WIND POWER PROJECT BY GREEN INFRA WIND POWER GENERATION LIMITED

Project title	Wind Power Project by Green Infra Wind Power Generation Limited
Project ID	1776
Monitoring period	01-May-2024 to 31-October-2024 (Inclusive of both dates)
Original date of issue	03-January-2025
Most recent date of issue	09-November-2024
Version	03
***VCS Standard* Version**	4.7
Prepared by	Rajeev Kumar Singh Sembcorp Green Infra Ltd.

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PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The purpose of the project activity is to generate clean electricity by harnessing the renewable wind energy. The project activity involves the installation of 18 Wind Turbine Generators (WTGs) for generating the electricity, aggregated to capacity of 36 MW. Over the 10 years of first crediting period, the project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 79,147 tCO2e per year, thereon displacing 81,993 MWh/year amount of electricity from the generation-mix of power plants connected to the Indian grid, which is mainly dominated by thermal/fossil fuel-based power plant.

The details of project and its location of installation are mentioned in the table below:

	Name of the Investor: Green Infra Wind Power Generation Limited					
COD	Cap of each WTGs	No. of WTGs	MW	Location	Connection with Grid	Usage
12-Aug-2016	2 MW	5	10	Harappanahalli Taluk, Davanagere District.	Indian Grid	Generated electricity supply to group captive consumer
21-Sep-2016	2 MW	3	6			
02-Nov-2016	2 MW	2	4			
13-Jan-2017	2 MW	8	16			
	Total	18	36			

Project WTGs technical details has been provided under section 3.1 of the MR.

Thus, project activity generates clean electricity & helps in avoiding the fossil fuel fired electricity generation from the grid electricity mix and thereby reducing the equivalent GHG emissions from the atmosphere. The project is operational since 12-August-2016 till date.

The total GHG emission reductions or removals generated in this monitoring period (01-May-2024 to 31-October-2024) is 48,161 tCO2e.

1.2 Audit History

Audit type	Period	Program	Validation/verification body name	Number of years
Joint Validation/ verification	12-August-2016 to 30-June-2018	VCS	LGAI Technological Center, S.A. (Applus+ Certification)	1 year, 10 months, 19 days
Verification	01-July-2018 to 31-July-2020	VCS	Earthood Services Pvt.Ltd.	2 years, 1 month
Verification	01-August - 2020 to 31-July-2021	VCS	Earthood Services Pvt.Ltd.	1 year, 0 month
Verification	01-August-2021 to 31-July-2022	VCS	LGAI Technological Center, S.A. (Applus+ Certification)	1 year, 0 month
Verification	01-August-2022 to 31-August-2023	VCS	LGAI Technological Center, S.A. (Applus+ Certification)	1 year, 1 month
Verification	01-September 2023 to 30-April 2024	VCS	Carbon Check India Pvt.Ltd.	8 months
Verification	01-May-2024 to 31-October-2024	VCS	SGS India Pvt. Ltd.	6 months
Total	12-August-2016 to 31-October-2024	-	-	8 year, 2 months, 19 days

1.3 Sectoral Scope and Project Type

:

Sectoral scope[1]	01-Energy (Renewable/non-renewable sources)
Project activity type	Type I- Renewable Energy Projects

[1] *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*

Sectoral scope	Not applicable
AFOLU project category[2]	Not applicable
Project activity type	Not applicable

1.4 Project Proponent

Organization name	Green Infra Wind Power Generation Limited
Contact person	Rajeev Kumar Singh
Title	Manager- Carbon Team
Address	5th Floor, Tower C, Building No. 8, DLF Cybercity, Gurgaon-122002, Haryana, India
Telephone	+91-9789183888
Email	Rajeevkumar.singh@sembcorp.com

1.5 Other Entities Involved in the Project

At present, Green Infra Renewable Energy Limited is the sole entity involved in the project.

Organization name	NA
Role in the project	NA
Contact person	NA
Title	NA
Address	NA
Telephone	NA
Email	NA

1.6 Project Start Date

Project start date	12-August-2016

[2] *See Appendix 1 of the* VCS Standard

Justification	As per the Section 3.8 of the VCS Standard v.4.7, "The project start date of a non-AFOLU project is the date on which the project began generating GHG emission reductions or removals". The project is a non-AFOLU project and the earliest date of interconnection with the grid is 12-August-2016. Hence, the start date of the project is 12 August-2016.

1.7 Project Crediting Period

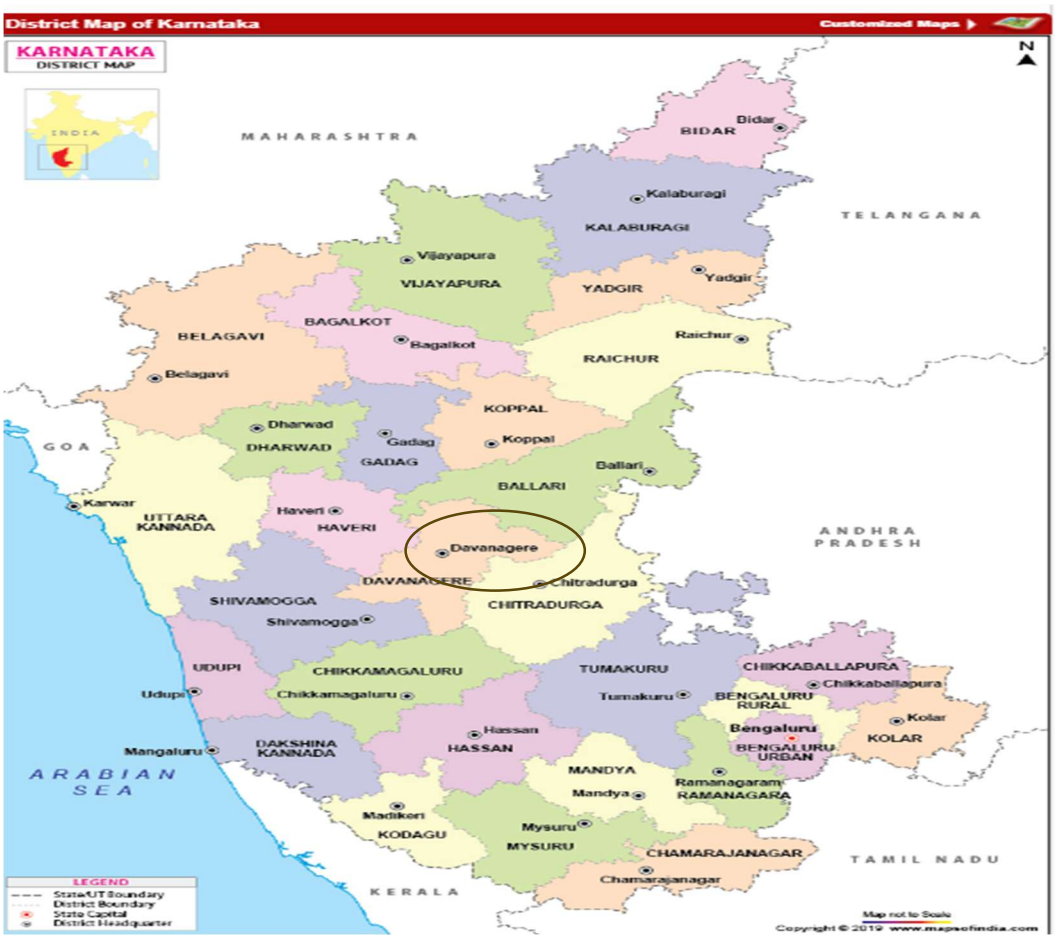
Crediting period	☐ Seven years, twice renewable ☐ Ten years, fixed ☒ Other (The project has chosen a crediting period of 10 years renewable twice. This is in line with the VCS Standard v3.7 which was applicable at the time of project registration)
Start and end date of first or fixed crediting period	12-August-2016 to 11- August-2026

1.8 Project Location

The details of the project locations are mentioned in the table below:

Name of Investor	Project Capacity	State	District	Tehsil/Taluka
Green Infra Wind Power Generation Limited	36 MW	Karnataka	Davangere	Harappanahalli

The project locations are shown below:



WTG wise Location:

S. No.	SCADA Label	Latitude	Longitude
1	HRG 01	14.8049076°	75.9680992°
2	HRG 02	14.8287511°	75.9798681°
3	HRG 03	14.8250970°	75.9824444°
4	HRG 04	14.8193786°	75.9665373°
5	HRG 05	14.7982227°	75.9882514°
6	HRG 06	14.8206972°	75.9838928°
7	HRG 07	14.8199311°	75.9727287°
8	HRG 08	14.7977797°	75.9733918°
9	HRG 09	14.8150685°	75.9915616°

10	HRG 10	14.8014458°	75.9850324°
11	HRG 11	14.8055876°	75.9783329°
12	HRG 12	14.8103336°	75.9889475°
13	HRG 14	14.8249220°	75.9725651°
14	HRG 15	14.7986081°	75.9677275°
15	HRG 16	14.8090112°	75.9937270°
16	HRG 17	14.8240810°	75.9726171°
17	HRG 18	14.8054880°	75.9783696°
18	HRG 19	14.8083964°	75.9937428°

1.9 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	ACM0002	Grid-connected electricity generation from renewable sources	18.1
Tool	Tool 07	Tool to calculate the emission factor for an electricity system	6.0
Tool	Tool 01	Tool for the demonstration and assessment of additionality	7.0

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

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

1.12 Sustainable Development Contributions

The various contributions by the Project Proponent (PP) towards the SDGs has been given below:

1. **SDG 7 Affordable and Clean Energy**[3]: Since the project activity is a solar power project, it generates clean energy. The Project activity is a new facility (Greenfield) and the electricity generated by the project is exported to the Indian electricity grid. The project therefore displaces an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid.

   During the current monitoring period 01-May-2024 to 31-October-2024 (inclusive of both dates) 49,893 MWh electricity has supplied to Indian grid.

2. SDG 13 Climate Action[4]**:** The main purpose of this project activity is to generate a clean form of electricity through renewable wind energy sources.

The project supplies clean electricity from the wind power plants to the Indian Grid, hence displacing the electricity generated from grid connected fossil fuel power plants and thereby avoiding the equivalent Carbon dioxide which is a greenhouse gas.

By supplying 49,893 MWh clean electricity to Indian grid, the project avoided release of 48,161 tCO_{2e} into the atmosphere during the current monitoring period: 01-May-2024 to 31-October-2024(inclusive of both dates).

3. SDG 8 Employment and decent work: The implementation of the project activity has led to increase in the employment and skill upliftment in the surrounding areas. The current monitoring period has employed 18 people for the project activity.

[3] https://sdgs.un.org/goals/goal7

[4] https://sdgs.un.org/goals/goal13

Table 1: Sustainable Development Contributions

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime
1)	7.2	7.2.1: Renewable energy share in the total final energy consumption	Implemented activities to increase	About 49,893 MWh renewable electricity has been supplied to Central Grid to Indian Electricity grid during the current monitoring period that helps to increase the renewable energy share in the energy mix.	A total of 654,522 MWh renewable electricity has been supplied to the Indian grid by the project activity since commissioning.
2)	8.5	8.5.2: Unemployment rate, by sex, age and persons with disabilities	Implemented activities to decrease	The project activity has generated jobs with currently 18 employees including local, non-local people and skilled personnel.	The project has created more than 30 jobs since commissioning,
3)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to increase	By generating 49,893 MWh renewable electricity the project has avoided emission of 48,161 tCO2e in the atmosphere.	Since commissioning the project has avoided emission of 631,791 tCO2e in the atmosphere.

1.13 Commercially Sensitive Information

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

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

Stakeholder Identification	Villagers located near the project area are identified as the main stakeholders of the project activity. They are identified by the CSR committee of the company in discussion with the Gram Panchayat and the Block level Government officers. As the villagers are in the vicinity of the project activity, they would be likely be the most impacted by the implementation of the project.
Legal or customary tenure/access rights	All legal or customary tenure/access rights are with PP. Furthermore, the project activity has no impact on any collective or conflicting rights held by the stakeholders, indigenous people (IPs), local communities (LCs), or customary rights holders.
Stakeholder diversity and changes over time	The project owner has conducted and stakeholder meeting during the start of registration process of this project under the VCS mechanism. In this stakeholder meeting, diverse stakeholders such as local villagers (villages nearby the project site), state utility officials, NGOs were invited. The project owner has explained the various benefits and advantages of this project including the economic impact on the local area. Over the period of the year, the nature of the stakeholders has not changed.

Expected changes in well-being	Over the course of the project implementation, there has been considerable and positive impact on the livelihood of the local people. The project activity has generated employment to the local people, development of new skills for the locals by providing trainings and exposing to various awareness programs.
Location of stakeholders	The main stakeholders of this project are: • State utility which includes transmission and distribution companies which have offices at local (block level) and as well as State Capital. Villagers/local citizens- they are located near the project area. The project has positive impact on the local people has it has generated employment (temporary/permanent) opportunities for them.
Location of resources	In the project activity, neither any territories and resources are owned by the stakeholders, nor they have any customary access)

2.1.2 Stakeholder Consultation and Ongoing Communication

Ongoing consultation	PP follows the following three methods for continuous feedback and ongoing communications with stakeholders during project implementation. These are: a) Grievance box at regional office/project site b) Grievance register maintained at regional office/project site c) A digitized QR code.
Date(s) of stakeholder consultation	10-November-2015
Communication of monitored results	Monitored outcomes are conveyed to the stakeholders in two ways: 1.Through VERRA Website: - PP submits third-party (i.e., VVB) verified monitoring results to VERRA, and once

	approved, the project documentation is made publicly available on the VERRA webpage for each monitoring period. 2.Through PP regional office: - A copy of all the project related documents and monitoring data (e.g., grievance register) is available at regional offices of the PP, which is accessible to all the stakeholders associated with the project activity.
Consultation records	The LSC records were submitted to VVB at the time of validation and grievance register records for the current monitoring period is submitted to VVB.
Stakeholder input	Stakeholder input/feedback received during LSC and the LSC report for the same had been submitted to the VVB during validation. Furthermore, the stakeholder feedback/grievance received during the current MP, through ongoing consultation mechanism, has been taken care as per the standard procedure adopted by PP, provided in section 2.1.4 of the VCS-MR. There were no major comments from the stakeholders which could impact on the design of the project.

2.1.3 Free, Prior, and Informed Consent

Consent	Before the project commissioning PP had taken appropriate approvals from relevant authorities. There are no ongoing or unresolved conflicts related to the project activity.
Outcome of FPIC	Not Applicable. The project activity does not affect any type of property rights, and there are no ongoing or unresolved conflicts over property rights, usage, or resources. This project activity does not involve any encroachment on land, people's relocation, or forced physical or economic displacement.

2.1.4 Grievance Redress Procedure

The project proponent has put a robust grievance redressal mechanism in place at the project site. The PP has established three main mechanisms to capture the grievances:

- A grievance box
- A grievance register
- A digitized QR code

Any stakeholder, including local villagers, can lodge a complaint related to any matter through any of the above-mentioned three channels. The grievance register is most easily accessible for the stakeholders as the dedicated visitor cum grievance register has been placed at the project site. It is the most appropriate publicly accessible location at which the local stakeholders can provide their feedback on the project.

The project owner's HSE committee discusses the grievance received (if any) on a quarterly basis and the same if found genuine gets addressed/resolved properly.

Grievances received	Resolution and outcome
No grievances were received during the current monitoring period	Not applicable

2.1.5 Public Comments

The project was open for public comment from 11-July-2018 to 10-August-2018. No public comment was received during this period.

Summary of comments received	Actions taken
Not applicable	Not applicable

2.2 Risks to Stakeholders and the Environment

2.2.1 Management Experience

Green Infra Renewable Energy Limited is a SPV of Sembcorp Industries which has years of experience in implementing wind and solar energy projects. Some of the other projects implemented by Sembcorp industries are VCS1856, VCS1745, VCS 1904, GS7152, GS7468. No entity has been newly involved in project design or implementation during the current monitoring period.

2.2.2 Risk assessment

	Risk identified	Mitigation or preventative measure(s) taken
Natural and human-induced risks to stakeholders' wellbeing	Visual and Aesthetics impacts	The layout for the wind turbines has been finalized based on a sitting exercise which has accounted for visual impacts. All the wind turbines have uniform visual characteristics such as colour, size, and design of turbine.
Risks to stakeholder participation	No risk identified	No agricultural activities are undertaken near the project site, The land is purchased through willing seller and willing buyer arrangement and no negative impacts on livelihood could be identified which may pose risk to stakeholders' participation.
Working conditions	Safety of employees at project site	PP has a health and safety policy, and procedure manual in place to ensure favorable working condition.
Safety of women and girls	No risk identified	The project is a wind power project and its day-to-day operations does not involve any interactions with the local community. Hence, there are no safety related concerns for women and girls.
Safety of minority and marginalized groups, including children	No risk identified	There are no marginalized group or minorities present in the local community. No vulnerable communities were identified as mentioned in the ESIA report.
Pollutants (air, noise, discharges to water, generation of waste, and release of hazardous materials and chemical pesticides and fertilizers)	Soil quality (waste/used oil can lead to contamination of soils at site)	The waste/used oil from the turbines and transformer oil is disposed of to an authorized vendor.
	Water Resources & Quality (excessive use of water resources in the project vicinity leading to their depletion)	Water required for cleaning is sourced from authorized tankers suppliers during the dry months in order to eliminate dust and insect build up in the rotor blades. No

		waste water generation is envisaged from the process
	Noise from wind turbine operation	A noise modelling exercise was carried out for the proposed project using the WindPRO software available for the design and planning of wind farms. The modelling exercise indicates that there will be only a marginal increase in noise levels and there will be no significant impact on the noise levels due to the Project.

2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

	Risks identified[5]	Mitigation or preventative measure(s) taken
Discrimination	Discrimination on the basis of individual's race, gender, age, disability, ethnicity or cultural affiliation, sexual orientation, belief, educational background, or any other basis.	PP has code of conduct policy in place to prevent discrimination against anyone.
Sexual harassment	Unwelcome acts or behavior (whether directly or by implication)	PP has a prevention of sexual harassment policy in place which is applicable to both permanent and contractual employees.
Gender equity in labor and work	Biasness in hiring, promotions or terminations	PP has fair employment practice policy in place to prevent any such partiality.
Forced labor	No risk identified	PP complies with the core labour standards for the ADB financed portion of the Project by engaging those contractors and other

[5] 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.

		providers of goods and services who do not employ forced labour.
Child labor	No risk identified	PP complies with the core labour standards for the ADB financed portion of the Project by engaging those contractors and other providers of goods and services who do not employ child labour
Human trafficking	No risk identified	The PP works with ethical suppliers as per code of conduct policy and no such scenario is envisaged for the project activity.

2.3.2 Human Rights

Risks identified	Mitigation or preventative measure(s) taken
No risk identified	The land required for the project comprises of entirely private land and is purchased on willing seller- willing buyer basis and direct negotiations with the land owners. There are no resettlement and rehabilitation or involuntary resettlement issues related to the project; and no specific / vulnerable group of community is likely to be affected by the project., hence there are no risks to human rights violation identified.

2.3.3 Indigenous Peoples and Cultural Heritage

Risks identified	Mitigation(s) or preventative measure taken
No risk identified	The project does not affect the indigenous people and their cultural heritage as Indigenous communities like tribes, ethnic minorities, aboriginals etc. are not present in the area.

2.3.4 Property Rights

Risks identified	Mitigation or preventative measure(s) taken
No risk identified	This project does not infringe with property rights and resources. The land required for the project comprises of entirely private land and is purchased on willing seller- willing buyer basis and direct negotiations with the land owners. Hence, there is no need to implement any measures to protect and preserve the property rights of stakeholders, IPs, LCs, and customary rights holders.

2.3.5 Benefit Sharing

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Summary of the benefit sharing plan	Not applicable
Benefit sharing during the monitoring period	Not applicable

2.4 Ecosystem Health

Risk identified		Mitigation or preventative measure(s) taken during the monitoring period
Impacts on biodiversity and ecosystems	No risk identified	This project activity does not involve any activity which may negatively impact biodiversity and ecosystem. The locations identified for the WTG do not comprise of any trees or shrubs in the immediate vicinity. Provision of adequate spaces between each turbine for movement of birds which reduces the potential for accidental collision has been provided as per the project site layout plan.

Soil degradation and soil erosion	Dispersion of soil	Temporary paved areas are constructed to be used while refueling the machineries, in case of any accidental spill the soil will be cut and stored securely for disposal with hazardous waste.
Water consumption and stress	Contamination of pond, domestic water run off	Portable toilets are provided with septic tank followed by soak pit. Temporary paved areas are used while refueling the machineries Storage of oil is undertaken on paved impervious surface and secondary containment shall be provided for fuel storage tanks;

2.4.1 Rare, Threatened, and Endangered species

Species or habitat	Not applicable
Areas needed for habitat connectivity	Not applicable

	Risks identified	Mitigation or preventative measure(s) taken
Habitats for rare, threatened, and endangered species	Not applicable	Not applicable
Areas for habitat connectivity	Not applicable	Not applicable

2.4.2 Introduction of species

This project activity neither involve any planting activities nor introduction of species. Hence, not applicable.

Species introduced	Classification	Justification for use	Adverse effects and mitigation
Not applicable	Not applicable	Not applicable	Not applicable

Existing invasive species	Mitigation measures to prevent the spread or continued existence of invasive species
Not applicable	Not applicable

	Risks identified	Mitigation or preventative measure(s) taken
Invasive species	Not applicable	Not applicable

2.4.3 Ecosystem conversion

This project activity does not involve ARR, ALM, WRC or ACoGS activities. Hence, not applicable.

	Risks identified	Mitigation or preventative measure(s) taken
Ecosystem conversion	Not applicable	Not applicable

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project activity involves the installation of Wind project. The total installed capacity of the project is 36 MW of Wind power project located at Karnataka state in India. Green Infra Wind Power Generation Limited promotes the project.

The Project activity is a new facility (Greenfield) and the electricity generated by the project will be exported to the Indian electricity grid for group captive consumer usage. The project will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. The Project Proponent plans to avail the VCS benefits for the project.

In the Pre-project scenario the entire electricity, delivered to the grid by the project activity, would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources.

The project shall result in replacing annual anthropogenic emissions of greenhouse gases (GHG's)estimated to be approximately 79,147 tCO2e per year, there on displacing 81,993 MWh/year amount of electricity from the grid over the 10 years crediting period. The total GHG emission reductions or removals generated in this monitoring period (01-May-2024 to 31

October-2024) is 48,161 tCO_{2e}, thereby displacing 49,893 MWh amount of electricity from the grid.

The operational aspect of this project was very smooth during the monitoring period. There was no internal and external hindrance was observed or created by any stakeholders. Schedule maintenance was done properly to achieve the maximum generation.

Technology Details –

The technical specification for WTG at project site is as follows:

WTG Make and Model No.	Gamesa G114
Generator Type & Rating	Doubly-Fed Asyn, 2000kW
WTG Configuration	18 x 2000 kW
Rotor Diameter	114.0 m
Swept area	10,207 m^2
Hub Height	106m
Tower Type & Shape	Steel Conical Tubular
Cut-in- wind speed	2.5 m/s
Rated wind speed	10.0 m/s
Cut-out speed	25.0 m/s
Survival wind speed	60 m/s

The major breakdown/shutdown details for the current monitoring period is mentioned in the below table:

Sr. No.	Date	Location ID (WTG)	Duration (hrs)	Remarks
1	01-05-2024	HRG 08	4.13	Blade position measurement error
2	01-05-2024	HRG 19	23.35	Manual stop for Generator, Bearing replacement & Main bearing

				grease purging work
3	01-05-2024	HRG 10	0.17	HU pump drive failure
4	02-05-2024	HRG 19	5.93	Manual stop for generator and Gearbox alignment work
5	06-05-2024	HRG 17	1.78	Emergency series feedback error
6	08-05-2024	HRG 18	5.78	Manual stop for main bearing grease purging work
7	19-05-2024	HRG 17	5.35	Communication failure due to SF6 breaker T connector failure
8	03-06-2024	HRG 18	2.08	Top emergency button
9	12-06-2024	HRG 14	2.68	Manual stop for Transformer cooling fan replacement work
10	19-06-2024	HRG 14	1.33	Top emergency button
11	02-07-2024	HRG 14	3.15	Optimal generation scheduling
12	04-07-2024	HRG 04	4.43	Automatics not ok
13	07-07-2024	HRG 17	4.53	MV switch trip from CCU
14	24-07-2024	HRG 14	11.98	Hydraulic oil high temperature

15	26-07-2024	HRG 14	21.76	Hydraulic oil high temperature
16	01-08-2024	HRG 15	7.43	Analog card failure
17	07-08-2024	HRG 06	9.83	Blade position measurement error
18	19-08-2024	HRG 06	6.71	Blade position measurement error
19	22-08-2024	HRG 14	4.21	Grid voltage failure
20	25-08-2024	HRG 03	13.28	BUS error-INTERBUS failure
21	09-09-2024	HRG 19	3.23	Preload failure
22	27-09-2024	HRG 05	7.75	Manual stop for WTG 6 month maintenance work
23	29-09-2024	HRG 10	5.88	Magnetothermic trigger of the stator protection
24	30-09-2024	HRG 18	8.43	Grid voltage failure
25	10-10-2024	HRG 08	8.28	Yaw motors over current protection
26	21-10-2024	HRG 08	5.13	Top emergency button

3.2 Deviations

3.2.1 Methodology Deviations

No methodology deviation was applied during the current monitoring period.

3.2.2 Project Description Deviations

Deviation 1:

During the 2nd monitoring period from 01-July-2018 to 31-July-2020 following project deviation was considered:

Change from PD: Consideration of Transmission losses in calculating the Net electricity supplied to the grid by the project plant in a given month

Net Electricity (kWh) = Export, kWh – Import, kWh – Transmission losses,

Reason: Currently, Discom has started considering the "Transmission Loss" in JMR. Hence same has been considered and deducted from the Export value to arrive at the Net Electricity delivered from the project activity. This is not under the purview of PP as the State Electricity board is a government entity and solely responsible for the JMR preparation and any changes in the calculation of Net Electricity formulae. PP has no control over it and therefore deducted the transmission losses in line with the JMR prepared by the DISCOM during the current monitoring period.

However, this project deviation doesn't have an adverse impact in the applicability of the methodology, additionally or the appropriateness of the baseline scenario.

Deviation 2: During the 2nd monitoring period from 01-July-2018 to 31-July-2020 following project deviation was considered:

Change from PD: Registered JPD provides the latitude & longitude of Harapanahalli site only, The WTG wise Latitude & Longitude coordinates were swapped in the previous monitoring period, i.e.- 1st July 2018 to 31st July 2020. This has been corrected in the current monitoring period.

The above deviations do not impact the applicability of the methodology, additionally or the appropriateness of the baseline scenario, and the project remains in compliance with the applied methodology.

Deviation 3:

During the 4th monitoring period from 01-August-2021 to 31-July-2022 following project deviation was considered:

Change in the cross-check mechanism –

As the electricity generated is used by the group captive consumers hence, the generation as per JMRs in a financial year can be crosschecked with all the invoices raised during that financial year.

Deviation #4:

During the 5th monitoring period from 01-August-2022 to 31-August-2023 following project deviation was considered:

Change in metering system:

The project proponent has changed meters in accordance with a notice from Karnataka Power Transmission Corporation Limited to provide meters with an automatic meter reading system to the plant. In this system, the generation details shall be accounted for based on the AMR data received at SLDC. The new meters were calibrated and replaced on 20-07-2023. The calibration details are provided in the appendix 2.

Reason: To comply with government order, the PP has changed metering system in the plant.

The above deviation does not impact the applicability of the methodology, additionally or the appropriateness of the baseline scenario, and the project remains in compliance with the applied methodology.

This project did not apply any deviations related to Project Description during the current monitoring period.

3.3 Grouped Projects

Not applicable, as the project is not a grouped project.

3.4 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	tCO2/MWh
Description	Operating margin CO2 emission factor for the project electricity system in year y
Source of data	Calculated from CEA database, Version 12, May 2017
Value applied	0.9843
Justification of choice of data or description of measurement methods and procedures applied	Calculated as per "Tool to calculate the emission factor for an electricity system, version 06" as 3-year generation weighted average using data for the years 2013-14, 2014-15 & 2015-16. The data are obtained from "CO2 Baseline Database for Indian Power Sector" version 12, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	• Calculation of baseline emissions
Comments	The above value is fixed and it is same for the entire crediting period.

Data / Parameter	$EF_{grid,BM,y}$
Data unit	tCO2/MWh
Description	Build margin CO2 emission factor for the project electricity system in year y
Source of data	Calculated from CEA database, Version 12, May 2017
Value applied	0.9083
Justification of choice of data or description of measurement methods and procedures applied	Calculated as per "Tool to calculate the emission factor for an electricity system, version 06" as per the latest data available for the most recent year 2015-16. The data is obtained from "CO2 Baseline Database for Indian Power Sector" version 12, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	• Calculation of baseline emissions
Comments	The above value is fixed and it is same for the entire crediting period.

Data / Parameter	$EF_{grid,CM,y}$
Data unit	tCO2/MWh
Description	Combined margin CO2 emission factor for the project electricity system in year y
Source of data	Central Electricity Authority: Calculated from CEA database, Version 12, May 2017

Value applied	0.9653
Justification of choice of data or description of measurement methods and procedures applied	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ Where: $EF_{grid,BM,y}$ = Build Margin CO2 emission factor in year y (tCO2/MWh) $EF_{grid,OM,y}$ = Operating margin CO2 emission factor in year y (tCO2/MWh) W_{OM} = Weighting of operating margin emissions factor (%) =75% W_{BM} = Weighting of build margin emissions factor (%) = 25%
Purpose of data	• Calculation of baseline emissions
Comments	The above value is fixed and it is same for the entire crediting period.

4.2 Data and Parameters Monitored

Data / Parameter	$EG_{PJ,y}$
Data unit	MWh/y
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh
Source of data	Monthly joint meter reading reports
Description of measurement methods and procedures to be applied	The Net electricity supplied to the grid is the difference of final value of export and import after deducting Transmission losses in line with the JMR, and same value is considered for ER calculations
Frequency of monitoring/recording	Continuous measurement and monthly recording
Value monitored	49,893
Monitoring equipment	The electricity exported / supplied by the plant to pooling substation and further to substation. This meter also measures electricity imported by the plant from the grid.

Feeder No. 1	Main Meter	Check meter
Meter Number	23011368	23011410
Make	L&T	L&T

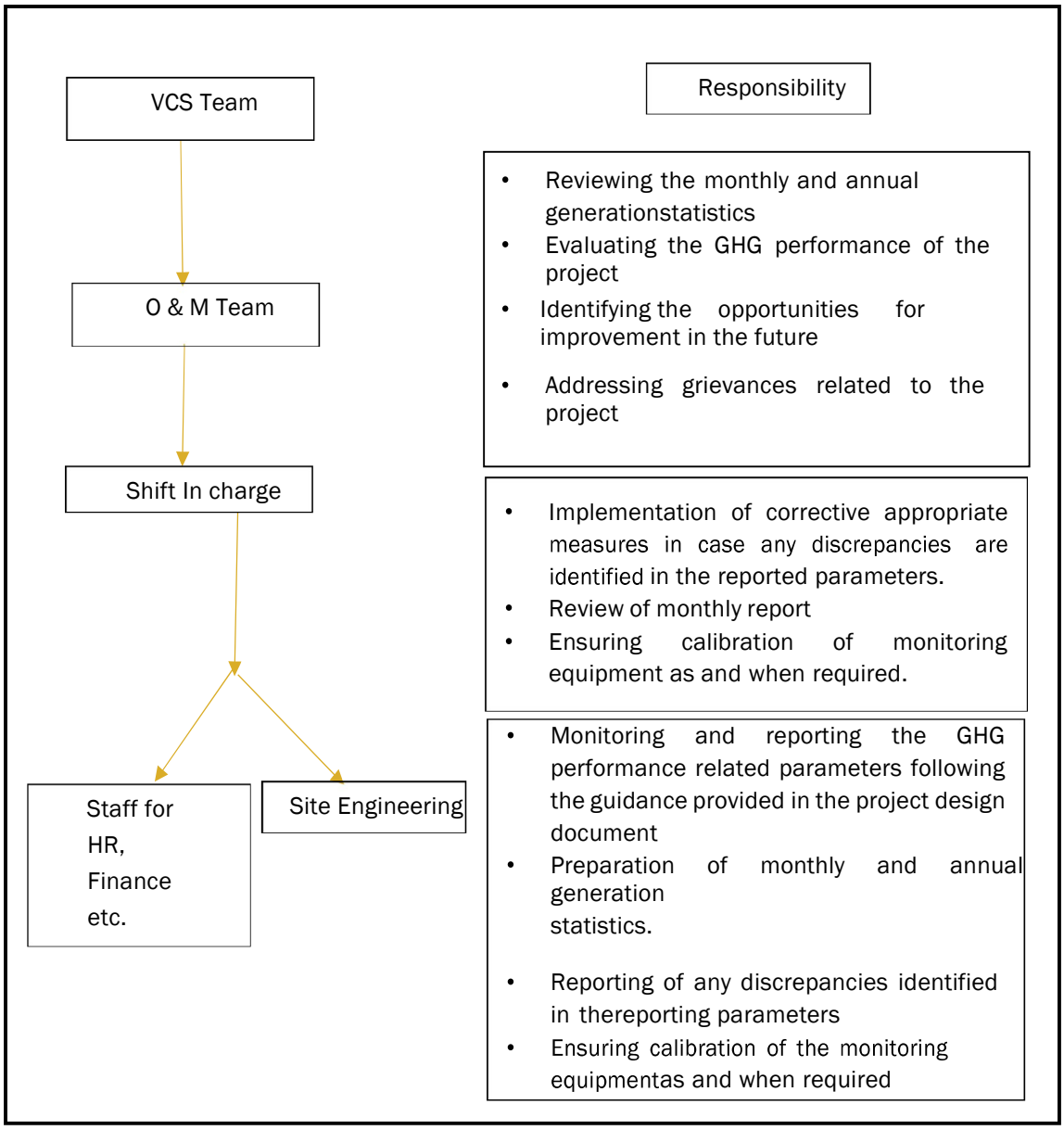
	<table><tr><td>Accuracy</td><td>0.2s</td><td>0.2s</td></tr><tr><td>Last Calibration</td><td>20-July-2023</td><td>20-July-2023</td></tr><tr><td>Valid till</td><td>19-July-2028</td><td>19-July-2028</td></tr></table> <table><tr><td>Feeder No. 2</td><td>Main Meter</td><td>Check meter</td></tr><tr><td>Meter Number</td><td>23011371</td><td>23011388</td></tr><tr><td>Make</td><td>L&T</td><td>L&T</td></tr><tr><td>Accuracy</td><td>0.2s</td><td>0.2s</td></tr><tr><td>Last Calibration</td><td>20-July-2023</td><td>20-July-2023</td></tr><tr><td>Valid till</td><td>19-July-2028</td><td>19-July-2028</td></tr></table>
QA/QC procedures to be applied	The electricity supplied/exported by the project activity in the JMR report in financial year is cross checked with the monthly (Financial) invoices of sale. The meters are approved, tested & sealed by the State Utility. The meters are in the custody of State Utility. The frequency of calibration is once in 5 years. In the absence or delay in the meter calibration appropriate Guidelines are applied appropriately to confirm the conservativeness of metering. The metering arrangement, accuracy class of meters, calibration frequency is under control of state electricity board and PP do not have any control on it. PP is getting value of net electricity supplied to grid from the JMR and the same is considered in the monitoring parameter. The billing is raised based on substation meters.
Purpose of the data	Calculation of baseline emissions
Calculation method	Thus, Net electricity supplied to the grid by the project plant in a given month = Export, kWh – 115% Import, kWh – Transmission losses, Currently, Discom has started considering the “Transmission Loss” in JMR. Hence, same has been considered and deducted from the Export value to arrive at the Net Electricity delivered from the project activity. This is not under the purview of PP as the State Electricity board is a government entity and solely responsible for the Joint Meter Reading preparation and any changes in the calculation of Net

	Electricity formulae. PP has no control over it and therefore deducted the transmission losses in line with the JMR prepared by the DISCOM during the current monitoring period. In invoice, the import is calculated as 115% of import and thus conservative value of considering 115% of import is used for ER calculations.
Comments	Data will be archived in paper & electronic form for two years after the end of crediting period or of the last issuance of VERs for this project activity, whichever occurs later.

4.3 Monitoring Plan

The monitoring plan is developed in accordance with the modalities and procedures for CDM project activities and is proposed for grid-connected wind power project being implemented. The monitoring plan, which is implemented by the project participant describes about the monitoring organisation, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving. In reference to this project, it was found that there was no internal auditing processes conducted during the current monitoring period.

The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project participant. PP proposed the following structure for data monitoring, collection, data archiving and calibration of equipment's for this project activity. The team comprises of the following members:



Data Measurement:

The export and import energy are measured continuously using above mentioned Main and Check meters located at the pooling substation as well as the KPTCL substation. Readings of meters is collected through AMR (Automatic meter reading) data received at SLDC. The monthly generation details shall be generated from the AMR data received by the DISCOM main office and sent to the project proponent. As the electricity generated is used by the group captive consumers hence, the generation as per JMRs in a financial year can be crosschecked with all the invoices raised during that financial year.

Data collection and archiving:

Readings from meters are collected through AMR data and received in the DISCOM main office. The data are recorded and stored in logs as well as in electronic form on a daily basis. The records are checked periodically by the Plant Manager and discussed thoroughly with the plant supervisor. The period of storage of the monitored data will be 2 years after the end of crediting period or till the last issuance of VCUs for the project activity whichever occurs later.

Emergency preparedness:

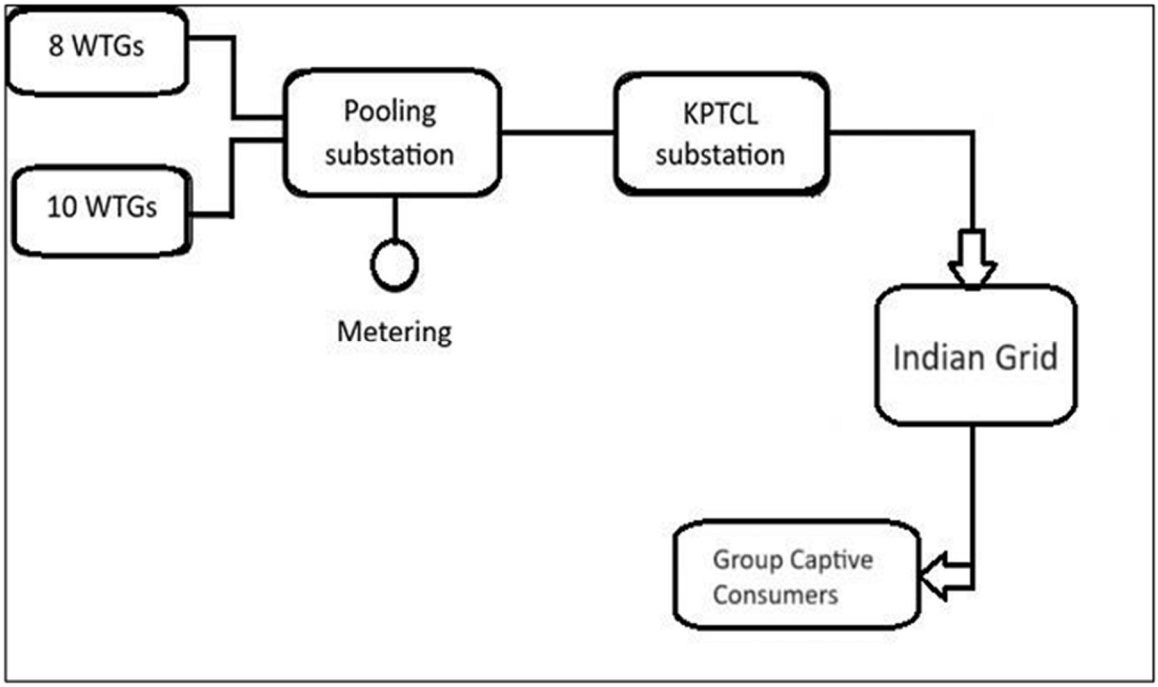
The project activity does not result in any unidentified activity that can result in substantial emissions from the project activity. In case of meter malfunctioning, the plant operations shall be stopped and resumed when the malfunctioned meters are replaced with new calibrated meters. No other need for emergency preparedness in data monitoring is visualized.

Personnel training:

In order to ensure a proper functioning of the project activity and a properly monitoring of emission reductions, the staff will be trained. The plant helpers will be trained in equipment operation, data recording, reports writing, operation and maintenance and emergency procedures in compliance with the monitoring plan.

Metering Arrangement:

Line diagram with metering arrangement for the wind project activity is shown below:



QA/QC procedures:

The energy meters at the feeders are maintained and owned by state electricity board. Neither the project proponent nor the site personnel have any control over it. The electricity supplied/exported by the project activity in the JMR report in financial year will be crosschecked with the records of sold electricity (monthly invoices of sale) to state electricity board. The meters are approved, tested & sealed by the state utility. The meters are calibrated by state electricity board at-least once in five years. The project owner does not conduct any internal audit but cross-checks the generation data, JMR data, and a few other parameters such as WTG downtime, etc internally from time to time. This is mainly to improve the data accuracy and integrity. No non-conformity or variation has been found during the current monitoring period.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

$BE_y = EG_{PJ,y} * EF_{grid,CM,y}$

Where, BE_y = Baseline Emissions in year y (tCO2e/yr)

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the VCS project activity in year y (MWh/yr)

$EF_{grid,CM,y}$ = Combined margin CO2 emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO2e/MWh) (i.e, 0.9653 tCO2/MWh).

and;

$EG_{PJ,y}$ = 49,893 MWh (Round down value) Here,

BE_y = 49,893 MWh * 0.9653 tCO2/MWh

= 48,161 tCO2e (Round down value)

5.2 Project Emissions

The project emissions from the wind power project activity is zero as per the ACM0002, para 34. As the project activity is the installation of a new grid-connected Wind Power plant and does not involve any project emissions from fossil fuel, operation of dry, flash steam or binary geothermal power plants, and from water reservoirs of hydro power plants.

Therefore $PE_{FF,y}$, $PE_{GP,y}$, $PE_{HP,y}$ are equal to zero and thus, $PE_y = 0$.

5.3 Leakage Emissions

As per the para 56 in the ACM0002, no other leakage emissions are considered. The emission potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use are neglected.

$LE_y = 0$

5.4 GHG Emission Reductions and Carbon Dioxide Removals

As per the applied methodology, emission reductions are calculated as follows:

$ER_y = BE_y - PE_y$

Where,

ER_y = Emission reduction in year y (tCO2e/yr)

BE_y = Baseline emissions in year y (tCO2e/yr)

PE_y = Project emissions in year y (tCO2e/yr)

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-2024 to 31-Oct-2024	48,161	0	0	48,161	0	48,161
Total	48,161	0	0	48,161	0	48,161

Vintage period	Ex-ante estimated reductions/ removals	Achieved reductions/ removals	Percent difference	Explanation for the difference
01-May-2024 to 31-Oct-2024	39,899	48,161	20.71%	The actual emission reduction achieved is higher as the generation depends

Total	39,899	48,161	20.71%	on the climatic conditions like the monsoon season and high winds from June to September which is beyond the control of the Project Participant and corresponding PLF will be higher than the annual average so the increase in generation/PLF will not impact the additionality of the project. Hence, the increase in emission reduction is acceptable.

APPENDIX 1: COMMERCIALLY SENSITIVE INFORMATION

This section is not applicable.

Section	Information	Justification
NA	NA	NA

APPENDIX 2: CALIBRATION DETAILS

The Project Proponent has changed meters in accordance with a notice from Karnataka Power Transmission Corporation Limited to provide meters with an automatic meter reading system to the plant on 20-07-2023. IN this system, the generation details shall be accounted for based on the AMR data received at SLDC. The new meters were calibrated on 20-July-2023[6].

Meter and Calibration details of 36 MW Wind project by Green Infra Wind Power Generation Limited:

FEEDER NO.1

Details	Old main meter	New Main Meter	Old check meter	New Check meter
Meter Number	16196486	23011368	16196494	23011410
Make	L&T	L&T	L&T	L&T
Accuracy	0.2s	0.2s	0.2s	0.2s
Last Calibration	15-October-2020	20-July-2023	15-October-2020	20-July-2023
Valid till	14-October-2025	19-July-2028	14-October-2025	19-July-2028

FEEDER NO.2

Details	Old main meter	New Main Meter	Old check meter	New Check meter
Meter Number	16196472	23011371	16196478	23011388
Make	L&T	L&T	L&T	L&T
Accuracy	0.2s	0.2s	0.2s	0.2s
Last Calibration	15-October-2020	20-July-2023	15-October-2020	20-July-2023
Valid till	14-October-2025	19-July-2028	14-October-2025	19-July-2028

[6] The State Utility requested for calibration of meters to be done every 6 months. The calibration of meters was done on 06/02/2021, 19/07/2021, 18/12/2021 and 16/11/2022 and then replacement of meters was done on 20/07/2023. All the calibration certificates have been submitted to the DOE.