollution Control Board.
2. Generation of Baseline data as per Environment (Protection) Act, 1986 i.e. Environmental Monitoring [Air, Water (Ground Water & Surface water), Noise, Soil], Testing and Studies like Flora, Fauna, Socio Economic, Land Use, Ground Water.

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Ecomen Mining Pvt Ltd

M/s Ambuja Cements Limited

**CHAPTER-12 of
Draft EIA/EMP**

Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District: Palwal, State: Haryana.

3. Minerals testing [in line with IBM directives that only NABL accredited lab can do Mineral's Testing].
4. Coal testing /analysis
5. Forest proposal for de-reservation & clearance; Wild Life Management Plan.
6. Ground water survey, Water balance assessment & Geo-hydrological study.
7. Water management, recovery, recycling and reuse of waste water, Rain Water Harvesting; commissioning of Piezometers.
8. Thematic mapping using Remote Sensing, GIS & GPS. Preparing Land use / Land cover maps. Digital Image processing.
9. Environmental Audit, Risk Assessment, Disaster Management plan & Compliance monitoring & report.
10. Training programme: Environment and Forest Clearance Process to create awareness leading to skill development in the 12 Functional Areas of Environment Clearance as prescribed by NABET-QCI.
11. ETP/STP operation & Maintenance.

12.3 ACHIEVEMENTS

1. More than 100 EIA/EMPs approval of major client, all over India
2. More than 50 Major Monitoring assessments, all over India
3. 50 specialized studies
4. 10 World Bank funded projects
5. Case studies awarded by MOEFCC
6. Setting site Labs

12.4 AWARDS

Ecomen is recipient of many prestigious awards as given below:

1. 'Silver Medal' from Mining, Geological and Metallurgical Institute of India [MGMI] for the paper 'Noamundi – Long Range, Programme and Mine Planning' [1969].
2. 'National Consultant' of MOEF in 'Industrial Pollution Prevention Project'; Gap Analysis of some State Pollution Control Board's Laboratories; conducted a National Workshop [2001].
3. 'Certificate of Excellence' for Implementation of World Bank funded Rural Drinking Water & Environment & Sanitation project (2002).

**CHAPTER-12 of
Draft EIA/EMP**

Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District: Palwal, State: Haryana.

4. 'LMA Creativity & Innovation Award 2014' for very significant contribution in any walks of life in India or abroad by way of his / her innovation or creativity.
5. 'Udyog Ratan Award' for the outstanding performance in the field of economic & industrial development of the industry in the country and 'Excellence Award' for Ecomen for its class and quality services, from Institute of Economic Studies, New Delhi (2015).
6. 'Life Time Achievement Award 2015' to a Mining Engineer by Mining Engineers Association of India.
7. 'Eminent Engineer Award (2017)' by Institute of Engineer's India on consideration of eminence and contribution in the discipline of Environmental Engineering.

12.5 OUR CLIENTS/ PROJECTS EXPERIENCE

Our clients include major Corporates, [apart from World Bank aided projects& MOEFCC assigned case studies] Tata Steel Mines, Rungtas, NMDC, CMPDI, Heidelberg, Reliance, Ambuja Cements, J P Group, Everest Industries, L&T, NTPC, KIOCL, Reliance Power, Lanco Power, Lafarge etc.

12.6 OUR RESOURCES

Ecomen distinguishes itself by outstanding experience, vision and exposure of its key functionaries, experts, &specialists, in Industrial, Mining and Environmental disciplines as also, Socio-Economic, Public Health & Sanitation, Forestry and Management areas.

**CHAPTER-12 of
Draft EIA/EMP**

Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District: Palwal, State: Haryana.

Ecomen has been accredited by NABET certificate no. NABET/EIA/22-25/SA 0219 and valid till 22/03/2025.


**QUALITY COUNCIL
OF INDIA**
Creating a Culture of Excellence


NABET

National Accreditation Board for Education and Training

Certificate of Accreditation

Ecomen Mining Pvt. Ltd. (formerly known as Ecomen Laboratories Pvt Ltd.)

Second Floor Hall, House no. B - 1/8, Sector - H, Aliganj, Lucknow - 226024

The organization is accredited in **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	Ministry	
1	Mining and mineral extraction (open cast and underground mining)	1	1 (A) (1)	A
2	Power valley projects	1	2 (A) (1)	A
3	Thermal power plants	1	2 (A) (2)	B
4	Hydroelectric projects	1	2 (A) (3)	A
5	Large dams and barrages	1	2 (A) (4)	A
6	Cement plants	1	2 (A) (5)	A
7	Chemical plants	1	2 (A) (6)	A
8	Submarine mining and seabed mineral production	1	2 (A) (7)	A
9	Super projects	1	2 (A) (8)	A
10	Manufacturing process (chemicals, drugs, allied processing, food, etc.)	1	2 (A) (9)	A
11	Common Hazardous Waste treatment, storage and disposal facilities (TSDF)	1	2 (A) (10)	A
12	Refineries	1	2 (A) (11)	A
13	Gas processing and petrochemical projects	1	2 (A) (12)	A
14	Transport and air transportation projects	1	2 (A) (13)	A

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in SAC minutes dated February 02, 2024, posted on QCI NABET website.

The Accredited organization shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET Charter of Accreditation and QCI NABET EIA/EMP Version 3 dated Mar. 27, 2024. The accreditation needs to be renewed before the expiry date by Ecomen Mining Pvt. Ltd. according to the process of renewal.

Issue Date
Mar. 22, 2024



Valid up to
Mar. 22, 2025


Mr. Ajay Kumar Jha
 Sr. Director - NABET

Certificate No
NABET/EIA/22-25/SA 0219


Post [Dr] Varinder S Kanwar
 CEO - NABET

The Accredited organization shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET Charter of Accreditation and QCI NABET EIA/EMP Version 3 dated Mar. 27, 2024. The accreditation needs to be renewed before the expiry date by Ecomen Mining Pvt. Ltd. according to the process of renewal.

FIGURE 12. 1 NABET CERTIFICATE OF CONSULTANCY



IN-GJ60252431003766V



सत्यमेव जयते

INDIA NON JUDICIAL

Government of Gujarat

Certificate of Stamp Duty

Certificate No.

IN-GJ60252431003766V

Certificate Issued Date

16-Oct-2023 02:40 PM

Account Reference

IMPACC (AC)/ gj13001011/ GULBAI TEKRA/ GJ-AH

Unique Doc. Reference

SUBIN-GJGJ1300101144227440669303V

Purchased by

AMBUJA CEMENTS LIMITED

Description of Document

Article 5(h) Agreement (not otherwise provided for)

Description

Agreement

Consideration Price (Rs.)

0

(Zero)

First Party

ADANI LOGISTICS LIMITED

Second Party

AMBUJA CEMENTS LIMITED

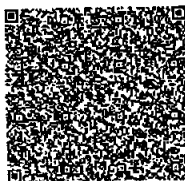
Stamp Duty Paid By

AMBUJA CEMENTS LIMITED

Stamp Duty Amount(Rs.)

300

(Three Hundred only)



HE 0014945931

VOID VOID VOID

Statutory Alert:

1. The authenticity of this Stamp certificate should be verified at 'www.shcilestamp.com' or using e-Stamp Mobile App of Stock Holding. Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.

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MEMMORANDUM OF UNDERSTANDING

THIS MEMMORANDUM OF UNDERSTANDING ("MoU") is made at Ahmedabad, on this 17th day of October, 2023

BETWEEN

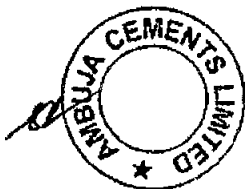
ADANI LOGISTICS LIMITED (ALL), a company incorporated under the Companies Act, 1956, having its Office at Adani Corporate House, Shantigram, Near Vaishnav Devi Circle, S. G. Highway, Khodiyar, Ahmedabad, Gujarat 382421 (hereinafter referred to as "ALL", which expression shall, unless repugnant to the context or meaning thereof, be deemed to mean and include its successors and permitted assigns) of the ONE PART.

AND

AMBUJA CEMENTS LIMITED (ACL), a company incorporated under the provisions of the Indian Companies Act, 1956, having its Registered Office at Adani Corporate House, Shantigram, Near Vaishnav Devi Circle, S.G. Highway, Khodiyar, Ahmedabad, Gujarat 382421, hereinafter called as "ACL" (which expression shall, unless repugnant to the context or meaning thereof be deemed to include its successors and permitted assigns) of the OTHER PART.

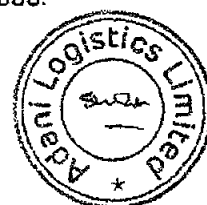
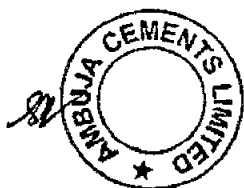
WHEREAS,

- (1) ACL is desirous of setting up a cement grinding unit with 6 MMTPA capacity at the land measuring approximately **27.11 Acres**, situated at village Devli, Tehsil- Palwal, Dist- Palwal in Haryana.
- (2) ALL is the owner of a portion of the aforesaid land, measuring approximately **6.594 Acres**.
- (3) ACL is desirous of taking the aforesaid portion of the land owned by ALL on lease hold basis and ALL is willing to make available the said land to ACL on leasehold basis; and
- (4) The Parties are desirous of recording their broad understanding concerning the same as herein after appearing in this MoU.



NOW THIS MEMMORANDUM OF UNDERSTANDING WITNESSES AS FOLLOWS:

1. ACL is desirous of setting up a cement grinding unit with 6 MMTPA capacity at the land measuring approximately **6.594 Acres** (as provided in Annexure A) which is portion of total 27.11 Acres of land that is proposed to be used to setup cement grinding unit, situated at village Devli, Tehsil- Palwal, Dist- Palwal in Haryana. ALL is the owner of a portion of the aforesaid land, measuring approximately **6.594 Acres** (as provided in Annexure A), situated at village Devli, Tehsil- Palwal, Dist- Palwal in Haryana. (Herein after referred to as the said Land) as provided in detail in the Schedule and **Annexure-A** hereinafter appearing. ACL is desirous of having the possession of the said Land for the purpose of its aforesaid cement grinding unit and ALL is willing to make the said land available to ACL on a leasehold basis, subject to the execution of a registered lease deed and approvals, if any required by ALL and ACL under the applicable laws for the said transaction.
2. ALL and ACL being *Related Parties* and part of the Adani Group, the parties are entering into this transaction on an *Arm's Length Price Basis*. Accordingly, ACL shall pay to ALL the consideration / lease rentals calculated on arm's length basis for taking the said land on lease hold basis
3. The Parties agree that this MoU shall be valid for a period of five Year with effect from 16th October 2023 or till the execution of the lease deed and other required documentations if any, whichever is earlier.
4. ACL shall take all the required permissions and NOCs to set up the cement grinding unit in the said Land and shall use the said Land in accordance with such approvals and NOCs. It shall duly adhere to all statutory compliances and shall not do any act / omission in connection with the said Land which may cause nuisance, annoyance, or safety threat.
5. ACL here by agrees to indemnify and hold ALL harmless against any and all claims, demands, fines, losses, damages, costs, penalties, expenses, actions, suits or proceedings, injuries, monetary liability on account of death of / injury to any person, cost of response to any governmental inquiry, liability for loss of or damage to property and reasonable attorney and consulting fees and costs relating to any of the foregoing, arising from any statutory noncompliance / acts or omissions or breach of the terms and conditions herein by ACL / its personals.
6. Either party shall have the right to terminate this MoU by giving not less than 30 Days' notice in writing or in such an event this MoU shall stand terminated on the expiry of the said 30 days' period.
7. This MoU shall be subject to exclusive jurisdiction of the courts in Ahmedabad.



Schedule

All that piece and parcel of the land measuring approximately **6.594 Acres** area, which is a portion of total 27.11 Acres of land going to be used to setup cement grinding unit, situated at Mouza Devli, Tehsil- Palwal, Dist- Palwal in Haryana in the survey numbers as provided in "Annexure A" with boundaries as follows:

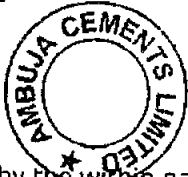
East - Agri Land
 West - Tatarpur Industrial Area
 North - Asaoti Village
 South - ICD Palwal

IN WITNESS WHEREOF the parties hereto have executed this MoU the day, month and year first hereinabove written.

SIGNED AND DELIVERED by the within named
ADANI LOGISTICS LIMITED by its Authorized Signatory
 Mr. Sushant Kumar Mishra
 CEO - Adani Logistics Ltd



SIGNED AND DELIVERED by the within named
AMBUJA CEMENTS LIMITED by its Authorized Signatory
 Mr. Sukuru Ramarao
 Chief Operating Officer
 Ambuja Cements Limited



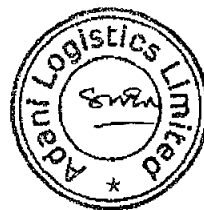
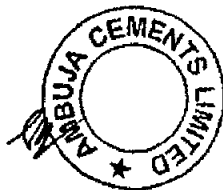
In the presence of

1. Mr. Bhimsi Kachhot

2. Mr. Amit Sinha

"ANNEXURE A"

Khewat No.	Updated Survey No.	Village	Sale Deed	Balance Land	Acre
		Name	No	Marla	
319	13//1/1	Devli	39#4831	16	0.725
319	13//10/2	Devli	39#4831	10	0.813
319	13//11/1	Devli	39#4831	8	0.925
319	13//20/2	Devli	39#4831	17	0.981
58	13//21/2	Devli	41#6703,	2	0.638
58	13//21/2	Devli	42#6702,		0
58	13//21/2	Devli	43#6709,		0
58	13//21/2	Devli	45#9600		0
58	13//21/2	Devli	11368		0
58	13//22/1/1	Devli	41#6703,	18	0.113
58	13//22/1/1	Devli	42#6702,		0
58	13//22/1/1	Devli	43#6709,		0
58	13//22/1/1	Devli	45#9600		0
58	13//22/1/1	Devli	11368		0
331	18//2/3	Devli	06#8267	6	0.288
319	14//16/1	Devli	39#4831	3	0.394
104	14//20/1	Devli	40#764	15	0.719
104	15//15	Devli	40#764	0	1
Land in Acre					6.594





Certificate No.

IN-GJ60260977369267V

Certificate Issued Date

16-Oct-2023 02:47 PM

Account Reference

IMPACC (AC)/ gj13001011/ GULBAI TEKRA/ GJ-AH

Unique Doc. Reference

SUBIN-GJGJ1300101144585417834162V

Purchased by

AMBUJA CEMENTS LIMITED

Description of Document

Article 5(h) Agreement (not otherwise provided for)

Description

Agreement

Consideration Price (Rs.)

0

(Zero)

First Party

ADANI AGRI LOGISTICS LIMITED

Second Party

AMBUJA CEMENTS LIMITED

Stamp Duty Paid By

AMBUJA CEMENTS LIMITED

Stamp Duty Amount(Rs.)

300

(Three Hundred only)



REF 0014945932

Statutory Alert:

1. The authenticity of this Stamp certificate should be verified at 'www.shcilestamp.com' or using e-Stamp Mobile App of Stock Holding.
Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.

MEMMORANDUM OF UNDERSTANDING

THIS MEMMORANDUM OF UNDERSTANDING ("MoU") is made at Ahmedabad, on this 17th day of October, 2023

BETWEEN

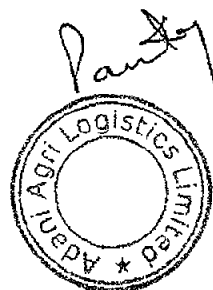
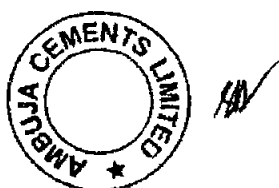
ADANI AGRI LOGISTICS LIMITED (AALL), a company incorporated under the Companies Act, 1956, having its Office at Adani Corporate House, Shantigram, Near Vaishnav Devi Circle, S. G. Highway, Khodiyar, Ahmedabad, Gujarat 382421 (hereinafter referred to as "AALL", which expression shall, unless repugnant to the context or meaning thereof, be deemed to mean and include its successors and permitted assigns) of the ONE PART.

AND

AMBUJA CEMENTS LIMITED (ACL), a company incorporated under the provisions of the Indian Companies Act, 1956, having its Registered Office at Adani Corporate House, Shantigram, Near Vaishnav Devi Circle, S.G. Highway, Khodiyar, Ahmedabad, Gujarat 382421, hereinafter called as "ACL" (which expression shall, unless repugnant to the context or meaning thereof be deemed to include its successors and permitted assigns) of the OTHER PART.

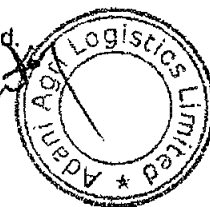
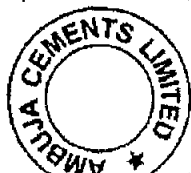
WHEREAS,

- (1) ACL is desirous of setting up a cement grinding unit with 6 MMTPA capacity at the land measuring approximately **27.11 Acres**, situated at village Devli, Tehsil- Palwal, Dist- Palwal in Haryana.
- (2) AALL is the owner of a portion of the aforesaid land, measuring approximately **20.513 Acres**.
- (3) ACL is desirous of taking the aforesaid portion of the land owned by AALL on lease hold basis and AALL is willing to make available the said land to ACL on leasehold basis; and
- (4) The Parties are desirous of recording their broad understanding concerning the same as herein after appearing in this MoU.



NOW THIS MEMMORANDUM OF UNDERSTANDING WITNESSES AS FOLLOWS:

1. ACL is desirous of setting up a cement grinding unit with 6 MMTPA capacity at the land measuring approximately **20.513 Acres** (as provided in Annexure A) which is portion of total 27.11 Acres of land that is proposed to be used to setup cement grinding unit, situated at village Devli, Tehsil- Palwal, Dist- Palwal in Haryana. AALL is the owner of a portion of the aforesaid land, measuring approximately **20.513 Acres** (as provided in Annexure A), situated at village Devli, Tehsil- Palwal, Dist- Palwal in Haryana. (Herein after referred to as the said Land) as provided in detail in the Schedule and **Annexure-A** hereinafter appearing. ACL is desirous of having the possession of the said Land for the purpose of its aforesaid cement grinding unit and AALL is willing to make the said land available to ACL on a leasehold basis, subject to the execution of a registered lease deed and approvals, if any required by AALL and ACL under the applicable laws for the said transaction.
2. AALL and ACL being *Related Parties* and part of the Adani Group, the parties are entering into this transaction on an *Arm's Length Price Basis*. Accordingly, ACL shall pay to AALL the consideration / lease rentals calculated on arm's length basis for taking the said land on lease hold basis.
3. The Parties agree that this MoU shall be valid for a period of five Year with effect from 17th October 2023 or till the execution of the lease deed and other required documentations if any, whichever is earlier.
4. ACL shall take all the required permissions and NOCs to set up the cement grinding unit in the said Land and shall use the said Land in accordance with such approvals and NOCs. It shall duly adhere to all statutory compliances and shall not do any act / omission in connection with the said Land which may cause nuisance, annoyance, or safety threat.
5. ACL here by agrees to indemnify and hold AALL harmless against any and all claims, demands, fines, losses, damages, costs, penalties, expenses, actions, suits or proceedings, injuries, monetary liability on account of death of / injury to any person, cost of response to any governmental inquiry, liability for loss of or damage to property and reasonable attorney and consulting fees and costs relating to any of the foregoing, arising from any statutory noncompliance / acts or omissions or breach of the terms and conditions herein by ACL / its personals.
6. Either party shall have the right to terminate this MoU by giving not less than 30 Days' notice in writing or in such an event this MoU shall stand terminated on the expiry of the said 30 days' period.
7. This MoU shall be subject to exclusive jurisdiction of the courts in Ahmedabad.




Schedule

All that piece and parcel of the land measuring approximately **20.513 Acres** area, which is a portion of total 27.11 Acres of land going to be used to setup cement grinding unit, situated at Mouza Devli, Tehsil- Palwal, Dist- Palwal in Haryana in the survey numbers as provided in "Annexure A" with boundaries as follows:

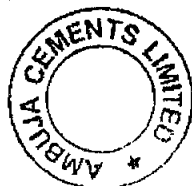
East - Agri Land
 West - Tatarpur Industrial Area
 North - Asaoti Village
 South - ICD Palwal

IN WITNESS WHEREOF the parties hereto have executed this MoU the day, month and year first hereinabove written.

Pankaj


SIGNED AND DELIVERED by the within named
ADANI AGRI LOGISTICS LIMITED by its Authorized Signatory
 Mr. Pankaj Kumar Bhardwaj
 Business Head
 Adani Agri Logistics Ltd

S. Sukuru Ramarao



SIGNED AND DELIVERED by the within named
AMBUJA CEMENTS LIMITED by its Authorized Signatory
 Mr. Sukuru Ramarao
 Chief Operating Officer
 Ambuja Cements Limited

In the presence of

1. Mr. Bhimsi Kachhot

Bhimsi Kachhot

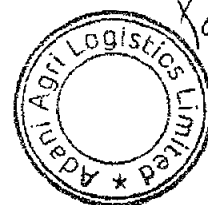
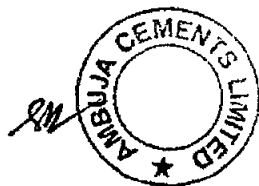
2. Mr. Amit Sinha

Amit Sinha

"ANNEXURE A"

Khewat No.	Updated Survey No.	Village	Sale Deed	Balance Land	Acre
		Name	No	Marla	
31	13//21/1	Devli	3#8464	13	0.331
327	19//1/1/2	Devli	13#113	12	0.075
328	19//1/1/1	Devli	11#114	11	0.444
328	19//1/1/1	Devli	10#115		0
315	18//5/2/1	Devli	11#114	4	0.525
315	18//5/2/1	Devli	10#115		0
315	18//5/1/1	Devli	11#114	2	0.138
315	18//5/1/1	Devli	10#115		0
325	18//5/1/2	Devli	11#114	9	0.056
325	18//5/1/2	Devli	10#115		0
325	18//5/2/2	Devli	11#114	2	0.263
325	18//5/2/2	Devli	10#115		0
313	18//6/1/2	Devli	8765	12	0.325
313	18//6/2/2	Devli	8765	12	0.2
324	18//6/1/1	Devli	8#8766	3	0.269
324	18//6/2/1	Devli	8#8766	1	0.131
110	18//15/1/1	Devli	13#113	11	0.069
110	18//15/1/2	Devli	13#113	14	0.338
324	18//4/1/1	Devli	8#8766	6	0.163
324	18//4/2/1	Devli	8#8766	1	0.381
324	18//4/3/1	Devli	8#8766	11	0.194
324	18//4/1/2	Devli	8#8766	6	0.038
324	18//4/2/2	Devli	8#8766	13	0.081
324	18//4/3/2	Devli	8#8766	7	0.044
313	18//7/2	Devli	8765	16	0.6
324	18//7/1	Devli	8#8766	4	0.4
313	18//14/1	Devli	12#112	16	0.1
313	18//14/3	Devli	12#112	7	0.169
327	18//14/2	Devli	13#113	17	0.731

324	18//3/1/1	Devli	8#8766	16	0.35
324	18//3/2/1	Devli	8#8766	17	0.356
324	18//3/2/3	Devli	8#8766	9	0.056
324	18//3/1/2	Devli	8#8766	12	0.075
324	18//3/2/2	Devli	8#8766	15	0.094
313	18//8/2	Devli	8765	16	0.6
324	18//8/1	Devli	8#8766	4	0.4
313	18//13/1	Devli	12#112	16	0.1
313	18//13/3	Devli	12#112	7	0.169
327	18//13/2	Devli	13#113	17	0.731
321	14//15	Devli	4#8466	0	1
314	14//16/2	Devli	2#8467	10	0.563
32	14//25/2	Devli	2#8467	0	0.375
314	14//25/1	Devli	2#8467	0	0.625
320	14//14/1	Devli	7#8762	8	0.55
320	14//14/2	Devli	7#8762	12	0.45
326	14//17	Devli	6#8764	0	1
326	14//24/1	Devli	6#8764	0	0.375
326	14//24/2	Devli	6#8764	13	0.581
322	14//13/1	Devli	1#8465	10	0.188
322	14//13/2	Devli	1#8465	10	0.813
323	14//18/1/1	Devli	5#8763	13	0.081
323	14//18/1/2	Devli	5#8763	2	0.263
323	14//18/1/3	Devli	5#8763	12	0.2
323	14//18/2/1	Devli	5#8763	2	0.263
323	14//18/2/2	Devli	5#8763	12	0.2
323	14//23/1/1	Devli	5#8763	11	0.319
323	14//23/1/2	Devli	5#8763	2	0.138
323	14//23/2/1	Devli	5#8763	9	0.306
323	14//23/2/2	Devli	5#8763	4	0.15
323	14//23/2/3	Devli	5#8763	13	0.081
84	14//12	Devli	1#8465	0	1
323	14//19	Devli	5#8763	0	1
84	14//11	Devli	1#8465	0	1
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W. T. O. 2

$\frac{d}{dt} \left(\frac{\partial L}{\partial \dot{x}} \right) = \frac{\partial L}{\partial x}$

2002/01/24

कक्षा	सात वाईस	१५५७	५६७७५५
पक्ष	सात वाईस	१५५७	५६७७५५
२०१३	सात वाईस	१५५७	५६७७५५
१५	सात वाईस	१५५७	५६७७५५
	३५३४ स्वयंसेवक		

Year	1961	1962	1963	1964	1965
Population	1,000,000	1,050,000	1,100,000	1,150,000	1,200,000
Area (sq. miles)	100,000	100,000	100,000	100,000	100,000
Population density (per sq. mile)	10	10.5	11	11.5	12

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$$L_2 = \{ \langle M, x \rangle \mid M \text{ is a Turing machine and } x \text{ is a string} \}$$

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An approved Laboratory from Ministry of Environment, Forest and Climate Change & CPCB Govt. of India, New Delhi

TEST REPORT

FORMAT NO. ECO/QS/FORMAT/10

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil - Palwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/AA/0589/10-12/2023
		Issue Date of Test Report	05.01.2024
Type of Sample	Ambient Air		
Sample Registration No.	589	Name of Location	Within Project Site
Sampling Method	As per Reference Method	Sample Collected By	EMPL Representative
Date of Sample Collection	01.10.2023 to 30.12.2023	Time of Sample Collection	-
Date of Sample Received	-	Time of Sample Received	-
Start Date of Analysis	01.10.2023 to 30.12.2023	End Date of Analysis	05.01.2024
Weather Condition	Sunny	Sampling Duration	24 Hrs.
Environmental Condition	Temperature:	Sample ID Code	ECO/LAB/10-12/2023
	Humidity:		
	25 ± 2 °C		
	56 %		

DATE	24 HOURLY				
	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	CO
03.10.2023	59.16	24.68	14.20	28.41	0.35
06.10.2023	57.86	29.00	12.67	24.78	0.42
10.10.2023	58.20	24.91	13.56	22.89	0.37
13.10.2023	61.78	32.62	13.26	26.07	0.68
17.10.2023	66.52	28.42	11.00	24.30	0.47
20.10.2023	61.02	26.94	13.50	25.62	0.47
24.10.2023	55.67	23.56	12.13	21.48	0.54
27.10.2023	63.55	31.46	11.94	27.64	0.51
03.11.2023	68.52	33.15	14.62	25.70	0.55
07.11.2023	58.82	31.35	13.00	23.06	0.56
10.11.2023	72.63	36.10	11.74	24.56	0.56
14.11.2023	54.16	27.46	15.12	35.24	0.57
17.11.2023	65.72	25.93	13.94	30.62	1.06
21.11.2023	65.92	35.16	10.68	21.47	0.63
24.11.2023	68.84	33.12	11.74	24.87	0.65
28.11.2023	55.29	26.03	13.62	25.84	0.66
01.12.2023	63.50	24.68	11.20	23.65	0.68
04.12.2023	69.83	32.56	12.59	21.47	0.75
08.12.2023	74.16	36.94	12.43	24.56	0.77
11.12.2023	65.88	37.00	15.62	27.14	0.78
15.12.2023	59.15	25.52	13.94	24.65	0.88
18.12.2023	57.02	29.16	12.54	26.58	0.85
22.12.2023	65.75	31.64	15.31	24.68	0.96
25.12.2023	62.35	29.34	14.20	28.56	0.52

	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	CO
NUMBER OF OBSERVATIONS	24	24	24	24	24
MEAN	70.16	36.54	7.10	23.05	0.56
GEOMETRIC MEAN	62.74	29.59	13.04	25.41	0.61
STD. GEO. DEVN. (24 HRS.)	5.42	4.08	1.34	3.02	0.18
98th PERCENTILES	87.29	54.93	8.2	34.02	0.79
MAXIMUM CONCENTRATION	74.2	37.0	15.6	35.2	1.06
MINIMUM CONCENTRATION	54.2	23.6	10.7	21.5	0.35

PERCENTILE VALUE :										
	10	20	30	40	50	60	70	80	90	98
PM ₁₀	55.48	57.86	58.98	61.02	62.93	65.72	65.90	68.52	71.23	73.46
PM _{2.5}	24.68	25.32	26.49	28.42	29.25	31.46	32.59	33.15	36.52	36.97
SO ₂	11.36	11.86	12.42	12.61	13.13	13.55	13.94	14.20	14.97	15.48
NO ₂	21.90	23.41	24.53	24.66	24.82	25.69	26.12	27.34	28.52	54.52
CO	0.43	0.49	0.49	0.56	0.60	0.65	0.69	0.77	0.87	1.01

Note: All units are µg/m³ except CO is mentioned in ppm

---End of Report---

Verified By

Technical Manager

Authorized By

Quality Manager



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E-mail: contactus@ecomen.in, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE6076H1Z1

An approved Laboratory from Ministry of Environment, Forest and Climate Change & CPCB Govt. of India, New Delhi

TEST REPORT

FORMAT NO. ECO/QS/FORMAT/10

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil - Paiwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/AA/0589/10-12/2023
		Issue Date of Test Report	05.01.2024
Type of Sample	Ambient Air		
Sample Registration No.	589	Name of Location	Devli
Sampling Method	As per Reference Method	Sample Collected By	EMPL Representative
Date of Sample Collection	01.10.2023 to 30.12.2023	Time of Sample Collection	-
Date of Sample Received	-	Time of Sample Received	-
Start Date of Analysis	01.10.2023 to 30.12.2023	End Date of Analysis	05.01.2024
Weather Condition	Sunny	Sampling Duration	24 Hrs.
Environmental Condition	Temperature:	Sample ID Code	ECO/LAB/10-12/2023
	Humidity:		
	25 ± 2 °C		
	56 %		

DATE	24 HOURLY							
	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	CO			
03.10.2023	56.93	29.65	11.36	20.10	0.46			
06.10.2023	49.19	31.44	13.27	21.00	0.48			
10.10.2023	55.32	25.86	12.69	23.10	0.40			
13.10.2023	53.01	27.35	10.68	20.94	0.55			
17.10.2023	39.65	30.40	9.19	16.25	0.74			
20.10.2023	54.80	28.56	12.62	19.68	0.33			
24.10.2023	47.79	31.65	13.27	17.49	0.50			
27.10.2023	61.05	33.04	10.95	21.16	0.80			
03.11.2023	50.63	26.14	14.20	20.31	0.41			
07.11.2023	60.62	32.96	11.95	18.86	0.47			
10.11.2023	57.08	29.82	10.68	23.62	0.55			
14.11.2023	52.44	25.64	12.65	17.82	0.39			
17.11.2023	49.36	26.34	13.28	28.57	0.40			
21.11.2023	59.28	32.96	11.62	16.82	0.29			
24.11.2023	54.53	31.56	12.55	20.81	0.46			
28.11.2023	60.82	34.18	11.11	22.60	0.41			
01.12.2023	63.16	30.62	13.66	20.69	0.46			
04.12.2023	59.84	23.68	10.82	18.42	0.38			
08.12.2023	62.68	25.46	13.26	17.43	0.32			
11.12.2023	59.36	24.78	12.02	17.93	0.49			
15.12.2023	55.69	31.12	10.44	21.65	0.26			
18.12.2023	58.01	34.92	9.69	19.30	0.46			
22.12.2023	56.37	29.36	11.57	24.03	0.41			
25.12.2023	57.68	32.98	11.36	19.68	0.46			

	PM ₁₀ 24	PM _{2.5} 24	SO ₂ 24	NO ₂ 24	CO 24
NUMBER OF OBSERVATIONS					
MEAN	70.16	36.54	7.10	23.03	0.56
GEOMETRIC MEAN	57.42	29.84	11.80	20.18	0.43
STD. GEO. DEVN. (24 HRS.)	3.38	3.28	1.27	2.69	0.12
98th PERCENTILES	87.29	54.93	8.2	34.02	0.79
MAXIMUM CONCENTRATION	63.9	35.5	14.2	28.5	0.80
MINIMUM CONCENTRATION	49.4	23.7	9.2	16.3	0.26

PERCENTILE VALUE :	10	20	30	40	50	60	70	80	90	98
PM ₁₀	51.82	55.32	56.11	57.08	57.61	58.01	59.32	60.62	62.11	63.55
PM _{2.5}	25.21	26.14	27.96	29.65	30.51	31.44	32.31	32.98	34.55	35.21
SO ₂	10.51	10.76	11.09	11.40	11.79	12.45	12.65	13.26	13.28	13.95
NO ₂	17.45	17.89	18.82	19.68	20.21	20.79	21.02	22.03	23.46	25.01
CO	0.31	0.36	0.36	0.41	0.44	0.46	0.47	0.49	0.55	0.77

Note: All units are µg/m³ except CO is mentioned in ppm

---End of Report---

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Technical Manager

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TEST REPORT

FORMAT NO. ECO/QS/FORMAT/10

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil - Palwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/AA/0589/10-12/2023
		Issue Date of Test Report	05.01.2024
Type of Sample	Ambient Air		
Sample Registration No.	589	Name of Location	Medhapur
Sampling Method	As per Reference Method	Sample Collected By	EMPL Representative
Date of Sample Collection	01.10.2023 to 30.12.2023	Time of Sample Collection	-
Date of Sample Received	-	Time of Sample Received	-
Start Date of Analysis	01.10.2023 to 30.12.2023	End Date of Analysis	05.01.2024
Weather Condition	Sunny	Sampling Duration	24 Hrs.
Environmental Condition	Temperature:	Sample ID Code	ECO/LAB/10-12/2023
	Humidity:		

DATE	24 HOURLY					
	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	CO	
07.10.2023	45.46	19.68	16.25	17.13	0.55	
12.10.2023	50.11	23.56	9.89	19.20	0.41	
14.10.2023	44.19	21.78	12.51	20.05	0.53	
19.10.2023	42.14	26.53	8.54	23.62	0.34	
21.10.2023	46.35	25.14	11.25	18.00	0.52	
26.10.2023	42.94	21.49	10.06	17.02	0.56	
28.10.2023	45.94	25.71	12.29	16.56	0.47	
31.10.2023	44.50	20.36	9.39	19.01	0.33	
01.11.2023	40.19	21.46	13.06	16.79	0.31	
06.11.2023	37.89	22.05	10.04	14.08	0.59	
08.11.2023	54.36	20.27	10.79	18.56	0.50	
13.11.2023	47.33	20.87	11.00	17.36	0.46	
15.11.2023	50.67	24.78	9.89	14.95	0.36	
20.11.2023	42.08	20.63	8.95	18.30	0.29	
22.11.2023	47.26	20.84	11.31	17.05	0.28	
27.11.2023	39.61	18.96	10.97	16.98	0.23	
05.12.2023	41.64	23.16	9.13	15.74	0.74	
09.12.2023	35.01	17.84	11.73	18.02	0.38	
12.12.2023	39.52	20.42	13.68	24.54	0.32	
16.12.2023	46.21	22.66	14.58	21.36	0.37	
19.12.2023	44.16	19.23	12.96	17.22	0.26	
23.12.2023	49.20	23.65	10.68	18.90	0.38	
26.12.2023	53.42	26.18	10.36	17.02	0.24	
30.12.2023	42.06	21.76	12.62	17.18	0.45	

	PM ₁₀ 24	PM _{2.5} 24	SO ₂ 24	NO ₂ 24	CO 24
NUMBER OF OBSERVATIONS					
MEAN	70.16	36.54	7.10	23.05	0.56
GEOMETRIC MEAN	44.41	21.93	11.22	17.97	0.39
STD. GEO. DEVN. (24 HRS.)	4.71	2.33	1.82	2.36	0.12
98th PERCENTILES	87.29	54.93	8.2	34.02	0.79
MAXIMUM CONCENTRATION	54.4	26.5	16.3	24.5	0.74
MINIMUM CONCENTRATION	35.0	17.8	8.5	14.1	0.23

PERCENTILE VALUE :										
	10	20	30	40	50	60	70	80	90	98
PM ₁₀	38.45	40.19	42.07	42.94	44.34	45.94	46.81	49.20	52.05	53.93
PM _{2.5}	19.10	20.27	20.52	20.87	21.62	22.05	23.36	24.78	25.95	26.37
SO ₂	9.41	9.89	10.05	10.70	10.99	11.30	12.31	12.76	13.49	15.48
NO ₂	15.99	16.90	17.02	17.14	17.29	18.02	18.59	19.09	20.97	19.74
CO	0.26	0.30	0.30	0.36	0.38	0.44	0.48	0.51	0.55	0.67

Note: All units are $\mu\text{g}/\text{m}^3$ except CO is mentioned in ppm

----End of Report----

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ECOMEN MINING PRIVATE LIMITED
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Second Floor Hall, House No. B-1/8, Sector-H, Aliganj, Lucknow - 226 024
Phone No. : 0522 - 4079201/2746282

E-mail: contactus@ecomen.in, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE6076H1Z1

An approved Laboratory from Ministry of Environment, Forest and Climate Change & CPCB Govt. of India, New Delhi

TEST REPORT

FORMAT NO. ECO/QS/FORMAT/10

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil - Palwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/AA/0589/10-12/2023
		Issue Date of Test Report	05.01.2024
Type of Sample	Ambient Air		
Sample Registration No.	589	Name of Location	Asoati
Sampling Method	As per Reference Method	Sample Collected By	EMPL Representative
Date of Sample Collection	01.10.2023 to 30.12.2023	Time of Sample Collection	-
Date of Sample Received	-	Time of Sample Received	-
Start Date of Analysis	01.10.2023 to 30.12.2023	End Date of Analysis	05.01.2024
Weather Condition	Sunny	Sampling Duration	24 Hrs.
Environmental Condition	Temperature:	Sample ID Code	ECO/LAB/10-12/2023
	Humidity:		
	25 ± 2 °C		
	56 %		

DATE	24 HOURLY					
	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	CO	UO
03.10.2023	53.53	27.15	12.88	21.14		0.73
06.10.2023	57.41	24.37	10.23	19.08		0.40
10.10.2023	43.84	21.99	13.07	10.76		0.38
13.10.2023	55.97	29.72	10.31	23.81		0.79
17.10.2023	52.52	25.60	13.42	18.96		0.44
20.10.2023	43.83	20.94	13.04	23.88		0.78
24.10.2023	58.27	28.61	10.23	19.77		0.39
27.10.2023	62.57	31.72	11.04	22.33		0.56
03.11.2023	62.17	33.94	11.88	20.88		0.36
07.11.2023	55.89	31.32	11.74	34.76		0.60
10.11.2023	51.90	27.61	11.00	21.15		0.94
14.11.2023	58.94	30.34	12.48	20.63		0.57
17.11.2023	57.09	26.35	10.99	23.68		0.27
21.11.2023	50.54	22.21	11.02	28.00		0.41
24.11.2023	54.10	24.62	13.52	21.12		0.33
28.11.2023	55.44	27.00	12.73	18.25		0.87
01.12.2023	61.12	29.83	10.78	19.74		0.40
04.12.2023	53.20	22.45	11.83	23.17		1.02
08.12.2023	50.87	28.25	10.08	19.03		0.42
11.12.2023	57.72	31.89	11.17	27.56		1.20
15.12.2023	56.11	29.30	16.82	18.62		0.39
18.12.2023	54.02	28.70	10.64	22.30		0.64
22.12.2023	55.71	20.26	12.06	26.16		0.53
25.12.2023	59.55	25.90	14.08	19.17		0.35

NUMBER OF OBSERVATIONS	PM ₁₀ 24	PM _{2.5} 24	SO ₂ 24	NO ₂ 24	CO 24
MEAN	70.16	36.54	7.10	23.05	0.56
GEOMETRIC MEAN	54.94	26.83	11.94	21.98	0.53
STD. GEO. DEVN. (24 HRS.)	4.57	3.66	1.64	3.74	0.25
98th PERCENTILES	87.29	54.93	8.2	34.02	0.79
MAXIMUM CONCENTRATION	62.6	33.9	16.8	34.8	1.20
MINIMUM CONCENTRATION	43.8	20.3	10.1	18.2	0.27

PERCENTILE VALUE :									
	10	20	30	40	50	60	70	80	90
PM ₁₀	47.69	51.90	53.36	54.10	55.80	56.11	57.57	58.94	61.62
PM _{2.5}	21.46	22.45	25.11	26.35	27.38	28.61	29.51	30.34	31.81
SO ₂	10.25	10.72	11.00	11.07	11.78	12.02	12.75	13.21	13.91
NO ₂	18.98	19.13	19.77	20.78	21.13	22.07	23.22	23.84	27.14
CO	0.36	0.38	0.38	0.41	0.49	0.57	0.73	0.81	0.92

Note: All units are µg/m³ except CO is mentioned in ppm

----End of Report----

Verified By

[Signature]
Technical Manager

Authorized By

[Signature]
Quality Manager



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TEST REPORT

FORMAT NO. ECO/QS/FORMAT/10

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil - Palwal, Dist- Faridabad, Haryana		Test Report No.	ECO/LAB/AA/0589/10-12/2023
			Issue Date of Test Report	05.01.2024
Type of Sample	Ambient Air			
Sample Registration No.	589		Name of Location	Pahladpur
Sampling Method	As per Reference Method		Sample Collected By	EMPL Representative
Date of Sample Collection	01.10.2023 to 30.12.2023		Time of Sample Collection	-
Date of Sample Received	-		Time of Sample Received	-
Start Date of Analysis	01.10.2023 to 30.12.2023		End Date of Analysis	05.01.2024
Weather Condition	Sunny		Sampling Duration	24 Hrs.
Environmental Condition	Temperature:	25 ± 2 °C	Sample ID Code	ECO/LAB/10-12/2023
	Humidity:	56 %		

DATE	24 HOURLY					
	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	CO	
07.10.2023	46.52	26.09	12.29	25.40	0.390	
12.10.2023	53.69	22.39	11.02	24.01	0.359	
14.10.2023	41.06	21.36	8.00	20.24	0.356	
19.10.2023	48.64	24.77	9.04	27.12	0.359	
21.10.2023	45.64	27.66	12.65	25.27	0.526	
26.10.2023	38.09	24.29	14.28	11.05	0.256	
28.10.2023	50.64	26.57	11.98	22.00	0.785	
31.10.2023	54.37	24.92	13.62	24.52	0.316	
01.11.2023	55.05	21.16	9.79	20.05	0.344	
06.11.2023	52.37	19.71	8.88	21.46	0.316	
08.11.2023	48.64	21.54	12.49	23.08	0.536	
13.11.2023	52.96	18.14	9.70	27.22	0.319	
15.11.2023	52.81	17.24	14.06	29.58	0.443	
20.11.2023	46.76	23.96	11.83	26.80	0.385	
22.11.2023	47.26	22.77	11.62	25.78	0.533	
27.11.2023	51.29	26.93	11.27	23.65	0.399	
03.12.2023	48.84	23.70	9.01	19.92	0.724	
09.12.2023	50.09	26.32	8.43	24.23	0.682	
12.12.2023	46.67	24.62	8.06	21.88	0.308	
16.12.2023	51.87	19.98	11.92	25.25	0.402	
19.12.2023	47.56	17.41	13.58	27.64	0.368	
23.12.2023	50.69	22.39	11.34	25.26	0.547	
26.12.2023	46.21	27.54	9.50	25.87	0.414	
30.12.2023	54.00	21.75	10.09	19.97	0.346	

	PM ₁₀ 24	PM _{2.5} 24	SO ₂ 24	NO ₂ 24	CO 24
NUMBER OF OBSERVATIONS					
MEAN	70.16	36.54	7.10	23.05	0.56
GEOMETRIC MEAN	49.06	22.84	10.85	24.31	0.41
STD. GEO. DEVN. (24 HRS.)	4.07	3.05	1.90	2.98	0.14
98th PERCENTILES	87.29	54.93	8.2	34.02	0.79
MAXIMUM CONCENTRATION	55.1	27.7	14.3	31.1	0.79
MINIMUM CONCENTRATION	38.1	17.2	8.0	19.9	0.26

PERCENTILE VALUE										
	10	20	30	40	50	60	70	80	90	98
PM ₁₀	43.35	46.52	47.01	48.64	49.46	50.69	52.12	52.96	54.19	54.74
PM _{2.5}	17.78	19.98	21.45	22.39	23.24	24.29	24.84	26.32	27.24	27.60
SO ₂	8.57	9.03	9.68	10.28	11.31	11.79	12.01	12.55	13.61	14.18
NO ₂	20.12	21.72	22.97	24.05	24.88	25.27	25.79	26.93	27.69	30.52
CO	0.32	0.33	0.33	0.36	0.38	0.40	0.43	0.53	0.64	0.76

Note: All units are µg/m³ except CO is mentioned in ppm

---End of Report---

Verified By

Vikas Kumar
Technical Manager

Authorized By

Abhishek
Quality Manager



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TEST REPORT

FORMAT NO. ECO/QS/FORMAT/10

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil - Palwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/AA/0589/10-12/2023
		Issue Date of Test Report	05.01.2024
Type of Sample	Ambient Air		
Sample Registration No.	589	Name of Location	Baghaura
Sampling Method	As per Reference Method	Sample Collected By	EMPL Representative
Date of Sample Collection	01.10.2023 to 30.12.2023	Time of Sample Collection	-
Date of Sample Received	-	Time of Sample Received	-
Start Date of Analysis	01.10.2023 to 30.12.2023	End Date of Analysis	05.01.2024
Weather Condition	Sunny	Sampling Duration	24 Hrs.
Environmental Condition	Temperature:	Sample ID Code	ECO/LAB/10-12/2023
	Humidity:		
	25 ± 2 °C		
	56 %		

DATE	24 HOURLY							
	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	CO			
03.10.2023	43.62	22.52	13.20	21.63	0.47			
06.10.2023	41.87	23.65	10.10	23.45	0.32			
10.10.2023	44.20	24.73	12.62	19.17	0.37			
13.10.2023	39.68	21.80	11.65	20.25	0.25			
17.10.2023	48.52	25.64	15.62	18.69	0.29			
20.10.2023	41.36	30.15	12.30	21.04	0.24			
24.10.2023	42.35	24.00	14.47	20.91	0.42			
27.10.2023	45.68	25.44	11.58	22.23	0.54			
03.11.2023	41.20	20.56	10.84	16.84	0.37			
07.11.2023	37.84	27.48	12.34	18.24	0.54			
10.11.2023	39.45	24.66	10.42	16.19	0.41			
14.11.2023	31.62	31.52	10.41	17.48	0.51			
17.11.2023	41.58	26.64	10.58	18.00	0.40			
21.11.2023	47.52	29.86	11.34	30.14	0.52			
24.11.2023	49.15	32.43	11.36	17.56	0.32			
28.11.2023	46.20	27.17	12.34	18.94	0.41			
01.12.2023	44.82	27.50	13.31	22.52	0.36			
04.12.2023	47.30	26.97	11.68	12.64	0.38			
08.12.2023	40.81	24.70	14.25	21.16	0.32			
11.12.2023	56.94	31.00	11.78	18.46	0.44			
15.12.2023	48.22	28.56	12.53	20.31	0.63			
18.12.2023	47.92	27.55	11.37	17.48	0.36			
22.12.2023	43.98	29.81	13.06	19.06	0.42			
25.12.2023	51.25	31.04	11.68	16.78	0.47			

	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	CO
NUMBER OF OBSERVATIONS	24	24	24	24	24
MEAN	70.16	36.54	7.10	23.05	0.56
GEOMETRIC MEAN	44.19	26.70	12.04	18.98	0.40
STD. GEO. DEVN. (24 HRS.)	4.77	3.17	1.35	2.36	0.09
98th PERCENTILES	87.29	54.93	8.2	34.02	0.79
MAXIMUM CONCENTRATION	53.9	32.4	15.6	23.5	0.63
MINIMUM CONCENTRATION	31.6	20.6	10.1	12.6	0.24

PERCENTILE VALUE:

	10	20	30	40	50	60	70	80	90	98
PM ₁₀	38.65	41.20	41.73	43.62	44.51	45.68	47.41	48.22	51.03	52.70
PM _{2.5}	22.16	24.00	24.71	25.64	27.07	27.50	29.19	30.15	31.28	32.01
SO ₂	10.47	11.08	11.37	11.65	11.73	12.31	12.54	13.12	13.97	15.11
NO ₂	16.80	17.48	17.96	18.51	19.00	19.95	20.37	21.09	22.05	25.46
CO	0.30	0.32	0.32	0.37	0.40	0.42	0.44	0.49	0.53	0.59

Note: All units are µg/m³ except CO is mentioned in ppm

----End of Report----

Verified By

Technical Manager

Authorized By

Quality Manager



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TEST REPORT

FORMAT NO. ECO/QS/FORMAT/10

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil - Palwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/AA/0589/10-12/2023
		Issue Date of Test Report	05.01.2024
Type of Sample	Ambient Air		
Sample Registration No.	589	Name of Location	Mandkaul
Sampling Method	As per Reference Method	Sample Collected By	EMPL Representative
Date of Sample Collection	01.10.2023 to 30.12.2023	Time of Sample Collection	-
Date of Sample Received	-	Time of Sample Received	-
Start Date of Analysis	01.10.2023 to 30.12.2023	End Date of Analysis	05.01.2024
Weather Condition	Sunny	Sampling Duration	24 Hrs.
Environmental Condition	Temperature:	Sample ID Code	ECO/LAB/10-12/2023
	Humidity:		
	25 ± 2 °C		
	56 %		

DATE	24 HOURLY					
	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	CO	
03.10.2023	43.05	23.88	10.52	23.30	0.569	
06.10.2023	44.87	17.59	11.65	24.15	0.341	
10.10.2023	45.91	21.00	13.62	22.17	0.458	
13.10.2023	51.83	20.18	15.08	20.18	0.604	
17.10.2023	53.88	25.62	12.54	16.14	0.368	
20.10.2023	53.15	23.16	11.00	26.31	0.417	
24.10.2023	57.31	25.95	16.52	24.10	0.319	
27.10.2023	51.02	19.36	13.24	16.00	0.418	
03.11.2023	53.25	25.00	14.05	19.84	0.338	
07.11.2023	48.28	19.91	10.69	21.24	0.368	
10.11.2023	52.05	20.75	12.36	18.74	0.327	
14.11.2023	49.94	18.41	11.08	20.36	0.487	
17.11.2023	50.94	24.65	13.25	17.24	0.299	
21.11.2023	53.24	24.00	10.58	17.02	0.289	
24.11.2023	51.28	22.19	17.25	24.20	0.328	
28.11.2023	49.62	23.03	13.62	16.90	0.418	
01.12.2023	50.26	26.16	14.20	17.20	0.471	
04.12.2023	54.00	24.84	12.08	16.35	0.368	
08.12.2023	57.56	23.52	14.20	19.32	0.444	
11.12.2023	50.95	24.15	17.14	22.20	0.368	
15.12.2023	49.02	25.52	15.62	23.32	0.284	
18.12.2023	46.25	25.18	12.14	18.20	0.439	
22.12.2023	47.28	23.89	13.95	21.04	0.374	
25.12.2023	43.10	21.46	10.52	25.20	0.319	

	PM ₁₀ 24	PM _{2.5} 24	SO ₂ 24	NO ₂ 24	CO 24
NUMBER OF OBSERVATIONS	24	24	24	24	24
MEAN	70.16	36.54	7.10	23.05	0.56
GEOMETRIC MEAN	50.00	22.73	13.05	20.21	0.38
STD. GEO. DEVN. (24 HRS.)	3.53	2.47	2.03	3.11	0.08
98th PERCENTILES	87.29	54.93	8.2	34.02	0.79
MAXIMUM CONCENTRATION	57.3	26.2	17.3	26.3	0.60
MINIMUM CONCENTRATION	43.0	17.6	10.5	16.0	0.28

PERCENTILE VALUE :		10	20	30	40	50	60	70	80	90	98
PM ₁₀		43.98	46.25	48.65	49.94	50.95	51.28	52.31	53.24	53.94	55.79
PM _{2.5}		18.89	20.18	21.23	23.03	23.70	24.00	24.75	25.18	25.79	26.07
SO ₂		10.61	11.05	12.04	12.40	13.25	13.62	14.07	14.55	16.25	17.20
NO ₂		16.52	17.13	18.10	19.42	20.27	21.20	22.31	23.63	24.19	22.86
CO		0.31	0.32	0.32	0.37	0.37	0.41	0.42	0.45	0.48	0.59

Note: All units are µg/m³ except CO is mentioned in ppm

---End of Report---

Verified By

Technical Manager

Authorized By

Quality Manager



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TEST REPORT

FORMAT NO. ECO/QS/FORMAT/10

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Dcvli, Tatapur, Ladpur, Tehsil - Palwal, Dist- Faridabad, Haryana		Test Report No.	ECO/LAB/AA/0589/10-12/2023
			Issue Date of Test Report	05.01.2024
Type of Sample	Ambient Air			
Sample Registration No.	589		Name of Location	Badram
Sampling Method	As per Reference Method		Sample Collected By	EMPL Representative
Date of Sample Collection	01.10.2023 to 30.12.2023		Time of Sample Collection	-
Date of Sample Received	-		Time of Sample Received	-
Start Date of Analysis	01.10.2023 to 30.12.2023		End Date of Analysis	05.01.2024
Weather Condition	Sunny		Sampling Duration	24 Hrs.
Environmental Condition	Temperature:	25 ± 2 °C	Sample ID Code	ECO/LAB/10-12/2023
	Humidity:	56 %		

DATE	PM ₁₀	PM _{2.5}	24 HOURLY SO ₂	NO ₂	CO
07.10.2023	50.570	19.769	10.440	20.171	0.388
12.10.2023	38.849	22.291	9.928	25.682	0.300
14.10.2023	42.560	23.757	9.640	20.545	0.396
19.10.2023	46.227	22.850	10.872	21.216	0.513
21.10.2023	47.054	20.978	10.827	24.800	0.349
26.10.2023	43.930	22.372	17.664	27.004	0.471
28.10.2023	47.722	19.918	15.664	23.256	0.327
31.10.2023	45.310	21.838	10.048	27.746	0.437
01.11.2023	41.278	20.898	11.200	16.906	0.488
06.11.2023	44.073	22.842	12.088	26.612	0.295
08.11.2023	44.625	21.190	9.200	21.720	0.349
13.11.2023	39.765	23.490	10.816	22.539	0.322
15.11.2023	52.973	23.555	11.160	23.870	0.472
20.11.2023	39.985	27.361	6.792	20.210	0.310
22.11.2023	49.195	23.045	10.181	23.193	0.440
27.11.2023	38.373	25.742	11.744	23.587	0.355
05.12.2023	32.852	25.110	11.086	25.896	0.298
09.12.2023	33.703	24.106	9.591	20.186	0.345
12.12.2023	36.017	22.320	11.696	18.751	0.238
16.12.2023	49.553	26.077	10.852	21.434	0.164
19.12.2023	47.739	21.967	12.056	19.984	0.300
23.12.2023	34.262	22.487	10.189	23.355	0.397
26.12.2023	37.428	23.136	10.896	24.621	0.420
30.12.2023	43.389	21.480	9.568	19.488	0.327
NAAQS Standards	100.00	60.00	80.00	80.00	2.00

NUMBER OF OBSERVATIONS	24	24	24	24	24
MEAN	71.05	37.21	7.17	23.07	0.57
GEOMETRIC MEAN	42.84	22.79	10.65	22.40	0.35
STD. GEO. DEVN. (24 HRS.)	5.66	1.83	1.52	2.79	0.08
98th PERCENTILES	87.38	54.22	8.46	34.39	0.82
MAXIMUM CONCENTRATION	52.97	27.36	15.66	27.75	0.51
MINIMUM CONCENTRATION	32.85	19.77	6.79	16.91	0.16

PERCENTILE VALUE :

	10	20	30	40	50	60	70	80	90	98
PM ₁₀	33.98	37.43	39.31	42.56	44.00	45.31	47.39	49.19	50.27	51.87
PM _{2.5}	20.41	21.19	21.90	22.32	22.66	23.05	23.52	24.11	25.91	26.77
SO ₂	9.57	9.81	10.17	10.52	10.84	10.89	11.16	11.68	11.96	14.02
NO ₂	19.64	20.18	20.51	21.46	22.46	23.34	23.95	25.15	26.40	16.28
CO	0.30	0.30	0.30	0.33	0.35	0.38	0.40	0.44	0.47	0.50

Note: All units are µg/m³ except CO is mentioned in ppm

---End of Report---

Verified By

[Signature]
Technical Manager

Authorized By

[Signature]
Quality Manager



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An approved Laboratory from Ministry of Environment, Forest and Climate Change & CPCB Govt. of India, New Delhi

TEST REPORT

FORMAT NO. ECO/QS/FORMAT/10

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil - Pahwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/AA/0589/10-12/2023
		Issue Date of Test Report	05.01.2024
Type of Sample	Ambient Air		
Sample Registration No.	589	Name of Location	-
Sampling Method	As per Reference Method	Sample Collected By	EMPL Representative
Date of Sample Collection	01.10.2023 to 30.12.2023	Time of Sample Collection	-
Date of Sample Received	-	Time of Sample Received	-
Start Date of Analysis	01.10.2023 to 30.12.2023	End Date of Analysis	05.01.2024
Weather Condition	Sunny	Sampling Duration	24 Hrs.
Environmental Condition	Temperature:	Sample ID Code	ECO/LAB/10-12/2023
	Humidity:		
	25 ± 2 °C		
	56 %		

Location: A ₁ (Within Project Site)								
Date	O ₃ (µg/m ³)	CO (mg/m ³)	NH ₃ (µg/m ³)	C ₆ H ₆ (µg/m ³)	As (ng/m ³)	Ni (ng/m ³)	BaP (ng/m ³)	Pb (µg/m ³)
06.10.2023	21.30	0.425	11.42	BDL	BDL	BDL	BDL	BDL
14.11.2023	15.82	0.574	16.35	BDL	BDL	BDL	BDL	BDL
11.12.2023	18.00	0.776	8.86	BDL	BDL	BDL	BDL	BDL
Standard	100.00	2.000	400.00	5.00	6.00	20.00	1.0	1.00
Detection Range	2-200	0.1-200	2-700	1-100	1-100	1-100	1-100	1-100
Location: A ₂ (Devli)								
Date	O ₃ (µg/m ³)	CO (mg/m ³)	NH ₃ (µg/m ³)	C ₆ H ₆ (µg/m ³)	As (ng/m ³)	Ni (ng/m ³)	BaP (ng/m ³)	Pb (µg/m ³)
06.10.2023	9.04	0.482	7.53	BDL	BDL	BDL	BDL	BDL
14.11.2023	13.55	0.392	11.02	BDL	BDL	BDL	BDL	BDL
11.12.2023	11.42	0.498	8.00	BDL	BDL	BDL	BDL	BDL
Standard	100.00	2.000	400.00	5.00	6.00	20.00	1.0	1.00
Detection Range	2-200	0.1-200	2-700	1-100	1-100	1-100	1-100	1-100
Location: A ₃ (Medhapur)								
Date	O ₃ (µg/m ³)	CO (mg/m ³)	NH ₃ (µg/m ³)	C ₆ H ₆ (µg/m ³)	As (ng/m ³)	Ni (ng/m ³)	BaP (ng/m ³)	Pb (µg/m ³)
12.10.2023	16.82	0.658	7.62	BDL	BDL	BDL	BDL	BDL
08.11.2023	17.42	0.449	6.15	BDL	BDL	BDL	BDL	BDL
23.12.2023	13.56	0.387	3.72	BDL	BDL	BDL	BDL	BDL
Standard	100.00	2.000	400.00	5.00	6.00	20.00	1.0	1.00
Detection Range	2-200	0.1-200	2-700	1-100	1-100	1-100	1-100	1-100
Location: A ₄ (Asoati)								
Date	O ₃ (µg/m ³)	CO (mg/m ³)	NH ₃ (µg/m ³)	C ₆ H ₆ (µg/m ³)	As (ng/m ³)	Ni (ng/m ³)	BaP (ng/m ³)	Pb (µg/m ³)
06.10.2023	13.62	0.428	7.56	BDL	BDL	BDL	BDL	BDL
14.11.2023	16.53	0.574	15.02	BDL	BDL	BDL	BDL	BDL
11.12.2023	8.21	1.204	10.56	BDL	BDL	BDL	BDL	BDL
Standard	100.00	2.000	400.00	5.00	6.00	20.00	1.0	1.00
Detection Range	2-200	0.1-200	2-700	1-100	1-100	1-100	1-100	1-100

Contd...



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Location: A ₅ (Pahladpur)								
Date	O ₃ (µg/m ³)	CO (mg/m ³)	NH ₃ (µg/m ³)	C ₆ H ₆ (µg/m ³)	As (ng/m ³)	Ni (ng/m ³)	BaP (ng/m ³)	Pb (µg/m ³)
12.10.2023	10.28	0.359	8.04	BDL	BDL	BDL	BDL	BDL
08.11.2023	12.65	0.582	10.48	BDL	BDL	BDL	BDL	BDL
23.12.2023	10.29	0.547	5.86	BDL	BDL	BDL	BDL	BDL
Standard	100.00	2.000	400.00	5.00	6.00	20.00	1.0	1.00
Detection Range	2-200	0.1-200	2-700	1-100	1-100	1-100	1-100	1-100
Location: A ₆ (Baghaura)								
Date	D ₅ (µg/m ³)	CO (mg/m ³)	NH ₃ (µg/m ³)	C ₆ H ₆ (µg/m ³)	As (ng/m ³)	Ni (ng/m ³)	BaP (ng/m ³)	Pb (µg/m ³)
06.10.2023	7.26	0.227	11.35	BDL	BDL	BDL	BDL	BDL
14.11.2023	13.56	0.515	8.47	BDL	BDL	BDL	BDL	BDL
11.12.2023	17.53	0.445	14.36	BDL	BDL	BDL	BDL	BDL
Standard	100.00	2.000	400.00	5.00	6.00	20.00	1.0	1.00
Detection Range	2-200	0.1-200	2-700	1-100	1-100	1-100	1-100	1-100
Location: A ₇ (Mandkaul)								
Date	O ₃ (µg/m ³)	CO (mg/m ³)	NH ₃ (µg/m ³)	C ₆ H ₆ (µg/m ³)	As (ng/m ³)	Ni (ng/m ³)	BaP (ng/m ³)	Pb (µg/m ³)
06.10.2023	10.32	0.341	13.56	BDL	BDL	BDL	BDL	BDL
14.11.2023	9.56	0.487	6.25	BDL	BDL	BDL	BDL	BDL
11.12.2023	12.45	0.368	4.77	BDL	BDL	BDL	BDL	BDL
Standard	100.00	2.000	400.00	5.00	6.00	20.00	1.0	1.00
Detection Range	2-200	0.1-200	2-700	1-100	1-100	1-100	1-100	1-100
Location: A ₈ (Badram)								
Date	O ₃ (µg/m ³)	CO (mg/m ³)	NH ₃ (µg/m ³)	C ₆ H ₆ (µg/m ³)	As (ng/m ³)	Ni (ng/m ³)	BaP (ng/m ³)	Pb (µg/m ³)
12.10.2023	16.52	0.336	7.04	BDL	BDL	BDL	BDL	BDL
08.11.2023	7.85	0.348	9.36	BDL	BDL	BDL	BDL	BDL
23.12.2023	12.56	0.400	10.78	BDL	BDL	BDL	BDL	BDL
Standard	100.00	2.000	400.00	5.00	6.00	20.00	1.0	1.00
Detection Range	2-200	0.1-200	2-700	1-100	1-100	1-100	1-100	1-100

----End of Report----

Verified By

[Signature]
Technical Manager

Authorized By

[Signature]
Quality Manager



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TEST REPORT

FORMAT NO. ECO/QS/FORMAT/13

FORMAT NO. ECO/ST/001/23

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil – Palwal, Dist- Faridabad, Haryana		Test Report No.	ECO/LAB/AA/589/10-12/2023
			Issue Date of Test Report	05.01.2024
Type of Sample	Noise Measurement			
Sample Registration No.	589		Name of Location	-
Sampling Method	IS:4412, Part-I & 2, 1991		Sample Collected By	EMPL Representative
Date of Sample Collection	01.10.2023 to 31.12.2023		Time of Sample Collection	-
Date of Sample Received	-		Time of Sample Received	-
Start Date of Analysis	01.10.2023 to 31.12.2023		End Date of Analysis	05.01.2024
Weather Condition	Sunny		Sampling Duration	24 Hrs.
Environmental Condition	Temperature:	25 ± 2 °C	Sample ID Code	ECO/LAB//589/10-12/2023
	Humidity:	56 %		

Noise Level Monitoring (Oct 2023-Dec 2023)

Location	Area Type	Day (0600-2200 hours)				Night (2200-0600 hours)			
		Norm	Max.	Min.	Mean*	Norm	Max.	Min.	Mean*
N1: Within Project Site	Industrial	75	79.5	58.2	70.4	70	65.5	48.6	59.6
N2: Devli	Residential	55	59.6	45.6	51.6	45	57.4	42.6	52.4
N3: Medhapur	Residential	55	59.6	38.5	52.8	45	52.3	37.7	44.6
N4: Asoati	Residential	55	62.0	42.6	53.9	45	47.8	39.5	43.5
N5: Pahladpur	Residential	55	62.5	37.8	54.2	45	51.0	35.6	44.2
N6: Baghaura	Residential	55	56.7	39.8	53.5	45	46.5	37.8	42.0
N7: Mandkaul	Residential	55	67.5	47.8	57.7	45	51.1	36.0	46.1
N8: Pirthala	Residential	55	60.0	36.8	54.5	45	45.7	49.8	43.1
All values in dB(A); * Logarithmic Averages									

Statement of Conformity: Noise Level is meeting requirements as per CPCB (Noise Pollution Regulation And Control Rules, 2000).

Standard limit of Noise CPCB

Area Code	Category of area	Limit in dB (A) Leq	
		(DAY)	(NIGHT)
A	Industrial Area	75	70

Note:

1. Day time is reckoned in between 6:00 AM and 10:00 PM.
2. Night time is reckoned in between 10:00 PM and 6:00 AM
3. Silence zone is defined as area up to 100m around such premises as hospitals, educational institutions & courts. The silence zones are to be declared by a competent authority.
4. Mixed categories of areas should be declared as one of the four above-mentioned categories by the competent authority and the corresponding standard shall apply.

---End of Report---

Verified By

Technical Manager

Authorized By

Quality Manager



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TEST REPORT

FORMAT NO. ECO/QS/FORMAT/09

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil -Palwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/GW/0280/2784/11/2023
		Issue Date of Test Report	30.11.2023
Type of Sample	Ground Water		
Sample Registration No.	0280	Name of Location	Tatapur Village (GW-1)
Sampling Method	APHA	Sample Collected By	ELPL Representative
Date of Sample Collection	07.11.2023 to 08.11.2023	Time of Sample Collection	-
Date of Sample Received	15.11.2023	Time of Sample Received	11.30 AM
Start Date of Analysis	15.11.2023	End Date of Analysis	30.11.2023
Laboratory Environmental Condition	Temperature: 27 ± 2°C	Sample Quantity	As per Requirement
	Humidity: 55 %	Sample ID Code	ECO/LAB/2784/11/2023

Sl. No.	Tests	Unit	Protocol	Detection Range	Result	Indian Standards as per IS 10500:2012 (Reaff:2018)	
						Desirable	Permissible
1.	Colour	Hazen	APHA, 24th Ed : 2023, 2120 B	5-100	<5.0	5	15
2.	Taste	-	APHA, 24th Ed : 2023, 2160 A+B	Qualitative	Agreeable	Agreeable	Agreeable
3.	Odour	-	APHA, 24th Ed : 2023, 2150 B	Qualitative	Agreeable	Agreeable	Agreeable
4.	Turbidity	NTU	APHA, 24th Ed : 2023, 2130 A+B	1-100	1.24	1	5
5.	Electrical Conductivity	Us/cm	APHA, 24th Ed : 2023, 2510 A + B	1-2000	1166.0	-	-
6.	pH	-	APHA, 24th Ed : 2023, 4500H+A+B	2-12	7.09	6.5-8.5	No Relax
7.	Total Dissolved Solids as TDS	mg/l	APHA, 24th Ed : 2023, 2540-C	5-5000	711.0	500	2000
8.	Alkalinity as CaCO ₃	mg/l	APHA, 24th Ed : 2023, 2320 A+B	5-1500	248.0	200	600
9.	Total Hardness as CaCO ₃	mg/l	APHA, 24th Ed : 2023, 2340 A+C	5-1500	264.0	200	600
10.	Calcium as Ca	mg/l	APHA, 24th Ed : 2023, 3500 Ca A+B	5-1000	75.2	75	200
11.	Magnesium as Mg	mg/l	APHA, 24th Ed : 2023, 3500 Mg A+B	5-1000	18.47	30	100
12.	Sodium as Na	mg/l	APHA, 24th Ed : 2023, 3500 Na A+B	1-100	45.4	-	-
13.	Potassium as K	mg/l	APHA, 24th Ed : 2023, 3500 K, A-B	1-100	4.01	-	-
14.	Chloride as Cl	mg/l	APHA, 24th Ed : 2023, 4500 Cl A+B	5-1000	46.0	250	1000
15.	Sulphate as SO ₄	mg/l	APHA, 24th Ed : 2023, 4500-SO ₄ ²⁻ E	1-250	38.6	200	400
16.	Nitrate Nitrogen as NO ₃	mg/l	APHA, 24th Ed : 2023, 4500-NO ₃ ²⁻ E	5-100	15.3	45	No Relax
17.	Fluoride as F	mg/l	APHA, 24th Ed : 2023, 4500-C	0.05-10	0.54	1	1.5
18.	Iron as Fe	mg/l	APHA, 24th Ed : 2023, 3500 Fe B	0.02-50	0.29	1.0	No Relax
19.	Copper as Cu	mg/l	APHA, 24th Ed : 2023, 3111 A+B	0.05-5	<0.05	0.05	1.5
20.	Manganese as Mn	mg/l	APHA, 24th Ed : 2023, 3111 A+B	0.1-5	<0.1	0.1	0.3
21.	Zinc as Zn	mg/l	APHA, 24th Ed : 2023, 3111 A+B	0.02-50	0.16	5	15
22.	Arsenic as As	mg/l	APHA, 24th Ed : 2023, 3111 A+B	0.005-2	<0.005	0.01	No Relax
23.	Total Chromium as T Cr	mg/l	APHA, 24th Ed : 2023, 3111 A+B	0.01-50	<0.01	0.05	No Relax
24.	Phenolic Compound as C ₆ H ₅ OH	mg/l	APHA, 24th Ed : 2023, 5530 A+C	0.001-10	<0.001	0.001	0.005
25.	Free Residual Chlorine as FRC	mg/l	APHA, 24th Ed : 2023, 4500-Cl B	0.05-10	<0.05	0.2	1
26.	Boron as B	mg/l	APHA, 24th Ed : 2023, 4500 A+C	0.5-10	<0.5	0.5	10
27.	Anionic Detergent as MBAS	mg/l	APHA, 24th Ed : 2023, 5540 A+C	0.02-5	<0.02	0.2	10
28.	Mercury as Hg	mg/l	APHA, 24th Ed : 2023, 3112 A+B	0.001-2	<0.001	0.001	No Relax
29.	Cadmium as Cd	mg/l	APHA, 24th Ed : 2023, 3111 A+B	0.001-5	<0.001	0.003	No Relax
30.	Lead as Pb	mg/l	APHA, 24th Ed : 2023, 3111 A+B	0.005-5	<0.005	0.01	No Relax
31.	Aluminum as Al	mg/l	APHA, 24th Ed : 2023, 3111 A+B	0.01-5	<0.01	0.03	0.2
32.	Selenium as Se	mg/l	APHA, 24th Ed : 2023, 3111 A+B	0.005-5	<0.005	0.01	No Relax
33.	Mineral Oil	mg/l	IS-3025 Part-39	0.2-10	<0.2	0.5	No Relax
34.	Cyanide as CN	mg/l	APHA, 24th Ed : 2023, 4500-CN	0.04-5	<0.04	0.05	No Relax
35.	Total coliform	Cfu/ml	IS15185 2016, RA 2021	<10	Absent	Absent	Absent
36.	E.coli	Cfu/ml	IS15185 2016, RA 2021	<10	Absent	Absent	Absent

Statement of Conformity: The above tested parameters confirm as per IS 10500:2012(Reaff:2018) limits for above tested parameters.

Note-

1. Test results relate to the items sampled & tested
2. Test report shall not be reproduced except in full without approval of the laboratory.
3. The test samples will be disposed of after one Month from the date of issue of test report

---End of Report---

Verified By
[Signature]
Technical Manager

Authorized By
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Quality Manager



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TEST REPORT

FORMAT NO. ECO/QS/FORMAT/09

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil -Palwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/GW/0280/2785/11/2023
		Issue Date of Test Report	30.11.2023
Type of Sample	Ground Water	Name of Location	Devli Village (GW-2)
Sample Registration No.	0280	Sample Collected By	ELPL Representative
Sampling Method	APHA	Time of Sample Collection	-
Date of Sample Collection	07.11.2023 to 08.11.2023	Time of Sample Received	11.30 AM
Date of Sample Received	15.11.2023	End Date of Analysis	30.11.2023
Start Date of Analysis	15.11.2023	Sample Quantity	As per Requirement
Laboratory Environmental Condition	Temperature: 27 ± 2°C	Sample ID Code	ECO/LAB/2785/11/2023
	Humidity: 55 %		

Sl. No.	Tests	Unit	Protocol	Detection Range	Result	Indian Standards as per IS 10500:2012 (Reaff:2018)	
						Desirable	Permissible
1	Colour	Hazen	APHA, 24th Ed. 2023, 2120 B	5-100	<5.0	5	15
2	Taste	-	APHA, 24th Ed. 2023, 2160 A+B	Qualitative	Agreeable	Agreeable	Agreeable
3	Odour	-	APHA, 24th Ed. 2023, 2150 B	Qualitative	Agreeable	Agreeable	Agreeable
4	Turbidity	NTU	APHA, 24th Ed. 2023, 2130 A+B	1-100	1.31	1	5
5	Electrical Conductivity	Us/cm	APHA, 24th Ed. 2023, 2510 A+B	1-2000	1228.0	-	-
6	pH	-	APHA, 24th Ed. 2023, 4500H+A+B	2-12	7.13	6.5-8.5	No Relax
7	Total Dissolved Solids as TDS	mg/l	APHA, 24th Ed. 2023, 2540 C	5-5000	749.0	500	2000
8	Alkalinity as CaCO ₃	mg/l	APHA, 24th Ed. 2023, 2320 A+B	5-1500	260.0	200	600
9	Total Hardness as CaCO ₃	mg/l	APHA, 24th Ed. 2023, 2340 A+C	5-1500	276.0	200	600
10	Calcium as Ca	mg/l	APHA, 24th Ed. 2023, 3500 Ca A+B	5-1000	72.0	75	200
11	Magnesium as Mg	mg/l	APHA, 24th Ed. 2023, 3500 Mg A+B	5-1000	23.33	30	100
12	Sodium as Na	mg/l	APHA, 24th Ed. 2023, 3500 Na A+B	1-100	47.6	-	-
13	Potassium as K	mg/l	APHA, 24th Ed. 2023, 3500 K, A+B	1-100	2.65	-	-
14	Chloride as Cl	mg/l	APHA, 24th Ed. 2023, 4500 Cl A+B	5-1000	50.0	250	1000
15	Sulphate as SO ₄	mg/l	APHA, 24th Ed. 2023, 4500-SO ₄ E	1-250	43.8	200	400
16	Nitrate Nitrogen as NO ₃	mg/l	APHA, 24th Ed. 2023, 4500-NO ₃ E	5-100	11.23	45	No Relax
17	Fluoride as F	mg/l	APHA, 24th Ed. 2023, 4500-C	0.05-10	0.41	1	1.5
18	Iron as Fe	mg/l	APHA, 24th Ed. 2023, 3500 Fe B	0.02-50	0.13	1.0	No Relax
19	Copper as Cu	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.05-5	<0.05	0.05	1.5
20	Manganese as Mn	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.1-5	<0.1	0.1	0.3
21	Zinc as Zn	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.02-50	0.07	5	15
22	Arsenic as As	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.005-2	<0.005	0.01	No Relax
23	Total Chromium as T. Cr	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.01-50	<0.01	0.05	No Relax
24	Phenolic Compound as C ₆ H ₅ OH	mg/l	APHA, 24th Ed. 2023, 5530 A+C	0.001-10	<0.001	0.001	0.005
25	Free Residual Chlorine as FRC	mg/l	APHA, 24th Ed. 2023, 4500-ClB	0.05-10	<0.05	0.2	1
26	Boron as B	mg/l	APHA, 24th Ed. 2023, 4500 A+C	0.5-10	<0.5	0.5	1.0
27	Anionic Detergent as MBAS	mg/l	APHA, 24th Ed. 2023, 5540 A+C	0.02-5	<0.02	0.2	1.0
28	Mercury as Hg	mg/l	APHA, 24th Ed. 2023, 3112 A+B	0.001-2	<0.001	0.001	No Relax
29	Cadmium as Cd	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.001-5	<0.001	0.003	No Relax
30	Lead as Pb	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.005-5	<0.005	0.01	No Relax
31	Aluminum as Al	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.01-5	<0.01	0.03	0.2
32	Selenium as Se	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.005-5	<0.005	0.01	No Relax
33	Mineral Oil	mg/l	IS-3025 Part-39	0.2-10	<0.2	0.5	No Relax
34	Cyanide as CN	mg/l	APHA, 24th Ed. 2023, 4500-CN	0.04-5	<0.04	0.05	No Relax
35	Total coliform	Cfu/ml	IS15185:2016,RA:2021	<10	Absent	Absent	Absent
36	E.coli	Cfu/ml	IS15185:2016,RA:2021	<10	Absent	Absent	Absent

Statement of Conformity: The above tested parameters confirm as per IS 10500:2012(Reaff:2018) limits for above tested parameters.

Note-

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3. The test samples will be disposed of after one Month from the date of issue of test report

---End of Report---

Verified By

Technical Manager

Authorized By

Quality Manager



ECOMEN MINING PRIVATE LIMITED
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E-mail: contactus@ecomen.in, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE5076H1Z1

An approved Laboratory from Ministry of Environment, Forest and Climate Change & CPCB Govt. of India, New Delhi

TEST REPORT

FORMAT NO. ECO/QS/FORMAT/09

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil -Palwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/GW/0280/2786/11/2023
		Issue Date of Test Report	30.11.2023
Type of Sample	Ground Water		
Sample Registration No.	0280	Name of Location	Medhapur village (GW-3)
Sampling Method	APHA	Sample Collected By	ELPL Representative
Date of Sample Collection	07.11.2023 to 08.11.2023	Time of Sample Collection	-
Date of Sample Received	15.11.2023	Time of Sample Received	11.30 AM
Start Date of Analysis	15.11.2023	End Date of Analysis	30.11.2023
Laboratory Environmental Condition	Temperature: 27 ± 2°C	Sample Quantity	As per Requirement
	Humidity: 55 %	Sample ID Code	ECO/LAB/2786/11/2023

Sl. No.	Tests	Unit	Protocol	Detection Range	Result	INDIAN STANDARDS As Per IS 10500:2012 (Reaff:2018)	
						Desirable	Permissible
1.	Colour	Hazen	APHA, 24th Ed. : 2023, 2120 B	5-100	<5.0	5	15
2.	Taste	-	APHA, 24th Ed. : 2023, 2160 A+B	Qualitative	Agreeable	Agreeable	Agreeable
3.	Odour	-	APHA, 24th Ed. : 2023, 2150 B	Qualitative	Agreeable	Agreeable	Agreeable
4.	Turbidity	NTU	APHA, 24th Ed. : 2023, 2130-A+B	1-100	1.39	1	5
5.	Electrical Conductivity	Us/cm	APHA, 24th Ed. : 2023, 2510-A + B	1-2000	1294.0	-	-
6.	pH	-	APHA, 24th Ed. : 2023, 4500H1+A+B	2 - 12	7.22	6.5-8.5	No Relax
7.	Total Dissolved Solids as TDS	mg/l	APHA, 24th Ed. : 2023, 2540-C	5 - 3000	789.0	500	2000
8.	Alkalinity as CaCO ₃	mg/l	APHA, 24th Ed. : 2023, 2320 A+B	5 - 1500	272.0	200	600
9.	Total Hardness as CaCO ₃	mg/l	APHA, 24th Ed. : 2023, 2340 A+C	5 - 1500	280.0	200	600
10.	Calcium as Ca	mg/l	APHA, 24th Ed. : 2023, 3500 Ca A+B	5 - 1000	76.8	75	200
11.	Magnesium as Mg	mg/l	APHA, 24th Ed. : 2023, 3500 Mg A+B	5 - 1000	21.38	30	100
12.	Sodium as Na	mg/l	APHA, 24th Ed. : 2023, 3500 Na A+B	1-100	56.4	-	-
13.	Potassium as K	mg/l	APHA, 24th Ed. : 2023, 3500 K A+B	1-100	2.19	-	-
14.	Chloride as Cl	mg/l	APHA, 24th Ed. : 2023, 4500 Cl A+B	5 - 1000	48.0	250	1000
15.	Sulphate as SO ₄	mg/l	APHA, 24th Ed. : 2023, 4500-SO ₄ ²⁻ E	1-250	56.5	200	400
16.	Nitrate Nitrogen as NO ₃	mg/l	APHA, 24th Ed. : 2023, 4500-NO ₃ ³⁻ E	5 - 100	9.22	45	No Relax
17.	Fluoride as F	mg/l	APHA, 24th Ed. : 2023, 4500-C	0.05-10	0.43	1	1.5
18.	Iron as Fe	mg/l	APHA, 24th Ed. : 2023, 3500 Fe B	0.02-50	0.22	1.0	No Relax
19.	Copper as Cu	mg/l	APHA, 24th Ed. : 2023, 3111 A+B	0.05-5	<0.05	0.05	1.5
20.	Manganese as Mn	mg/l	APHA, 24th Ed. : 2023, 3111 A+B	0.1-5	<0.1	0.1	0.3
21.	Zinc as Zn	mg/l	APHA, 24th Ed. : 2023, 3111 A+B	0.02-50	0.14	5	15
22.	Arsenic as As	mg/l	APHA, 24th Ed. : 2023, 3111 A+B	0.005-2	<0.005	0.01	No Relax
23.	Total Chromium as T Cr	mg/l	APHA, 24th Ed. : 2023, 3111 A+B	0.01-50	<0.01	0.05	No Relax
24.	Phenolic Compound as C ₆ H ₅ OH	mg/l	APHA, 24th Ed. : 2023, 5530 A+C	0.001-10	<0.001	0.001	0.005
25.	Free Residual Chlorine as FRC	mg/l	APHA, 24th Ed. : 2023, 4500-Cl B	0.05-10	<0.05	0.2	1
26.	Boron as B	mg/l	APHA, 24th Ed. : 2023, 4500 A+C	0.5-10	<0.5	0.5	1.0
27.	Anionic Detergent as MBAS	mg/l	APHA, 24th Ed. : 2023, 5540 A+C	0.02-5	<0.02	0.2	1.0
28.	Mercury as Hg	mg/l	APHA, 24th Ed. : 2023, 3112 A+B	0.001-2	<0.001	0.001	No Relax
29.	Cadmium as Cd	mg/l	APHA, 24th Ed. : 2023, 3111 A+B	0.001-5	<0.001	0.003	No Relax
30.	Lead as Pb	mg/l	APHA, 24th Ed. : 2023, 3111 A+B	0.005-5	<0.005	0.01	No Relax
31.	Aluminum as Al	mg/l	APHA, 24th Ed. : 2023, 3111 A+B	0.01-5	<0.01	0.03	0.2
32.	Selenium as Se	mg/l	APHA, 24th Ed. : 2023, 3111 A+B	0.005-5	<0.005	0.01	No Relax
33.	Mineral Oil	mg/l	IS-3025 Part-39	0.2-10	<0.2	0.5	No Relax
34.	Cyanide as CN	mg/l	APHA, 24th Ed. : 2023, 4500-CN	0.04-5	<0.04	0.05	No Relax
35.	Total coliform	CFU/ml	IS15185 2016,RA:2021	<10	Absent	Absent	Absent
36.	E.coli	CFU/ml	IS15185 2016,RA:2021	<10	Absent	Absent	Absent

Statement of Conformity: The above tested parameters confirm as per IS 10500:2012(Reaff:2018) limits for above tested parameters.

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---- End of Report ----

Verified By

Technical Manager

Authorized By

Quality Manager



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An approved Laboratory from Ministry of Environment, Forest and Climate Change & CPCB Govt. of India, New Delhi

TEST REPORT

FORMAT NO. ECO/QS/FORMAT/09

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil -Palwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/GW/0280/2787/11/2023
		Issue Date of Test Report	30.11.2023
Type of Sample	Ground Water		
Sample Registration No.	0280	Name of Location	Asoati Village (GW-4)
Sampling Method	APIA	Sample Collected By	ELPL Representative
Date of Sample Collection	07.11.2023 to 08.11.2023	Time of Sample Collection	-
Date of Sample Received	15.11.2023	Time of Sample Received	11.30 AM
Start Date of Analysis	15.11.2023	End Date of Analysis	30.11.2023
Laboratory Environmental Condition	Temperature: 27 ± 2°C	Sample Quantity	As per Requirement
	Humidity: 55 %	Sample ID Code	ECO/LAB/2787/11/2023

Sl. No.	Tests	Unit	Protocol	Detection Range	Result	Indian Standards as per IS 10500:2012 (Reaff:2018)	
						Desirable	Permissible
1.	Colour	Plazen	APHA, 24th Ed. : 2023, 2120 B	5-100	<5.0	5	15
2.	Taste	-	APHA, 24th Ed. : 2023, 2160 A+B	Qualitative	Agreeable	Agreeable	Agreeable
3.	Odour	-	APHA, 24th Ed. : 2023, 2150 B	Qualitative	Agreeable	Agreeable	Agreeable
4.	Turbidity	NTU	APHA, 24th Ed. : 2023, 2130-A+B	1-100	1.21	1	5
5.	Electrical Conductivity	Uscm	APHA, 24th Ed. : 2023, 2510-A + B	1-2000	1106.0	-	-
6.	pH	-	APIA, 24th Ed. : 2023, 4500H+A+B	2-12	7.34	6.5-8.5	No Relax
7.	Total Dissolved Solids as TDS	mg/l	APHA, 24th Ed. : 2023, 2540-C	5-5000	675.0	500	2000
8.	Alkalinity as CaCO ₃	mg/l	APIA, 24th Ed. : 2023, 2320 A + B	5-1500	240.0	200	600
9.	Total Hardness as CaCO ₃	mg/l	APIA, 24th Ed. : 2023, 2340 A+C	5-1500	264.0	200	600
10.	Calcium as Ca	mg/l	APHA, 24th Ed. : 2023, 3500 Ca A+B	5-1000	67.2	75	200
11.	Magnesium as Mg	mg/l	APHA, 24th Ed. : 2023, 3500 Mg A+B	5-1000	23.33	30	100
12.	Sodium as Na	mg/l	APIA, 24th Ed. : 2023, 3500 Na A+B	1-100	36.7	-	-
13.	Potassium as K	mg/l	APIA, 24th Ed. : 2023, 3500 K, A+B	1-100	1.55	-	-
14.	Chloride as Cl	mg/l	APIA, 24th Ed. : 2023, 4500 Cl A+B	5-1000	42.0	250	1000
15.	Sulphate as SO ₄	mg/l	APIA, 24th Ed. : 2023, 4500-SO ₄ ²⁻ E	1-250	36.2	200	400
16.	Nitrate Nitrogen as NO ₃	mg/l	APHA, 24th Ed. : 2023, 4500-NO ₃ ²⁻ E	5-100	12.2	45	No Relax
17.	Fluoride as F	mg/l	APHA, 24th Ed. : 2023, 4500-C	0.05-10	0.51	1	1.5
18.	Iron as Fe	mg/l	APHA, 24th Ed. : 2023, 3500 Fe B	0.02-50	0.23	1.0	No Relax
19.	Copper as Cu	mg/l	APIA, 24th Ed. : 2023, 3111 A+B	0.05-5	<0.05	0.05	1.5
20.	Manganese as Mn	mg/l	APIA, 24th Ed. : 2023, 3111 A+B	0.1-5	<0.1	0.1	0.3
21.	Zinc as Zn	mg/l	APIA, 24th Ed. : 2023, 3111 A+B	0.02-50	0.09	5	15
22.	Arsenic as As	mg/l	APIA, 24th Ed. : 2023, 3111 A-R	0.005-2	<0.005	0.01	No Relax
23.	Total Chromium as T. Cr.	mg/l	APIA, 24th Ed. : 2023, 3111 A+B	0.01-50	<0.01	0.05	No Relax
24.	Phenolic Compound as C ₆ H ₅ O11	mg/l	APIA, 24th Ed. : 2023, 5530 A+C	0.001-10	<0.001	0.001	0.005
25.	Free Residual Chlorine as FRC	mg/l	APHA, 24th Ed. : 2023, 4500-Cl B	0.05-10	<0.05	0.2	1
26.	Boron as B	mg/l	APHA, 24th Ed. : 2023, 4500 A+C	0.5-10	<0.5	0.5	10
27.	Anionic Detergent as MBAS	mg/l	APHA, 24th Ed. : 2023, 5540 A+C	0.02-5	<0.02	0.2	10
28.	Mercury as Hg	mg/l	APHA, 24th Ed. : 2023, 3112 A+B	0.001-2	<0.001	0.001	No Relax
29.	Cadmium as Cd	mg/l	APHA, 24th Ed. : 2023, 3111 A+B	0.001-5	<0.001	0.003	No Relax
30.	Lead as Pb	mg/l	APHA, 24th Ed. : 2023, 3111 A+B	0.005-5	<0.005	0.01	No Relax
31.	Aluminum as Al	mg/l	APHA, 24th Ed. : 2023, 3111 A+B	0.01-5	<0.01	0.03	0.5
32.	Selenium as Se	mg/l	APHA, 24th Ed. : 2023, 3111 A+B	0.005-5	<0.005	0.01	No Relax
33.	Mineral Oil	mg/l	IS-3025 Part-39	0.2-10	<0.2	0.5	No Relax
34.	Cyanide as CN	mg/l	APHA, 24th Ed. : 2023, 4500-CN	0.04-5	<0.04	0.05	No Relax
35.	Total coliform	Cfu/ml	IS15185:2016,RA 2021	<10	Absent	Absent	Absent
36.	E.coli	Cfu/ml	IS15185:2016,RA 2021	<10	Absent	Absent	Absent

Statement of Conformity: The above tested parameters confirm as per IS 10500:2012(Reaff:2018) limits for above tested parameters

Note:-

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---End of Report---

Verified By

Technical Manager

Authorized By
Quality Manager



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TEST REPORT

FORMAT NO. ECO/QS/FORMAT/09

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil-Palwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/GW/0280/2788/11/2023
		Issue Date of Test Report	30.11.2023
Type of Sample	Ground Water		
Sample Registration No.	0280	Name of Location	Pahladpur Village (GW-5)
Sampling Method	APHA	Sample Collected By	ELPL Representative
Date of Sample Collection	07.11.2023 to 08.11.2023	Time of Sample Collection	-
Date of Sample Received	15.11.2023	Time of Sample Received	11.30 AM
Start Date of Analysis	15.11.2023	End Date of Analysis	30.11.2023
Laboratory Environmental Condition	Temperature: 27 ± 2°C	Sample Quantity	As per Requirement
	Humidity: 55 %	Sample ID Code	ECO/LAB/2788/11/2023

Sl. No.	Tests	Unit	Protocol	Detection Range	Result	Indian Standards as per IS 10500:2012 (Reaff:2018)	
						Desirable	Permissible
1.	Colour	Hazen	APHA, 24th Ed. 2023, 2120 B	5-100	<5.0	5	15
2.	Taste	-	APHA, 24th Ed. 2023, 2160 A+B	Qualitative	Agreeable	Agreeable	Agreeable
3.	Odour	-	APHA, 24th Ed. 2023, 2150 B	Qualitative	Agreeable	Agreeable	Agreeable
4.	Turbidity	NTU	APHA, 24th Ed. 2023, 2130 A+B	1-100	1.38	1	5
5.	Electrical Conductivity	Us/cm	APHA, 24th Ed. 2023, 2510 A+B	1-2000	922.0	-	-
6.	pH	-	APHA, 24th Ed. 2023, 4500H+A+B	2-12	7.5	6.5-8.5	No Relax
7.	Total Dissolved Solids as TDS	mg/l	APHA, 24th Ed. 2023, 2540-C	5-5000	562.0	500	2000
8.	Alkalinity as CaCO ₃	mg/l	APHA, 24th Ed. 2023, 2320 A+B	5-1500	208.0	200	600
9.	Total Hardness as CaCO ₃	mg/l	APHA, 24th Ed. 2023, 2340 A+C	5-1500	212.0	200	600
10.	Calcium as Ca	mg/l	APHA, 24th Ed. 2023, 3500 Ca A+B	5-1000	64.0	75	200
11.	Magnesium as Mg	mg/l	APHA, 24th Ed. 2023, 3500 Mg A+B	5-1000	12.64	30	100
12.	Sodium as Na	mg/l	APHA, 24th Ed. 2023, 3500 Na A+B	1-100	34.2	-	-
13.	Potassium as K	mg/l	APHA, 24th Ed. 2023, 3500 K, A+B	1-100	2.01	-	-
14.	Chloride as Cl	mg/l	APHA, 24th Ed. 2023, 4500 Cl A+B	5-1000	34.0	250	1000
15.	Sulphate as SO ₄	mg/l	APHA, 24th Ed. 2023, 4500-SO ₄ E	1-250	26.2	200	400
16.	Nitrate Nitrogen as NO ₃	mg/l	APHA, 24th Ed. 2023, 4500-NO ₃ E	5-100	7.12	45	No Relax
17.	Fluoride as F	mg/l	APHA, 24th Ed. 2023, 4500-C	0.05-10	0.42	1	1.5
18.	Iron as Fe	mg/l	APHA, 24th Ed. 2023, 3500 Fe B	0.02-50	0.17	1.0	No Relax
19.	Copper as Cu	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.05-5	<0.05	0.05	1.5
20.	Manganese as Mn	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.1-5	<0.1	0.1	0.3
21.	Zinc as Zn	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.02-50	0.12	5	15
22.	Arsenic as As	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.005-2	<0.005	0.01	No Relax
23.	Total Chromium as T. Cr.	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.01-50	<0.01	0.05	No Relax
24.	Phenolic Compound as C ₆ H ₅ OH	mg/l	APHA, 24th Ed. 2023, 5530 A+C	0.001-10	<0.001	0.001	0.005
25.	Free Residual Chlorine as FRC	mg/l	APHA, 24th Ed. 2023, 4500-ClB	0.05-10	<0.05	0.2	1
26.	Boron as B	mg/l	APHA, 24th Ed. 2023, 4500 A+C	0.5-10	<0.5	0.5	10
27.	Anionic Detergent as MBAS	mg/l	APHA, 24th Ed. 2023, 5540 A+C	0.02-5	<0.02	0.2	10
28.	Mercury as Hg	mg/l	APHA, 24th Ed. 2023, 3112 A-B	0.001-2	<0.001	0.001	No Relax
29.	Cadmium as Cd	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.001-5	<0.001	0.003	No Relax
30.	Lead as Pb	mg/l	APHA, 24th Ed. 2023, 3111 A-B	0.005-5	<0.005	0.01	No Relax
31.	Aluminum as Al	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.01-5	<0.01	0.03	0.2
32.	Selenium as Se	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.005-5	<0.005	0.01	No Relax
33.	Mineral Oil	mg/l	IS-3025 Part-39	0.2-10	<0.2	0.5	No Relax
34.	Cyanide as CN	mg/l	APHA, 24th Ed. 2023, 4500-CN	0.04-5	<0.04	0.05	No Relax
35.	Total coliform	Cfu/ml	IS 15185:2016, RA 2021	<10	Absent	Absent	Absent
36.	E.coli	Cfu/ml	IS 15185:2016, RA 2021	<10	Absent	Absent	Absent

Statement of Conformity: The above tested parameters confirm as per IS 10500:2012(Reaff:2018) limits for above tested parameters

Note-

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---End of Report---

Verified By

[Signature]
Technical Manager

Authorized By

[Signature]
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TEST REPORT

FORMAT NO. ECO/QS/FORMAT/09

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil-Palwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/GW/0280/2789/11/2023
		Issue Date of Test Report	30.11.2023
Type of Sample	Ground Water	Name of Location	Baghlaula Village (GW-6)
Sample Registration No.	0280	Sample Collected By	ELPL Representative
Sampling Method	APHA	Time of Sample Collection	-
Date of Sample Collection	07.11.2023 to 08.11.2023	Time of Sample Received	11.30 AM
Date of Sample Received	15.11.2023	End Date of Analysis	30.11.2023
Start Date of Analysis	15.11.2023	Sample Quantity	As per Requirement
Laboratory Environmental Condition	Temperature: 27 ± 2°C	Sample ID Code	ECO/LAB/2789/11/2023
	Humidity: 55 %		

Sl. No.	Tests	Unit	Protocol	Detection Range	Result	Indian Standards as per IS 10500:2012 (Reaff:2018)	
						Desirable	Permissible
1.	Colour	Hazen	APHA, 24th Ed.: 2023, 2120 B	5-100	<5.0	5	15
2.	Taste	-	APHA, 24th Ed.: 2023, 2160 A+B	Qualitative	Agreeable	Agreeable	Agreeable
3.	Odour	-	APHA, 24th Ed.: 2023, 2150 B	Qualitative	Agreeable	Agreeable	Agreeable
4.	Turbidity	NTU	APHA, 24th Ed.: 2023, 2130 A+B	1-100	1.34	1	5
5.	Electrical Conductivity	Us/cm	APHA, 24th Ed.: 2023, 2510 A+B	1-2000	880.0	-	-
6.	pH	-	APHA, 24th Ed.: 2023, 4500H-A+B	2-12	7.34	6.5-8.5	No Relax
7.	Total Dissolved Solids as TDS	mg/l	APHA, 24th Ed.: 2023, 2540-C	5-5000	537.0	500	2000
8.	Alkalinity as CaCO ₃	mg/l	APHA, 24th Ed.: 2023, 2320 A+B	5-1500	204.0	200	600
9.	Total Hardness as CaCO ₃	mg/l	APHA, 24th Ed.: 2023, 2340 A+C	5-1500	216.0	200	600
10.	Calcium as Ca	mg/l	APHA, 24th Ed.: 2023, 3500 Ca A+B	5-1000	60.8	75	200
11.	Magnesium as Mg	mg/l	APHA, 24th Ed.: 2023, 3500 Mg A+B	5-1000	15.55	30	100
12.	Sodium as Na	mg/l	APHA, 24th Ed.: 2023, 3500 Na A+B	1-100	26.2	-	-
13.	Potassium as K	mg/l	APHA, 24th Ed.: 2023, 3500 K, A+B	1-100	1.91	-	-
14.	Chloride as Cl	mg/l	APHA, 24th Ed.: 2023, 4500 Cl A+B	5-1000	28.0	250	1000
15.	Sulphate as SO ₄	mg/l	APHA, 24th Ed.: 2023, 4500-SO ₄ E	1-250	24.5	200	400
16.	Nitrate Nitrogen as NO ₃	mg/l	APHA, 24th Ed.: 2023, 4500-NO ₃ E	5-100	8.22	45	No Relax
17.	Fluoride as F	mg/l	APHA, 24th Ed.: 2023, 4500-C	0.05-10	0.48	1	1.5
18.	Iron as Fe	mg/l	APHA, 24th Ed.: 2023, 3500 Fe B	0.02-50	0.18	1.0	No Relax
19.	Copper as Cu	mg/l	APHA, 24th Ed.: 2023, 3111 A+B	0.05-5	<0.05	0.05	1.5
20.	Manganese as Mn	mg/l	APHA, 24th Ed.: 2023, 3111 A+B	0.1-5	<0.1	0.1	0.3
21.	Zinc as Zn	mg/l	APHA, 24th Ed.: 2023, 3111 A+B	0.02-50	0.11	5	15
22.	Arsenic as As	mg/l	APHA, 24th Ed.: 2023, 3111 A+B	0.005-2	<0.005	0.01	No Relax
23.	Total Chromium as T. Cr.	mg/l	APHA, 24th Ed.: 2023, 3111 A+B	0.01-50	<0.01	0.05	No Relax
24.	Phenolic Compound as C ₆ H ₅ OH	mg/l	APHA, 24th Ed.: 2023, 5530 A+C	0.001-10	<0.001	0.001	0.005
25.	Free Residual Chlorine as FRC	mg/l	APHA, 24th Ed.: 2023, 4500-Cl B	0.05-10	<0.05	0.2	1
26.	Boron as B	mg/l	APHA, 24th Ed.: 2023, 4500 A+C	0.5-10	<0.5	0.5	1.0
27.	Anionic Detergent as MBAS	mg/l	APHA, 24th Ed.: 2023, 5540 A+C	0.02-5	<0.02	0.2	1.0
28.	Mercury as Hg	mg/l	APHA, 24th Ed.: 2023, 3112 A+B	0.001-2	<0.001	0.001	No Relax
29.	Cadmium as Cd	mg/l	APHA, 24th Ed.: 2023, 3111 A+B	0.001-5	<0.001	0.003	No Relax
30.	Lead as Pb	mg/l	APHA, 24th Ed.: 2023, 3111 A+B	0.005-5	<0.005	0.01	No Relax
31.	Aluminum as Al	mg/l	APHA, 24th Ed.: 2023, 3111 A+B	0.01-5	<0.01	0.03	0.2
32.	Selenium as Se	mg/l	APHA, 24th Ed.: 2023, 3111 A+B	0.005-5	<0.005	0.01	No Relax
33.	Mineral Oil	mg/l	IS-3025 Part-39	0.2-10	<0.2	0.5	No Relax
34.	Cyanide as CN	mg/l	APHA, 24th Ed.: 2023, 4500-CN	0.04-5	<0.04	0.05	No Relax
35.	Total coliform	Cfu/ml	IS 15185:2016/RA:2021	<1.0	Absent	Absent	Absent
36.	E.coli	Cfu/ml	IS 15185:2016/RA:2021	<1.0	Absent	Absent	Absent

Statement of Conformity: The above tested parameters confirm as per IS 10500:2012(Reaff:2018) limits for above tested parameters.

Note-

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---End of Report---

Verified By

Technical Manager

Authorized By

Quality Manager



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An approved Laboratory from Ministry of Environment, Forest and Climate Change & CPCB Govt. of India, New Delhi

TEST REPORT

FORMAT NO. ECO/QS/FORMAT/09

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Talapur, Ladpur, Tehsil -Palwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/GW/0280/2790/11/2023
		Issue Date of Test Report	30.11.2023
Type of Sample	Ground Water		
Sample Registration No.	0280	Name of Location	Mandkaul Village (GW-7)
Sampling Method	APHA	Sample Collected By	ELPL Representative
Date of Sample Collection	07.11.2023 to 08.11.2023	Time of Sample Collection	-
Date of Sample Received	15.11.2023	Time of Sample Received	11.30 AM
Start Date of Analysis	15.11.2023	End Date of Analysis	30.11.2023
Laboratory Environmental Condition	Temperature: 27 ± 2°C	Sample Quantity	As per Requirement
	Humidity: 55 %	Sample ID Code	ECO/LAB/2790/11/2023

Sl. No.	Tests	Unit	Protocol	Detection Range	Result	Indian Standards as per IS 10500:2012 (Reaff:2018)	
						Desirable	Permissible
1.	Colour	Hazen	APHA, 24th Ed. 2023, 2120 B	5-100	<5.0	5	15
2.	Taste	-	APHA, 24th Ed. 2023, 2160 A+B	Qualitative	Agreeable	Agreeable	Agreeable
3.	Odour	-	APHA, 24th Ed. 2023, 2150 B	Qualitative	Agreeable	Agreeable	Agreeable
4.	Turbidity	NTU	APHA, 24th Ed. 2023, 2130 A+B	1-100	1.56	1	5
5.	Electrical Conductivity	Us/cm	APHA, 24th Ed. 2023, 2510 A+B	1-2000	1025.0	-	-
6.	pH	-	APHA, 24th Ed. 2023, 4500H+A+B	2-12	7.52	6.5-8.5	No Relax
7.	Total Dissolved Solids as TDS	mg/l	APHA, 24th Ed. 2023, 2540-C	5-5000	625.0	500	2000
8.	Alkalinity as CaCO ₃	mg/l	APHA, 24th Ed. 2023, 2320 A+B	5-1500	228.0	200	600
9.	Total Hardness as CaCO ₃	mg/l	APHA, 24th Ed. 2023, 2340 A+C	5-1500	240.0	200	600
10.	Calcium as Ca	mg/l	APHA, 24th Ed. 2023, 3500 Ca A+B	5-1000	67.2	75	200
11.	Magnesium as Mg	mg/l	APHA, 24th Ed. 2023, 3500 Mg A+B	5-1000	17.50	30	100
12.	Sodium as Na	mg/l	APHA, 24th Ed. 2023, 3500 Na A+B	1-100	36.5	-	-
13.	Potassium as K	mg/l	APHA, 24th Ed. 2023, 3500 K, A+B	1-100	2.76	-	-
14.	Chloride as Cl	mg/l	APHA, 24th Ed. 2023, 4500 Cl A+B	5-1000	36.0	250	1000
15.	Sulphate as SO ₄	mg/l	APHA, 24th Ed. 2023, 4500-SO ₄ ²⁻ F	1-250	33.8	200	400
16.	Nitrate Nitrogen as NO ₃	mg/l	APHA, 24th Ed. 2023, 4500-NO ₃ ²⁻ F	5-100	9.22	45	No Relax
17.	Fluoride as F	mg/l	APHA, 24th Ed. 2023, 4500-C	0.05-10	0.43	1	1.5
18.	Iron as Fe	mg/l	APHA, 24th Ed. 2023, 3500 Fe B	0.02-50	0.21	1.0	No Relax
19.	Copper as Cu	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.05-5	<0.05	0.05	1.5
20.	Manganese as Mn	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.1-5	<0.1	0.1	0.3
21.	Zinc as Zn	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.02-50	0.13	5	15
22.	Arsenic as As	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.005-2	<0.005	0.01	No Relax
23.	Total Chromium as T Cr	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.01-50	<0.01	0.05	No Relax
24.	Phenolic Compound as C ₆ H ₅ OH	mg/l	APHA, 24th Ed. 2023, 5530 A+C	0.001-10	<0.001	0.001	0.005
25.	Free Residual Chlorine as FRC	mg/l	APHA, 24th Ed. 2023, 4500-Cl B	0.05-10	<0.05	0.2	1
26.	Boron as B	mg/l	APHA, 24th Ed. 2023, 4500 A+C	0.5-10	<0.5	0.5	10
27.	Anionic Detergent as MBAS	mg/l	APHA, 24th Ed. 2023, 5540 A+C	0.02-5	<0.02	0.2	1.0
28.	Mercury as Hg	mg/l	APHA, 24th Ed. 2023, 3112 A+B	0.001-2	<0.001	0.001	No Relax
29.	Cadmium as Cd	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.001-5	<0.001	0.003	No Relax
30.	Lead as Pb	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.005-5	<0.005	0.01	No Relax
31.	Aluminum as Al	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.01-5	<0.01	0.03	0.2
32.	Selenium as Se	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.005-5	<0.005	0.01	No Relax
33.	Mineral Oil	mg/l	IS-3025 Part-39	0.2-10	<0.2	0.5	No Relax
34.	Cyanide as CN	mg/l	APHA, 24th Ed. 2023, 4500-CN	0.04-5	<0.04	0.05	No Relax
35.	Total coliform	Cfu/ml	IS15185:2016, RA 2021	<10	Absent	Absent	Absent
36.	E coli	Cfu/ml	IS15185:2016, RA 2021	<10	Absent	Absent	Absent

Statement of Conformity: The above tested parameters confirm as per IS 10500:2012(Reaff:2018) limits for above tested parameters.

Note-

1. Test results relate to the items sampled & tested
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---End of Report---

Verified By
[Signature]
Technical Manager

Authorized By
[Signature]
Quality Manager



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An approved Laboratory from Ministry of Environment, Forest and Climate Change & CPCB Govt. of India, New Delhi

TEST REPORT

FORMAT NO. ECO/QS/FORMAT/09

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil -Palwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/GW/0280/2791/11/2023
		Issue Date of Test Report	30.11.2023
Type of Sample	Ground Water		
Sample Registration No.	0280	Name of Location	Pinthala Village (GW-8)
Sampling Method	APHA	Sample Collected By	FLPL Representative
Date of Sample Collection	07.11.2023 to 08.11.2023	Time of Sample Collection	-
Date of Sample Received	15.11.2023	Time of Sample Received	11.30 AM
Start Date of Analysis	15.11.2023	End Date of Analysis	30.11.2023
Laboratory Environmental Condition	Temperature: 27 ± 2°C	Sample Quantity	As per Requirement
	Humidity: 55 %	Sample ID Code	ECO/LAB/2791/11/2023

Sl. No.	Tests	Unit	Protocol	Detection Range	Result	Indian Standards as per IS 10500:2012 (Reaff:2018)	
						Desirable	Permissible
1	Colour	Hazen	APHA, 24th Ed. 2023, 2120 B	5-100	<5.0	5	15
2	Taste	-	APHA, 24th Ed. 2023, 2160 A+B	Qualitative	Agreeable	Agreeable	Agreeable
3	Odour	-	APHA, 24th Ed. 2023, 2150 B	Qualitative	Agreeable	Agreeable	Agreeable
4	Turbidity	NTU	APHA, 24th Ed. 2023, 2130-A+B	1-100	1.26	1	5
5	Electrical Conductivity	Us/cm	APHA, 24th Ed. 2023, 2510-A + B	1-2000	1126.0	-	-
6	pH	-	APHA, 24th Ed. 2023, 4500H+A+B	2-12	7.44	6.5-8.5	No Relax
7	Total Dissolved Solids as TDS	mg/l	APHA, 24th Ed. 2023, 2540-C	5-5000	687.0	500	2000
8	Alkalinity as CaCO ₃	mg/l	APHA, 24th Ed. 2023, 2320 A+B	5-1500	240.0	200	600
9	Total Hardness as CaCO ₃	mg/l	APHA, 24th Ed. 2023, 2340 A+C	5-1500	248.0	200	600
10	Calcium as Ca	mg/l	APHA, 24th Ed. 2023, 3500 Ca A+B	5-1000	75.2	75	200
11	Magnesium as Mg	mg/l	APHA, 24th Ed. 2023, 3500 Mg A+B	5-1000	14.58	30	100
12	Sodium as Na	mg/l	APHA, 24th Ed. 2023, 3500 Na A+B	1-100	47.2	-	-
13	Potassium as K	mg/l	APHA, 24th Ed. 2023, 3500 K, A+B	1-100	4.12	-	-
14	Chloride as Cl	mg/l	APHA, 24th Ed. 2023, 4500 Cl A+B	5-1000	36.0	250	1000
15	Sulphate as SO ₄	mg/l	APHA, 24th Ed. 2023, 4500-SO ₄ E	1-250	48.5	200	400
16	Nitrate Nitrogen as NO ₃	mg/l	APHA, 24th Ed. 2023, 4500-NO ₃ E	5-100	14.1	45	No Relax
17	Fluoride as F	mg/l	APHA, 24th Ed. 2023, 4500-C	0.05-10	0.62	1	1.5
18	Iron as Fe	mg/l	APHA, 24th Ed. 2023, 3500 Fe B	0.02-50	0.19	1.0	No Relax
19	Copper as Cu	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.05-5	<0.05	0.05	1.5
20	Manganese as Mn	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.1-5	<0.1	0.1	0.3
21	Zinc as Zn	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.02-50	0.13	5	15
22	Arsenic as As	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.005-2	<0.005	0.01	No Relax
23	Total Chromium as Cr	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.01-50	<0.01	0.05	No Relax
24	Phenolic Compound as C ₆ H ₅ OH	mg/l	APHA, 24th Ed. 2023, 5530 A+C	0.001-10	<0.001	0.001	0.005
25	Free Residual Chlorine as FRC	mg/l	APHA, 24th Ed. 2023, 4500-Cl B	0.05-10	<0.05	0.2	1
26	Boron as B	mg/l	APHA, 24th Ed. 2023, 4500 A+C	0.5-10	<0.5	0.5	10
27	Anionic Detergent as MBAS	mg/l	APHA, 24th Ed. 2023, 5540 A+C	0.02-5	<0.02	0.2	10
28	Mercury as Hg	mg/l	APHA, 24th Ed. 2023, 3112 A+B	0.001-2	<0.001	0.001	No Relax
29	Cadmium as Cd	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.001-5	<0.001	0.003	No Relax
30	Lead as Pb	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.005-5	<0.005	0.01	No Relax
31	Aluminium as Al	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.01-5	<0.01	0.03	0.2
32	Selenium as Se	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.005-5	<0.005	0.01	No Relax
33	Mineral Oil	mg/l	IS-3025 Part-39	0.2-10	<0.2	0.5	No Relax
34	Cyanide as CN	mg/l	APHA, 24th Ed. 2023, 4500-CN	0.04-5	<0.04	0.05	No Relax
35	Total coliform	Cfu/ml	IS15185 2016:RA 2021	<10	Absent	Absent	Absent
36	E coli	Cfu/ml	IS15185 2016:RA 2021	<10	Absent	Absent	Absent

Statement of Conformity: The above tested parameters confirm as per IS 10500:2012(Reaff:2018) limits for above tested parameters.

Note-

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---End of Report---

Verified By

Technical Manager

Authorized By

Quality Manager



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TEST REPORT

FORMAT NO. ECO/QS/FORMAT/09

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Talapur, Ladpur, Tehsil -Palwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/SW/0280/2792/11/2023
		Issue Date of Test Report	30.11.2023
Type of Sample	Surface Water		
Sample Registration No.	0280	Name of Location	Agra Canal (SW-1)
Sampling Method	APIIA	Sample Collected By	ELPI Representative
Date of Sample Collection	07.11.2023 to 08.11.2023	Time of Sample Collection	-
Date of Sample Received	15.11.2023	Time of Sample Received	11.30 AM
Start Date of Analysis	15.11.2023	End Date of Analysis	30.11.2023
Laboratory Environmental Condition	Temperature: 27 ± 2°C	Sample Quantity	As per Requirement
	Humidity: 55 %	Sample ID Code	ECO/LAB/2792/11/2023

Sl. No.	Tests	Unit	Protocol	Detection Range	Result	IS 2296 Class-C
1.	pH	-	APHA, 24th Ed. 2023, 4500H+A+B	2-12	7.53	6.0-9.0
2.	Colour	Hazen	APIIA, 24th Ed. 2023, 2120 B	5-100	20.0	300
3.	Electrical Conductivity	Us/cm	APHA, 24th Ed. 2023, 2510-A+B	1-2000	723.0	-
4.	Dissolved Oxygen as DO	mg/l	APIIA, 24th Ed. 2023, 4500 A+C	1-15	5.9	4.0
5.	Biological Oxygen Demand as BOD (mg/l) 5 days at 20 °C	mg/l	APIIA, 24th Ed. 2023, 5210A+B	1-1000	3.5	3.0
6.	Chemical Oxygen Demand as COD	mg/l	APIIA, 24th Ed. 2023, 5220 A+C	1-1000	16.0	-
7.	Total Suspended Solids as TSS	mg/l	APHA, 24th Ed. 2023, 2540-D	5-5000	11.2	-
8.	Total Dissolved Solids as TDS	mg/l	APHA, 24th Ed. 2023, 2540-C	5-5000	470.0	1500
9.	Oil & Grease as O & G	mg/l	APIIA, 24th Ed. 2023, 5520 A+D	2.5-1000	<2.5	-
10.	Alkalinity as CaCO ₃	mg/l	APHA, 24th Ed. 2023, 2320 A+B	5-1500	176.0	-
11.	Total Hardness as CaCO ₃	mg/l	APIIA, 24th Ed. 2023, 2340 A+C	5-1500	184.0	-
12.	Calcium as Ca	mg/l	APHA, 24th Ed. 2023, 3500 Ca A+B	5-1000	49.6	-
13.	Magnesium as Mg	mg/l	APHA, 24th Ed. 2023, 3500 Mg A+B	5-1000	14.58	-
14.	Sodium as Na	mg/l	APIIA, 24th Ed. 2023, 3500 Na A+B	1-100	21.2	-
15.	Potassium as K	mg/l	APIIA, 24th Ed. 2023, 3500 K, A+B	1-100	1.78	-
16.	Chloride as Cl	mg/l	APHA, 24th Ed. 2023, 4500 Cl A+B	5-1000	22.0	600
17.	Sulphate as SO ₄	mg/l	APHA, 24th Ed. 2023, 4500-SO ₄ -F	1-250	20.1	400
18.	Nitrate Nitrogen as NO ₃	mg/l	APHA, 24th Ed. 2023, 4500-NO ₃ -E	5-100	7.98	50
19.	Fluoride as F	mg/l	APIIA, 24th Ed. 2023, 4500-C	0.05-10	0.32	1.5
20.	Iron as Fe	mg/l	APHA, 24th Ed. 2023, 3500 Fe B	0.02-50	0.15	0.50
21.	Copper as Cu	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.05-5	<0.05	1.5
22.	Zinc as Zn	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.02-50	0.1	15
23.	Arsenic as As	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.05-2	<0.05	0.2
24.	Total Chromium as T. Cr	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.05-50	<0.05	-
25.	Phosphate as PO ₄	mg/l	APHA, 24th Ed. 2023, 4500-P, A+B+D	0.1-50	<0.1	-
26.	Phenolic Compound as C ₆ H ₅ OH	mg/l	APHA, 24th Ed. 2023, 5530 A+C	0.005-10	<0.005	0.005
27.	Anionic Detergent as MBAS	mg/l	APHA, 24th Ed. 2023, 5540 A+C	0.02-5	<0.02	1.0
28.	Boron as B	mg/l	APHA, 24th Ed. 2023, 4500 A+C	0.5-10	<0.5	-
29.	Cadmium as Cd	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.01-5	<0.01	0.01
30.	Mercury as Hg	mg/l	APHA, 24th Ed. 2023, 3112 A+B	0.01-2	<0.01	-
31.	Lead as Pb	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.01-5	<0.01	0.1
32.	Manganese as Mn	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.1-5	<0.1	-
33.	Free Residual Chlorine as FRC	mg/l	APHA, 24th Ed. 2023, 4500-ClB	0.05-10	<0.05	-
34.	Aluminum as Al	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.01-5	<0.01	-
35.	Selenium as Se	mg/l	APHA, 24th Ed. 2023, 3111 A+B	0.01-5	<0.005	0.05
36.	Cyanide as CN	mg/l	APHA, 24th Ed. 2023, 4500-CN	0.04-5	<0.04	0.05
37.	Total coliform	MPN/100 ml	ISI 5185:2016; RA 2021	20	70.0	5000

Statement of Conformity: The above tested parameters confirm as per IS 2296 (CLASS-C) Limit

Note-

1. Test results relate to the items sampled & tested.
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3. The test samples will be disposed of after one Month from the date of issue of test report.

---End of Report---

Verified By

Technical Manager

Authorized By

Quality Manager



ECOMEN MINING PRIVATE LIMITED
(Formerly known as Ecomen Laboratories Private Limited)
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E-mail: contactus@ecomen.in, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE6076H1Z1

An approved Laboratory from Ministry of Environment, Forest and Climate Change & CPCB Govt. of India, New Delhi

TEST REPORT

FORMAT NO. ECO/QS/FORMAT/09

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil -Palwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/SW/0280/2793/11/2023
		Issue Date of Test Report	30.11.2023
Type of Sample	Surface Water		
Sample Registration No.	0280	Name of Location	Pond Near pithala (SW-2)
Sampling Method	APHA	Sample Collected By	ELPL Representative
Date of Sample Collection	07.11.2023 to 08.11.2023	Time of Sample Collection	-
Date of Sample Received	15.11.2023	Time of Sample Received	11.30 AM
Start Date of Analysis	15.11.2023	End Date of Analysis	30.11.2023
Laboratory Environmental Condition	Temperature: 27 ± 2°C	Sample Quantity	As per Requirement
	Humidity: 55 %	Sample ID Code	ECO/LAB/2793/11/2023

Sl. No.	Tests	Unit	Protocol	Detection Range	Result	IS 2296
						Class-C
1.	pH	-	APHA, 24th Ed. : 2023, 4500H+A+B	2 -12	7.57	6.0-9.0
2.	Colour	Hazen	APHA, 24th Ed. : 2023, 2120 B	5-100	45.0	300
3.	Electrical Conductivity	Us/cm	APHA, 24th Ed. : 2023, 2510-A + B	1-2000	891.0	-
4.	Dissolved Oxygen as DO	mg/l	APHA, 24th Ed. : 2023, 4500 A+C	1-15	4.1	4.0
5.	Biological Oxygen Demand as BOD (mg/l) 5 days at 20 °C	mg/l	APHA, 24th Ed. : 2023, 5210A+B	1-1000	9.0	3.0
6.	Chemical Oxygen Demand as COD	mg/l	APHA, 24th Ed. : 2023, 5220 A+ C	1-1000	60.0	-
7.	Total Suspended Solids as TSS	mg/l	APHA, 24th Ed. : 2023, 2540-D	5-5000	31.6	-
8.	Total Dissolved Solids as TDS	mg/l	APHA, 24th Ed. : 2023, 2540-C	5 - 5000	579.0	1500
9.	Oil & Grease as O & G	mg/l	APHA, 24th Ed. : 2023, 5520 A+D	2.5-1000	<2.5	-
10.	Alkalinity as CaCO ₃	mg/l	APHA, 24th Ed. : 2023, 2320 A+B	5-1500	192.0	-
11.	Total Hardness as CaCO ₃	mg/l	APHA, 24th Ed. : 2023, 2340 A+C	5 - 1500	208.0	-
12.	Calcium as Ca	mg/l	APHA, 24th Ed. : 2023, 3500 Ca A+B	5 - 1000	56.0	-
13.	Magnesium as Mg	mg/l	APHA, 24th Ed. : 2023, 3500 Mg A+B	5 - 1000	16.52	-
14.	Sodium as Na	mg/l	APHA, 24th Ed. : 2023, 3500 Na A+B	1-100	36.7	-
15.	Potassium as K	mg/l	APHA, 24th Ed. : 2023, 3500 K, A+B	1-100	1.89	-
16.	Chloride as Cl	mg/l	APHA, 24th Ed. : 2023, 4500 Cl A+B	5-1000	38.0	600
17.	Sulphate as SO ₄	mg/l	APHA, 24th Ed. : 2023, 4500-SO ₄ 2- E	1 - 250	32.5	400
18.	Nitrate Nitrogen as NO ₃	mg/l	APHA, 24th Ed. : 2023, 4500-NO ₃ 2- E	5 - 100	11.3	50
19.	Fluoride as F	mg/l	APHA, 24th Ed. : 2023, 4500-C	0.05 -10	0.49	1.5
20.	Iron as Fe	mg/l	APHA, 24th Ed. : 2023, 3500 Fe B	0.02 -50	0.32	0.50
21.	Copper as Cu	mg/l	APHA, 24th Ed. : 2023, 3111 A+B	0.05-5	<0.05	1.5
22.	Zinc as Zn	mg/l	APHA, 24th Ed. : 2023, 3111 A+B	0.02-50	0.08	15
23.	Arsenic as As	mg/l	APHA, 24th Ed. : 2023, 3111 A+B	0.05-2	<0.05	0.2
24.	Total Chromium as T. Cr	mg/l	APHA, 24th Ed. : 2023, 3111 A+B	0.05-50	<0.05	-
25.	Phosphate as PO ₄	mg/l	APHA, 24th Ed. : 2023, 4500-P, A-B+D	0.1 -50	<0.1	-
26.	Phenolic Compound as C ₆ H ₅ OH	mg/l	APHA, 24th Ed. : 2023, 5530 A+C	0.005 - 10	<0.005	0.005
27.	Anionic Detergent as MBAS	mg/l	APHA, 24th Ed. : 2023, 5540 A+C	0.02-5	<0.02	1.0
28.	Boron as B	mg/l	APHA, 24th Ed. : 2023, 4500 A+C	0.5-10	<0.5	-
29.	Cadmium as Cd	mg/l	APHA, 24th Ed. : 2023, 3111 A+B	0.01-5	<0.01	0.01
30.	Mercury as Hg	mg/l	APHA, 24th Ed. : 2023, 3112 A+B	0.01-2	<0.01	-
31.	Lead as Pb	mg/l	APHA, 24th Ed. : 2023, 3111 A+B	0.01-5	<0.01	0.1
32.	Manganese as Mn	mg/l	APHA, 24th Ed. : 2023, 3111 A+B	0.1-5	<0.1	-
33.	Free Residual Chlorine as FRC	mg/l	APHA, 24th Ed. : 2023, 4500-Cl B	0.05 -10	<0.05	-
34.	Aluminum as Al	mg/l	APHA, 24th Ed. : 2023, 3111 A+B	0.01-5	<0.01	-
35.	Selenium as Se	mg/l	APHA, 24th Ed. : 2023, 3111 A+B	0.005-5	<0.005	0.05
36.	Cyanide as CN	mg/l	APHA, 24th Ed. : 2023, 4500-CN	0.04-5	<0.04	0.05
37.	Total coliform	MPN/100 ml	IS 15185 2016; RA. 2021	2.0	141.0	5000

Statement of Conformity: The above tested parameters confirm as per IS 2296 (CLASS-C) Limit
Note-

1. Test results relate to the items sampled & tested.
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--- End of Report ---

Verified By
[Signature]
Technical Manager

Authorized By
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Quality Manager



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An approved Laboratory from Ministry of Environment, Forest and Climate Change & CPCB Govt. of India, New Delhi

TEST REPORT

FORMAT NO. ECO/QS/FORMAT/08

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil -Palwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/SS/0280/2778/11/2023
		Issue Date of Test Report	30.11.2023
Type of Sample	Soil Sample		
Sample Registration No.	0280	Name of Location	Within Project Site (S-1)
Sampling Method	IS-2720	Sample Collected By	ELPL Representative
Date of Sample Collection	07.11.2023 to 08.11.2023	Time of Sample Collection	-
Date of Sample Received	15.11.2023	Time of Sample Received	11.30 AM
Start Date of Analysis	15.11.2023	End Date of Analysis	30.11.2023
Laboratory Environmental Condition	Temperature: 27 ± 2°C	Sample Quantity	As per Requirement
	Humidity: 55 %	Sample ID Code	ECO/LAB/2778/11/2023

Sl. No.	Parameters	Unit	Test Method	Results
1.	pH (Ratio 1:5)	-	IS 2720(Part-26) 1987 Ref-2021	8.88
2	Electrical Conductivity (Ratio 1:5)	µ mhos/cm	IS:14767-2000 Ref-2021	249.0
3	Moisture	%	IS 2720(Part-2) 1973 Ref-2020	3.4
4	Bulk Density	gm/cc	No:S-09 Issue No.2, Date 12.04.2021	1.2
5	Av. Calcium (Ca)	mg/kg	SOP No:S-30 Issue No.2, Date 12.04.2021	180.0
6	Av. Magnesium (Mg)	mg/kg	SOP No:S-30 Issue No.2, Date 12.04.2021	44.0
7.	Av. Potassium (K ₂ O)	Kg/ha	IS 9497:1980 Ref-2020	78.0
8	Av. Phosphorous (P ₂ O ₅)	Kg/ha	SOP No S-07 Issue No.2, Date 12.04.2021	156.0
9	Zinc (Zn)	mg/kg	SOP No S-28 Issue No.2, Date 12.04.2021	2.12
10	Iron (Fe)	mg/kg	SOP No:S-28 Issue No.2, Date 12.04.2021	17.2
11	Organic Carbon	%	IS 2720(Part-22)1972 Ref-2020	0.87
12	Boron (B)	mg/kg	SOP No S-25 Issue No.2, Date 12.04.2021	1.06
13.	Water Soluble Chloride (Cl)	mg/kg	SOP No:S-36 Issue No.02, Date-12.04.2021	34.0
14.	Sulphate (SO ₄)	mg/kg	IS 2720 (27):1977 RA2020	26.7
15	Sodium (Na)	mg/kg	IS 9497 1980 RA2020	76.2
16.	Total Porosity	%	No:S-06 Issue No.2, Date 12.04.2021	17.24
17	Water Holding Capacity	%	No S-06 Issue No.2, Date 12.04.2021	24.2
18.	Organic Matter	%	IS 2720(Part-22)1972 Ref-2020	1.32
19.	Available Nitrogen as N	Kg/ha	SOP No:S-14 Issue No.2, Date 12.04.2021	98.00
20	Sodium Absorption ratio (SAR)	%	-	1.32
21	Cation Exchange capacity (CEC)	meq/100gm	SOP No:S-05 Issue No.2, Date 12.04.2021	19.85
22	Grain Size Distribution			
a	Textural Class	-	SOP No.S-03 Issue No.2, Date 12.04.2021	Sandy Clay Loam
b	Sand	%	SOP No:S-03 Issue No.2, Date 12.04.2021	43.0
c	Silt	%	SOP No S-03 Issue No.2, Date 12.04.2021	33.0
d	Clay	%	SOP No S-03 Issue No.2, Date 12.04.2021	24.0

Note :

1. Test result applied to the sample as received
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---End of Report---

Verified By

[Signature]
Technical Manager

Authorized By

[Signature]
Quality Manager



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E-mail: contactus@ecomen.in, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 03AAACE6076H1Z1

An approved Laboratory from Ministry of Environment, Forest and Climate Change & CPCB Govt. of India, New Delhi

TEST REPORT

FORMAT NO. ECO/QS/FORMAT/08

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil -Palwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/SS/0280/2779/11/2023
		Issue Date of Test Report	30.11.2023
Type of Sample	Soil Sample		
Sample Registration No.	0280	Name of Location	Devli Village (S-2)
Sampling Method	IS-2720	Sample Collected By	ELPI. Representative
Date of Sample Collection	07.11.2023 to 08.11.2023	Time of Sample Collection	-
Date of Sample Received	15.11.2023	Time of Sample Received	11.30 AM
Start Date of Analysis	15.11.2023	End Date of Analysis	30.11.2023
Laboratory Environmental Condition	Temperature: 27 ± 2°C	Sample Quantity	As per Requirement
	Humidity: 55 %	Sample ID Code	ECO/LAB/2779/11/2023

Sl. No.	Parameters	Unit	Test Method	Results
1	pH (Ratio 1:5)		IS 2720(Part-26) 1987 Ref-2021	8.61
2	Electrical Conductivity (Ratio 1:5)	µ mhos/cm	IS.14767. 2000 Ref- 2021	451.0
3	Moisture	%	IS 2720(Part-2) 1973 Ref-2020	8.8
4	Bulk Density	gm/cc	No S-09 Issue No.2, Date 12.04.2021	1.21
5	Av. Calcium (Ca)	mg/kg	SOP No S-30 Issue No.2, Date 12.04.2021	124.0
6	Av. Magnesium (Mg)	mg/kg	SOP No S-30 Issue No.2, Date 12.04.2021	66.0
7	Av. Potassium (K ₂ O)	Kg/ha	IS 9497 1980 Ref-2020	64.0
8	Av. Phosphorous (P ₂ O ₅)	Kg/ha	SOP No S-07 Issue No.2, Date 12.04.2021	124.0
9	Zinc (Zn)	mg/kg	SOP No S-28 Issue No.2, Date 12.04.2021	3.22
10	Iron (Fe)	mg/kg	SOP No S-28 Issue No.2, Date 12.04.2021	23.2
11	Organic Carbon	%	IS 2720(Part-22)1972 Ref-2020	1.23
12	Boron (B)	mg/kg	SOP No S-25 Issue No.2, Date 12.04.2021	1.23
13	Water Soluble Chloride (Cl)	mg/kg	SOP No S-36 Issue No.02, Date-12.04.2021	44.0
14	Sulphate (SO ₄)	mg/kg	IS 2720 (27) 1977 RA2020	43.2
15	Sodium (Na)	mg/kg	IS 9497 1980 RA2020	56.2
16	Total Porosity	%	No S-06 Issue No.2, Date 12.04.2021	9.70
17	Water Holding Capacity	%	No S-06 Issue No.2, Date 12.04.2021	25.2
18	Organic Matter	%	IS 2720(Part-22)1972 Ref-2020	1.87
19	Available Nitrogen as N	Kg/ha	SOP No S-14 Issue No.2, Date 12.04.2021	154.00
20	Sodium Absorption ratio (SAR)	%		1.01
21	Cation Exchange capacity (CEC)	meq/100gm	SOP No S-05 Issue No.2, Date 12.04.2021	23.22
22	Grain Size Distribution			
a	Textural Class	-	SDP No S-03 Issue No.2, Date 12.04.2021	Sandy Clay Loam
b	Sand	%	SOP No S-03 Issue No.2, Date 12.04.2021	41.0
c	Silt	%	SOP No S-03 Issue No.2, Date 12.04.2021	32.0
d	Clay	%	SOP No S-03 Issue No.2, Date 12.04.2021	27.0

Note :

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---End of Report---

Verified By

Technical Manager

Authorized By

Quality Manager



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TEST REPORT

FORMAT NO. ECO/QS/FORMAT/08

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil-Palwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/SS/0280/2780/11/2023
		Issue Date of Test Report	30.11.2023
Type of Sample	Soil Sample		
Sample Registration No.	0280	Name of Location	Tatapur Village (S-3)
Sampling Method	IS-2720	Sample Collected By	ELPL Representative
Date of Sample Collection	07.11.2023 to 08.11.2023	Time of Sample Collection	-
Date of Sample Received	15.11.2023	Time of Sample Received	11.30 AM
Start Date of Analysis	15.11.2023	End Date of Analysis	30.11.2023
Laboratory Environmental Condition	Temperature: 27 ± 2°C	Sample Quantity	As per Requirement
	Humidity: 55 %	Sample ID Code	ECO/LAB/2780/11/2023

Sl. No.	Parameters	Unit	Test Method	Results
1	pH (Ratio 1:5)	-	IS 2720(Part-26) 1987 Ref-2021	6.99
2	Electrical Conductivity (Ratio 1:5)	µ mhos/cm	IS:14767, 2000 Ref- 2021	265.0
3	Moisture	%	IS 2720(Part-2), 1973 Ref-2020	2.2
4	Bulk Density	gm/cc	No S-09 Issue No.2, Date 12.04.2021	1.19
5	Av. Calcium (Ca)	mg/kg	SOP No.S-30 Issue No.2, Date 12.04.2021	136.0
6	Av. Magnesium (Mg)	mg/kg	SOP No.S-30 Issue No.2, Date 12.04.2021	78.0
7	Av. Potassium (K ₂ O)	Kg/ha	IS 9497 1980 Ref-2020	96.5
8	Av. Phosphorous (P ₂ O ₅)	Kg/ha	SOP No.S-07 Issue No.2, Date 12.04.2021	165.0
9	Zinc (Zn)	mg/kg	SOP No.S-28 Issue No.2, Date 12.04.2021	1.98
10	Iron (Fe)	mg/kg	SOP No.S-28 Issue No.2, Date 12.04.2021	26.2
11	Organic Carbon	%	IS 2720(Part-22)1972 Ref-2020	0.85
12	Boron (B)	mg/kg	SOP No.S-25 Issue No.2, Date 12.04.2021	1.32
13	Water Soluble Chloride (Cl)	mg/kg	SOP No S-36 Issue No.02, Date-12.04.2021	46.0
14	Sulphate (SO ₄)	mg/kg	IS 2720 (27), 1977 RA2020	34.9
15	Sodium (Na)	mg/kg	IS 9497, 1980 RA2020	63.0
16	Total Porosity	%	No.S-06 Issue No.2, Date 12.04.2021	20.67
17	Water Holding Capacity	%	No.S-06 Issue No.2, Date 12.04.2021	23.8
18	Organic Matter	%	IS 2720(Part-22)1972 Ref-2020	1.29
19	Available Nitrogen as N	Kg/ha	SOP No S-14 Issue No.2, Date 12.04.2021	112.00
20	Sodium Absorption ratio (SAR)	%	-	1.06
21	Cation Exchange capacity (CEC)	meq/100gm	SOP No.S-05 Issue No.2, Date 12.04.2021	21.18
22	Grain Size Distribution			
a	Textural Class	-	SOP No S-03 Issue No.2, Date 12.04.2021	Sandy Clay Loam
b	Sand	%	SOP No S-03 Issue No.2, Date 12.04.2021	45.0
c	Silt	%	SOP No S-03 Issue No.2, Date 12.04.2021	29.0
d	Clay	%	SOP No S-03 Issue No.2, Date 12.04.2021	26.0

Note :

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---End of Report---

Verified By

(Signature)
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Quality Manager



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TEST REPORT

FORMAT NO. ECO/QS/FORMAT/08

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil -Palwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/SS/0280/2781/11/2023
		Issue Date of Test Report	30.11.2023
Type of Sample	Soil Sample		
Sample Registration No.	0280	Name of Location	Ladpur Village (S-4)
Sampling Method	IS-2720	Sample Collected By	ELPL Representative
Date of Sample Collection	07.11.2023 to 08.11.2023	Time of Sample Collection	-
Date of Sample Received	15.11.2023	Time of Sample Received	11.30 AM
Start Date of Analysis	15.11.2023	End Date of Analysis	30.11.2023
Laboratory Environmental Condition	Temperature: 27 ± 2°C	Sample Quantity	As per Requirement
	Humidity: 55 %	Sample ID Code	ECO/LAB/2781/11/2023

Sl. No.	Parameters	Unit	Test Method	Results
1	pH (Ratio 1:5)	-	IS 2720(Part-26) 1987 Refr-2021	6.68
2	Electrical Conductivity (Ratio 1:5)	μ mhos/cm	IS.14767. 2000 Refr- 2021	502.0
3	Moisture	%	IS 2720(Part-2) 1973 Refr-2020	9.7
4	Bulk Density	gm/cc	No.S-09 Issue No 2, Date 12.04.2021	1.21
5	Av. Calcium (Ca)	mg/kg	SOP No S-30 Issue No 2, Date 12.04.2021	136.0
6	Av. Magnesium (Mg)	mg/kg	SOP No S-30 Issue No 2, Date 12.04.2021	38.0
7	Av. Potassium (K ₂ O)	Kg/ha	IS 9497-1980 Refr-2020	16.7
8	Av. Phosphorous (P ₂ O ₅)	Kg/ha	SOP No S-07 Issue No.2, Date 12.04.2021	172.0
9	Zinc (Zn)	mg/kg	SOP No S-28 Issue No.2, Date 12.04.2021	2.87
10	Iron (Fe)	mg/kg	SOP No S-28 Issue No.2, Date 12.04.2021	23.5
11	Organic Carbon	%	IS 2720(Part-22)1972 Refr-2020	0.95
12	Boron (B)	mg/kg	SOP No S-25 Issue No 2, Date 12.04.2021	1.28
13	Water Soluble Chloride (Cl)	mg/kg	SOP No S-36 Issue No 02, Date-12.04.2021	28.0
14	Sulphate (SO ₄)	mg/kg	IS 2720 (27):1977 RA2020	55.2
15	Sodium (Na)	mg/kg	IS 9497-1980 RA2020	45.0
16	Total Porosity	%	No S-06 Issue No.2, Date 12.04.2021	23.90
17	Water Holding Capacity	%	No S-06 Issue No.2, Date 12.04.2021	24.7
18	Organic Matter	%	IS 2720(Part-22)1972 Refr-2020	1.44
19	Available Nitrogen as N	Kg/ha	SOP No S-14 Issue No 2, Date 12.04.2021	132.00
20	Sodium Absorption ratio (SAR)	%	-	0.88
21	Cation Exchange capacity (CEC)	mcq/100gm	SOP No S-05 Issue No.2, Date 12.04.2021	23.63
22	Grain Size Distribution			
a	Textural Class	-	SOP No S-03 Issue No 2, Date 12.04.2021	Sandy Clay Loam
b	Sand	%	SOP No S-03 Issue No 2, Date 12.04.2021	44.0
c	Silt	%	SOP No S-03 Issue No.2, Date 12.04.2021	27.0
d	Clay	%	SOP No S-03 Issue No 2, Date 12.04.2021	29.0

Note:

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---End of Report---

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TEST REPORT

FORMAT NO. ECO/QS/FORMAT/08

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil -Palwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/SS/0280/2782/11/2023
		Issue Date of Test Report	30.11.2023
Type of Sample	Soil Sample		
Sample Registration No.	0280	Name of Location	Mandkal Village (S-5)
Sampling Method	IS-2720	Sample Collected By	ELPL Representative
Date of Sample Collection	07.11.2023 to 08.11.2023	Time of Sample Collection	-
Date of Sample Received	15.11.2023	Time of Sample Received	11.30 AM
Start Date of Analysis	15.11.2023	End Date of Analysis	30.11.2023
Laboratory Environmental Condition	Temperature: 27 ± 2°C	Sample Quantity	As per Requirement
	Humidity: 55 %	Sample ID Code	ECO/LAB/2782/11/2023

Sl. No.	Parameters	Unit	Test Method	Results
1	pH (Ratio 1:5)	-	IS 2720(Part-26) 1987 Ref-2021	8.05
2	Electrical Conductivity (Ratio 1:5)	µ mhos/cm	IS 14767, 2000 Ref- 2021	411.0
3	Moisture	%	IS 2720(Part-2) 1973 Ref-2020	15.0
4	Bulk Density	gm/cc	No S-09 Issue No.2, Date 12.04.2021	1.27
5	Av. Calcium (Ca)	mg/kg	SOP No S-30 Issue No.2, Date 12.04.2021	146.0
6	Av. Magnesium (Mg)	mg/kg	SOP No S-30 Issue No.2, Date 12.04.2021	56.0
7	Av. Potassium (K ₂ O)	Kg/ha	IS 9497:1980 Ref-2020	54.6
8	Av. Phosphorous (P ₂ O ₅)	Kg/ha	SOP No S-07 Issue No.2, Date 12.04.2021	148.0
9	Zinc (Zn)	mg/kg	SOP No S-28 Issue No.2, Date 12.04.2021	2.66
10	Iron (Fe)	mg/kg	SOP No S-24 Issue No.2, Date 12.04.2021	24.2
11	Organic Carbon	%	IS 2720(Part-22)1972 Ref-2020	0.74
12	Boron (B)	mg/kg	SOP No S-25 Issue No.2, Date 12.04.2021	1.87
13	Water Soluble Chloride (Cl)	mg/kg	SOP No S-36 Issue No.02, Date-12.04.2021	40.0
14	Sulphate (SO ₄)	mg/kg	IS 2720 (27) 1977 RA2020	42.2
15	Sodium (Na)	mg/kg	IS 9497, 1980 RA2020	82.0
16	Total Porosity	%	No S-06 Issue No.2, Date 12.04.2021	13.01
17	Water Holding Capacity	%	No S-06 Issue No.2, Date 12.04.2021	23.8
18	Organic Matter	%	IS 2720(Part-22)1972 Ref-2020	1.12
19	Available Nitrogen as N	Kg/ha	SOP No S-14 Issue No.2, Date 12.04.2021	102.00
20	Sodium Absorption ratio (SAR)	%	-	1.46
21	Cation Exchange capacity (CEC)	meq/100gm	SOP No S-05 Issue No.2, Date 12.04.2021	24.99
22	Grain Size Distribution			
a	Textural Class	-	SOP No S-03 Issue No.2, Date 12.04.2021	Sandy Clay Loam
b	Sand	%	SOP No S-03 Issue No.2, Date 12.04.2021	40.0
c	Silt	%	SOP No S-03 Issue No.2, Date 12.04.2021	28.0
d	Clay	%	SOP No S-03 Issue No.2, Date 12.04.2021	32.0

Note:

1. Test result applied to the sample as received
2. Test report will not be generated again without prior written permission of the laboratory
3. The test samples will be disposed of after one Month from the date of issue of test report

---End of Report---

Verified By

[Signature]
Technical Manager

Authorized By

[Signature]
Quality Manager



ECOMEN MINING PRIVATE LIMITED
(Formerly known as Ecomen Laboratories Private Limited)
Second Floor Hall, House No. B-1/8, Sector-H, Aliganj, Lucknow - 226 024
Phone No. : 0522 - 4079201/2746282

E-mail: contactus@ecomen.in, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE6076H1Z1

An approved Laboratory from Ministry of Environment, Forest and Climate Change & CPCB Govt. of India, New Delhi

TEST REPORT

FORMAT NO. ECO/QS/FORMAT/08

NAME & ADDRESS OF CUSTOMER:	Cement Grinding Unit M/s Ambuja Cements Limited Village-Devli, Tatapur, Ladpur, Tehsil -Palwal, Dist- Faridabad, Haryana	Test Report No.	ECO/LAB/SS/0280/2783/11/2023
		Issue Date of Test Report	30.11.2023
Type of Sample	Soil Sample		
Sample Registration No.	0280	Name of Location	Playa Village (S-6)
Sampling Method	IS-2720	Sample Collected By	ELPL Representative
Date of Sample Collection	07.11.2023 to 08.11.2023	Time of Sample Collection	-
Date of Sample Received	15.11.2023	Time of Sample Received	11.30 AM
Start Date of Analysis	15.11.2023	End Date of Analysis	30.11.2023
Laboratory Environmental Condition	Temperature: 27 ± 2°C	Sample Quantity	As per Requirement
	Humidity: 55 %	Sample ID Code	ECO/LAB/2783/11/2023

Sl. No.	Parameters	Unit	Test Method	Results
1.	pH (Ratio 1:5)	-	IS 2720(Part-26) 1987 Ref-2021	8.12
2	Electrical Conductivity (Ratio 1:5)	µ mhos/cm	IS 14767 2000 Ref- 2021	376.0
3	Moisture	%	IS 2720(Part-2) 1973 Ref-2020	12.9
4	Bulk Density	gm/cc	No S-09 Issue No.2, Date 12.04.2021	1.24
5	Av. Calcium (Ca)	mg/kg	SOP No S-30 Issue No.2, Date 12.04.2021	156.0
6	Av. Magnesium (Mg)	mg/kg	SOP No S-30 Issue No.2, Date 12.04.2021	64.0
7.	Av. Potassium (K ₂ O)	Kg/ha	IS 9497-1980 Ref-2020	67.5
8	Av. Phosphorous (P ₂ O ₅)	Kg/ha	SOP No S-07 Issue No.2, Date 12.04.2021	202.0
9	Zinc (Zn)	mg/kg	SOP No S-28 Issue No.2, Date 12.04.2021	3.07
10	Iron (Fe)	mg/kg	SOP No S-28 Issue No.2, Date 12.04.2021	24.2
11	Organic Carbon	%	IS 2720(Part-22)1972 Ref-2020	0.72
12	Boron (B)	mg/kg	SOP No S-25 Issue No.2, Date 12.04.2021	1.34
13	Water Soluble Chloride (Cl)	mg/kg	SOP No S-36 Issue No.02, Date-12.04.2021	34.0
14.	Sulphate (SO ₄)	mg/kg	IS 2720 (27):1977 RA2020	41.2
15	Sodium (Na)	mg/kg	IS 9497 1980 RA2020	72.0
16	Total Porosity	%	No S-06 Issue No.2, Date 12.04.2021	20.51
17	Water Holding Capacity	%	No S-06 Issue No.2, Date 12.04.2021	21.6
18.	Organic Matter	%	IS 2720(Part-22)1972 Ref-2020	1.09
19	Available Nitrogen as N	Kg/ha	SOP No S-14 Issue No.2, Date 12.04.2021	117.00
20	Sodium Absorption ratio (SAR)	%	-	1.22
21	Cation Exchange capacity (CEC)	meq/100gm	SOP No S-05 Issue No.2, Date 12.04.2021	17.92
22	Grain Size Distribution			
a	Textural Class	-	SOP No S-03 Issue No.2, Date 12.04.2021	Sandy Clay Loam
b	Sand	%	SOP No S-03 Issue No.2, Date 12.04.2021	43.0
c	Silt	%	SOP No S-03 Issue No.2, Date 12.04.2021	35.0
d	Clay	%	SOP No S-03 Issue No.2, Date 12.04.2021	22.0

Note :

- 1 Test result applied to the sample as received
- 2 Test report will not be generated again without prior written permission of the laboratory
- 3 The test samples will be disposed of after one Month from the date of issue of test report

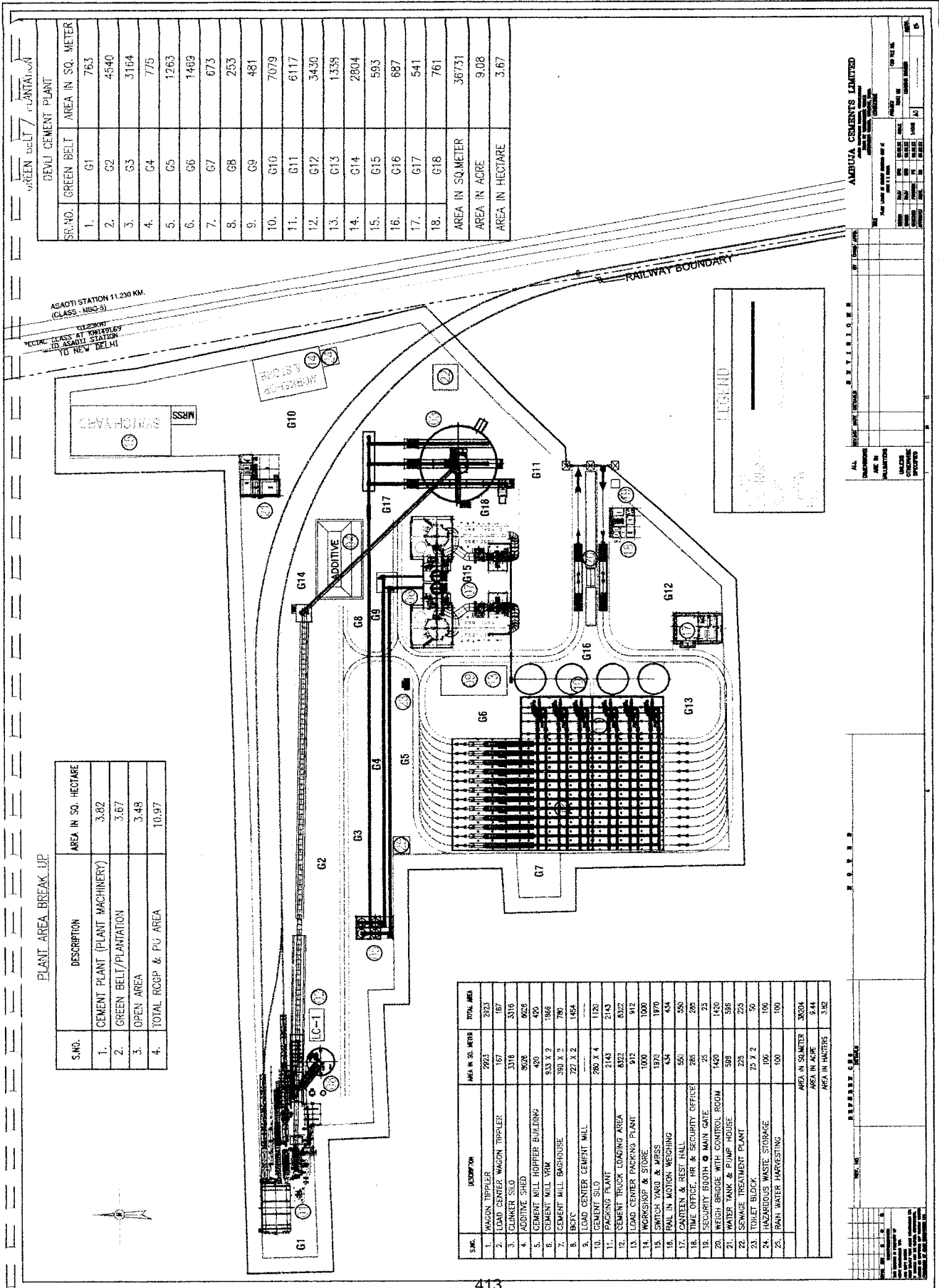
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Verified By

[Signature]
Technical Manager

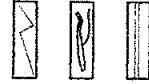
Authorized By

[Signature]
Quality Manager



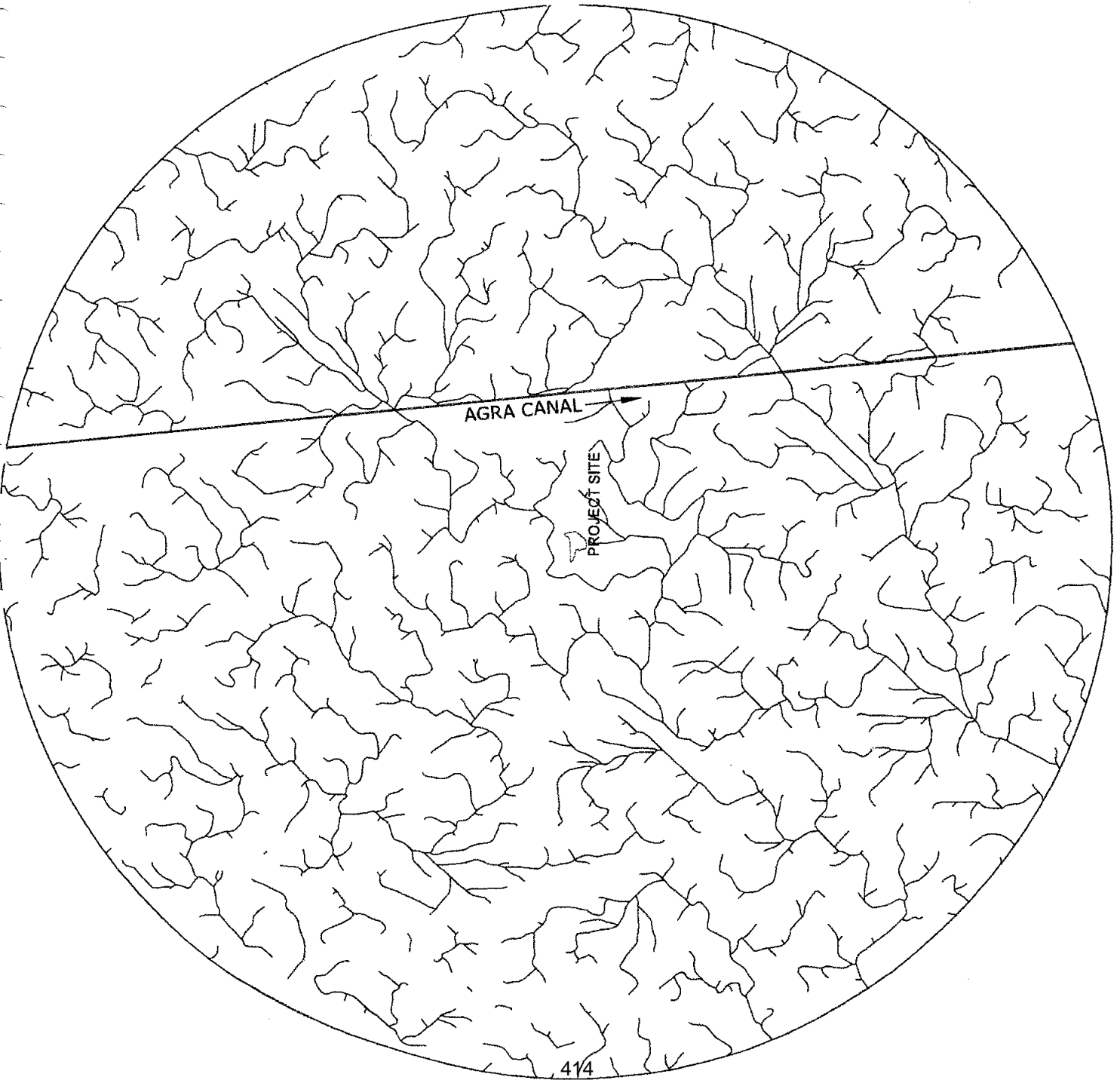


INDEX



PROJECT SITE
DRAINAGE
CANAL

SCALE :- 0 1 2 3 4 5KM



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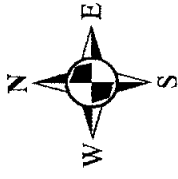
CEMENT GRINDING UNIT

M/S AMBUJA CEMENTS LIMITED

VILL.: DEVL, TATAPUR, LADPUR; TEHSIL: PALWAL;

DISTRICT: FARIDABAD

DRAINAGE MAP

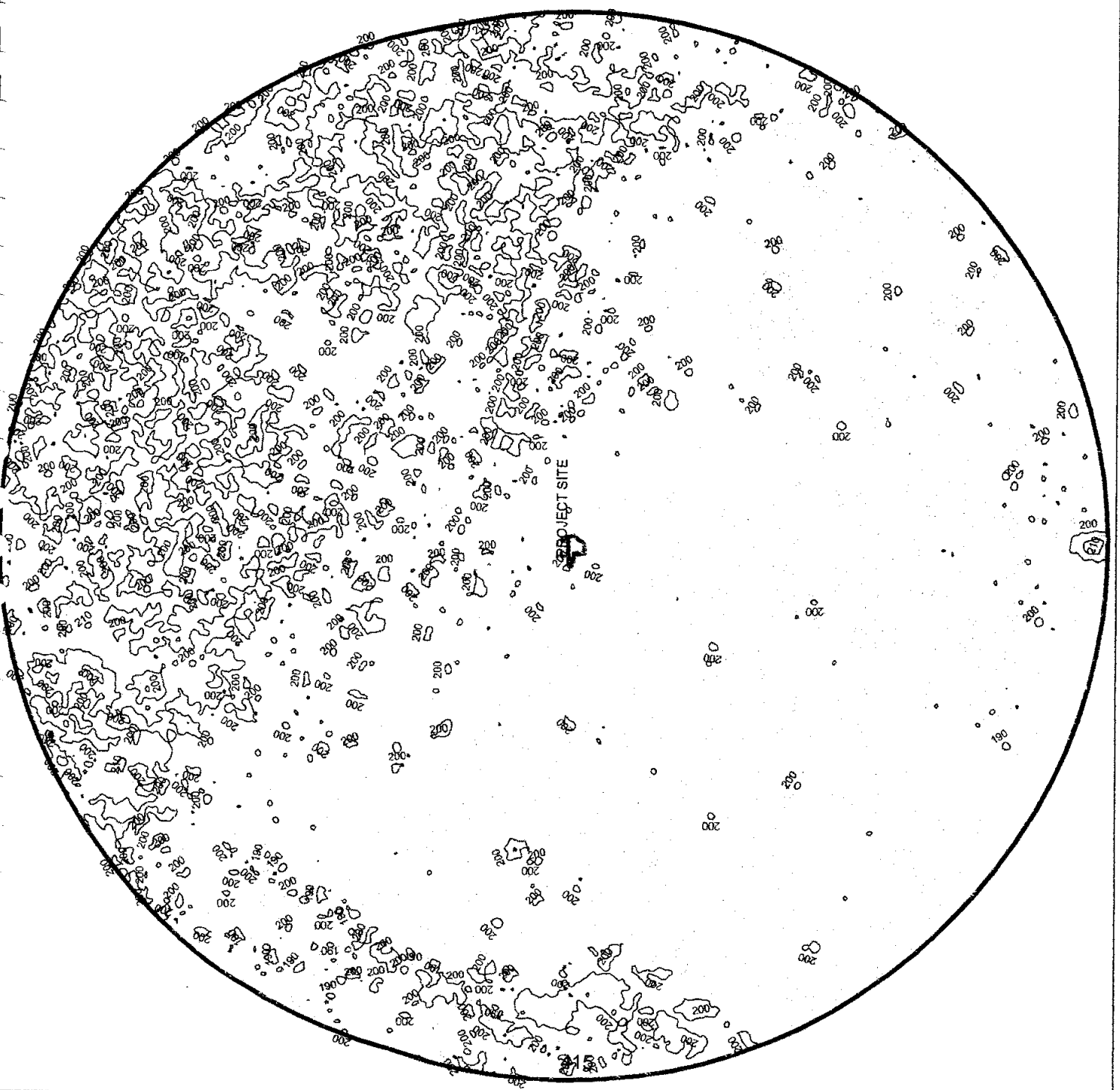


Legend

- Project Boundary
- 10km Buffer
- Major Contour (5m interval)
- Minor Contour (5m interval)



ECOMEN MINING PVT. LTD., LUCKNOW
CEMENT GRINDING UNIT
M/S AMBUJA CEMENTS LIMITED
VILL.: DEVL, TATAPUR, LADPUR, TEHSIL: PALWAL;
DISTRICT: FARIDABAD
CONTOUR PLAN
PLATENO.-



CONVENTIONAL SYMBOLS

- Express highway with toll with bridge with distance stone
- Roads, metalled according to importance
- Roads, double carriageway according to importance
- Unmetalled road, Cart track, Paved road with potholes, Road path
- Stream with water in bed undefined, Canal
- Dam, masonry or rock-lined, outflow, Weir
- Pier dry with water channel with island & rocks, Tide river
- Submerged rocks, Shoal, Swamp, Reeds
- Wells, lined, unlined, Tube well, Spring, Tanks, peam, dry
- Embankments road or rail, bank, Broken ground
- Railways, broad gauge, double, single with station, under construction
- Railways, other gauges, double, single with station, double, single
- Mineral line or railway line, Cutting with tunnel
- Contours with spot features, Rocky slopes, Cliffs
- Sand features (Hill, (Zand) (sandbarment), (Shallow) (shallow))
- Towns or Villages, inhabited, deserted, Fort
- Auto permanent, temporary, Tower, Antiquities
- Temple, Church, Mosque, Light, Tomb, Graves
- Lighthouse, Lightship, Buoy, lighted, unlighted, Anchorage
- Mine, Vm on table, Grass, Scrub
- Point, palmyra, other, Pagan, Conifer, Bamboo, Other trees
- Airport, civil, military, aerodrome, Surveyed line
- Boundary, international
- State, demarcated, unmetalled
- district, sub-division, forest, forest
- Boundary, other, surveyed, unmetalled
- Height, incorporated, station, contour, approximate
- BM 63 3, BM 63 3
- Post office, Telegraph office, Overhead link
- Post house of inspection, Bangalore, Direct house, Police station
- Camping ground, forest, reserved, protected
- State, names, administrative, locality or tribal
- Hospital, Dispensary, Veterinary, Hospital, Dispensary
- Aerodrome, Heliport, Transit site
- Power line, with pylons, surveyed, with poles, unsurveyed

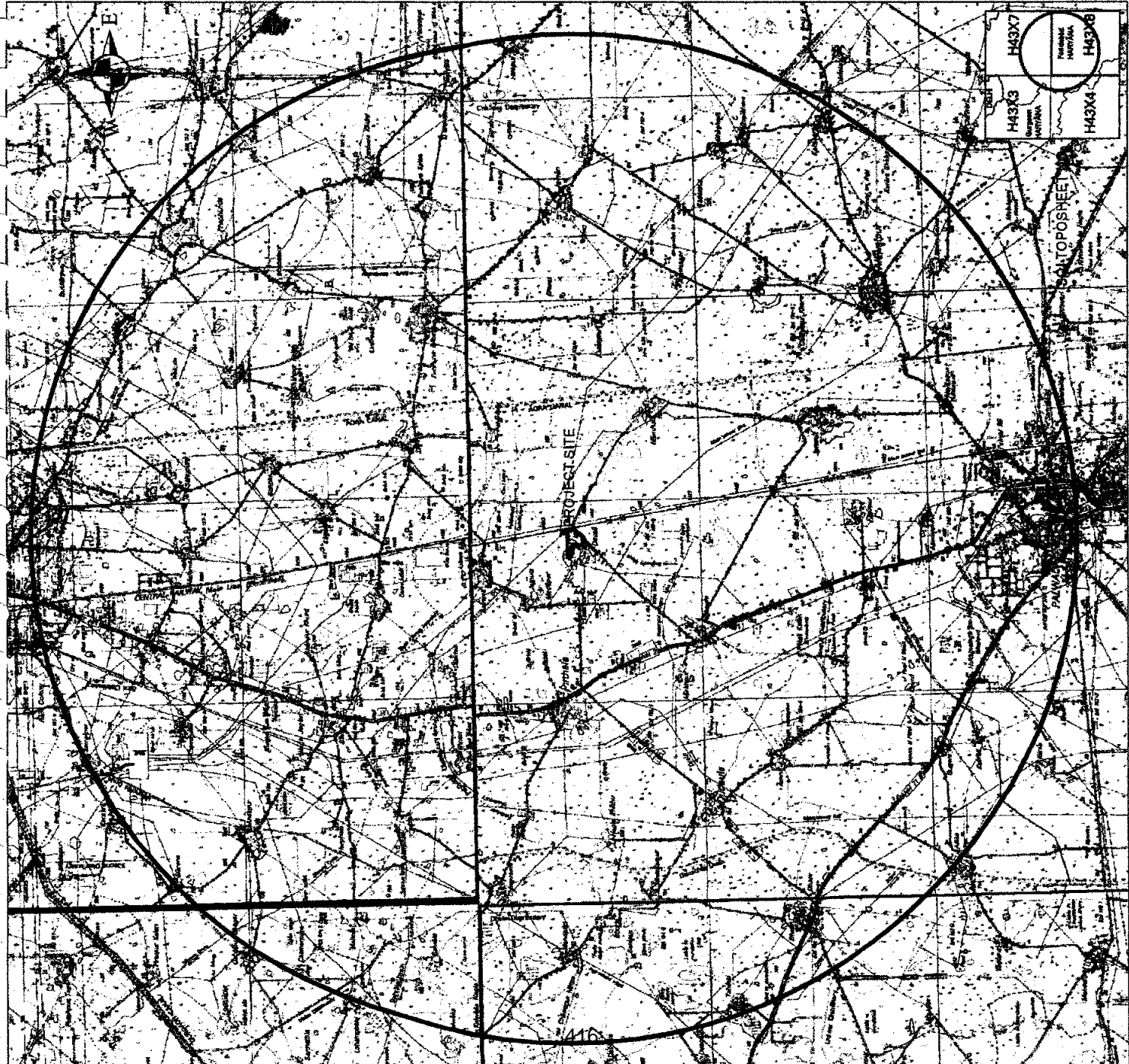
Legend

- Project Boundary
- 10km Buffer

ECOMEN MINING PVT. LTD., LUCKNOW
CEMENT GRINDING UNIT

M/S AMBUJA CEMENTS LIMITED
VILL.: DEVLI, TATAPUR, LADPUR, TEHSIL: PALWAL,
DISTRICT: FARIDABAD
TOPOGRAPHICAL MAP

PLATE NO.-



**EXECUTIVE SUMMARY OF
DRAFT ENVIRONMENTAL IMPACT ASSESSMENT AND
ENVIRONMENTAL MANAGEMENT PLAN
FOR**

**PROPOSED CEMENT GRINDING UNIT WITH CEMENT PRODUCTION CAPACITY OF 2
X 3 MILLION METRIC TONS PER ANNUM (6.0 MMTPA) LOCATED AT VILLAGE:
DEVLI, TEHSIL AND DISTRICT PALWAL, HARYANA BY AMBUJA CEMENTS LTD.**

STANDARD TOR OBTAINED FROM SEAC, HARYANA

VIDE F. NO. SEAC/HR/2024/176

PROPOSAL NO: SIA/HR/IND1/449852/2023 dated 27/08/2024



**SECTOR: 3 (b) CEMENT PLANT AS PER SCHEDULE OF EIA NOTIFICATION
2006 AND ITS AMENDMENTS (CATEGORY "B1")**

BASELINE STUDY PERIOD: 1ST OCTOBER 2023 – 31ST DECEMBER 2023

PROJECT PROPONENT
M/s AMBUJA CEMENTS LIMITED
Address: Adani Corporate House,
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NABET Certificate No. NABET/EIA/22-25/SA
0219, Validity : 22.03.2025

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EXECUTIVE SUMMARY

1.0 INTRODCUTION

1.1 PROJECT

Ambuja Cements Ltd., a prominent entity within the Adani Group, has been a leading force in the Indian cement industry for over 25 years. Renowned for its commitment to sustainability, Ambuja Cement aims to be the most competitive and sustainable company in the cement manufacturing sector. This dedication to sustainable practices not only fulfills a crucial business imperative but also provides the company with a distinct competitive edge. Currently, Ambuja Cement has a cement capacity of 31 million tonnes with six integrated cement manufacturing plants and eight cement grinding units across the country.

M/s Ambuja Cements Limited (ACL) proposes to setup a Cement Grinding Unit with Cement Production Capacity of 2 x 3.0 Million Metric Tons per Annum (6 MMTPA) at Village: Devli, Tehsil + District: Palwal, State: Haryana with an area of 10.97 Ha. This report has been prepared in reference to the Terms of Reference (ToR) issued by State Level Expert Appraisal Committee (SEAC), Haryana vide letter no SEAC / HR / 2024/ 176 dated 27/08/2024 for carrying out the Environmental Impact Assessment (EIA) study for the installation of Cement Grinding Unit. As per EIA Notification 2006 and subsequent amendments, the project can be classified under Schedule 3(b) Cement Plants. All standalone grinding units are classified under Category 'B1' and must obtain environmental clearance from the SEAC/SEIAA.

1.2 DETAILS OF THE PROJECT

1.2.1 LOCATION AND ACCESSIBILITY

The Cement Grinding & Packing unit will be situated in Village Devli, Tehsil+District: Palwal, State: Haryana. The area falls within Survey of India Topo sheet no. 53 H /8, (H43x8), scaled at 1: 50,000. Location map & Salient features / Environmental setting map for the proposed project is given in Figure 1& Table 1.

**Executive
Summary of Draft
EIA/EMP**
**Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million
Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District:
Palwal, State: Haryana.**
**TABLE NO:1 ENVIRONMENTAL SETTING WITHIN 10 KM RADIUS OF THE PLANT
SITE**

S. No	Particulars	Details		
1.	Project Location& Project Proponent name	Village: Devli, District+Tehsil- Palwal, State: Haryana M/S Ambuja Cements Limited (A Group Company of AdaniGroup)		
2.	Project Area	10.97 Ha		
3.	Geographical Location	Centroid - Latitude 28° 13'47.4256'' to 28° 14'00.5638'' N Longitude: 77° 19' 18.8045'' to 77° 19' 39.9306''E		
4.	Elevation above Mean Sea Level	430 m		
5.	Present Land Use	Fellow Land, Ambuja Resources Limited		
6.	Nearest Railway Station	Description	Distance (~km)	Direction
		Asoati Railway Station	1.3	N
7.	Nearest Airport	Indira Gandhi International Airport	42	NW
		Kidzania International Airport	36.78	N
8.	Nearest Highway	NH-2 (19)	2.6	W
9.	Nearest Road	NH-2 (19)	2.6	W
10.	Nearest habitation /Village	Devli	Adjacent	SW
		Medapur	1	W
		Asoati	1	NNW
		Pahladpur	2.1	NE
		Mandakaul	2.8	SE
		Kakaripur	4.2	ESE
11.	Nearest District Headquarters	Palwal	9	S
12.	Nearest City	Palwal	9	S

**Executive
Summary of Draft
EIA/EMP**

Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District: Palwal, State: Haryana.

13.	Densely populated area	S. No.	Places	Population as per census 2011 (Nos.)	Distance (~km)	Direction
		1	Devli	2958	Adjacent	SW
14	Inland waterbodies	S. No.	Description	Distance (~km)	Direction	
		River canal				
		1.	Agra Canal	2.6	E	
15.	Reserved Forests/ Protected Forests/Notified Wildlife Sanctuary/ Notified national parks/ Ecologically sensitive areas	Nil				
16	Defence Installations	Nil				
17.	Archeologically Important places	S. No.	Description	Distance (~km)	Direction	
		1.	Raja Nahar Singh Fort	11	N	
		2.	Panchwati Temple	10.9	S	
18.	Interstate/National Boundaries	Nil within 15km study Area				
19.	Hills/Valleys	Nil within 15km study Area				
20.	Seismic Zone	Zone-IV (High Damage Risk Zone)				

**Executive
Summary of Draft
EIA/EMP**

Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District: Palwal, State: Haryana.

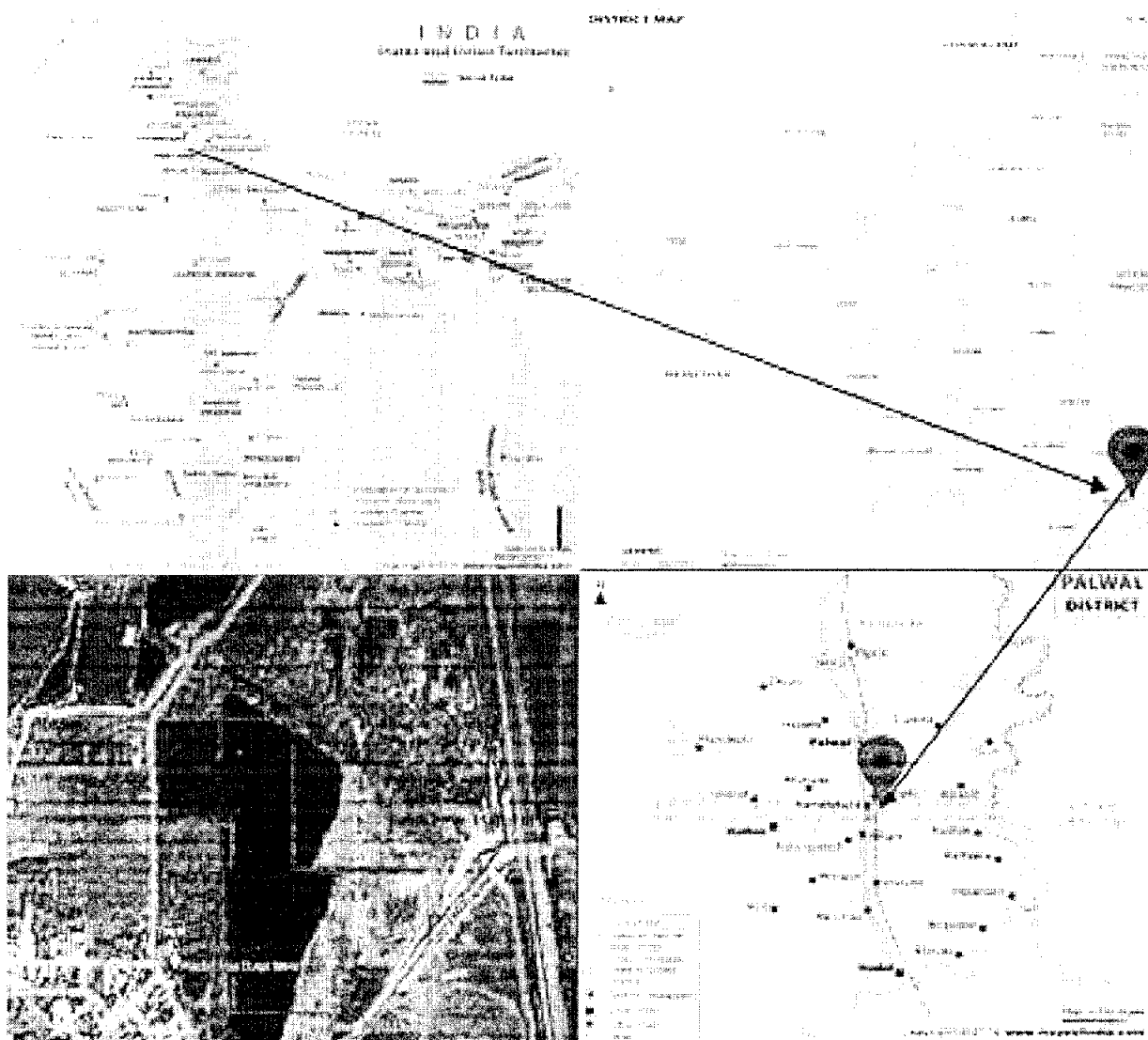


FIGURE NO.1 LOCATION MAP OF THE PROJECT SITE

2.0 PROJECT DESCRIPTION

2.1 Resource Requirement for The Project Activity

Out of total land about 3.67 hectare of which ~33.5 % of the area will be developed as greenbelt area & plantation.

**Executive
Summary of Draft
EIA/EMP**

Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District: Palwal, State: Haryana.

Table 2 Proposed Land Area Break up Details

S. No	Land use Description	Area (in hectare)	Percent (%)
1	Cement Plant (Plant Machinery)	3.82	34.8
2	Green Belt/Plantation	3.67	33.5
3	Open Area	3.48	31.7
Total		10.97	100

2.1.1 WATER REQUIREMENT

The total water requirement for grinding unit will be 600 KLD which will be sourced from Ground Water/ Agra Canal. The breakup of the water requirement is given in the table below

TABLE NO.3 BREAK UP OF WATER REQUIREMENTS

	Mill-1	Mill-1	Total
Process water consumption	180	180	360
Drinking & Flushing water consumption	15	15	30
Water treatment reject/Backwash water	15	15	30
Cooling water , (Evaporation + Blow down losses)	90	90	180
Total water consumption	300	300	600
Total waste water from process and cooling			
Reject water of Water Treatment	15	15	30
Reject/blow down water of CT	15	15	30
Regeneration from sewage water treatment plant	11	11	22
Total for Dust suppression system and green belt	41	41	82

2.1.2 POWER REQUIREMENT

Total power requirement for the proposed grinding unit will be 36 MW which will be sourced from nearest sub-station at line from nearby sub-station at Devli at 132 KV / 66 KV or 33 KV switch yard with suitable step down transformer, if required.

2.1.3 FUEL REQUIREMENT

The fuel is required for the operation of 1000 KVA DG set. To be directly sourced from nearby authorized local retailers as and the required for intermittent consumption. The estimated requirement of the fuel will be 80-100 liters per hour.

Executive Summary of Draft EIA/EMP	Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District: Palwal, State: Haryana.
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2.1.4 RAW MATERIAL REQUIREMENT

The maximum annual requirement of major raw materials and their probable sources of procurement are given below in Table 4. Raw material requirement shall vary with the type of cement (OPC/PPC & other types as per market demand) manufacturing.

TABLE NO.4 THE MAXIMUM ANNUAL REQUIREMENT OF MAJOR RAW MATERIALS

Sl. No.	Raw material for each line (Dry basis)			Source & Distance	Mode of Transport	Storage for both lines
	Particulars	Max	Min			
1.	Clinker	2 x 2.85 MMTPA	2 x 0.90 MMTPA	In house/ Domestic Plants (Marwar Mundwa) ~600Km	Road/Rail	Clinker Silo 100000MT
2.	Gypsum (natural/ chemical)	2 x 0.24 MMTPA	2 x 0.15 MMTPA	Bikaner , Rajasthan or any other domestic sources ~500Km	Road/Rail	Covered Shed 4000 MT
3.	Fly ash	2 x 1.05 MMTPA	2 x 0.90 MMTPA	Nearby thermal Power plant(NTPC Dadri/Harduaganj/NTPC Jhajjar) ~200 Km	Road/Rail	RCC Silo 2 x 4000 MT CFA/WFA-2000t
4.	Slag	2 x 1.95 MMTPA	2 x 0.75 MMTPA	Domestic ~500 km	Rail/Road	Covered Shed 7000 MT
5.	Coal (For HAG)	2 x 0.07 MMTPA	2 x 0.03 MMTPA	South Eastern Coal Field Ltd ~ 1200Km	Road/Rail	Covered Shed 1000 MT

2.1.5 MANPOWER REQUIREMENT

The total manpower requirement for the project is estimated around 1685 persons, of which the requirement during construction period is 1530. Details of manpower required during construction and operation phase are given as below in Table 5.

TABLE NO 5. TOTAL MANPOWER REQUIREMENT

Description		Construction Phase	Operation Phase
Proposed	Permanent	30	30
	Contract	1500	125
Total (A)		1530	155
Period of employment in days (B)		545	365

**Executive
Summary of Draft
EIA/EMP**
Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District: Palwal, State: Haryana.

Total Man-days (A*B)

833850

56575

2.2 CEMENT MANUFACTURING PROCESS

The proposed cement grinding unit will use advanced Vertical Roller Mill (VRM) and Ball Mill + Roller Press technology to produce PPC, OPC, PSC, and composite cement. Clinker, gypsum, and fly ash will be stored and handled efficiently, with clinker grinding done in closed ball mills with high-efficiency separators. The plant emphasizes energy efficiency and environmental sustainability. The production process includes clinker, fly ash, and gypsum grinding, cement production, storage, packing, and dispatch. VRM allows for drying, grinding, material transport, and classification in one unit, while ball mills work on impact and attrition. The finished cement will be packed via rotary packers or transported in bulk.

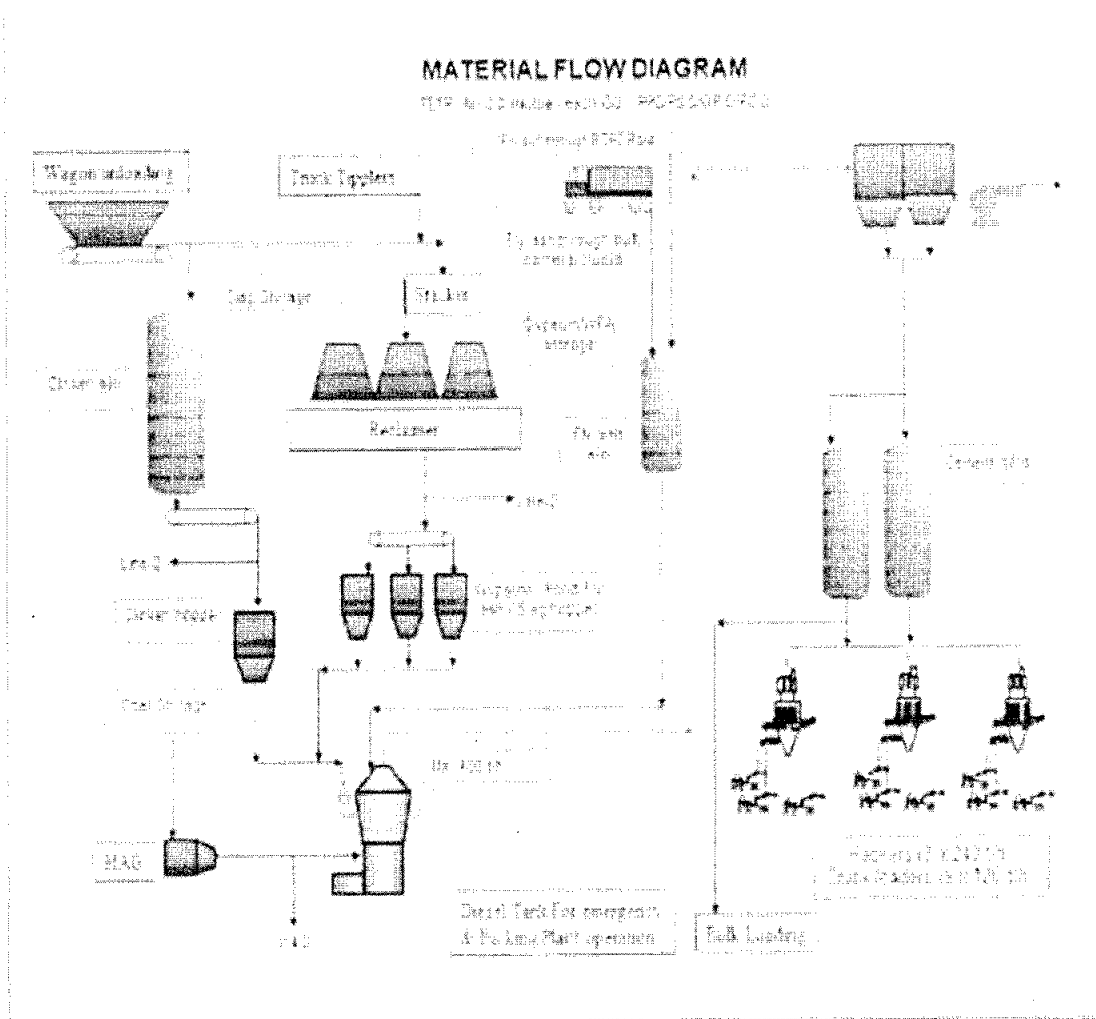


FIGURE NO.2 PROPOSED PROCESS FLOW DIAGRAM

**Executive
Summary of Draft
EIA/EMP**

Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District: Palwal, State: Haryana.

2.3 SOLID AND HAZARDOUS WASTE MANAGEMENT

The proposed waste management plan includes the collection of 65 kg/day of organic waste in bins, which will be composted and used as manure for greenbelt development. Additionally, 40 kg/day of inorganic waste will be collected in bins and disposed of through authorized PCB vendors.

TABEL NO.6 HAZARDOUS WASTE GENERATION AND MANAGEMENT

Sl.No	Name of materials	Schedule	Proposed Quantity (TPD)	Handling & Storage	Method of disposal
1	Used oil	5.1	2	In isolated area with non-permeable concrete flooring	Through CPCB/SPCB authorized agency Recycler
2	Cotton rags	33.2	4	In isolated area with non-permeable concrete flooring	Through CPCB/SPCB authorized agency (TSDF/CHWIF)
3	Lead acid batteries	-	0.7	In isolated area with non-permeable concrete flooring	To OEM through buy-buy-back/through authorized recycler
4	Used oil containers @20L capacity	33.1	0.6	In isolated area with non-permeable concrete flooring	Through CPCB/SPCB authorized Agency Recycler

3.0 BASELINE ENVIRONMENTAL STUDIES

A comprehensive survey was conducted within a 10-kilometer radius for the expansion of Ambuja Cements Ltd. located at Village Devli, Tehsil and District: Palwal, State- Haryana. As per the EIA guidelines, study was conducted within a 10 Km radius from the periphery of the proposed site. Baseline data for environmental attributes like ambient air, meteorology, water, hydrology, land use, soil, geology, noise, socio-economic, ecology and biodiversity etc. were collected. The study was conducted over a three-month period, from 1st October 2023 to 31 December 2023 during Post Monsoon season.

3.1 LAND USE

Land use refers to the economic use of land, while land cover describes the composition of the land's surface. Remote sensing and digital image processing techniques, using tools like ERDAS and ARC GIS, are employed to map land use/land cover for environmental management and resource planning.

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TA BLE NO 7. MAJOR LAND USE/LAND COVER CATEGORIES OF STUDY AREA

SL No	Category	Area in Ha	% of the Study Area
1	Agricultural Land	9429.36	27.57
2	Fallow Land	14730.62	43.07
3	Water bodies/Canal/Nala	206.69	0.60
4	Plantation	3757.76	10.99
6	Settlements/Built-up Land	6077.67	17.77
	Total	34202.1	100.00

3.2 AMBIENT AIR QUALITY

Eight (8) monitoring locations were set up in the study area for assessment of the existing ambient air quality. Ambient Air Quality Monitoring reveals that in post-monsoon season, the concentrations of average PM₁₀ and PM_{2.5} for all the 8 stations was found in the range of 31.67 µg/m³ (Baghaura Village) to 74.24 µg/m³ (within project site) and 17.20 µg/m³ (Pahaladpur Village) to 37.08 µg/m³ (within project site) respectively. During the study period, SO₂ and NO_x were found to be in the range of 8.03 µg/m³ (Pahaladpur Village) to 17.30 µg/m³ (Mandkaul Village) and 12.63 µg/m³ (at Baghaura village) to 35.24 µg/m³ (Within the project site) respectively. CO concentration was observed in the range of 0.16 mg/m³ (Badram) to 1.20 mg/m³ (Asoati). All the parameters are observed to be well within the limits of NAAQ norms. Air quality modelling was carried out using AERMOD and revealed that the incremental values will be marginal and resultant air quality parameters will be well within limits. Based on the primary and secondary data collection the ambient air quality monitoring results were analyzed and observed that the anthropogenic source of air pollution within the 10 km study area were mainly due to point and line sources.

3.3 NOISE QUALITY

Noise levels were monitored at eight locations around the project site during both day and night. The monitoring focused on residential, commercial areas, and nearby small to medium industries. Within a 10 km radius, noise levels at all sampling points were within CPCB's prescribed limits. Daytime noise levels ranged from 51.6 Leq dB(A) at Devli village (N-2) to 70.4 Leq dB(A) at the project site (N-1), while night time levels varied from 42.0 Leq dB(A) near Baghaura village (N-6) to 59.6 Leq dB(A) at

the project site (N-1). The noise levels monitored at all residential areas are within the norms prescribed for Residential Zone.

3.4 SOIL QUALITY

The soil quality is good enough for agriculture with additional macro and micro nutrients by way of fertilization through organic/inorganic means. As the soil parameters shows varying nutrient contents, acidic to basic soil parameters and organic carbon contents, slightly basic pH soil, varying organic carbon, soil amendments as well addition of fertilizers may be needed to make the soil amenable to chosen agricultural crop or plantation.

3.5 WATER QUALITY

3.5.1 SURFACE WATER QUALITY

The water quality is mostly within acceptable limits for Class-C waters, with only a slight exceedance in BOD. This indicates minor organic pollution but generally safe conditions for primary water contact and aquatic life. The water quality shows significant signs of organic pollution, with BOD levels well above the permissible limit and a high COD. This suggests a substantial presence of decomposing organic matter, potentially from domestic or agricultural runoff, which could harm aquatic life and reduce the suitability for recreational activities. The proposed grinding unit will have adopted zero liquid discharge technique. Hence, major impact is not envisaged by the proposed project and the surface water quality will be monitored regularly and maintained.

3.5.2 GROUND WATER QUALITY

Groundwater pollution is usually traced back to four main origins: Industrial, Domestic, agriculture and environmental pollution. The contaminant is carried by the aquifers and results in the groundwater pollution. The groundwater from all the tested villages is generally safe for drinking as per the IS 10500:2012 standards. Although some parameters, like turbidity and hardness, slightly exceed desirable levels, they are still within permissible limits, indicating the water is of acceptable quality. The proposed grinding unit will be based on the dry process thus no discharge of waste water is envisaged from the proposed project. Hence, major impact is not envisaged by the proposed project and the ground water quality will be monitored regularly and maintained.

3.6 BIOLOGICAL ENVIRONMENT

The Biological Environment study has been carried out as a part of the EIA study report to understand the present status of ecosystem prevailing in the study area and to study the floristic and fauna diversity of the terrestrial and aquatic environment of the study area within the 10 km radius of the plant site. The schedule I species found in the study area are one mammals, one bird and two reptiles. A wildlife conservation plan is under preparation for submission to regulatory authorities details of which along with the budget will be included in the final EIA after its approval from the regulatory authorities As per study conducted in the study area and as per information collected from Divisional Forest Officer, Palwal it is found that there are no National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/Elephant Reserves/(existing as well as proposed) within 10 km of the site area. The nearest protected areas Asola Bhatti Wildlife sanctuary which is ~29 km away from away from project site.

3.7 SOCIO ECONOMIC ENVIRONMENT

The socio-economic survey of the villages provides a comprehensive overview of the population, average household size, literacy rate, and sex ratio, among other factors. One key concern highlighted in the study is the non-working population in the study area. A portion of the population faces challenges due to limited income opportunities, with many expressing the need for sustainable, long-term employment to improve their livelihoods. The infrastructure and amenities available in the region reflect the area's moderate economic development. While basic infrastructure exists, higher-level amenities such as advanced education, healthcare services, and access to clean drinking water are notably lacking. The availability of educational and healthcare facilities is below average, highlighting the urgent need for enhanced medical services. In general, the socio-economic condition of the local population can be described as average, with moderate levels of literacy and work participation. However, the study underscores the need for significant improvements in essential services and employment opportunities to uplift the community's overall well-being.

3.8 TRAFFIC STUDY

Due to the proposed project, there will be addition of heavy and light motor vehicles in the existing traffic. The LOS value is 0.17. According to this performance will be in the category of Excellent scenario. The present road capacity is good enough to bear the increased traffic load due to proposed project. However, internal roads and feeder roads will be maintained to facilitate transportation.

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4.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.1 IMPACT ON AMBIENT AIR QUALITY

During the construction phase, air quality may deteriorate due to fugitive dust emissions from activities like excavation, backfilling, concreting, and the operation of heavy vehicles and machinery. Emissions of pollutants such as particulate matter, sulphur dioxide (SO₂), nitrogen dioxide (NO₂), and carbon monoxide (CO) are likely during both the construction and operational phases, with sources including raw material handling, production processes, and vehicle movement.

Mitigation measures include regular maintenance of vehicles and equipment to meet CPCB emission standards, water sprinkling on roads and construction sites to control dust, and the use of bag filters in cement mill stacks and bagging plant to limit dust emissions to 30 mg/Nm³. Fly Ash handling will be done in a closed circuit with water sprays to minimize dust. Automatic tripping systems will be installed in case of pollution control equipment failure, and materials will be stored in covered or enclosed spaces to prevent windblown dust. Dust suppression, including water sprinkling, will be employed at key areas, air quality will be monitored regularly, and construction workers will be provided with dust masks for protection.

4.2 IMPACT ON AMBIENT NOISE QUALITY

During the construction phase, activities such as foundation work, structure fabrication, construction equipment operations, and vehicle movement are likely to increase ambient noise levels, particularly in areas closer to the site, though the impact will be minimal due to the absence of nearby settlements. In the operation phase, noise levels are expected to rise near equipment, but they will be contained and kept within OSHA's 75 dB(A) limit.

To mitigate noise, measures such as regular machine maintenance, speed limits for vehicles, improved silencers, vibration isolation, use of personal protective equipment (PPE), and development of a greenbelt around the site will be implemented.

4.3 IMPACT ON WATER QUALITY

During the construction phase of the proposed plant, approximately 200 KLD of water will be sourced from the Agra Canal or treated water from Palwal, with the construction lasting around 18 months. This temporary water requirement will have minimal impact on regional groundwater availability, and drinking water will be provided for workers. Domestic wastewater will be treated on-site using septic tanks and soak pits, ensuring no discharge and protecting surrounding water quality. In the operation

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phase, the grinding unit will have minimal water consumption, using a closed-loop cooling system that recirculates water, with only a small amount of makeup water needed to offset evaporation losses. Mitigation measures include preventing wastewater discharge outside the plant, installing rooftop rainwater harvesting structures to recharge groundwater, treating domestic wastewater in an STP, and maintaining separate networks for storm water and wastewater drains with sedimentation pits and oil separators.

Mitigation measures

- Wastewater will not be discharged outside the plant premises. Therefore, operation of Grinding Unit will not pose any adverse impact on the ground water resources of the area.
- The company will install roof top rainwater harvesting structures inside the plant premises to re-charge the groundwater
- The domestic wastewater generated from the toilets, washrooms and canteen of the plant shall be treated in STP.
- The network of storm water drains and wastewater drains inside the plant will be made separate.
- The storm water drain will have sedimentation pits

4.4 IMPACT ON LAND ENVIRONMENT

The project activities will result in the generation of soil and debris, which will be carefully managed throughout the construction process. Prior to the onset of the monsoon season, comprehensive measures will be taken to stabilize any disturbed slopes to prevent erosion and maintain site integrity. Topsoil will be meticulously preserved and reinstated upon the completion of construction to restore the natural landscape. The levelling process will involve the strategic placement of backfill materials to ensure proper ground stability. To mitigate fugitive dust emissions during construction, it is highly recommended to implement dust suppression techniques, such as regular spraying, to maintain air quality and reduce environmental impact.

Mitigation Measures

- All earth work will be completed in such a way so that the soil erosion and carryover of the materials in other areas are protected.
- Excavated soil will be stored properly to avoid the spread of wind-blown dust and shall be reused for greenbelt maintenance.

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- Proper disposal of construction debris, the packaging materials which may consist of wooden boxes and jute wrappers will be stored at suitable place and disposed of suitably.
- Change in existing Land use\Land cover from agricultural fallow land into industrial uses will be for longer duration and this change in Land use\Land cover shall be confined to project site only.

There will be no change in Land use\Land cover outside the plant area.

4.5 IMPACT ON ROAD AND TRAFFIC

The activities which would probably be responsible for traffic congestion would be transportation of raw material for which trucks will be used. Traffic to the different sites during construction/installation will be intensive and heavier than at present in normal operating conditions. The aspect of the activities would be generation of dust from movement of vehicles are likely to cause some impacts on the working population within the immediate vicinity of the project site. In turn, it will subject existing roads to more stress.

Mitigation Measures

- Vehicles with PUC certificate will be hired
- Vehicles will be covered with a tarpaulin and not overloaded.
- Un-necessary blowing of horn will be avoided.
- Roads from NH-2(19) to Plant Site will be maintained in good condition to reduce noise due to traffic.
- Greenbelt of appropriate quality and width will be developed.
- To avoid accidents, the speed of vehicles will be low near habitation areas

4.6 IMPACT ON SOCIO ECONOMIC ENVIRONMENT

The construction phase will employ about 1,530 people, mostly from the local area, creating indirect jobs through market and trade development. However, the influx of workers may strain sanitation, introduce diseases, increase local conflicts, and cause short-term health impacts like eye irritation and headaches from dust exposure.

Mitigation Measures

- Awareness programme will be conducted before the monsoon season regarding the spread of water borne/ vector diseases.

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- Mosquito repellents will be provided in the nearby villages and at construction site to avoid the spread of diseases.
- In advance, facilities with equipped medical and safety services will be provided to take a control over the incident/violence if any caused.
- To control the dust emissions during the construction phase, the site boundary will be covered by the curtains.
- Whenever necessary, collaboration between project authority and local bodies will be done on regular basis with an objective to build and maintain a good relationship which is necessary for smooth functioning of the project as well as progress and welfare of the people in the study area
- Job oriented training courses will be organized through industrial/technical training institutions for educated youth like electrical, tailoring, plumbing, type writing, shorthand and machine repairing, welding fabrication, and other skill developing trades.

5.0 ALTERNATIVE ANALYSIS

Ambuja Cements Limited conducted a comprehensive site suitability analysis for the proposed cement grinding unit, assessing three potential locations. The evaluation process involved a detailed comparison of the three sites based on various factors such as environmental impact, logistical advantages, and infrastructure support. This thorough assessment was carried out to identify the most appropriate location for the project, ensuring that the selected site meets both operational requirements and sustainability standards.

TABLE NO. 8 DETAILS OF ALTERNATIVE SITE

SITE 1:Village Amaru, Tehsil +District: Palwal; State: Haryana	SITE 2:Village: Devli, Tehsil+District: Palwal; State: Haryana	SITE 3:Village: Pyala, Tehsil+District: Palwal; State: Haryana
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The selected site is site 2. Selected site is suitable due to road and rail connectivity. 90% of raw materials are expected by rail to arrive at project site and 90% product will be transported by road. Since the selected site is having very low human settlement the same has been considered. The selected site is a fallow land with no agriculture and the land is already converted for industrial purposes.

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6.0 ENVIRONMENTAL MONITORING PROGRAMME

Post project monitoring will be conducted as per the guidelines of SPCB and MoEF & CC and are tabulated below in Table 9. A monitoring schedule is very important to comply with the standards for which control measures have been designed.

TABLE NO 9. MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

S. No	Potential impact	Action to be followed	Parameters for monitoring	Frequency of monitoring	Location
1	Air Emissions	Ambient Air Quality Monitoring 4 locations inside the project boundary.	PM10, PM2.5, SO ₂ , NO _x & CO	Twice in a week.	At least four locations
		Online Continuous Ambient Air Quality Monitoring	PM10, PM2.5, SO ₂ , NO _x & CO	Online Continuous	At one location (Already Provided)
		Exhaust from Vehicles Use of fuel efficient vehicles. Maintenance of vehicles, Use of only PUC certified vehicles.	Vehicle logs to be maintained	--	Within the plant boundary
		Stack Emission Monitoring of stack attached Cement Mill, Packaging Area	PM (Ball Mill, FAD, Roller Press, Packaging Plant, Wagon Tripler) PM, SO ₂ , NO _x , (for DG)	Once in a month	Within the plant boundary
2	Noise	Noise generated from various plant operations, vehicular to be optimized and monitored	Spot Noise Level recording; Leq (night), Leq(day), Leq (dn)	Once in a month	Noise measurement at the source & boundary of the project
		Generation of vehicular noise	Maintain records of vehicle	Periodic during operation phase	Within plant boundary
3	Wastewater Discharge	No untreated discharge of sewage to be made to surface water, groundwater or soil.	No discharge hoses in vicinity of watercourses.	Periodic during operation phase	Within plant boundary

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		Take care in disposal of sewage generated such that soil and groundwater resources are protected	Discharge norms for sewage will be maintained	Discharge norms for sewage will be maintained	STP discharge water
		Compliance of treated sewage usage/ discharge to standards	pH, TSS, TDS, BOD, COD, Oil Grease Coliforms count	Periodic during operation Phase	One location (Treated Wastewater)
4	Drainage and effluent Management	Ensure drainage system and specific design measures are working effectively. Design to incorporate existing drainage pattern and avoid disturbing the same.	Visual inspection of drainage and records thereof	Periodic during operation phase	Within plant boundary
5	Water Quality and Water Level	Monitoring used water quality & groundwater quality and levels	Comprehensive monitoring as per IS: 1050 Groundwater	Quality-twice a year Level-Monthly.	Four locations surrounding project site
6	Energy Usage	Energy usage for air-conditioning and other activities to be minimized Conduct annual energy audit for the buildings	Energy audit report	Annual audits and periodic checks during operational Phase	Within plant boundary
7	Emergency preparedness, such as fire fighting	Fire protection and safety measures to take care of fire and explosion hazards, to be assessed and steps taken for their prevention.	Mock drill records, on site emergency plan, evacuation plan	Periodic during operation phase	Within plant boundary
8	Maintenance flora and fauna	Vegetation, greenbelt/ green cover development.	No. of plants, species	Periodic during operation Phase	Within project boundary.
9	Solid a Hazardous Waste Management	Implement waste management plan that identifies and characterizes every waste arising associated with proposed activities and which identifies the	Records of solid waste generation, treatment and disposal	Periodic during operation phase	Within plant boundary

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		procedures for collection, handling & disposal of each			
10	Health	Employees and migrant labour health check ups	All relevant parameters like Routine Blood Examination, Microscopic, Biochemistry Routine Urine Examination, Lung function test, Sputum examination, Audiometry, X-ray, ECG	Regular check ups	All workers

6.1 EMISSION AND DISCHARGE FROM PLANT

A well-equipped environmental laboratory will be set up within the plant premises. Proper periodic training will be given to EMC employees to carry out necessary environmental monitoring and analysis. The production of cement can cause the following environmental problems:

- (i) Emission to air
- (ii) Water pollution
- (iii) Solid wastes and
- (iv) Hazardous wastes.

Details of emission monitoring system installation is given in the table no 10

TABLE NO. 10 DETAILS OF EMISSION MONITORING SYSTEM INSTALLATION

Particulars	Off-Line Monitoring as per (3 rd party monitoring – Monthly)	On-Line Monitoring Parameters
A. Stack Monitoring		
Cement Mill	CPCB standard & Consent to Operate	PM
B. Industrial Wastewaters		

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Inlet & Outlet of the STP	CPCB standard & Consent to Operate	pH, BOD, COD, TSS, Conductivity residual Cl, DO.
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6.2 GREEN BELT

The extent project is 10.97 Ha out of which 3.67 hectare ie. ~33.5 % of the area will be developed as greenbelt area & plantation. A thick greenbelt all along the roads and plant will be developed. This greenbelt will serve as a buffer between the peripheries and the industry, there by controlling the air emissions and noise levels.

6.3 SOCIAL PARAMETERS

The socio-economic development activities associated with the proposed project will focus on benefiting the nearby villages surrounding the project site. The company plans to implement initiatives that complement existing governmental programs aimed at improving the well-being of the local population. In addition to these efforts, environmental awareness campaigns are being organized and will continue to be held to educate and engage local communities on sustainable practices. These awareness camps aim to promote environmental responsibility and encourage active participation in preserving local ecosystems. Aligning with the national objective of sustainability, the company will undertake a range of developmental activities that foster long-term economic growth, environmental stewardship, and social upliftment in the region.

7.0 ADDITIONAL STUDIES

7.1 RISK ASSESSMENT

Risk is the potential that a chosen action or activity will lead to a loss of human or property. Risk assessment is a step for Risk Management. Risk assessment is the determination of qualitative and quantitative value of risk related to a situation or hazard.

TABLE NO. 11 POSSIBLE HAZARDOUS LOCATIONS

S.No	Hazardous area	Hazard/Impact
1	Electrical room	Fire and electrocution
2	Transformer area	Fire and electrocution
3	Cable tunnel	Fire and electrocution

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4	Coal storage yard	Sliding and fire
5	Clinker silo	Collapse and material spillage
6	Grinding unit	Fatal accident, High noise
7	Chimney	Structure failure, Leakage/Air Pollution
8	Coal handling	Fire
9	Fuel storage area	Fire and spillage
10	Packing plant	Fire collapse and material spillage

Disaster management plans are prepared with an aim of taking precautionary step to control the hazard propagation, avert disaster, take action after the disaster which limits the damage to the minimum and follow the on-site emergency planning. The onsite emergency is an unpleasant situation that causes extensive damage to plant personnel and surrounding area and its environment due to in operation, maintenance, design and human error.

The off-site plan in detail will be based on those events, which are most likely to occur, but other less likely events, which have severe consequence, will also be considered. Incidents which have very severe consequences yet have a small probability of occurrence would also be considered during the preparation of the plan. However, the key feature of a good off-site emergency plan is flexibility in its application to emergencies other than those specifically included in the formation of the plan.

7.2 PUBLIC CONSULTATION

The Draft EIA/EMP report has been submitted to concerned authority, Haryana for public hearing. Action plan will be prepared and submitted after the conduction of public hearing.

8.0 PROJECT BENEFITS

The proposed project will enhance the overall socio-economic growth of the region by improving physical and social infrastructure, creating employment opportunities for skilled, semi-skilled, and unskilled workers, and providing various other tangible benefits to the nearby areas.

The proposed project will significantly improve local physical infrastructure by enhancing healthcare, roads, water access, sanitation, and implementing water security measures like rainwater harvesting and pond renovation. Social infrastructure will also benefit, with job creation boosting socio-economic conditions, especially for local and tribal populations, and the development of medical, educational, and self-help initiatives. The project will generate 1,530 jobs during the 18-month construction phase and

155 operational jobs, alongside indirect employment in transportation, ancillary services, and local businesses, with a focus on hiring local unskilled and semi-skilled labour.

9.0 ENVIRONMENTAL MANAGEMENT PLAN

The major source of pollution in a cement plant are stack. Air pollution will be the major concern to be looked upon for the project activity. No major water, noise & soil pollution is envisaged from the project activity. Various mitigation measures have been proposed to take care of the environment in respect of air, water, noise, soil & the green cover of the project.

9.1 Air Quality management plan

The Air Quality Management Plan for the construction and operation phases includes water sprinkling on unpaved roads, regular sweeping of paved roads, and the use of PUC-certified construction equipment. Vehicles will be well-maintained, and stockpiles will be covered to prevent dust emissions. During the operation phase, fugitive emissions will be controlled by transporting clinker via covered conveyor belts and fly ash pneumatically, concreting plant roads, sweeping with vacuum machines, limiting vehicle speeds to 10 km/h, and using water sprinkling on bare lands. CPCB guidelines will be implemented to minimize emissions.

9.2 Solid and Hazardous waste management plan

TABLE NO. 12 SOLID WASTE MANAGEMENT PLAN

S. No.	Type of Waste	End Use / Disposal Plan
1.	Dust collected from air pollution control equipment	Will be totally recycled back to process.
2.	Sludge from Sewage Treatment Plant (30 Kg/day)	Will be used as manure for greenbelt development
3.	Municipal waste (domestic and or commercial wastes (40 kg/day)	Waste will be collected & segregated into bio- degradable & non- degradable. Further, Bio- degradable waste will be converted into organic manure by installation of Organic Waste Converter (OWC) machine and manure will be used for greenbelt development & plantation and non-degradable waste will be sent to authorized vendor from CPCB/SPCB as per scientifically in compliance of Solid

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		Waste Management rules 2016, as amended thereof.
4.	Redundant machinery or equipment of (~250 tonnes/ annum)	Occasionally, scraps as and when generated segregated, stored & sold to vendors.
5.	Horticultural waste	Horticultural wastes generated from gardens/greenbelt will be composted.
6.	Construction and demolition waste	Will be utilized in levelling of land and construction of roads

TABLE NO. 13 HAZARDOUS WASTE GENERATION

S. No.	Type of Waste	Waste Category	Treatment/Disposal Plan
1.	Used Oil /Spent oil / Grease	Schedule I, Category - 5.1	Will be generated per Schedule-I of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016; which will be sent to CPCB/ SPCB authorized recycler. Used Oil/ Spent oil will be filled in Empty barrels and further sent to CPCB/ SPCB authorized recycler.
2.	Waste/ Residue containing oil	Schedule I, Category - 5.2 & 33.2	
3.	Empty barrels	Schedule I, Category - 33.1	
4.	Contaminated cotton rags	Schedule I, Category - 5.2 & 33.2	
5.	E-Waste	Schedule I	Will be sent to registered vendors as per E- Waste Management Rules, 2016.
6.	Used Lead acid batteries	Schedule III	Will be stored in the designated storage area and will be disposed-off/ sent to registered vendors as per Battery Waste Management Rules 2020.

9.3 STORM WATER MANAGEMENT PLAN

Rainwater harvesting will be implemented according to the site's elevation and contour profile, directing storm water towards a dedicated rainwater harvesting pond based on these elevations. To ensure the collected storm water is suitable for direct use, careful management practices will be employed to prevent

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contamination. This includes regular inspections and cleaning of storm drains to maintain their effectiveness. Additionally, to protect the quality of harvested rainwater, the use of fertilizers and pesticides will be avoided before and during the monsoon season. These measures aim to optimize rainwater harvesting and ensure the resource remains clean and usable.

9.4 OCCUPATIONAL HEALTH AND SAFETY MANGEMENT PLAN

- Standard methods and machinery will be used.
- Use of Personal Protective Equipment (PPE) will be mandatory.
- Electrical equipment will be grounded, well insulated and conform to applicable codes.
- Employees will be provided with hard hats, safety boots, eye and ear protection, and snug fitting gloves as appropriate.
- Masks and dust-proof clothing will be provided to personnel working in areas with high dust levels.
- Sanitation facilities will be well equipped.
- Ventilation systems will be provided to control work area temperatures and humidity;
- Pre-employment and periodic medical examinations will be conducted for all personnel, and specific surveillance programs instituted for personnel potentially exposed to health hazards.
- At the time of placement each worker will be medically examined by a qualified doctor to ascertain his physical fitness for specific job.
- During the course of employment, the workers will be examined for such parameters as Chest X-ray Vision Audiometry Spirometry ECG, the examination will be conducted once in six months in the occupational health center by a part time factory medical officer, to evaluate the effect of exposure.

9.5 GREEN BELT DEVELOPMENT PLAN

Out of the total project area of 10.97 hectares, 3.67 hectares (approximately 33%) will be dedicated to greenbelt and plantation development in line with CPCB guidelines, with plans to plant around 2500 saplings per hectare, factoring in a 70% survival rate. The Greenbelt/Plantation Management Plan includes preparing seed beds with appropriate fertilizers and mulch, using topsoil for development, and selecting plant species that are fast-growing, tall, and a mix of perennial evergreen and deciduous trees with thick canopies. Planting will be done in alternating rows around the site to minimize pollution dispersion, and species will be chosen for their ecological compatibility and adherence to regional soil and hydrological conditions, with a preference for indigenous species. The company will provide the

Executive Summary of Draft EIA/EMP	Proposed Cement Grinding Unit with Cement Production Capacity of 2 x 3 Million Metric Tons per Annum (6.0 MMTPA) at located Village: Devli, Tehsil+ District: Palwal, State: Haryana.
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necessary facilities and equipment, assign a horticulturist and team for management and care, and apply fertilizers as needed to ensure a healthy and dense greenbelt.

9.6 SOCIO ECONOMIC MANAGEMENT PLAN

An Environmental Cell will be established to oversee the mitigation of transient and temporary impacts during the construction phase, focusing on minimizing air pollutants by installing advanced pollution control equipment before any emissions are released into the atmosphere. Regular monitoring and analysis of gases will be conducted to ensure compliance with environmental norms. The project is expected to yield short-term positive impacts, including an improved quality of life for the local community. Additionally, the project proponent and contractors are committed to engaging the majority of the workforce from nearby villages and towns, thereby supporting local employment and economic development.

9.7 PROJECT COST AND EMP IMPLEMENTATION BUDGET

The total investment for the proposed project works out to approximately INR 1400 Crores for 6 MMTPA Devli Cement Grinding Unit. The breakup of cost of the project is given in the Table 14.

TABLE NO: 14 PROJECT COST BREAKUP

Particulars	Amount (INR in Crores)
Land & Site development	27.0
Engineering know-how & project management	24.0
Civil works & structure	464.0
Plant & machinery	568.9
Expense on training	6.0
Misc. fixed asset	9.0
Pre-operative expenses including interest during construction	146.9
EMP cost	70.2
Contingency @ 6%	84.0
Total Capital Budget	1400.0

**Executive
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COST BREAKUP FOR EMP
TABLE NO: 15 PROPOSED EMP COST

SI.No	Particulars	Estimated cost in INR	
		Capital	Recurring
1	Air pollution Control Measures	35.0	3.0
2	Water Pollution Control Measures	20	0.2
3	Occupational Health and Safety	3.0	0.4
4	Environmental Monitoring	10.0	1.0
5	Green Belt Development	2.2	0.2
	Total	70.2	4.8

10.0 CONCLUSION

The plant design incorporates leading-edge technology to effectively manage air emissions and noise levels during operations. No effluent will be produced from the plant, and all solid waste generated will be recycled back into the plant's processes. This Environmental Impact Assessment (EIA) report demonstrates that the careful execution of the proposed Environmental Management Plan will minimize negative environmental impacts while promoting both direct and indirect positive benefits to society through the project's development.

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**Ecomen Mining Pvt Ltd
Limited**

M/s Ambuja Cements

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- ① feedback Mechanism @ end of every year to ensure affirmative implementation of CSR.
- ② + Complaint Redressal Mechanism
- ③ Medical Camps for regular health check up of all the employees instructed to keep a check on occupational hazards.
- ④ Contractual emp? → local people to be absorbed

Underpass
↓