AAC BLOCK PROJECT BY AEROCON BUILDWELL PVT. LTD. (EKIESL- JUNE 2016-02)

Project title	AAC Block Project by Aerocon Build well Pvt. Ltd. (EKIESL- June 2016-02)
Project ID	1549
Monitoring period	01-May-2023 to 14-July-2024 (inclusive of both dates)
Original date of issue	20-September-2024
Most recent date of issue	06-March-2025
Version	05
***VCS Standard* Version**	VCS Standard version 4.7
Prepared by	Mr. Jimmy Sah Infinite Environmental Solutions Limited

CONTENTS

1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The company Aerocon Build well Pvt. Ltd (ABPL) are involved in manufacturing of Autoclaved Aerated Concrete (AAC) blocks/ fly ash bricks in Ujjain, India and part of the KEMKER and GOYAL Group. With the prime focus on delivering state of the art energy efficient bricks, the group has already delivered a significant market share in the region. The current project of Aerocon is an initiative to manufacture 150,000 cubic meters of AAC annually at Ujjain, Madhya Pradesh, India. The core of this technology is the composition of raw materials and its chemistry, with fly ash from thermal plants mixed with lime, cement, gypsum and Aluminum powder stone dust and plaster of Paris, which enable the blocks to acquire the mechanical properties required during the hydration and curing process without being sintered.

The prime objective of the project activity is to produce a high-quality walling material and wall insulating building material by adopting an efficient low energy intensive brick production process instead of a high energy intensive brick production process like Clay Brick Bull's trench kilns (BTKs) and positively impact the energy consumption pattern both at the brick production level and at the building operation level. While attaining the prime objective the project activity will also reduce GHG emissions associated to energy consumption (both fossil fuel and electricity) in the high energy intensive BTKs by an energy efficient brick making technology.

Reduce air pollution by introducing robust air treatment facilities in the project activity; the clay brick kiln technology is adopted by an unorganized sector with very poor air treatment facilities; and enhance use of fly ash, an industrial waste, as a major ingredient of building material.

Production process of AAC blocks and fly ash bricks does not involve sintering or kiln heating for blocks consolidation and thus eliminates the burning of fossil fuels as required in the clay brick production by adopting the green waste mixing technology in PFA slurry process, ultimately contributing to the reduction of greenhouse gas emissions. The estimated annual average and the total CO_2e emission reduction by the project activity over the crediting period of 10 years are expected to be 31,332 tCO_2e/year and 313,324 tCO_2e respectively.

The manufacturing processes of AAC blocks and fly ash bricks require electricity and steam generation for operation. The consumption of such forms of energy (electricity/fuel) to generate steam is much lower compared to the thermal energy consumed for production of burnt clay bricks. Furthermore, the steam required for the process is generated using biomass briquettes[1] produced locally from agricultural residues, which is renewable energy source and displaces the carbon intensive coal/fuel oils. Further AAC block and fly ash brick making technology needs cement and lime as process inputs, which are sources of emissions during their production.

[1] Biomass briquettes are a biofuel substitute made of biodegradable green waste like agricultural residues with lower emissions of greenhouses gases and carbon dioxide then traditional fuel sources.

However, such emissions are negligible when compared to the emissions from baseline activity, thereby leading to emission reductions.

The scenario existing prior to the implementation of the project activity and the baseline scenario:

This is a green field project. Prior to proposed project activity, there was no AAC block/brick manufacturing facility at the project location. Mostly the fly ash generated is dumped in the open and disposed of without using them at Thermal Power Station. Clay brick manufacturing, an alternative brick manufacturing technology and the baseline scenario involves two key processes: (a) producing green bricks and (b) sintering/firing the green bricks in a kiln. The sintering process requires huge amount of thermal energy inputs, which is sourced majorly from the fossil fuel-coal combustion with a small quantum from combustion of biomass in the form of fuel wood. Production of AAC blocks and bricks does not require any sintering process as the project activity eliminates the burning of fossil fuel as required in clay brick production. So, the amount of such energy, which is required in the project activity scenario, is much lower than the thermal energy required in clay brick manufacturing process. Therefore, the project activity enables total energy reduction and its associated GHG reduction due to changes in brick production process. It may be worthwhile to note that there will be some emissions associated with the production of raw materials (cement and lime) used in the project activity, which will be accounted for as leakages to project activity.

The description of major equipment used for the manufacturing of AAC blocks is as follows:

Name of the Machines	Specification of the Machines		Numbers of machines used
Boiler	TPH	8	1
	Boiler pressure 17.5 kg/cm^2	17.5	
	Boiler Capacity, (F & A 100°C)	8000 kg/hr	
	Type	Coal/ Biomass Fired boiler	
Air Compressor	Air Receiver capacity 1.0 (1000 l)	1.0 m^3	2
	Free Air delivery	462 cfm	
	Motor Input (Power)	75 kW (100 HP)	
Vacuum pump (for Autoclave machine)	Capacity Final pressure	2000 m^3 /hr 0.3 bar atm (absolute)	1
Auto clave	Number		6
	steam pressure	12 bars	
DG set	Capacity	250kVA	2

The start date of the project activity is 15-July-2014, which is start date of actual operation of the project activity.

The spatial extent of project boundary is the Indian grid, manufacturing unit of the AAC Blocks and Fly ash bricks and source of raw materials.

The production of the fly ash brick was discontinued from June 2016 because of insufficient demand in market. The same is provided as a part of deviation during previous monitoring period.

The monitoring period is from 01-May-2023 to 14-July-2024. The total GHG emission reductions or removals generated in this monitoring period are 31,270 tCO_2e.

1.2 Audit History

Audit type	Period	Program	Validation/verification body name	Number of years
Validation and Verification	15-July-2014 to 30-June-2016	VCS	EPIC Sustainability Services Pvt. Ltd.	1 year 11 month 16 days
Verification	01-July-2016 to 31-December-2020	VCS	Earthhood Services Pvt. Ltd.	4 years 6 months
Verification	01-Jan-2021 to 30-April-2023	VCS	VKU Certification Pvt. Ltd.	2 year 4 months
Verification	01-May-2023 to 14-July-2024	VCS	VKU Certification Pvt. Ltd.	1 year 2 months 14 days
Total	15-July-2014 to 14-July-2024	VCS	-	10 years

1.3 Sectoral Scope and Project Type

Sectoral scope[2]	Scope 4 - Manufacturing Industries
Project activity type	Type III - Other Project Activity

1.4 Project Proponent

Organization name	Aerocon Buildwell Pvt Ltd
Contact person	Mr. Rahul Dani

[2] *Projects, activities, or methodologies may be developed under any of the 16 VCS sectoral scopes: https://verra.org/programs/verified-carbon-standard/vcs-program-details/#sectoral-scopes*

Title	Director
Address	21/1 Snehlataganj, Street No. 1 Indore (MP)
Telephone	-
Email	aerocinfo@gmail.com

1.5 Other Entities Involved in the Project

Organization name	Infinite Environmental Solutions Limited
Role in the project	Project Consultant
Contact person	Mr. Jimmy Sah
Title	COO
Address	Scheme Number 94, Ring Road, Sector F, Residential Plot Number 128 FB, Indore – 452016 (M.P.), India
Telephone	+91-9644130430
Email	jimmy@infisolutions.org

1.6 Project Start Date

Project start date	15-July-2014
Justification	The start date of the project activity is 15-July-2014, which is start date of actual operation of the project activity.

1.7 Project Crediting Period

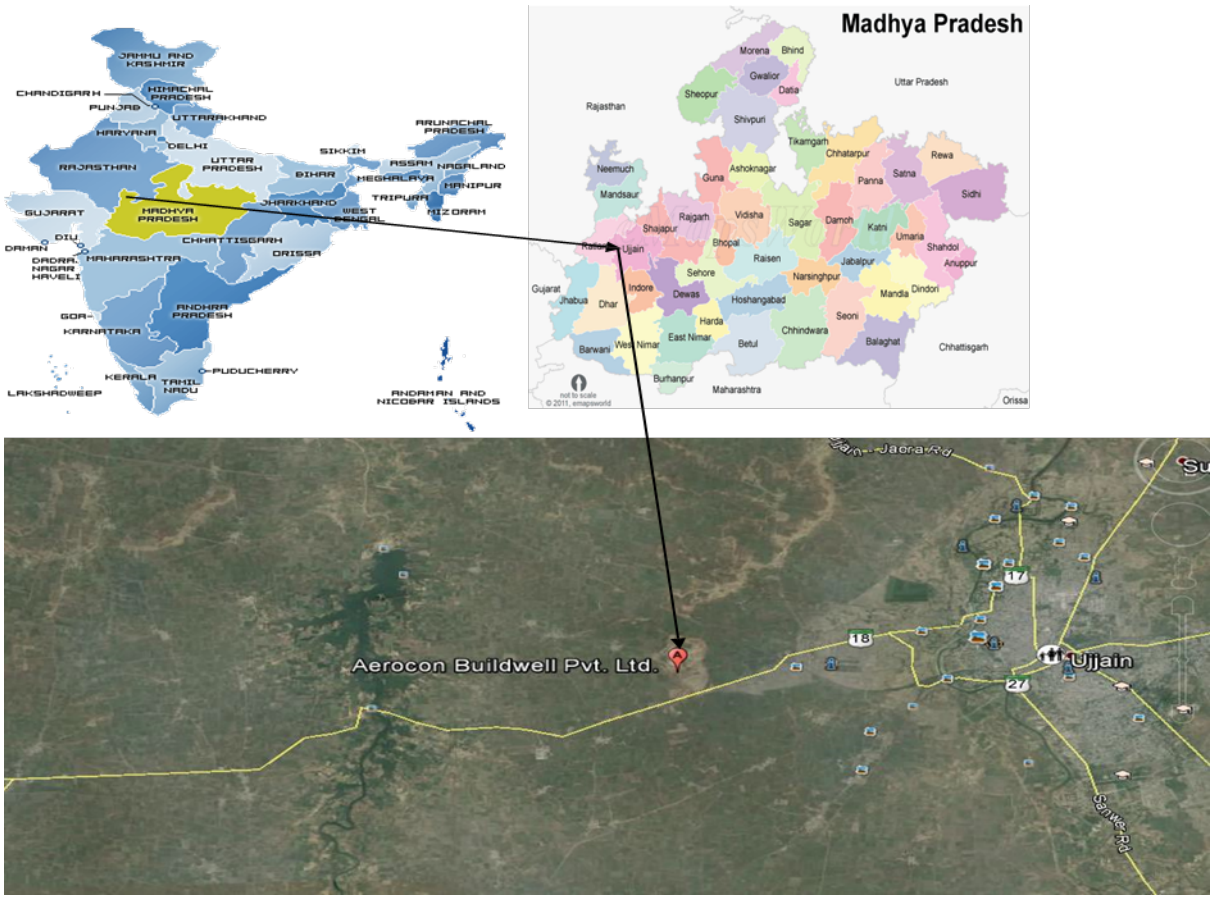
Crediting period	☐ Seven years, twice renewable ☐ Ten years, fixed ☒ Other (The project crediting period shall be a maximum of ten years which will be renewed at most twice.)
Start and end date of first or fixed crediting period	15-July-2014 to 14-July-2024 (inclusive of both dates)

1.8 Project Location

The nearest airport is in Indore. Project site is well connected by district roads to the nearest town. The physical address and geographic co-ordinate of the project activity under the project is provided below:

Latitude	Longitude	Village	Tehsil	District	State
N 23.177946	E 75.698998	Jalal Khedi	Ambodia Badnaga	Ujjain	Madhya Pradesh

The map of project site is as indicated in the following figure:



1.9 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	AMS III.Z	Fuel Switch, process improvement and energy efficiency in brick manufacture	6.0[3]
Tool	Tool 03	Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion	2[4]
Tool	Tool 05	Tool to calculate baseline, project and/or leakage emissions from electricity consumption	2.0[5]
Tool	Tool 07	Tool to calculate the emission factor for an electricity system	5.0[6]
Tool	Tool 12	Tool to calculate project and leakage emissions from transportation of freight	1.1.0[7]

1.10 Double Counting and Participation under Other GHG Programs

1.10.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

☐ Yes ☒ No

1.10.2 Registration in Other GHG Programs

Was the project registered or seeking registration under any other GHG programs?

☐ Yes ☒ No

[3] https://cdm.unfccc.int/methodologies/DB/VLZZ1DVT1QI3KHZKSM6QECOAKNSCXZ
[4] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-03-v2.pdf
[5] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-05-v2.0.pdf
[6] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v5.0.pdf
[7] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-12-v1.1.0.pdf

1.11 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

1.11.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the *VCS Program Definitions* for definitions of emissions trading program and binding emission limit.

☐ Yes ☒ No

1.11.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the *VCS Program Definitions* for definition of GHG-related environmental credit system.

☐ Yes ☒ No

1.11.3 Supply Chain (Scope 3) Emissions

Do the project activities affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☒ Yes ☐ No

If yes:

Is the project proponent(s) or authorized representative a buyer or seller of the product(s) (goods or services) that are part of a supply chain?

☒ Yes ☐ No

If yes:

Has the project proponent(s) or authorized representative posted a public statement on their website saying, “Carbon credits may be issued through the Verified Carbon Standard project [project ID] for the greenhouse gas emission reductions or removals associated with [project proponent or authorized representative organization name(s)] [name of product(s) whose emissions footprint is changed by the project activities].”

☒ Yes ☐ No

In accordance with the requirement of paragraph 3.24.7 of VCS standard version 4.7, Infinite Environmental Solutions Limited (Authorized Representative) for the project activity on behalf of Aerocon Buildwell Private Limited (Project Proponent) posted a public statement on their website stating that, “ Carbon credits may be issued through Verified Carbon Standard project 1549 for

the greenhouse gas emission reductions associated with Infinite Environmental Solutions Limited, the AAC Block's emissions footprint is changed by the project activity."[8] Additionally, PP has also posted the public statement on their LinkedIn website stating that, "Carbon credits may be issued through Verified Carbon Standard project 1549 for the greenhouse gas emission reductions associated with Aerocon Buildwell Private Limited, the AAC Block's emissions footprint is changed by the project activity."[9]

The emission involved in the procurement of raw materials are consider as the leakage emission in calculating the emission reduction of the project. Whereas sales of manufactured finished products and emission involved is not considered in the project boundary therefore it has not been considered.

1.12 Sustainable Development Contributions

Ministry of Environment, Forests & Climate change, Government of India has stipulated following indicators for sustainable development in the interim approval guidelines for GHG projects.

- Environmental well-being
- Social well-being
- Economic well-being
- Technological well-being

- **Environmental wellbeing:**

Reduction of energy resources consumption: Since there is no sintering or cooking in the project activity, this technology is more efficient in terms of energy consumption and results in lower energy consumption than the clay brick manufacturing.

Reduction of fossil fuels consumption: Clay brick manufacturing process are fossil fuel-based technologies, especially coal, (sub-bituminous) in India. With the implementation of the proposed project activity, consumption of fossil fuels for building material manufacturing will be avoided, thus contributing to GHG emission reductions.

Utilization of waste material from other industries as raw materials: The raw materials used in the project activity are mostly (to the extent of 67%) waste materials or by products from other industries. Pulverized fuel ash (PFA) is a waste that creates both problems regarding its disposal and environmental degradation due to its potential to pollute both air and water. Indian coals have very high ash content to the tune of 25 % and 45%. However, coal with an ash content of around 40% is predominantly used in India for thermal power generation. As a consequence, a

[8] https://infisolutions.org/admin/images/VCS%201549_Public%20statement.pdf

[9] https://www.linkedin.com/posts/aerocon-buildwell-p-ltd-accounts-7a0b39353_vcs-1549public-statement-activity-7302582262989017088-inHZ?utm_source=share&utm_medium=member_desktop&rcm=ACoAAEDioEoBRKtdHOa4mUvUBVe1KQChM2UVt4g

huge amount of fly ash is generated in thermal power plants, causing several disposal-related problems.

Reduction of resources consumption: fly ash utilization in the proposed project activity will contribute to savings in natural resources, mainly the land (and topsoil), water, coal and limestone. The utilization of fly ash in the manufacture of building blocks, as in the proposed project activity, releases considerable amounts of land. Also, water saved due to reduced fly ash disposal from thermal power plants. Reduction of waste generation in the manufacturing process: No waste material is generated in the manufacturing process of AAC blocks and panels. On the contrary, waste materials from other industries are used but no wastes are generated.

- **Social benefits:**

Improvement of air quality in the nearby region: With the avoidance of fossil fuel combustion in the proposed project activity, the exhaust gas emissions and direct air pollution are substantially reduced in the neighboring region. Better quality employment creation: The proposed project activity is situated in the Ujjain district, Madhya Pradesh state, India. Since the proposed project activity is a green field project it has created employment opportunities for more than 80 skilled-unskilled people (Temporary (15 men+10 women), permanent (57 men+0 women)) in the entire project area. Child labour is prohibited in the project activity as per the national regulation.

- **Economic well-being**

Reduction of dependence from fossil fuels: The project activity reduces to the maximum the dependence of the brick manufacturing process from fossil fuels. This reduces the overall dependence of the whole region from the imports and availability of fossil fuels, thereby allowing other industries to use energy resources.

- **Technological well-being**

Enhancement of the use of green building material: The following are the ecological green building quality and characteristics of AAC blocks:

- Energy efficient
- Lower energy consumption per cum in production process
- Best thermal insulation, 6 to 10 times better than regular concrete
- Non-toxic, environmentally friendly
- Un-suppressed fire resistance
- Excellent sound absorption
- No waste of raw materials

AAC blocks/ fly ash bricks are a high-quality product with high insulating capabilities – their use leads to lower energy consumption at the air conditioning end of the construction building and would partly help the building in achieving the green building status. Its low-density feature enables the building structure to be lightweight and thus would require fewer deep foundations.

As per VCS Standard version 4.7, Appendix 3: Document History and Effective Date, for V4.2, serial number 04 states that “it is required by project proponents to demonstrate contributions

to a minimum of three SDGs in all monitoring reports verified after the effective date. Effective immediately for all projects that request registration on or after 20-January-2023. Projects that request registration before 20-January-2023 shall demonstrate contributions to at least three SDGs by 20-January-2025". This is project's fourth periodic verification for the Monitoring Period from 01-May-2023 to 14-July-2024 (Inclusive of both dates) and project was registered on 06-April-2020[10] i.e., before 20-January-2023. However, for the current monitoring period, the PP is showing contributions to three SDGs as follows:

[10] https://registry.verra.org/app/projectDetail/VCS/1549

Table 1: Sustainable Development Contributions

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime
1)	8.5	User Defined Indicator : Providing employment opportunities to people segregated by sex	Implemented activities to increase employment	In this monitoring period, PP has provided employment to 71 non-contractual[11] (70 male + 1 female) and to 43 contractual[12] (28 male + 15 female) workers.	Provided employment opportunities to 114[13] people (71 non-contractual + 43 contractual).
2)	12.5	Substantially reduce waste generation through prevention, reduction, recycling and reuse	Implemented activities to reduce the quantity of waste: fly ash by utilizing them	The project utilizes fly ash which is a waste material from industries. In this monitoring period, 68,080.92 tons of fly ash was utilized to make AAC blocks.	Project activity utilized 68,080.92 tons of fly ash to make AAC blocks[14].

[11] Non-contractual employees are full time employees working for Aerocon Buildwell Pvt. Ltd.
[12] Contractual employees are labours working in the AAC block manufacturing plant.
[13] The contribution over project lifetime for SDG 8 is similar to the current project contribution as PP will claim contribution towards SDG 8 from this monitoring period onwards. Previously. PP has not claimed this contribution.
[14] The contribution over project lifetime for SDG 12 is similar to the current project contribution as PP will claim contribution towards SDG 12 from this monitoring period onwards. Previously. PP has not claimed this contribution.

3)	13.2	13.2.2 Total greenhouse gas emissions per year	Implemented activities to increase GHG emission reduction	In this monitoring period, 31,270 tCO_2e is reduced by the production of AAC block	Prevented the release of total 243,946 tCO_2e i.e., (40,695+119,115+52,866+31,270) into the atmosphere.

1.13 Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of this report.

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

Stakeholder Identification	The stakeholder identification process for the project activity involves: Identifying key parties such as suppliers, manufacturers, and distributors within the supply chain. Recognizing end-users, including construction companies, contractors, and real estate developers. Considering communities and environmental groups impacted by AAC block production and waste management. Following stakeholders have been identified for this project activity: 1.Local community members 2. Local village administration 3. Technology suppliers
Legal or customary tenure/access rights	There is no legal or customary tenure/access rights to territories and resources, including collective and conflicting rights, held by stakeholders, indigenous people (IPs), local communities (LCs), and customary rights holders. Hence, not applicable.
Stakeholder diversity and changes over time	Based on the continuous interactions and ongoing communication with the stakeholders it is identified that the social, economic, and cultural diversity within stakeholder groups remained stable over time and there are no significant changes during the monitoring period.
Expected changes in well-being	Expected changes: Economic well-being – The project activity is likely to provide employment to the locality thus economic well beings are expected. Environmental well-being –The traditional clay brick manufacturing process in India relies heavily on fossil fuel

	technologies, particularly coal (sub-bituminous). However, with the implementation of the project, the use of fossil fuels in the production of building material is eliminated, leading to a reduction in greenhouse gas (GHG) emissions.
Location of stakeholders	Stakeholders, which include local communities, indigenous peoples, and village administrators, are primarily located within the project area and its immediate vicinity. Location: Jalal Khedi village, Ujjain district, M.P.
Location of resources	All the resources and the territories associated with the project did not result in rehabilitation and resettlement. There is no settlement on the land acquired. Therefore, no territories and resources of stakeholders directly intersect with the project area.

2.1.2 Stakeholder Consultation and Ongoing Communication

Ongoing consultation	The project proponent has organized a Local Stakeholder Consultation (LSC) meeting at the time of validation in accordance with the approved communication plan. This meeting served as a forum for stakeholders to express their concerns, stay informed about project developments, and offer feedback. During this monitoring period no LSC was organized however, PP has placed a grievance register at the security gate of site office where in the stakeholder can put down his/her complain and the same if found genuine will be addressed immediately.
Date(s) of stakeholder consultation	16-May-2014 at the time of validation. No LSC was conducted during current monitoring period.
Communication of monitored results	The feedback/comments received from stakeholders were quite positive and no negative comments were received. Monitoring results were shared through the grievance register by documenting grievances, conducting investigations, and documenting resolutions.
Consultation records	**Submission of Grievance:** The first step involves the individual formally submitting their grievance in the grievance register which is placed at entrance gate of the project. Security In charge is responsible for recording the grievance. **Acknowledgment and Analysis:** Upon receiving the grievance, the organization acknowledges receipt of the complaint and do the analyze that the grievance is genuine

	or not. Site In charge is responsible for acknowledging and analyze the grievance, after that he will forward the grievance to respective department keeping a copy to HR department. **Resolution of Grievance:** Based on the findings of the investigation, the organization works towards resolving the grievance. This could involve taking corrective actions, implementing changes in policies or procedures, providing compensation or restitution. The respective department head is resolving the grievance and sharing the information to the HR. **Documentation**: Throughout the entire process, detailed documentation is maintained. This includes records of the grievance, investigation findings, actions taken.HR is responsible for maintaining the documents.
Stakeholder input	All input received during the consultation at the time of validation was thoroughly reviewed and analyzed to ensure that stakeholders' perspectives are duly considered. However, no inputs were received during the current monitoring period.

2.1.3 Free, Prior, and Informed Consent

Consent	At the time of LSC conducted at validation of the project activity, Consent from concerned parties, including Indigenous Peoples (IPs), local communities (LCs), and customary rights holders, was obtained through a transparent and inclusive process. During the current monitoring period there are no ongoing or unresolved conflicts, demonstrating that the project does not exacerbate or influence the outcomes of unresolved conflicts.
Outcome of FPIC	The Free, Prior, and Informed Consent (FPIC) process culminated in a between the project proponent and all concerned parties, including Indigenous Peoples (IPs), local communities (LCs), and customary rights holders as a part of stakeholder consultation. PP hereby declares that the project has not encroached on any land, and does not relocate people, or forced physical or economic displacement. All activities have been conducted

[redacted]	in accordance with the regulatory norms and terms, ensuring the protection of rights and interests of all stakeholders involved. PP has submitted land ownership documents and consent order to VVB.

2.1.4 Grievance Redress Procedure

Grievances received	Resolution and outcome
No Grievance was recorded during current monitoring period.	To maintain ongoing communication with stakeholders, a grievance register mechanism has been established, known as the "Grievance Register," located at the project site office and accessible to all stakeholders. Community members can visit the project site to share their complaints, feedback, or comments in this register. If the comments are deemed genuine, immediate action will be taken. A copy of the grievance register is retained at the project site. However, no feedback or grievances have been reported during this monitoring period, resulting in no applicable or relevant outcomes from this ongoing communication with local stakeholders.

2.1.5 Public Comments

Summary of comments received	Actions taken
No comments were found on-site.	The grievance register has been provided for feedback collection, ensuring effective communication and resolution of concerns.

2.2 Risks to Stakeholders and the Environment

2.2.1 Management Experience

No new entity is involved in project design or implementation.

The initially engaged management is experienced enough to handle the implementation of the project activity.

2.2.2 Risk assessment

	Risk identified	Mitigation or preventative measure(s) taken
Natural and human-induced risks to stakeholders' wellbeing	No risk identified.	There are no such processes taking place due to the project activity which induce risks to stakeholder wellbeing.
Risks to stakeholder participation	No risk identified	There is a transparent grievance mechanism is followed at the site where any stockholder can put the grievance/ feedback.
Working conditions	No risk identified	Project proponent ensures that stakeholders face minimal health risk by providing safe working conditions. There are SOPs in place for proper handling of machinery to prevent any potential accidents related to health and safety. wherein the staff is instructed on safety procedures Proper sanitation practices and hygienic conditions are maintained. In every 6 months PPE kits[15] are distributed because it is also part of safety and health of employees
Safety of women and girls	No risk identified	Ensuring the safety of women and girls in the project involves comprehensive risk assessment and mitigation strategies. Measures such as well-lit areas, security patrols, the project activity has no Discrimination Policy and following it strictly. No Discrimination Policy has women safety rights like Right Against Being Stalked or Workplace Harassment.
Safety of minority and marginalized groups, including children	No risk identified	No child is forced to or allowed to work in the project activity and PP is following Child Labour (Prohibition and Regulation) Act, 1986[16]: This act includes key features like Prohibition of Child Labour, Regulation of Adolescent Labour, Working Hours and Conditions and Penalties for Violation.

[15] Helmets, safety goggles, masks, gloves, safety footwear and protective clothing are distributed.

[16] https://labour.gov.in/sites/default/files/act_2.pdf

Pollutants (air, noise, discharges to water, generation of waste, and release of hazardous materials and chemical pesticides and fertilizers)	No risk identified	The facility does not produce any pollution in the manufacturing process but proposes to use the waste products like fly ash which create environmental pollution by increasing dust levels of the atmosphere. Hence there is positive impact on the environment due to this small-scale project activity of reducing the pollution caused by fly ash and fossil fuels.

2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

	Risks identified[17]	Mitigation or preventative measure(s) taken
Discrimination	No risk identified.	The project activity has No Discrimination Policy and following it strictly, so no discrimination incident is reported during current monitoring period.
Sexual harassment	No risk identified.	No instances of sexual harassment have been reported or identified within the project. This is ensured through the implementation of comprehensive policies and training aimed at preventing and promptly addressing such issues.
Gender equity in labor and work	No risk identified.	Equal opportunities for gender equity and fair pay are guaranteed through transparent hiring practices, non-discriminatory policies, and regular pay scale reviews to rectify any disparities. Ongoing training programs also foster gender inclusivity and address unconscious biases in the workforce. The Project Proponent ensures equal wage pay to its employees keeping them in line with the minimum wage criteria as per state labor laws.
Forced labor	No risk identified.	The project has implemented stringent ethical sourcing policies, which include the comprehensive vetting of suppliers and contractors to ensure compliance with labor laws and human rights standards.

[17] The identified risks and commensurate mitigation or preventative measure(s) for forced labor, child labor, and human trafficking, must be inclusive of staff and contracted workers employed by third parties.

Child labor	No risk identified.	No child is forced to or allowed to work in the project activity and PP is following Child Labour (Prohibition and Regulation) Act, 1986[18]: This act includes key features like Prohibition of Child Labour, Regulation of Adolescent Labour, Working Hours and Conditions and Penalties for Violation.
Human trafficking	No risk identified.	The project has implemented stringent ethical sourcing policies, which include the comprehensive vetting of suppliers and contractors to ensure compliance with labor laws and human rights standards.

2.3.2 Human Rights

Risks identified	Mitigation or preventative measure(s) taken
No risk identified.	The project maintains a commitment to upholding the rights of IPs, LCs, and customary rights holders, aligning with international human rights standards, including the UN Declaration on the Rights of Indigenous People[19]. Although there are no indigenous people (IPs), local communities (LCs), and customary rights holders identified, the project proponent (PP) remains steadfast in its commitment to recognizing, respecting, and promoting the protection of human rights. The PP actively engages with stakeholders through ongoing communication and interaction, seeking their feedback and input throughout the project lifecycle. Additionally, the project incorporates mechanisms for grievance redressal, providing a platform for stakeholders to voice their concerns and lodge grievances. Moreover, there is a comment/feedback box in place to facilitate open communication and ensure that stakeholders' voices are heard and considered.

2.3.3 Indigenous Peoples and Cultural Heritage

Risks identified	Mitigation(s) or preventative measure taken

[18] https://labour.gov.in/sites/default/files/act_2.pdf

[19] https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP_E_web.pdf

No risk identified.	PP is committed to protecting regional as well as national cultural heritage and the project activity is not affecting the any regional or national cultural heritage.

2.3.4 Property Rights

Risks identified	Mitigation or preventative measure(s) taken
No risk identified.	The project activity is installed at owned land. Regular consultations and grievance mechanisms are maintained to address any concerns promptly. No such incident was reported at the time of validation, in last verifications or during current monitoring period.

2.3.5 Benefit Sharing

Summary of the benefit sharing plan	Aerocon Buildwell Private Limited is legal owner of the project activity and there is no benefit sharing hence the section is not applicable.
Benefit sharing during the monitoring period	N/A

2.4 Ecosystem Health

	Risk identified	Mitigation or preventative measure(s) taken during the monitoring period
Impacts on biodiversity and ecosystems	No risk Identified.	Local wildlife and organisms are positively impacted by the reduction of fly ash in natural ecosystems.
Soil degradation and soil erosion	No risk Identified.	By using the fly ash, soil quality is improved in and around the project boundary. fly ash which creates environmental pollution by increasing dust levels of atmosphere.
Water consumption and stress	No risk Identified.	Throughout the monitoring period, no concerns regarding water consumption or stress were identified within the project.

2.4.1 Rare, Threatened, and Endangered species

Species or habitat	There is no rare, threatened and endangered species found during the monitoring period, neither reported at the time of project registration.

Areas needed for habitat connectivity	The project is located in Ujjain district of Madhya Pradesh, India. There are no such areas identified near the project site location that are needed for habitat connectivity.

	Risks identified	Mitigation or preventative measure(s) taken
Habitats for rare, threatened, and endangered species	No risk Identified.	There is no rare, threatened and endangered species found during the monitoring period, neither reported at the time of project registration.
Areas for habitat connectivity	No risk Identified.	The project is located in Ujjain district of Madhya Pradesh, India. There are no such areas identified near the project site location that are needed for habitat connectivity.

2.4.2 Introduction of species

Species introduced	Classification	Justification for use	Adverse effects and mitigation
N/A	N/A	N/A	N/A

Existing invasive species	Mitigation measures to prevent the spread or continued existence of invasive species
N/A	N/A

	Risks identified	Mitigation or preventative measure(s) taken
Invasive species	N/A	N/A

2.4.3 Ecosystem conversion

	Risks identified	Mitigation or preventative measure(s) taken
Ecosystem conversion	No risk Identified.	The project activity is manufacturing of AAC blocks hence the section is not applicable.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project proponent has adopted the new energy efficient technology for the AAC block manufacturing process. The project activity has a production capacity of 500 Cum/day for AAC Blocks manufacturing and 300 Cum/day for fly ash bricks manufacturing. During this monitoring period, there was no production of fly ash bricks. The production was discontinued since June 2016 due to the lack of demand for fly ash bricks

The key raw material ingredients of the AAC building blocks are fly ash, lime, and plaster of Paris, cement, and Aluminum powder, which are well-known mineral substitutes. Raw material fly ash is available in the form of wastes from industrial activities and are available in adequate quantities, whereas raw materials lime plaster of Paris, cement and Aluminum are industrial products which is being procured.

The description of major equipments used for the manufacturing of AAC blocks is as follows:

Name of the Machines	Specification of the Machines		Numbers of machines used
Boiler	TPH	8	1
	Boiler pressure 17.5 kg/cm^2	17.5	
	Boiler Capacity, (F & A 100°C)	8000 kg/hr	
	Type	Coal/ Biomass Fired boiler	
Air Compressor	Air Receiver capacity 1.0 (1000 l)	1.0 m^3	2
	Free Air delivery	462 cfm	
	Motor Input (Power)	75 kW (100 HP)	
Vacuum pump (for Autoclave machine)	Capacity Final pressure	2000 m^3 /hr 0.3 bar atm (absolute)	1
Auto clave	Number		6
	steam pressure	12 bar	
DG set	Capacity	250kVA	2

Summary of production process of AAC Blocks is mentioned below:

Dosing and mixing

The process begins with cleaning tank where Fly Ash is being mixed with water to form a slurry which is then transferred into the Press Tank after filtration and then finally transferred into the mixing tank through pipeline. Lime and Cement are being simultaneously discharged into the mixing tank from separate silos of Lime and Cement. Mixing up the raw materials in the control

system of the mixing tower with hot and cold water released through the spray nozzles, Aluminium dry powder and plaster of Paris is being added into the mixing tank and thus final mixing of raw materials is completed.

Casting & rising/pre-curing

Casting the mix with a mould system with inside dimensions of 5.625 m3, the mix is poured into the mould and vibrated so that the entrained air is released. The moulds are then parked in a parking area where the mass inside the mould rises like a cake. Once the cake is harder end enough, the mould is transported to a tilting station and the cake is separated from the mould on a platform which goes through horizontal and cross cutters.

Vertical/Horizontal /Cross cutting and back tilting

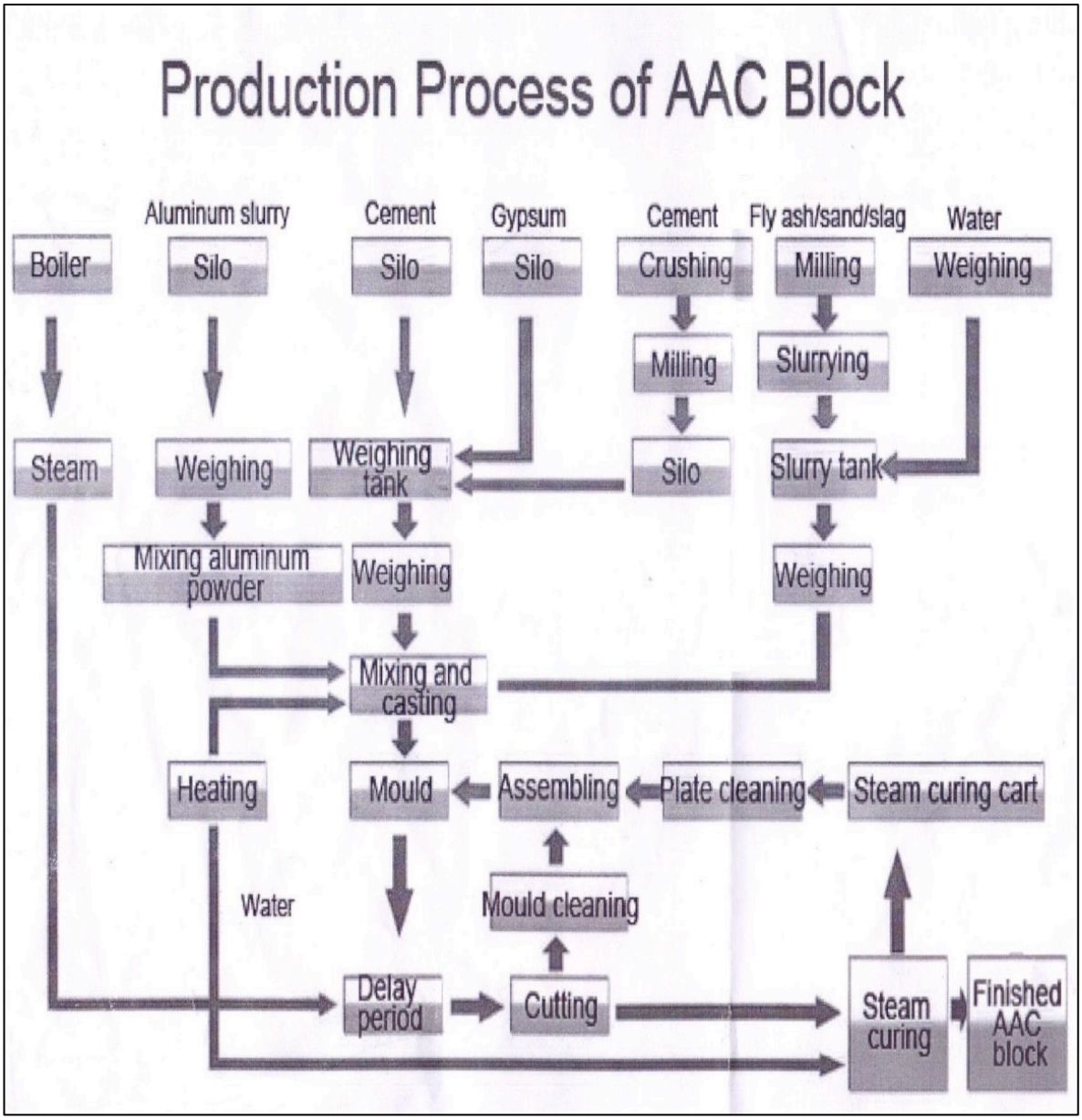
Cutting and milling the cakes with cutter among them horizontal cutter are equipped with broken –wire–detection system to indicate the wire which has broken. After cutting the cakes these are being transfer to the milling unit attached with the cutting unit for milling up each side of the cakes. After that the cakes are conveyed to the tilting table for back tilting for giving the extra hardness to the cakes.

Bed waste removal/Green separation/Stacking and buffering of the green cakes

All the sticking impurities are being separated in the green separator for avoiding the sticking of layer during the process of Autoclaves.

Autoclaving & packaging

The cakes are cured with steam at a pressure of approx. 12 bars in auto clave machine. After autoclaving the cakes are taken out of autoclaves unloaded from the cooking frame and proceed to the dispatching line for final dispatching.



3.2 Deviations

3.2.1 Methodology Deviations

There are no methodological deviations applied during this monitoring period.

3.2.2 Project Description Deviations

Following deviations were applied and approved during the previous monitoring period:

1) Deviation 1:

Fly ash brick production was discontinued in June 2016 due to insufficient demand in the market. The discontinuation of fly ash brick production has no impact on the baseline scenario because

the demand for AAC Blocks has increased, providing a good alternative to traditional bricks. Furthermore, the decision to resume production will depend on the market demand for fly ash bricks.

2) Deviation 2:

In the registered PDD two fixed parameters $EF_{Biomass\ briquettes}$ and EF_{gypsum} are missed from section 4.1 Data and Parameters Available at Validation and Five monitored parameters Q_{coal} , Q_{Gypsum} , $D_{f,m,\ gypsum}$, $D_{f,m,\ Briquettes}$ and $D_{f,m,\ Coal}$ are missed from section 4.2 Data and Parameters Monitored so, the missed parameters are incorporated in the respective sections the reason to add the parameters is as follows:

S.No.	Parameter	Justification / reason to add the parameter
1	Q_{coal}	Quantity of coal is used in boiler for steam generation in emergency cases whenever Biomass Briquettes are not available hence, it is used to calculate project emission. The parameter is monitored parameter, so it is considered under section 4.2 Data and Parameters Monitored.
2	Q_{Gypsum}	Gypsum is a raw material used in the production of AAC blocks and it is mentioned in the PDD, but the monitoring parameter Quantity of Gypsum is missed, and it is used in the calculation of project emission. The parameter is monitored parameter, so it is considered under section 4.2 Data and Parameters Monitored.
3	$D_{f,m,\ gypsum}$	Return trip road distance between the origin and destination of gypsum transportation is more than 200 KM. Hence, it is used to calculate leakage emission. The parameter is monitored parameter, so it is considered under section 4.2 Data and Parameters Monitored.
4	$D_{f,m,\ Briquettes}$	Return trip road distance between the origin and destination of Biomass Briquettes transportation is more than 200 KM. Hence, it is used to calculate leakage emission. The parameter is monitored parameter so considered under section 4.2 Data and Parameters Monitored.
5	$D_{f,m,\ Coal}$	Return trip road distance between the origin and destination of Coal transportation is more than 200 KM. Hence, it is used to calculate leakage emission The parameter is monitored parameter so considered under section 4.2 Data and Parameters Monitored.
6	$EF_{Biomass\ briquettes}$	Biomass briquettes are used in boiler for steam generation hence emission factor of biomass briquettes production is used to calculate leakage emission. It is a fixed parameter so considered under section 4.1 Data and Parameters Available at Validation.
7	EF_{gypsum}	Gypsum is used as a raw material the same is mentioned in s.no 2 of above hence emission factor of gypsum production is used to

		calculate leakage emission. It is a fixed parameter so considered under section 4.1 Data and Parameters Available at Validation.

However, the applied deviations do not impact the existing applicability conditions of the methodology, additionality or the appropriateness of the baseline scenario.

3.3 Baseline Reassessment

Did the project undergo baseline reassessment during the monitoring period?

☐ Yes ☒ No

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	$EF_{grid, OM, y}$
Data unit	tCO_2/MWh
Description	Operating Margin CO_2e emission factor for the INDIAN Grid in year y
Source of data	CEA Database "Baseline Carbon Dioxide Emission" Version 11.0
Value applied	0.9941
Justification of choice of data or description of measurement methods and procedures applied	Calculated in line with "Tool to calculate the emission factor for an electricity system (Version 05.0.0)" using data from Central Electricity Authority of India's (CEA) "Baseline Carbon Dioxide Emission Database Version 11.0". The value used is calculated ex-ante as generation based weighted average of last three years of the operating margin provided in the CEA database. Weighted average= $\sum i=1$ ton (Net generation in operating margin in year i * Simple operating margin in year i)/$\sum i= 1$ ton (Net generation in operating margin of year i)
Purpose of Data	Calculation of combined margin emission factor
Comments	The value is fixed ex-ante

Data / Parameter	$EF_{grid, BM, y}$
Data unit	tCO_2/MWh
Description	Build Margin CO_2e emission factor for the INDIAN Grid in year y
Source of data	CEA's "Baseline Carbon Dioxide Emission Database Version 11.0"

Value applied	0.9285
Justification of choice of data or description of measurement methods and procedures applied	Calculated in line with "Tool to calculate the emission factor for an electricity system (Version 05.0.0)" using data from Central Electricity Authority of India's (CEA) "Baseline Carbon Dioxide Emission Database Version 11.0". The value is calculated ex-ante as most recent build margin provided by the CEA.
Purpose of Data	Calculation of combined margin emission factor
Comments	The value is fixed ex-ante

Data / Parameter	Density of furnace oil
Data unit	Liter/kg
Description	Density of Furnace oil
Source of data	As per IOCL Website
Value applied	0.98 Liter/Kg
Justification of choice of data or description of measurement methods and procedures applied	As per IOCL Website
Purpose of Data	Calculation of project Emissions
Comments	The Value id fixed-Ex ante

Data / Parameter	EF_{coal}
Data unit	tCO_2e/TJ
Description	Carbon emission factor of coal
Source of data	IPCC Guidelines for National Greenhouse Gas Inventories.
Value applied	94.6
Justification of choice of data or description of measurement methods and procedures applied	IPCC 2006
Purpose of Data	Calculation of baseline emissions
Comments	The value is fixed ex-ante

Data / Parameter	NCV_{FO}
Data unit	TJ/kt

Description	Net Calorific value of Furnace Oil
Source of data	IPCC Guidelines for National Greenhouse Gas Inventories.
Value applied	41.7 TJ/kt
Justification of choice of data or description of measurement methods and procedures applied	IPCC 2006
Purpose of Data	Calculation of project emissions
Comments	The value is fixed ex-ante

Data / Parameter	$EF_{grid, CM, y}$
Data unit	tCO_2/MWh
Description	Combined Margin CO_2e emission factor for the INDIAN Grid in year y
Source of data	Central Electricity Authority (CEA) of India Database Version 11.0
Value applied	0.9613
Justification of choice of data or description of measurement methods and procedures applied	This has been calculated based on Operating Margin (OM) and Build Margin (BM) published by Central Electricity Authority (CEA) of India.
Purpose of Data	Calculation of baseline emissions
Comments	The value is fixed ex-ante

Data / Parameter	EF_{BL}
Data unit	tCO_2e/m^3
Description	The parameter is Annual production specific emission factor for manufacturing the product derived in the baseline scenario to project activity product.
Source of data	The average specific energy consumption (calculated as average of the lower and upper range of energy consumption for FC-BTK technology type), Reference: Development of Standard and Guidelines, Parivesh, CPCB as presented in the table B.4.4 above. Net Calorific Value of Coal of 25.8 MJ/t (Reference: Table 1.2 of Chapter 1 "2006 IPCC Guidelines for National Greenhouse Gas Inventories" and Standard volume of brick of .0015m3 (190mm*90mm*90mm; Reference: Indian Standard for Specification for Heavy duty Burnt clay Building Bricks (Third Version)) Biomass Adjustment factor – 2%; Reference: FAO Field Document No. 35, "Regional Wood Energy Development Programme in Asia", GCP/RAS/154/NET

Value applied	0.3592435
Justification of choice of data or description of measurement methods and procedures applied	The baseline annual production specific emission factor considers only the energy component associated to coal consumption post adjustment of biomass use.
Purpose of Data	Calculation of baseline emissions
Comments	The value is fixed ex-ante

Data / Parameter	EF_{FO}
Data unit	tCO_2e/TJ
Description	Carbon emission factor of Furnace Oil
Source of data	IPCC Guidelines for National Greenhouse Gas Inventories. Link: https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/3_Volume3/V3_2_Ch2_Mineral_Industry.pdf
Value applied	78.8
Justification of choice of data or description of measurement methods and procedures applied	CSI Protocol is an authentic source of data.
Purpose of Data	Calculation of project emissions
Comments	The value is fixed ex-ante

Data / Parameter	$EF_{Biomass\ briquettes}$
Data unit	tCO_2e/t biomass briquettes
Description	Carbon emission factor of biomass briquettes production
Source of data	DEFRA,2021[20] Bioenergy (Biomass)[21]
Value applied	0.04923
Justification of choice of data or description of measurement methods and procedures applied	Default values used for biomass briquettes production in which converting biomass and agriculture residue into briquette. The default value is considered from DEFRA,2021[22]
Purpose of Data	Calculation of leakage emissions

[20] https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2021

[21] https://assets.publishing.service.gov.uk/media/61ee7495e90e07037c8d6176/conversion-factors-2021-condensed-set-most-users.xls

[22] The Indian source and IPPC data is not available so DEFRA is used as a source.

Comments	The value is fixed ex-ante. Host country, India, has no standards for such emission factors, and so PP has checked the value for international sources like IPCC, but international sources have no value for the carbon emission factor of biomass briquette production; hence, the DEFRA value has been used for calculation, which is an authentication source.

Data / Parameter	Specific electricity consumption per MT of briquette
Data unit	kWh/MT
Description	Specific electricity consumption per MT of briquette
Source of data	DPR
Value applied	38 kWh/MT
Justification of choice of data or description of measurement methods and procedures applied	DPR
Purpose of Data	Calculation of project emissions
Comments	The value is fixed ex-ante

Data / Parameter	TDL
Data unit	%
Description	Transmission and Distribution losses
Source of data	Default value as per Tool for calculate baseline, project and or leakage emissions from electricity consumption
Value applied	10%
Justification of choice of data or description of measurement methods and procedures applied	Default value
Purpose of Data	Calculation of project emissions
Comments	The value is fixed ex-ante

Data / Parameter	EF_{flyash}
Data unit	tCO_2e/Tonne of fly ash
Description	Carbon emission factor of fly ash production

Source of data	UNFCCC source
Value applied	0 tCO_2e/Tonne of fly ash
Justification of choice of data or description of measurement methods and procedures applied	UNFCCC source
Purpose of Data	Calculation of leakage emissions
Comments	The value is fixed ex-ante

Data / Parameter	EF_{cement}
Data unit	tCO_2e/Tonne of cement
Description	Carbon emission factor of Cement production
Source of data	CSI Protocol default emission factor of cement production for India and China (Figure5.8: Regional average net CO_2 emissions per tonne cement in page 23/43 of the report) Link: https://docs.wbcsd.org/2009/06/CementIndustryEnergyAndCO2Performance.pdf
Value applied	0.638
Justification of choice of data or description of measurement methods and procedures applied	CSI Protocol is an authentic source of data.
Purpose of Data	Calculation of leakage emissions
Comments	The value is fixed ex-ante

Data / Parameter	EF_{gypsum}
Data unit	tCO_2e/tonne gypsum
Description	Carbon emission factor of gypsum production
Source of data	Sector report for the gypsum industry is used for the value[23]
Value applied	0.01
Justification of choice of data or description of measurement methods and procedures applied	Default value is considered. Based on best performing plants in the UK in the middle of the decade the benchmark value is proposed. The benchmark value is used because it is a conservative.

[23] 091102 Gypsum (europa.eu)

Purpose of Data	Calculation of leakage emissions
Comments	The value is fixed ex-ante. Host country, India, has no standards for such emission factors, and so PP has checked with other Indian sources but got some study[24] which has the value 0.0037. As a conservation approach, a 0.01 value is used. Also, PP has checked international sources like IPCC, but international sources have no value for the carbon emission factor of gypsum production; hence, the Sector report for the gypsum industry has been used, which is an authentication source.

Data / Parameter	$EF_{Aluminium}$
Data unit	tCO_2e/Tonne of Aluminum
Description	Carbon emission factor of Aluminum powder production
Source of data	Table 17: Industrial processes-emission factors and activity data
Value applied	1.7
Justification of choice of data or description of measurement methods and procedures applied	IPCC 2006 refers to emission factor of 1.7 tCO_2/t of Aluminium; However National Greenhouse Accounts (NGA) Factors, Table 17: Industrial processes- emission factors and activity data takes into consideration CO2 emissions and CF4 and C2F6 emissions due to production of aluminium. The NGA factors have been taken to be on a conservative side.
Purpose of Data	Calculation of leakage emissions
Comments	The value is fixed ex-ante

Data / Parameter	EF_{Lime}
Data unit	tCO_2e/Tonne of Lime
Description	Carbon emission factor of calcium Lime ($CaCO_3$) production
Source of data	Chapter 2 of "Mineral Industry Emissions" of 2006 IPCC Guidelines for National Greenhouse Gas Inventories.[25]
Value applied	0.75
Justification of choice of data or description of measurement methods and procedures applied	In the general practice lime from mineral source is available with a purity of 30-45% in terms of CaO that results in lesser emissions. However, the project activity requires 85% purity in terms of CaO. The emission factor is computed using the stoichiometric ratio of 0.43 tones CO2/ ton of lime.
Purpose of Data	Calculation of leakage emissions

[24] https://edgebuildings.com/wp-content/uploads/2022/04/IFC-India-Construction-Materials-Database-Methodology-Report.pdf (Page no 77).

[25] https://www.ipcc-nggip.iges.or.jp/EFDB/find_ef.php?ipcc_code=2.A.2&ipcc_level=2

Comments	The value is fixed ex-ante.

Data / Parameter	$EF_{CO2,t}$
Data unit	g tCO_2/ Tonne Km
Description	Default carbon di-oxide emission factor for freight transport activity f
Source of data	Based on the methodological tool "Project and leakage emissions from road transportation of freight." (Version 01.0.0)
Value applied	For raw material (Fly ash, Cement, Lime, Aluminum Powder) transportation generally heavy vehicles are being used. So, PP has considered the values for emission factor of heavy vehicles[26].
Justification of choice of data or description of measurement methods and procedures applied	Based on the default values specified and calculated as per the methodological tool "Project and leakage emissions from road transportation of freight" (Version 01.0.0).
Purpose of Data	Calculation of leakage emissions
Comments	The value is fixed ex-ante.

Vehicle Class	Emission factor (g CO2/ Tonne KM)
Light vehicle	245
Heavy vehicle	129

4.2 Data and Parameters Monitored

Data / Parameter	$P_{PJ,y}$
Data unit	m^3 (cubic meter)
Description	Gross annual production of AAC blocks and fly ash bricks
Source of data	Plant Records – production log book data and monthly sales Invoices
Description of measurement methods and procedures to be applied	Number of standard sized bricks and blocks being manufactured is being monitored manually. Number of blocks or bricks manufactured can be converted to volume units using the standard volume for each block and bricks.
Frequency of monitoring/recording	Continuous monitoring, monthly recording
Value monitored	AAC BLOCK – 171,405 m^3
Monitoring equipment	Number of Blocks and Bricks produced is manually counted
QA/QC procedures to be applied	Blocks and Bricks selling invoices can be used for verification of figures.

[26] All the raw material are transported by multi-Axle heavy vehicles having GVM higher than 28 tones.

Purpose of the data	Calculation of baseline emissions and project emissions.
Calculation method	Production = (Number of Blocks/ Bricks) x Standard Volume
Comments	All the data will be archived till a period of two years from the end of the crediting period or last issuance whichever is later. Also, it is to be noted that amount of raw material consumption is computed aggregately based upon raw material requirement for both type of products.

Data / Parameter	Compressive Strength of AAC Blocks and Bricks
Data unit	N/mm^2 (Newton per mm^2)
Description	Compressive Strength of AAC Blocks and Bricks
Source of data	External Lab Test Reports
Description of measurement methods and procedures to be applied	Dry compressive strength of the project block would be tested in nationally approved laboratory. Compressive strength test would be carried in line with IS code: 6441 Part V.
Frequency of monitoring/recording	Half Yearly monitoring, half yearly recording
Value monitored	4.522[27]
Monitoring equipment	Not Applicable as compressive strength tests are carried out in external laboratories.
QA/QC procedures to be applied	The laboratory would comply with relevant national standards.
Purpose of the data	Calculation of baseline emissions and project emissions
Calculation method	Not Applicable. This is a directly measured parameter
Comments	All the data will be archived till a period of two years from the end of the crediting period or last issuance whichever is later.

Data / Parameter	Q_{cement}
Data unit	Tonne
Description	Tons of cement used during project activity production (AAC block)
Source of data	Plant Records- purchase book
Description of measurement methods and procedures to be applied	Weigh Bridge

[27] This is average vales of all the test reports the details are provided in appendix 2: test record data.

Frequency of monitoring/recording	Monitoring frequency: Every purchase of raw material Recording frequency: Monthly
Value monitored	18,392.98 tonnes
Monitoring equipment	Purchase in known quantity
QA/QC procedures to be applied	Purchase data can be cross verified with raw material purchase invoice is a 3rd party data. The details of the weighbridge is provided in section 4.3.
Purpose of the data	Calculation of leakage emissions
Calculation method	Not Applicable. This is a directly measured parameter
Comments	All the data will be archived till a period of two years from the end of the crediting period or last issuance whichever is later.

Data / Parameter	Q_{Lime}
Data unit	Tonne
Description	Tons of Lime used during project activity production
Source of data	Plant Records- purchase book
Description of measurement methods and procedures to be applied	Weigh Bridge
Frequency of monitoring/recording	Monitoring frequency: Every purchase of raw material Recording frequency: Monthly
Value monitored	11,324.50 Tonnes
Monitoring equipment	Purchased in known quality
QA/QC procedures to be applied	Purchase data can be cross verified with raw material purchase invoice is a 3rd party data. The details of the weighbridge is provided in section 4.3.
Purpose of the data	Calculation of leakage emissions
Calculation method	Not Applicable. This is a directly measured parameter
Comments	All the data will be archived till a period of two years from the end of the crediting period or last issuance whichever is later.

Data / Parameter	$Q_{Aluminium}$
Data unit	Tonne
Description	Tons of Aluminium powder used during project activity production
Source of data	Plant Records- purchase book
Description of measurement methods	Weigh Bridge

and procedures to be applied	
Frequency of monitoring/recording	Monitoring frequency: Every purchase of raw material Recording frequency: Monthly
Value monitored	50.11 Tonnes
Monitoring equipment	Purchase in known quantity
QA/QC procedures to be applied	Purchase data can be cross verified with raw material purchase invoice is a 3rd party data. The details of the weighbridge is provided in section 4.3.
Purpose of the data	Calculation of leakage emissions
Calculation method	Not Applicable. This is a directly measured parameter
Comments	All the data will be archived till a period of two years from the end of the crediting period or last issuance whichever is later.

Data / Parameter	$Q_{Fly\ ash}$
Data unit	Tonne
Description	Tons of Fly Ash used during project activity production (AAC block and fly ash brick)
Source of data	Plant Records- purchase book
Description of measurement methods and procedures to be applied	Weigh Bridge
Frequency of monitoring/recording	Monitoring frequency: Every purchase of raw material Recording frequency: Monthly
Value monitored	68,080.92 Tonnes
Monitoring equipment	Every purchase
QA/QC procedures to be applied	Purchase data can be cross verified with raw material purchase invoice is a 3rd party data. The details of the weighbridge is provided in section 4.3.
Purpose of the data	Calculation of leakage emissions
Calculation method	Not Applicable. This is a directly measured parameter
Comments	All the data will be archived till a period of two years from the end of the crediting period or last issuance whichever is later.

Data / Parameter	$EC_{PJ,j,y}$
Data unit	MWh
Description	The electricity consumption by project activity in year y

Source of data	Electricity meter reading/Monthly invoice by Electricity Board
Description of measurement methods and procedures to be applied	Electricity consumption of the plant would be calculated as summation of the electricity imports from state grid.
Frequency of monitoring/recording	Monitoring frequency: Continuously Recording frequency: Monthly
Value monitored	283.81 MWh
Monitoring equipment	Equipment: Energy Meter or Electricity Consumption Meter (main power supply)
QA/QC procedures to be applied	The electricity meter [28]installed at the project site is a consumer-grade meter, which is owned and maintained by the State Electricity Board (i.e., MPPKVVCL (Madhya Pradesh Paschim Kshetra Vidyut Vitaran Company Limited)) and PP does not have any control over the meter hence, the calibration of the meter is solely conducted by the State Electricity Board[29].
Purpose of the data	Calculation of project emissions
Calculation method	Not Applicable. This is a directly measured parameter
Comments	All the data will be archived till a period of two years from the end of the crediting period or last issuance whichever is later.

Data / Parameter	$Q_{biomass\ briquettes}$
Data unit	Tonnes
Description	Tonnes of Biomass briquettes used in boiler for steam generation
Source of data	Purchase bills of Biomass Briquettes
Description of measurement methods and procedures to be applied	Monthly data of opening-closing stocks & purchase invoice bills
Frequency of monitoring/recording	Monthly recording
Value monitored	4,253.03 Tonnes
Monitoring equipment	Weighbridge
QA/QC procedures to be applied	Upon receipt of the monthly data of opening-closing stocks & purchase invoice bills, the personnel of PP will make periodical visits to the plants to cross check the diligence of record keeping by

[28] Latest Meter bill for the month of February 2025 submitted for confirmation of Meter Serial Number.

[29] Para 8.14 and 8.15 on pg. #40 of https://mperc.in/uploads/regulation_document/53b3577e0c8faa804cede7c440f8cf9d.pdf

	checking the total invoices raised for materials, raw material consumed and opening and closing stocks. The Weighbridge shall be calibrated annually and in case any fault observed at any point of time shall be calibrated or replaced as required. The details of the weighbridge is provided in section 4.3.
Purpose of the data	Calculation of project emissions
Calculation method	Not Applicable. This is a directly measured parameter
Comments	All the data will be archived till a period of two years from the end of the crediting period or last issuance whichever is later.

Data / Parameter	Q_{coal}
Data unit	Tonnes
Description	Tonnes of Coal used in boiler for steam generation
Source of data	Plant records
Description of measurement methods and procedures to be applied	Quantity is measured using weighbridge regularly and records are kept on paper and electronically.
Frequency of monitoring/recording	Monitored continuously and consolidated monthly in the plant records
Value monitored	0 Tonnes
Monitoring equipment	Weighbridge
QA/QC procedures to be applied	Upon receipt of the monthly data of opening-closing stocks & purchase invoice bills, the personnel of PP will make periodical visits to the plants to cross check the diligence of record keeping by checking the total invoices raised for materials, raw material consumed and opening and closing stocks. The Weighbridge shall be calibrated annually and in case any fault observed at any point of time shall be calibrated or replaced as required. The details of the weighbridge is provided in section 4.3.
Purpose of the data	Calculation of project emissions
Calculation method	Not Applicable. This is a directly measured parameter
Comments	All the data will be archived till a period of two years from the end of the crediting period or last issuance whichever is later.

Data / Parameter	Q_{Gypsum}
Data unit	Tonnes
Description	Tonnes of Gypsum used during project activity production
Source of data	Plant records

Description of measurement methods and procedures to be applied	Quantity is measured using weighbridge regularly and records are kept on paper and electronically.
Frequency of monitoring/recording	Monitored continuously and consolidated monthly in the plant records
Value monitored	1,589.26 Tonnes
Monitoring equipment	Weighbridge
QA/QC procedures to be applied	Upon receipt of the monthly data of opening-closing stocks & purchase invoice bills, the personnel of PP will make periodical visits to the plants to cross check the diligence of record keeping by checking the total invoices raised for materials, raw material consumed and opening and closing stocks. The Weighbridge shall be calibrated annually and in case any fault observed at any point of time shall be calibrated or replaced as required. The details of the weighbridge is provided in section 4.3.
Purpose of the data	Calculation of project emissions
Calculation method	Not Applicable. This is a directly measured parameter
Comments	All the data will be archived till a period of two years from the end of the crediting period or last issuance whichever is later.

Data / Parameter	$NCV_{Biomass}$
Data unit	KCal/Kg
Description	Net Calorific Value of Biomass briquettes
Source of data	Test Reports from external laboratory
Description of measurement methods and procedures to be applied	Measurement in laboratories according to relevant national/international standards. Would be measured yearly, taking at least three samples for each measurement. The average value would be used for the rest of the crediting period. Would be determined once in the first year of the crediting period. The NCV is calculated based on the dry biomass.
Frequency of monitoring/recording	Determined once in the first year of crediting period
Value monitored	3,600 Kcal/kg
Monitoring equipment	Not Applicable
QA/QC procedures to be applied	External laboratories comply with relevant national standard. The consistency of the measurements will be checked by comparing the measurement results with, relevant data sources (e.g., values in the literature, values used in the national GHG inventory) and default values by the IPCC. If the measurement results differ significantly from previous measurements or other relevant data sources, conduct additional measurements

Purpose of the data	Calculation of project emissions
Calculation method	The calorific value of biomass will be tested from external agency using state of the art bomb calorimeter.
Comments	All the data will be archived till a period of two years from the end of the crediting period or last issuance whichever is later.

Data / Parameter	$D_{f,m,\ flyash}$
Data unit	Km
Description	Return trip road distance between the origin and destination of fly ash transportation activity f in monitoring period m
Source of data	Records of vehicle operator or records by project participants
Description of measurement methods and procedures to be applied	Determined once for each freight transportation activity f for a reference trip using the vehicle odometer or any other appropriate sources (e.g., online sources). Calibration Frequency: Not Applicable Accuracy Class: Not Applicable
Frequency of monitoring/recording	Number of trips aggregated monthly
Value monitored	540 Km
Monitoring equipment	Not Applicable
QA/QC procedures to be applied	The data should be recorded in Log book (Per trip of incoming of raw material) & it would be cross-checked through the invoiced/Challan provided by the supplier or Vendors. The PP will note down the starting kilometer reading from the source of raw material and final kilometer reading while entering in the premises of the factory gate.
Purpose of the data	Calculation of leakage emissions
Calculation method	Not Applicable. This is a directly measured parameter
Comments	All the data will be archived till a period of two years from the end of the crediting period or last issuance whichever is later.

Data / Parameter	$D_{f,m,\ cement}$
Data unit	Km
Description	Return trip road distance between the origin and destination of cement transportation activity f in monitoring period m
Source of data	Records of vehicle operator or records by project participants
Description of measurement methods and procedures to be applied	Determined once for each freight transportation activity f for a reference trip using the vehicle odometer or any other appropriate sources (e.g., on- line sources). Calibration Frequency: Not Applicable Accuracy Class: Not Applicable

Frequency of monitoring/recording	Number of trips aggregated monthly
Value monitored	964 Km
Monitoring equipment	Not Applicable
QA/QC procedures to be applied	The data should be recorded in Log book (Per trip of incoming of raw material) & it would be cross-checked through the invoiced/Challan provided by the supplier or Vendors. The PP will note down the starting kilometer reading from the source of raw material and final kilometer reading while entering in the premises of the factory gate.
Purpose of the data	Calculation of leakage emissions
Calculation method	Not Applicable. This is a directly measured parameter
Comments	All the data will be archived till a period of two years from the end of the crediting period or last issuance whichever is later.

Data / Parameter	$D_{f, m, Lime}$
Data unit	Km
Description	Return trip road distance between the origin and destination of Lime transportation activity f in monitoring period m
Source of data	Records of vehicle operator or records by project participants
Description of measurement methods and procedures to be applied	Determined once for each freight transportation activity f for a reference trip using the vehicle odometer or any other appropriate sources (e.g., on- line sources). Calibration Frequency: Not Applicable Accuracy Class: Not Applicable
Frequency of monitoring/recording	Number of trips aggregated monthly
Value monitored	1,164 Km
Monitoring equipment	Not Applicable
QA/QC procedures to be applied	The data should be recorded in Log book (Per trip of incoming of Raw material) & it would be cross-checked through the invoiced/Challan provided by the supplier or Vendors. The PP will note down the starting kilometer reading from the source of raw material and final kilometer reading while entering in the premises of the factory gate. Premises of the factory gate.
Purpose of the data	Calculation of leakage emissions
Calculation method	Not Applicable. This is a directly measured parameter
Comments	All the data will be archived till a period of two years from the end of the crediting period or last issuance whichever is later.

Data / Parameter	$D_{f,m,\ Aluminium}$
Data unit	Km
Description	Return trip road distance between the origin and destination of Aluminum transportation activity f in monitoring period m
Source of data	Records of vehicle operator or records by project participants
Description of measurement methods and procedures to be applied	Determined once for each freight transportation activity for a reference trip using the vehicle odometer or any other appropriate sources (e.g., on- line sources). Calibration Frequency: Not Applicable Accuracy Class: Not Applicable
Frequency of monitoring/recording	Number of trips aggregated monthly
Value monitored	1,128 km
Monitoring equipment	Not Applicable
QA/QC procedures to be applied	The data should be recorded in Log book (Per trip of incoming of raw material) & it would be cross-checked through the invoiced/Challan provided by the supplier or Vendors. The PP will note down the starting kilometer reading from the source of raw material and final kilometer reading while entering in the premises of the factory gate.
Purpose of the data	Calculation of leakage emissions
Calculation method	Not Applicable. This is a directly measured parameter
Comments	All the data will be archived till a period of two years from the end of the crediting period or last issuance whichever is later.

Data / Parameter	$D_{f,m,\ gypsum}$
Data unit	Km
Description	Return trip road distance between the origin and destination of gypsum transportation activity f in monitoring period m
Source of data	Records of vehicle operator or records by project participants
Description of measurement methods and procedures to be applied	Determined once for each freight transportation activity for a reference trip using the vehicle odometer or any other appropriate sources (e.g., on- line sources). Calibration Frequency: Not Applicable Accuracy Class: Not Applicable
Frequency of monitoring/recording	Number of trips aggregated monthly
Value monitored	1,466 km
Monitoring equipment	Not Applicable
QA/QC procedures to be applied	The data should be recorded in Log book (Per trip of incoming of raw material) & it would be cross-checked through the invoiced/Challan

	provided by the supplier or Vendors. The PP will note down the starting kilometer reading from the source of raw material and final kilometer reading while entering in the premises of the factory gate.
Purpose of the data	Calculation of leakage emissions
Calculation method	Not Applicable. This is a directly measured parameter.
Comments	All the data will be archived till a period of two years from the end of the crediting period or last issuance whichever is later.

Data / Parameter	$D_{f,m,\ Briquettes}$
Data unit	Km
Description	Return trip road distance between the origin and destination of Biomass Briquettes transportation activity f in monitoring period m
Source of data	Records of vehicle operator or records by project participants
Description of measurement methods and procedures to be applied	Determined once for each freight transportation activity for a reference trip using the vehicle odometer or any other appropriate sources (e.g., on- line sources). Calibration Frequency: Not Applicable Accuracy Class: Not Applicable
Frequency of monitoring/recording	Number of trips aggregated monthly
Value monitored	566 km
Monitoring equipment	Not Applicable
QA/QC procedures to be applied	The data should be recorded in Log book (Per trip of incoming of raw material) & it would be cross-checked through the invoiced/Challan provided by the supplier or Vendors. The PP will note down the starting kilometer reading from the source of raw material and final kilometer reading while entering in the premises of the factory gate.
Purpose of the data	Calculation of leakage emissions
Calculation method	Not Applicable. This is a directly measured parameter.
Comments	All the data will be archived till a period of two years from the end of the crediting period or last issuance whichever is later.

Data / Parameter	$D_{f,m,\ Coal}$
Data unit	Km
Description	Return trip road distance between the origin and destination of Coal transportation activity f in monitoring period m
Source of data	Records of vehicle operator or records by project participants
Description of measurement methods	Determined once for each freight transportation activity for a reference trip using the vehicle odometer or any other appropriate sources (e.g., on- line sources).

and procedures to be applied	Calibration Frequency: Not Applicable Accuracy Class: Not Applicable
Frequency of monitoring/recording	Number of trips aggregated monthly
Value monitored	0 km
Monitoring equipment	Not Applicable
QA/QC procedures to be applied	The data should be recorded in Log book (Per trip of incoming of raw material) & it would be cross-checked through the invoiced/Challan provided by the supplier or Vendors. The PP will note down the starting kilometer reading from the source of raw material and final kilometer reading while entering in the premises of the factory gate.
Purpose of the data	Calculation of leakage emissions
Calculation method	Not Applicable. This is a directly measured parameter.
Comments	All the data will be archived till a period of two years from the end of the crediting period or last issuance whichever is later.

4.3 Monitoring Plan

Quality of the Product

Tests will be conducted to validate that the project AAC Blocks and bricks meet the performance requirements and specifications in line with the following sampling plan which includes the following information -

To validate that the service level of the product is better than that of the baseline product, PP will continuously monitor the mean value of the dry compressive strength of the project activity output at regular intervals throughout the current period. Any product that fails to meet the required compressive strength standards will be excluded from production.

Target population will be the production of fly ash Bricks starting from the 1st output obtained on the date of commercial operation and thereafter every six months. The simple random sampling method will be used.

Simple random sampling is suited to populations that are homogeneous. Since the AAC Blocks and fly ash bricks are manufactured through a fixed composition the output is homogenous in nature.

Sample size the estimated target number of “units” – pieces of equipment, buildings, motors, logbooks, etc. – which are to be studied (i.e. the sample size). The sample size calculations are based on a proportion (or percentage) of interest being the objective of the project, under Simple random sampling method. The following are pre-determined in order to estimate the sample size:

(a) The value that the proportion is expected to take;

(b) The level of precision, and confidence in that precision (90/10 for all small-scale projects)

The equation to give us the required sample size is:

$n \geq [1.645^2 \times N \times p(1-p)] \div [(N-1) \times 0.1^2 \times p^2 + 1.645^2 \times p(1-p)]$

Where:

n - Sample size

N - Total Production

p - Our expected proportion (0.50)

1.645- Represents the 90% confidence required

0.1 -Represents the 10% relative precision

The samples are collected randomly from every batch by the operators and submitted to Supervisor manager for further testing. A minimum 4 samples are randomly selected from every match.

The project activity has in-house testing facility and also doing testing using external laboratories. The details of the external laboratories testing are mentioned in Appendix-2 of this report. The details of the sampling are as follows:

From	To	Total Production (N)	Sample size (n)
1-May-2023	31-May-2023	633,600	271
1-June-2023	30-June-2023	610,100	271
1-July-2023	31-July-2023	629,250	271
1-August-2023	31-August-2023	674,150	271
1-September-2023	30-September-2023	643,100	271
1-October-2023	31-October-2023	532,000	271
1-November-2023	30-November-2023	580,000	271
1-December-2023	31-December-2023	573,700	271
1-January-2024	31-January-2024	735,800	271
1-February-2024	29-February-2024	685,600	271
1-March-2024	31-March-2024	391,700	271
1-April-2024	30-April-2024	481,091	271
1-May-2024	31-May-2024	670,641	271
1-June-2024	30-June-2024	689,230	271
1-July-2024	14-July-2024	292,400	271

There is above sampling method approached used on the project site during the monitoring period.

Monitoring parameters: -

Sr. No	Monitoring parameter	Data unit	Monitoring/Schedule
1.	$P_{PJ, y}$	CuM/day	Project proponent records the production of blocks as follows: • Number of pouring at mixing tower per cycle which are recorded digitally and manually. • Number of pouring rejected per cycle which is recorded manually. Continuous monitoring and monthly recording
2.	Q_{cement}	Tonne/Month	Project proponent does the primary recording by raw material /pour which is recorded digitally through load cell located at mixer tower. Continuous monitoring and monthly recording
3.	Q_{Lime}	Tonne/Month	
4.	$Q_{Aluminium}$	Tonne/Month	
5.	$Q_{Fly\ ash}$	Tonne/Month	
6.	$EC_{PJ,j,y}$	kWh	Project proponent takes the internal daily meter reading at substation. The energy meter is under the control of state energy board; thus, its calibrations are performed by them when required. Continuous monitoring and monthly recording
7.	$Q_{Biomass}$	Tonne	The project proponent determines the data from purchase invoice bills and stock registers on monthly basis based on opening and closing stock. Monthly recording
8.	Q_{coal}	Tonne	The project proponent determines the data from purchase invoice bills and stock registers on monthly basis based on opening and closing stock. Monthly recording
9.	Q_{Gypsum}	Tonne	The project proponent determines the data from purchase invoice bills and stock registers on monthly basis based on opening and closing stock. Monthly recording
10.	$FR_{flyash,m}$	Tonne	The project proponent records the challans provided by the truck operators and sums up to get the final weight for each delivery. Monitored on each delivery and aggregated monthly Monitored on each delivery and aggregated monthly
11.	$FR_{cement,m}$	Tonne	
12.	$FR_{Lime,m}$	Tonne	
13.	$FR_{Aluminium,m}$	Tonne	
14.	$D_{f,m,\ flyash}$	Km	The project proponent records the total distance travelled from the origin to the project activity location and return journey. Number of trips aggregated monthly
15.	$D_{f,m,\ cement}$	Km	
16.	$D_{f,m,\ Lime}$	Km	
17.	$D_{f,m,\ Aluminium}$	Km	
18.	$D_{f,m,\ Coal}$	Km	

19.	$D_{f,m,\ gypsum}$	Km	
20.	$D_{f,m,\ Briquettes}$	Km	
21.	$FC_{\ diesel}$	L	The project proponent uses volume meters on each fill basis for recording. Monitored on each fill and aggregated monthly

QA/QC Procedures

Data Management and Data Archiving

Copies of the break-up sheet, invoices raised and sales receipts will be retained and archived for the entire crediting period plus two years or last issuance whichever is later by the project proponent.

Training

The operation and maintenance team trains the staff on operation and maintenance aspects of the plant. The training ensures preventive maintenance and better operational control for the plant.

Internal audits:

The process used for conducting internal audits includes:

1. Planning: Planning of audit to focus on areas like production efficiency, quality control, and environmental compliance.
2. Execution: Perform on-site evaluations, including inspecting production areas, observing employee practices, and reviewing documentation on materials, safety procedures, and equipment maintenance.
3. Analysis: Identify non-conformities and improvement opportunities by analysing data collected during the audit and assess how they align with company standards and industry regulations.
4. Working: Take corrective actions and improvements to ensure issues are resolved effectively to confirm compliance and continuous improvement.

Calibration

The monitoring equipment is calibrated yearly as per industry practice though NABL accredited laboratory.

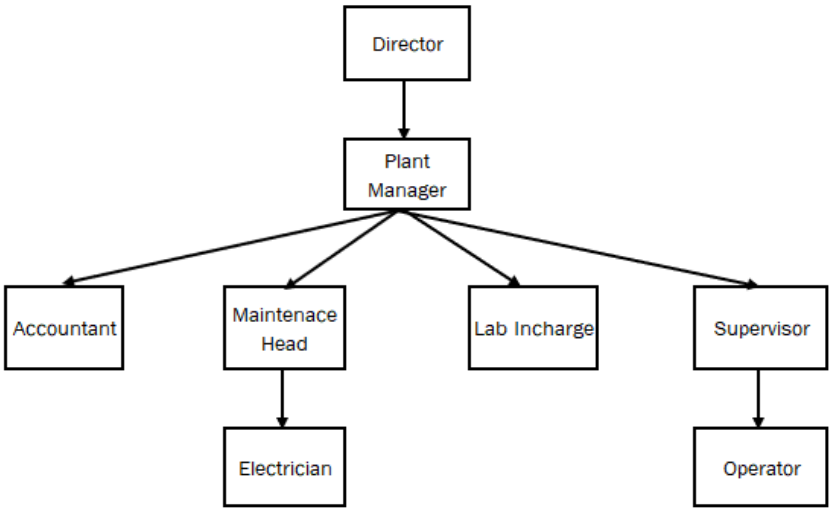
The calibration details of weighbridge is as follows:

S. NO.	Equipment	Make	Class	Serial No. of equipment	Date of calibration	Validity of calibration
1	Weighbridge	Arvin	III	WB072324	18-April-2023	17-April-2024
					15-April-2024	14-April-2025

MPP29621

The electricity meter [30]installed at the project site is a consumer-grade meter, which is owned and maintained by the State Electricity Board (i.e., MPPKVVCL (Madhya Pradesh Paschim Kshetra Vidyut Vitaran Company Limited)) and PP does not have any control over the meter hence, the calibration of the meter is solely conducted by the State Electricity Board[31].

Organizational structure



Responsibilities of personnel carrying monitoring activities:

S. No.	Task	Accountant	Maintenance head	Lab Incharge	Supervisor	Plant manager
1	Recording of monitored data				✓	
2	Verification of monitored data					✓
3	Staff's training and management				✓	✓
4	Plant maintenance		✓			
5	Calibration of monitoring equipment			✓		
6	Data storage	✓		✓		

[30] Latest Meter bill for the month of February 2025 submitted for confirmation of Meter Serial Number (MPP29621).

[31] Para 8.14 and 8.15 on pg. #40 of https://mperc.in/uploads/regulation_document/53b3577e0c8faa804cede7c440f8cf9d.pdf

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

Baseline emission has been quantified in accordance with the applied methodology i.e., AMS.III. Z. The formula used for calculation is as follows:

$$BE_y = EF_{BL} * P_{PJ,Y}$$

Where,

BE_y = Baseline emissions in year y, tCO_2e

EF_{BL} = The annual production specific baseline emission factor = 0.3592435 tCO_2e/Cum

$P_{PJ,Y}$ = The annual net production of the facility in year y

Period		EF_{BL}	$P_{PJ,y}$	BE_y
From	To	tCO_2e/m^3	m^3	tCO_2e
1-May-2023	31-May-2023	0.3592435	11,858.00	4259.91
1-June-2023	30-June-2023	0.3592435	11,326.00	4068.79
1-July-2023	31-July-2023	0.3592435	12,251.00	4401.09
1-August-2023	31-August-2023	0.3592435	13,698.00	4920.92
1-September-2023	30-September-2023	0.3592435	12,739.00	4576.40
1-October-2023	31-October-2023	0.3592435	10,811.00	3883.78
1-November-2023	30-November-2023	0.3592435	11,230.00	4034.30
1-December-2023	31-December-2023	0.3592435	10,777.00	3871.57
Vintage 2023			**94,690.00**	**34,016 (Round down value)**
1-January-2024	31-January-2024	0.3592435	14,017.00	5,035.52
1-February-2024	29-February-2024	0.3592435	13,099.00	4,705.73
1-March-2024	31-March-2024	0.3592435	7,490.00	2,690.73
1-April-2024	30-April-2024	0.3592435	93,65.00	3,364.32
1-May-2024	31-May-2024	0.3592435	13,091.00	4,702.86
1-June-2024	30-June-2024	0.3592435	13,592.00	4,882.84
1-July-2024	14-July-2024	0.3592435	6,061.00	2,177.37
Vintage 2024			**76,715.00**	**27,559 (Round down value)**
Total			**171,405**	**61,575**

5.2 Project Emissions

Project emission calculated as $PE_y = PE_{EC, y} + PE_{Fossil\ fuel, y}$

Where, $EF_{grid, CM, y} = 0.9613\ tCO_2e/MWh$

The project activity involves two sources of project emission:

1. Emissions from electricity consumption and
2. Emissions from electricity consumption for biomass briquette production

Project emission from electricity consumption

Emissions resulting from electricity consumption within the project boundary has been calculated in accordance with "Tool to calculate baseline, project and/or leakage emission from electricity consumption". The equation being used is:

$$PE_{EC,y} = \Sigma\ EC_{PJ,j,y} * EF_{grid, CM, y} * (1+TDL_y)$$

Where:

$PE_{EC,y}$ - Project emissions due to electricity consumption in year y, tCO_2/year

$EC_{PJ,j,y}$ - Quantity of electricity consumed by the project emission source j in year y, MWh/year

$EF_{grid, CM, y}$ - Emission factor for electricity generation for source j in year y, tCO_2/MWh

TDL_y - Average technical transmission and distribution losses for providing electricity to source j in year y, %

= 283.81 MWh * (1+10%) * 0.9613 tCO_2e /MWh

$PE_{EC,y}$ = 300.11 tCO_2e

Project Emission due to electricity consumption for biomass briquette production

Emissions resulting from electricity consumption for biomass briquette production has been calculated in accordance with "Tool to calculate baseline, project and/or leakage emission from electricity consumption". The equation being used is:

$$PE_{EC,y} = \Sigma\ EC_{PJ,j,y} * EF_{grid, CM, y} * (1+TDL_y)$$

Where:

$PE_{EC,y}$ - Project emissions due to electricity consumption in year y, tCO_2/year

$EC_{PJ,j,y}$ - Quantity of electricity consumed by the project emission source j in year y, MWh/year

$EF_{grid, CM, y}$ - Emission factor for electricity generation for source j in year y, tCO_2/MWh

TDL_y - Average technical transmission and distribution losses for providing electricity to source j in year y, %

$EC_{PJ,j,y}$ = Specific electricity consumption per MT of briquette x Quantity of biomass briquette consumed

= 38*4,253.03

= 161,615 kWh

= 161.615 MWh

$PE_{EC,y}$ = 161.615 MWh * (1+10%) * 0.9613 tCO_2e /MWh

= 170.90 tCO_2e

Project emissions due to fossil fuel or NRB consumption in year y ($PE_{fuel,y}$)

No fossil fuel is consumed in the project during the current monitoring period, this emission is zero.

Emissions from cultivation of biomass in a dedicated plantation in year y ($PE_{cultivation, y}$) =0 tCO_2e

Since briquette is procured and not cultivated in dedicated plantations, this emission is zero.

Project emissions due to the production of charcoal in kilns not equipped with a methane recovery and destruction facility in year y ($PE_{CH4, y}$) =0 tCO_2e

Since there is no charcoal produced inside the project activity, these emissions are zero.

Total Project Emissions= 472.00 tCO_2e (Round up value)

5.3 Leakage Emissions

There are two sources of leakage emission in the project:

a) Leakage emission due to raw material production

b) Leakage emission due to raw material transportation

Leakage emission due to raw material production

Formula used for calculation is as follows:

$$LE_{rm,prod,y} = Q_{cement} * EF_{cement} + Q_{lime} * EF_{lime} + Q_{aluminium} * EF_{aluminium}$$

$LE_{rm,prod,y}$: Leakage emissions associated with consumption of raw and/or additive materials in the year y

Q_{cement} : Quantity of cement consumed for the production of AAC blocks in the year y

EF_{cement} : CO_2 emission factor of the cement production

Q_{lime} : Quantity of lime consumed for the production of AAC blocks in the year y

EF_{lime} : CO_2 emission factor of the lime production

$Q_{aluminium}$: Quantity of Aluminium Powder consumed for the production of AAC blocks in the year y.

$EF_{Aluminium}$: CO_2 emission factor of the Aluminium production

The following are the leakage emission due to production of raw material:

Raw Material	1-May-2023 to 31-December-2023	01-January-2024 to 14-July-2024
O P C Cement	6,181.14	5,553.59
Fly Ash	0	0
Quick Lime Powder	4,573.26	3,920.12
Biomass Briquette	113.23	94.95
Gypsum Powder	8.10	7.79
Aluminium Powder	42.27	42.91
Total	10,917.99	9,619.35

Leakage Emissions from Raw Material Production = 20,537.34 tCO_2e

Leakage emission due to raw material transportation

Calculation of leakage associated with transportation of raw material

$$LE_{TR,m} = \Sigma D_{fm} \times F_{Rf,m} \times EF_{CO2,f} \times 10^{-6}$$

Where:

$LE_{TR,m}$: Leakage emission from road transportation of freight monitoring period m (tCO_2)

D_{fm}: Return trip road distance between the origin and destination of freight transportation activity f in monitoring period m (km)

$F_{Rf,m}$: Total mass of freight transported in freight transportation activity f in monitoring period m (t)

$EF_{CO2,f}$: Default CO_2 emission factor for freight transportation activity f (t CO_2e/km)

F: Freight transportation activities conducted in the project activity in monitoring period m

The following are the leakage emission due to transportations of raw material:

Raw Material	1-May-2023 to 31-December-2023	01-January-2024 to 14-July-2024
O P C Cement	1,316.68	908.44
Fly Ash	3,107.27	1,879.11
Quick Lime Powder	847.55	615.34
Biomass Briquette	167.59	142.94
Gypsum Powder	168.97	133.93
Aluminium Powder	3.74	3.81
Total	5,611.79	3,683.57

Leakage Emissions due to transportations = 9,295.36 tCO_2e

Total Leakage Emissions during Monitoring period: -

Period	Total Leakage Emissions (Vintage wise round up values)
	tCO_2e
1-May-2023 to 31-December-2023	16,530
01-January-2024 to 14-July-2024	13,303
Total	29,833

The rounded-up value is used so, 29,833 tCO_2e as total leakage due to project activity.

5.4 GHG Emission Reductions and Carbon Dioxide Removals

Vintage period	Baseline emissions (tCO_2e)	Project emissions (tCO_2e)	Leakage emissions (tCO_2e)	Reduction VCUs (tCO_2e)	Removal VCUs (tCO_2e)	Total VCUs (tCO_2e)
01-May-2023 to 31-Dec-2023	34,016	267	16,530	17,219	-	17,219
01-Jan-2024 to 14-Jul-2024	27,559	205	13,303	14,051	-	14,051
Total	**61,575**	**472**	**29,833**	**31,270**	**-**	**31,270**

For projects required to assess permanence risk:

The project is not required to assess permanence risk, hence not applicable.

State the non-permanence risk rating (%)	NA	
Has the non-permanence risk report been attached as either an appendix or a separate document?	☐ Yes	☒ No

For ARR and IFM projects with harvesting, state, in tCO_2e, the Long-term Average (LTA).	NA
Has the LTA been updated based on monitored data, if applicable?	☐ Yes ☒ No If no, provide justification.
State, in tCO_2e, the expected total GHG benefit to date.	NA
If a loss occurred (including a loss event or reversal), state the amount of tCO_2e lost:	NA

Vintage period	Baseline emissions (tCO_2e)	Project emissions (tCO_2e)	Leakage emissions (tCO_2e)	Buffer pool allocation (tCO_2e)	Reductions VCUs (tCO_2e)	Removals VCUs (tCO_2e)	Total VCU issuance (tCO_2e)
01-May-2023 to 31-Dec-2023	NA	NA	NA	NA	NA	NA	NA
01-Jan-2024 to 14-Jul-2024	NA	NA	NA	NA	NA	NA	NA
Total	NA	NA	NA	NA	NA	NA	NA

Vintage period	Ex-ante estimated reductions/ removals	Achieved reductions/ removals	Percent difference	Explanation for the difference
01-May-2023 to 31-Dec-2023	21,031	17,219	-18.13%	The actual emission reduction achieved is approximately 18.13 % lower due to the comparatively low production of AAC Blocks, which is dependent on market demand
01-Jan-2024 to 14-Jul-2024	16,825	14,051	-16.49%	The actual emission reduction achieved is approximately 16.49 % lower due to the comparatively low production of AAC Blocks, which is dependent on market demand
Total	37,856	31,270	-17.40%	The actual emission reduction achieved is approximately 17.40 % lower due to the

				comparatively low production of AAC Blocks, which is dependent on market demand

APPENDIX 1: COMMERCIALLY SENSITIVE INFORMATION

There is no commercially sensitive information included in the monitoring report to be excluded in the public version of this document.

APPENDIX 2: TEST RECORD DATA

S. No.	Date of report[32]	Compressive strength (N/mm²)	Name of laboratory	Accreditation of laboratory
1	12- December-2022	4.46	Kailtech Test & Research Centre Pvt. Ltd.	National Accreditation Board for Testing and Calibration Laboratories (NABL)
2	06-June-2023	4.48	Kailtech Test & Research Centre Pvt. Ltd.	National Accreditation Board for Testing and Calibration Laboratories (NABL)
3	12-September-2023	4.47	Kailtech Test & Research Centre Pvt. Ltd.	National Accreditation Board for Testing and Calibration Laboratories (NABL)
4	07-March-2024	4.77	Kailtech Test & Research Centre Pvt. Ltd.	National Accreditation Board for Testing and Calibration Laboratories (NABL)
5	15-June-2024	4.43	Kailtech Test & Research Centre Pvt. Ltd.	National Accreditation Board for Testing and Calibration Laboratories (NABL)
Average		4.522		

[32] Frequency of test is Half Yearly through external Lab Test Report.