15 MW GRID CONNECTED RENEWABLE ENERGY WIND TURBINE PROJECT IN KARNATAKA

Document Prepared By

LGAI Technological Center S.A. (Applus+ Certification)

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Summary:

Verification purpose: LGAI Technological Center S.A. (Applus+ Certification) (Hereafter referred as Applus+ Certification) has been appointed by "Mineral Enterprises Limited" to perform the 3rd periodic verification of the "15 MW Grid Connected Renewable Energy Wind Turbine Project in Karnataka". The main purpose of this verification activity is to have an independent third party for the assessment of the project design, monitoring report to ensure a thorough assessment of the proposed project activity against the applicable CDM and VCS requirements.

The project activity involves installation of 15 MW (5.0* 0.6 MW & 15.0*0.8 MW) wind power project across the Chitradurga wind corridor of Chitradurga district in the state of Karnataka. The project is registered with VCS with Project ID 619[1]. The electricity generated from the WTGs are fed into regional grid through Karnataka Power Transmission Company Limited (KPTCL) to southern grid which is now under the purview of the INDIAN Grid.

Start date of the project activity is 01-Novemeber-2004. The monitoring period for this VCS verification is from 01-January-2013 to 31-March-2016 (including both days) and the project activity achieved 79,013 tCO_2e emission reductions during this monitoring period thereon displacing 85,245.902 MWh 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 scope of the verification is the independent and objective review of the Monitoring Report (MR). The MR is reviewed against the relevant criteria (see above) and decisions by the CDM Executive Board and VCS executive board, including the approved baseline and monitoring methodology. The verification was based on the guidance given in the CDM validation and verification standard for project activities, version 02.0, review against registered PD and Final Validation report, CDM Project Standard for project activities, version 02.0, CDM project cycle procedure for project activities, version 02.0 and VCS program guideline and standard version 4.0.

A risk based approach has been followed to perform this verification activity. In the course of verification, 06 Corrective Action request (CAR) and 01 Clarification Requests (CLs) were raised and

[1] https://registry.verra.org/app/projectDetail/VCS/619

successfully closed. No FAR was raised during this verification. The review of the monitoring report and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and PP have provided LGAI Technological Center S.A. (Applus+ Certification) with sufficient evidence to verify the fulfilment of the stated criteria of VCS.

The assessment team has employed a risk based approach to assess the completeness and accuracy of the claims and conservativeness of the assumptions in the MR. The main focus of the assessment team is to identify the significant risks for the project implementation and the generation of VERs. The verification is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring report combined.

The only purpose of the verification is its usage during the issuance process as part of the VCS project cycle. Therefore, LGAI Technological Center S.A. (Applus+ Certification) can't be held liable by any party for decisions made or not made based on the verification opinion, which will go beyond that purpose.

The verification has been planned and organized to achieve a Reasonable Level of assurance as per the requirement of VCS. No sampling procedure applied for document verifications. The entire documents checked/WTGs verification conducted to arrive at positive verification conclusions.

CONTENTS

1 INTRODUCTION

1.1 Objective

LGAI Technological Center S.A. (Applus+ Certification) (Hereafter referred as Applus+ Certification) has been appointed by "Mineral Enterprises Limited" to perform the 3rd periodic verification of the "15 MW Grid Connected Renewable Energy Wind Turbine Project in Karnataka" under VCS standard and guideline version 4.0. The objective of this verification activity is to have an independent third party for the assessment of the project design, Monitoring Report and Final Verification report and to ensure a thorough assessment of the proposed project activity against the applicable CDM and VCS requirements. In particular;

- the project's baseline is assessed against "AMS-I.D - Version 13"
- the project's monitoring plan is assessed against "AMS-I.D - Version 13"
- the projects compliance with the requirements of Article 12 of the Kyoto Protocol, the CDM Modalities and Procedures as agreed in the Marrakech Accords under decision 3/CMP.1, the annexes to this decision, subsequent decisions and guidance made by COP/MOP & CDM Executive Board and other relevant rules, including the Host Country legislation and sustainability criteria along with VCS guideline and standard version 4.0
- CDM validation and verification standard for project activities, Version 02.0
- CDM Project Standard for project activities, version 02.0
- CDM project cycle procedure for project activities, version 02.0
- VCS standard v4.0
- VCS program guideline v4.0

Verification is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of verified emission reductions (VERs).

1.2 Scope and Criteria

The scope is defined as an independent and objective review of the Monitoring report (MR) prepared as per the registered PD and registered approved methodology AMS-I.D - Version 13. The MR is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board and VCS standard and guideline version 4.0, including the approved baseline and monitoring methodology AMS-I.D - Version 13. The verification was based on the requirements in the CDM validation and

verification standard for project activities, Version 02.0, CDM Project Standard for project activities, version 02.0, CDM project cycle procedure for project activities, version 02.0 and VCS program guideline and standard version 4.0

The verification is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the Monitoring report. In line with Guidelines for Application of materiality in verifications, the verification team has conducted a complete verification of all the information presented in the monitoring report and data monitored as presented in the emission reduction calculation spread sheet. It follows the paper trail back to the raw data such as meter reading records and invoices. There are no material errors, overestimation of ER, omission or misstatement. Verification team conducted remote audit due to pandemic situation and equipment, technical details and metering/monitoring arrangement verified through photos/certificate shared by PP. The verification team has reviewed all the documents like commissioning certificates, technical specification, O&M practices, JMR, invoices, training records, grievance registers etc.

1.3 Level of Assurance

Applus+ Certification has planned and performed the verification by obtaining evidence and other information and explanations that assessment team considers necessary to give reasonable assurance that reported estimated GHG emission reductions are fairly stated. All documentary evidences were checked, a remote audit was conducted due to pandemic situation and technical details and metering/monitoring arrangement verified through photos/certificate shared by PP to arrive at a verification conclusion by the assessment team.

In our opinion, the estimated GHG emissions reductions were calculated correctly on the basis of the approved baseline and monitoring methodology “AMS-I.D - Version 13 and the VCS standard.

1.4 Summary Description of the Project

The project activity involves installation and operation of a 15 MW wind power project in Karnataka state of India. The project activity involves 20 WTGs (5*0.6 MW & 15*0.8 MW)) developed by Enercon make. The all 20 WTGs were commissioned. The project activity is promoted by Mineral Enterprises Limited and acting as project proponent.

The monitoring period of this VCS verification covered from 01-January-2013 to 31-March-2016 (inclusive of both dates) and the project activity is achieved 79,013 tCO_2e emission reductions during this monitoring period.

Assessment team checked the Commission of WTG with the commissioning Certificate and found correct. The project is implemented as per the description in the registered PD. No event observed during the current monitoring period which can alter or deviate from the methodology requirement.

2 VERIFICATION PROCESS

2.1 Method and Criteria

Verification Process: The project assessment is based on the "CDM validation and verification standard for project activities, Version 02.0 and "VCS standard and program guideline version 4.0" and is conducted using standard auditing techniques to assess the correctness of the information provided by the project participants. Before the assessment begins, members of the team covering the technical scope(s), sectoral scope(s), and relevant host country experience for evaluating the VCS project activity are appointed.

Once the project is received by the assessment team, the members of the assessment team carried out: -

1. A desk review of the Monitoring report against the registered PD and final validation report;
2. Follow-up interviews with project participant;
3. The resolution of outstanding issues and the issuance of the final verification report and opinion.

The prepared verification report and other supporting documents then undergo an internal quality control at the HQ (Accredited office) before being submitted to the VCS executive board.

In order to ensure transparency, assumptions must be clear and stated explicitly and background material must also be referenced. Applus+ Certification has developed a specific checklist customized for the project. The checklist demonstrates, in a transparent manner, the project criteria (requirements), discussion on each criterion by the assessment team, and the results from validating the identified criteria.

Appointment of the assessment team

According to the sectoral scope / technical area and experience in the sectoral or natio nal business environment, Applus+Certificationhas composed a project assessment te am in accordance with the appointment rules in the internal Quality Management Syste m of Applus+ Certification.

The composition of audit team shall be approved by the Applus+Certificationensuring th at the required skills are covered by the team.

The four qualification levels for team members that are assigned by formal appointment rules are as presented below:

- Lead Auditor (LA).
- Auditor (A) / Auditor in Training (AiT).
- Technical Expert (TE).
- Technical Reviewer (TR).

The sectoral scope / technical area knowledge linked to the applied methodology/ies s hall be covered by the assessment team.

Name	Role	SS Coverage	TA Coverage	Financial aspect	Host country experience
Dr. Atul Takarkhede	LA/TE	YES	YES	NA	YES
Mr. Simon Shen	TR	YES	YES	NA	NA

The detail regarding the assessment team is provided below in this report as Appendix 3

Document review

The Monitoring report version 01 submitted by the PP was reviewed against the approved methodology, registered PD, final validation report and other relevant criteria to verify the correctness, credibility, and interpretation of the presented information. Furthermore, a cross-check between information provided and information from other sources has been done. A complete list of all documents and evidence material reviewed is included in this report below in Appendix 1.

Follow-up interviews

A remote audit is conducted by Applus+ Certification. Audit team performed interviews, via video/telephone conferences with project stakeholders to confirm selected information and to resolve issues identified in the document review. The detail is provided in this report.

Resolution of Clarification and Corrective Action Request

The objective of this phase of the Verification was to resolve the requests for corrective actions and clarification and any other outstanding issues which need to be clarified for Applus+ Certification positive conclusion on the Monitoring report. The Corrective Action Requests and Clarification Requests raised by Applus+ Certification were resolved during communications between the Client and Applus+ Certification to guarantee the transparency of the verification process, the concerns raised and responses given are summarized below in the Appendix 2.

The final MR Version 03 submitted by PP serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main CDM/VCS objectives. The two CDM/VCS main objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

Internal quality control

As final step of a verification of the final documentation including the verification report and the checklist have to undergo an internal quality control by the technical review committee, i.e. each report has to be finally approved either by the head of the technical review committee or the deputy. In case one of these two persons is part of the assessment team approval can only be given by the other one to avoid any conflict of Interest.

After confirmation of the PP the positive verification opinion and relevant documents are submitted to the VCS board through the VCS web-platform.

2.2 Document Review

The details of the document observed during the verification process are listed below in Appendix 1 of this report

2.3 Interviews

A remote audit was conducted for the project activity on 30-Janaury-2021. Remote audit was conducted due to ongoing COVID-19 pandemic situation in the entire state of India. Taking into account the rules of relevant national and local authorities (local to the DOE offices as well as to locality of the site visits), World Health Organization (WHO) recommendations, policies of the DOE and other relevant travel restrictions and guidance (for example, a requirement to self-isolate upon return). Moreover, The VCS Program does not explicitly mandate site visits as part of the validation and verification process, only that VVBs must achieve a reasonable level of assurance on all validations and verifications (per Section 4.1.2 of the VCS Standard, v4.0.

The VVB has taken alternative measures to reach reasonable level of assurance and conducted remote audit through Skype/Telephone with site personal & consultant (refer section 2.3) with the PP representative. This is also in line with the COVID-19 travel guidance for projects of VERRA.

Technical details & metering/monitoring arrangement verified through onsite photographs/name plates and calibration certificates shared by PP. All the documents were cross checked to ensure conservative estimation of emission reduction.

During the remote audit, the PP representatives were questioned about the implementation of the project activity. Several topics like the verification of commissioning date of meters, the generation, recording, and monitoring of the data and the error accountability were discussed. To cross check the information provided by PP, various documents like technical specifications, commissioning certificates, PPA, JMR sheets, invoice, calibration certificates, s, etc. were also verified. The names of the persons interviewed during remote audit through Zoom & telephonic interview is given below;

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Raghavan	Srinivasa	PP representative	30-Janaury -2021 (Remote Audit)	Project Implementation, JMR & invoicing procedure, calibration, grievance mechanism	Dr. Atul Takarkhede
2.	Sharma	Barun	EKI Energy Services Limited		Management practices, data storage, QA/QC	
3.	Yadav	Neetu	EKI Energy Services Limited		GHG calculations, MR and ER preparation, Data collection, data storage, QA/QC	

2.4 Site Inspections

Duration of Remote Audit: 30-Janaury-2021				
No.	Activity performed on-site	Site location	Date	Team member
1.	Assessment team checked the implementation of the project, Baseline emission, Emission reduction calculation, technical description of the project and Monitoring. Assessment team also checked that whether the monitoring plan as described in the VCS PD is actually practised onsite. Also assessment team checked any change in host country criteria which may affect the baseline of the project activity.	Chitrdurga district, Karnataka States, India	30-Janaury-2021	Dr. Atul Takarkhede

2.5 Resolution of Findings

The objective of this phase of the Verification was to resolve the requests for corrective

actions and clarification and any other outstanding issues from validation which need to be clarified for Applus+ Certification's positive conclusion on the Monitoring report. The Corrective Action Requests and Clarification Requests raised by Applus+ Certification were resolved during communications between the Client and Applus+ Certification to guarantee the transparency of the verification process, the concerns raised and responses given are summarized below in the appendix 2.

The final MR Version 03 submitted by PP serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main CDM/VCS objectives. The two CDM/VCS main objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

Areas of validation and verification findings	No. of CL	No. of CAR	No. of FAR
Project design document and Monitoring report	00	00	00
Description of project activity	01	03	00
Application of selected baseline and monitoring methodology and selected standardized baseline			
Applicability of methodology and standardized baseline	00	00	00
Deviation from methodology	00	00	00
Clarification on applicability of methodology, tool and/or standardized baseline	00	00	00
Project boundary	00	00	00
Establishment and description of baseline scenario	00	00	00
Demonstration of additionality	00	00	00
Emission reductions	00	01	00
Calibration details	00	01	00
Monitoring plan	00	00	00
No Net harm assessment	00	00	00
Local stakeholder consultation	00	01	00
Others (please specify	00	00	00
Total	**01**	**06**	**00**

The list of findings and the resolution is presented in Appendix 2 of this report.

2.5.1 Forward Action Requests

This is 3rd periodic verification of the project activity and no FAR was raised from validation or previous verification.

2.6 Eligibility for Validation Activities

This section is not applicable for present verification, as Applus+ Certification holds the accreditation for Validation of projects for this Sectoral Scope.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project is not registered any other GHG programs. The same is confirmed by check the UNFCCC web site. the project activity is not availing any REC benefits and the same can be confirmed from publicly available link of REC generators.

Web-link:
https://www.recregistryindia.nic.in/index.php/general/publics/registered_regens

Further, the project proponent has provided undertaking for not availing other forms of environmental credit including REC for the same crediting period under consideration.

3.2 Methodology Deviations

PP has not requested any methodological deviation. Thus, this section is not applicable for present verification.

3.3 Project Description Deviations

PP has applied one deviation that is correction in HTSC No. For two WTGs with HTSC no. VVS -28 commissioned on 28/10/2004, in last MR mentioned as VVS -26, however in Commissioning Certificates mentioned as VVS -28, therefore in the current monitoring report it is mentioned as VVS -28 in line with commissioning certificate. There is no change in commissioning date. The deviation does not impact the scale of the project activity, meth applicability, baseline, additionality and emission reduction of the project activity. Hence, accepted by the verification team.

3.4 Grouped Project

The project is not a grouped project. Thus, this section is not applicable.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

During the remote audit interviews with PP & plant in-charge and subsequent document verification; commissioning certificates, PPA, JMR and invoices, it was concluded that the

project is implemented as per the requirement of the registered VCD PD which is registered CDM PDD and approved monitoring plan. During the current monitoring period, Assessment team observed that no unforeseen incident/event evolved which can impact the operation of the project activity which was verified from breakdown records. The project undergone continuous operation and only scheduled maintenance is observed as per the manufactures specification which is acceptable to the assessment team and evident from JMRs.

The project activity is a 15 MW wind power project, employs 5 WTG of 0.6 MW and 15 WTG of 0.8 MW of Enercon make for power generation. The project is promoted by Mineral Enterprises Limited. The purpose of the project activity is to generate clean electricity with utilization of wind energy. The WTG wise latitudes and longitudes are confirmed below:

Sl. NO	Installed Capacity (MW)	HTS C Number /R R no.	Village	Taluka	Latitude	Longitude
1	0.6	VVS28	Elladekere	Vanivilas sagar	N13° 51’21”	E76° 29’ 33”
2	0.6	VVS28	Elladekere	Vanivilas sagar	N13°51’21”	E76°29’33”
3	0.6	VVS28	Elladekere	Vanivilas sagar	N13° 51’21”	E76° 9’33”
4	0.6	VVS28	Elladekere	Vanivilas sagar	N13°51’ 21”	E76°29’33”
5	0.6	VVS28	Elladekere	Vanivilas sagar	N13° 51’21”	E76°29’33”
6	0.8	MMCL 05	Mathighatta &Berebahalli	Holalkere	N14° 05’22”	E76°20’35”
7	0.8	MMCL 05	Mathighatta &Berebahalli	Holalkere	N14° 05’22”	E76°20’35”
8	0.8	MMCL 05	Mathighatta &Berebahalli	Holalkere	N14° 05’ 22”	E76°20’35”
9	0.8	ELP39	Kitthadalhill	Hiriyur	N13° 56’46”	E76°25’10”
10	0.8	ELP39	Kitthadalhill	Hiriyur	N13° 56’46”	E76°25’10”
11	0.8	ELP39	Kitthadalhill	Hiriyur	N13° 56’46”	E76°25’10”
12	0.8	ELP39	Kitthadalhill	Hiriyur	N13° 56’46”	E76°25’10”
13	0.8	ELP39	Kitthadalhill	Hiriyur	N13° 56’46”	E76°25’10”

14	0.8	ELP39	Kitthadalhill	Hiriyur	N13° 56'46"	E76°25'10"
15	0.8	ELP39	Kitthadalhill	Hiriyur	N13° 56'46"	E76°25'10"
16	0.8	ELP20	Kitthadalhill	Hiriyur	N13° 59'42"	E76°24'08"
17	0.8	ELP20	Kitthadalhill	Hiriyur	N13° 59'42"	E76°24'08"
18	0.8	ELP20	Kitthadalhill	Hiriyur	N13° 59'42"	E76°24'08"
19	0.8	ELP20	Kitthadalhill	Hiriyur	N13° 59'42"	E76°24'08"
20	0.8	ELP20	Kitthadalhill	Hiriyur	N13° 59'42"	E76°24'08"

Verification team confirmed from the registered PD and from previous verification reports that the location of the project activity including the coordinates is same as mentioned in the registered VCS PD.

Assessment team checked the commissioning certificate and confirmed that the dates of Commission for the WTGs are correct. Assessment team also conform during interview with the PP representatives that there is no change in project design and the project is implemented as per the description provided in the VCS PD. WTG wise commissioning dates are given below:

Sl. NO	Installed Capacity (MW)	HTS C No./R R no.	Commissioning date
1	0.6	VVS28	30-September-2004
2	0.6	VVS28	30-September-2004
3	0.6	VVS28	30-September-2004
4	0.6	VVS28	28-October-2004
5	0.6	VVS28	28-October-2004
6	0.8	MMCL 05	17.September-2005
7	0.8	MMCL 05	17.September-2005
8	0.8	MMCL 05	17.September-2005
9	0.8	ELP39	31-March-2006
10	0.8	ELP39	31-March-2006
11	0.8	ELP39	31-March-2006
12	0.8	ELP39	31-March-2006
13	0.8	ELP39	31-March-2006
14	0.8	ELP39	31-March-2006
15	0.8	ELP39	31-March-2006
16	0.8	ELP20	31-March-2006
17	0.8	ELP20	31-March-2006
18	0.8	ELP20	31-March-2006
19	0.8	ELP20	31-March-2006
20	0.8	ELP20	31-March-2006

The project boundary includes the electricity generation equipment at the project site, sub-station of KPTCL and Indian grid.

Assessment team also checked the Technical details of the WTGs installed onsite from documents submitted by PP and previous verification reports. The same is cross checked

from the photographs of the number plates, module capacity etc. submitted by PP & also cross checked from the technical details from Manufacturer.

The brief technical details of the WTG are as follows:

Technical details of WTG

Turbine model	Enercon E 40	Enercon E-448
Rated power	600	800
Rotor diameter	48m	48m
Hub height	74.85 m	56.85 m
Turbine Type	Gearless horizontal axis wind turbine with variable rotor speed	Gearless horizontal axis wind turbine with variable rotor speed
Power regulation	Independent electromechanical pitch system for each blade.	Independent electromechanical pitch system for each blade.
Design lifetime	20 years	20 years
Cutin windspeed	2.5 *m/s*	2.0 *m/s*
Rated wind speed	12 *m/s*	14 *m/s*
Extreme Wind Speed	59.5 *m/s*	59.5 *m/s*
Rated rotational speed	31.5 rpm	31.5 rpm
Operating range rot. speed	16.0 - 31.5 rpm	16.0 - 31.5 rpm
Orientation	Upwind	Upwind
No of Blades	3	3
Blade Material	Glass Fibre reinforced Epoxy	Glass Fibre reinforced Epoxy
Gear box type	Gear less	Gear less
Generator type	Synchronous generator	Synchronous generator
Braking	Aerodynamic	Aerodynamic
Output Voltage	400 V	400 V

Yaw System	Active yawing with 4 electric yaw drives with brake motor and friction bearing	Active yawing with 4 electric yaw drives with brake motor and friction bearing
Tower	74 m concrete	56 m concrete

The assessment team confirmed that there is no proposed or actual change to the project design during this monitoring period. The project design as mentioned in the registered PD is implemented and thus the same is acceptable to the assessment team. All required monitoring equipment's and procedures as mentioned in the registered PD are available and implemented in an appropriate manner.

The organisational role and responsibility as mentioned in the registered PD is followed onsite. All the emergency preparedness as mentioned in the registered PD is followed onsite and no discrepancies were found regarding the same. Meters are calibrated as per calibration frequency in registered VCS PD. All the emergency preparedness as mentioned in the registered VCS PD is followed onsite and no discrepancies were found regarding the same. Thus, completeness of the monitoring plan confirmed and there are no any material discrepancies between the actual monitoring system and the plan provided in the registered PD.

Assessment team confirms following during the verification remote audit:

1. Start date of the project activity is 30-September-2004 as mentioned in the registered VCS PD.

2. The project activity has not received or sought any other form of environmental credit during this or previous verifications and project activity's emission reductions have not included in an any emissions trading program. An undertaking letter dated 10-December-2020 has been submitted by PP for double counting with any other GHG program. PP also has given a written declaration that project has not claimed other form of GHG credit for the concerned monitoring period. Assessment team also checked that the projects are not registered under the REC mechanism of India and the same can be cross-checked at *https://recregistryindia.nic.in*. PP has given a written declaration that the credit claimed under VCS for the current monitoring period is not claimed under any other GHG mechanism.

3. Assessment team confirms that this is the 3rd monitoring under VCS and covers the activity from 01-January-2013 to 31-March-2016 (inclusive of both dates). The project activity adopts 10 years crediting period(renewable). 01-April-2006 is the start date and ended on 31-March-2016.

The GHG credits from 01-January-2013 to 31-March-2016 will be claimed under VCS only. At any point of time during the crediting period, the project proponent will abide by the "Double Counting".

4. Assessment team checked and found that the Project proponent of the project activity is as below for the current monitoring period:

Organization name	Mineral Enterprises Limited
Contact person	Mr. Basant Poddar
Title	Managing Director
Address	Khanija Bhavan, West Wing, 3rd Floor, No. 49, Race Course Road, Bangalore, Karnataka, India, Pin-500001
Telephone	+91 08042459797
Email	minent@mel.org.in

5. Assessment team also checked the details of other entity and found correct. The details are as below:

Organization name	EKI Energy Services Limited
Role in the project	Project Consultant
Contact person	Barun Sharma
Title	DGM
Address	Office No 201, Plot No 48, Scheme 78, Vijay Nagar Part- II, Indore 452010, India
Telephone	+91 9015615247
Email	barun@enkingint.org

6. The quantified emission reduction calculation for the monitoring period is correct and conservative. Assessment team also compared actual VER with the estimated VER and found that the actual VER is 79,013 tCO_2e is 32.73 % lower than the estimated emission reductions reduction 104,871 tCO_2e (32,275 tCO_2e/365 days x 1186 days) during this monitoring period which is due to lower wind flow pattern and low PLF attained by the wind power plant during the current monitoring period.

SUSTAINABLE DEVELEOPMENT:

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

Social well-being: The project activity has resulted in creating direct and indirect job opportunities for the local population on temporary and permanent basis. This results in the improvement in living standards of the local community. The installation of the renewable energy projects also led to development of basic infrastructure like roads, communication with the nearby cities etc. which also improved in living standards of the local population.

Economic well-being: The project activity has created direct and indirect job opportunities to the local community during installation and operation of the renewable energy projects. The investment for the project activity has led to the improvement in the economic activity in the local area.

Technological well-being: The successful operation of project activity has led to promotion of wind power generation and would encourage other entrepreneurs to participate in similar projects.

Environmental well-being:

The project activity utilizes renewable energy for generating electricity which otherwise would have been generated through alternate fuel (most likely - fossil fuel) based power plants, contributing to reduction in specific emissions (emissions of pollutant/unit of energy generated) including GHG emissions. As renewable energy projects produce no end products in the form of solid waste (ash etc.), they address the problem of solid waste disposal encountered by most other sources of power. Being a renewable resource, to generate electricity contributes to resource conservation. Thus the project causes no negative impact on the surrounding environment.

In view of the above, the PP has considered that the project activity profoundly contributes to the sustainable development.

4.2 Safeguards

4.2.1 No Net Harm

No potential environment or socio-economic matter was found during the documents review of VCS PD and grievance register etc. The project is renewable energy project and thus no negative impact observed due to project activity.

The project activity promotes environmental and socio-economic well-being as it results in zero GHG emissions due to installation and operation of clean, renewable energy technology for electricity generation. The report on "Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects" prepared by MNRE dated September 2013[2]. This report clearly mentioned that solar/Wind power project activity operations do not result in direct air pollution, noise pollution. Moreover, also as

[2] https://smartnet.niua.org/sites/default/files/resources/report-on-developmental-impacts-of-RE.pdf

per the Central Pollution Control Board of India notification[3] solar/wind project falls under White Category and are practically non-polluting.

4.2.2 Local Stakeholder Consultation

Local stakeholder consultation has been conducted at the time of project registration. For on-going stakeholder's communication, PP have maintained feedback/complaint register at the site office. All the stakeholders are happy with the implementation and operation of the project activity and no negative comments envisaged for the project activity. Complaint/suggestion/feedback register is maintained at site as a part of ongoing communication with stakeholders in line with clause 3.16.17 of VCS Standard, ver. 4.0 and appropriate actions taken time to time by PP.

Assessment team checked the grievance register provided by PP and found that local stakeholders can anytime lodge their grievances if any in the register over the operational life time of the project. During current monitoring period two grievance was received related to repair of street light and RO system and the same was resolved by the PP (refer Section 2.2 of MR). Thus, assessment team is of the opinion that the ongoing stakeholder mechanism is adequate and appropriate.

4.3 AFOLU-Specific Safeguards

This section is not applicable as this project activity is a non-AFOLU project activity.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

Means of verification	The verification team assessed whether the data and calculations of GHG emission reductions achieved resulting from the VCS PD. The verification team has checked whether calculations of baseline GHG emissions, project GHG emissions and leakage GHG emissions have been carried out in accordance with the formulae and methods described in the monitoring plan of the VCS PD.
Findings	CAR 06 was raised during the verification process and closed successfully. Please refer Appendix 2 of this report for the detail closure of the CAR.
Conclusion	**Baseline Emissions:** The baseline Emissions for a given year is calculated by multiplying the energy baseline with the grid emission factor. The grid in this case would be the 'Indian Grid' Formula Used:-

[3] http://envfor.nic.in/sites/default/files/Latest_118_Final_Directions.pdf

	$BE_y = EG_{,y} \times EF_y$ Where BE_y= Baseline Emissions (tCO_2/year) $EG_{,y}$ = Net electricity supplied to the grid by the WEGs EF_y = Baseline emission factor in tCO_2/MWh (The combined margin CO_2 emission factor for southern grid) estimated value based on 75% of OM and 25% of BM value **Ex-ante parameters:** The baseline emission factors are taken ex-ante in line with the registered VCS PD as well as cross checked with section validation report and found correct. The Ex-ante value of O M and BM are directly taken from CO2 baseline database, Version 4.0 published by Central Electricity Authority, Govt of India. Combined margin CO_2 emission factor ($EF_{grid,CM,y}$) is equal to 0.9269 tCO_2/MWh. The calculation approach was in line with the VCS PD. Values are as follows: $EF_{grid,OM,y}$ = 0.9981 tCO_2/MWh $EF_{grid,BM,y}$ = 0.7133 tCO_2/MWh $EF_{grid,CM,y}$ = 0.9269 tCO_2/MWh <u>Ex-post parameter:</u> As per the registered monitoring plan and requirement of the registered methodology following parameters needs to be monitored: EG_y (Net electricity supplied to the grid by WEGs in year y (MWh) The value of the net electricity supplied by the project activity is directly sourced from the monthly energy statements from Form "B" (JMRs) issued by Bangalore Electricity Supply Company Limited (BESCOM)" Energy exported and Imported is continuously measured and monthly recorded by the Tri Vector main and check meter installed at 33 kV metering point (substation). Net electricity supplied to grid is calculated as difference of measured values of "export" and "import" on the main meter and further deducted 115% of electricity import from grid and transmission loss. The details of energy meters including calibration dates are provided in Section 4.5 of this report. During the current monitoring period, the calibration of meters was done only for MMCL 05 site and for the other location i.e ELP 39, ELP 20 and VVS 28 no calibration was done as this is beyond control of PP and under purview of BESCOM. Further, there is delay in calibration for location ELP 39 (May 2013-March 2016), ELP 20 (May 2013- March 2016) and VVS -28 (June

	2013-March 2016) for complete monitoring period and result of delayed calibration is within permissible limit of accuracy class of 0.2%. PP has applied error factor 0.2% in export and import for the same in the ER calculation as a conservative approach and thus acceptable to assessment team. The total net electricity supplied by the project activity during the current monitoring period is 85,245.902 MWh. The verification team has checked the entire monthly "monthly energy statements from BESCOM" reports for the net electricity generated & supplied to the grid and cross checked the invoices raised by the PP to the state Utilities and conservatives' values of net electricity exported to grid have been used for calculating emission reductions. All relevant monitoring parameters have been verified with regard to the appropriateness of the applied measurement/determination method, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures. Baseline emission factor is calculated as combined margin, consisting of a combination of operating margin (OM) and build margin (BM) factors. BEy - Baseline emissions, tCO_2e BEy = 85,245.902 MWh x 0.9269 tCO_2e/MWh = 79,013 tCO_2e (rundown values) As per applied methodology AMS-I.D, version 13 and the VCS PD, project emission is considered zero as the project activity involved wind power generation. Leakage: As per applied methodology AMS-I.D, version 13 and VCS PD Leakage emissions are not considered for the project activity. Hence, ERy = BE_y – PE_y- L_y = 79,013 – 0 - 0 = 79,013 tCO_2e (roundown values) Assessment team confirmed that the GHG emission reductions and removals have been quantified correctly in line with the registered VCS PD. Verification team also confirms that the monitoring has been carried out in accordance with the monitoring plan contained in the registered VCS PD.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

Means of verification	The verification team checked the Calibration details of the monitoring meters with the calibration certificates.
Findings	CAR 07 was raised during the verification process and closed successfully. Please refer Appendix 2 of this report for the detail closure of the CAR.
Conclusion	The metering arrangement is tri-vector bi-directional energy meters of L & T Make; accuracy class 0.2s (main and check) installed at 33 kV metering point at sub-station of BESCOM in Chitradurga district. These meters record several parameters including electricity exported & imported. These electricity meters are being used by state electricity board for monthly generation reports. Assessment team observed that during the current monitoring period, the calibration of meters was done only for MMCL 05 site and for the other location i.e ELP 39, ELP 20 and VVS 28 no calibration was done as this is beyond control of PP and under purview of BESCOM. Further, there is delay in calibration for location ELP 39 (May 2013- March 2016), ELP 20 (May 2013- March 2016) and VVS -28 (June 2013-March 2016) for complete monitoring period and result of delayed calibration is within permissible limit of accuracy class of 0.2%. Hence, PP has applied maximum permissible error factor of 0.2% in the electricity export (error factor deducted) and import (error factor added) values for the delayed calibration period as observed error was less than permissible error. The calibration details of meters are provided in Appendix 5 of this report. Further, Assessment team confirms that all the meters are of same accuracy class i.e. 0.2s as per the requirement of the registered PD. On-site photographs and interview during remote audit with O&M personnel also confirms the same. The electricity generations are monitored continuously & cumulative readings are taken at the end of the month by joint meter reading procedure. These are sealed by State Utilities to avoid malfunctioning with meter readings. The calculation of net electricity supplied to grid is under purview of state electricity board and PP does not have control on it. For the delayed calibration maximum permissible error factor 0.2% have been applied. The break down log is checked and there is no major breakdown during the monitoring period. No unforced error observed. No sampling procedure applied for monitoring of the data parameter and entire documents were checked by the assessment team to arrive at positive verification conclusions. The monitoring plan is followed at the project site. The monitoring meters were found delayed calibration during the current monitoring. Hence, PP has applied maximum permissible error factor of 0.2% in the electricity export and import values for the delayed calibration. Thus, assessment team concluded that the

	evidences are sufficient in quantity, and appropriate for the quality, to determine the GHG reductions and removals.

4.6 Non-Permanence Risk Analysis

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
NA	NA	NA	NA	NA

5 VERIFICATION CONCLUSION

Applus+ Certification has been engaged by Mineral Enterprises Limited to perform the 3rd periodical verification of the "15 MW Grid Connected Renewable Energy Wind Turbine Project in Karnataka".

The management of Mineral Enterprises Limited is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project's Monitoring Plan in the registered PD and the applied methodology AMS-I.D - Version 13.

Our verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakesh accord, as well as those defined by the CDM Executive Board. Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. Further, the verification has been planned and organized to achieve a Reasonable Level of assurance as per the requirement of VCS. No sampling procedure applied for document verifications. The entire documents checked/Power plant verification conducted to arrive at positive verification conclusions. The verification team can confirm that:

- the project is operated as planned and described in the project document;
- the monitoring plan is as per the applied methodology;
- the monitoring process in Monitoring Report is as per the PD
- the development and maintenance of records and reporting procedures are in accordance with the monitoring plan;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements.
- A Reasonable Level of assurance was achieved as planned, during verification process.
- Verification period: 01-Janaury-2013 to 31-March-2016 (inclusive of both days)

Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals (tCO_2e)[4]	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
01-Janaury-2013 to 31-December-2013	26,522	0	0	26,522
01-January-2014 to 31-December-2014	25,569	0	0	25,569
01-January-2015 to 31-December-2015	24,173	0	0	24,173
01-January-2016 to 31-march-2016	2,749	0	0	2,749
Total	**79,013**	**0**	**0**	**79,013**

[4]Rounddown values

APPENDIX 1: DOCUMENTS REVIEWED OR REFERENCED (VERIFICATION)

No.	Author	Title	References to the document	Provider
1.	NA	Commissioning certificates of the WTGs	Letter dated: 01-October-2004 29-October-2004 19-September 2005 01-April-2006	PP
2.	NA	Contract of the project participant with the DOE	Contract document signed between PP and DOE	PP
3.	NA	The operational lifetime of the project activity from the manufacturer = (Technical specifications)	Manufacturer technical specifications	PP
4.	NA	Registered PD *https://registry.verra.org/app/projectDetail/VCS/619*	Version:04 10-November-2009	PP
5.	NA	Calibration Certificates of energy meters	-	PP
6.	NA	MR version 01 (Initial) MR version 02 (Final) MR version 03 (Updated for VERRA Review)	19-October-2020 12-February-2021 03-June-2021	PP
7.	NA	Emission reduction sheet version 01 Emission reduction sheet version 02	19-Octobe-2020 12-February-2021	PP
8.	NA	O & M Agreement	-	PP
9.	NA	Power Purchase Agreement (PPA)	-	PP
10.	NA	Tools/ guidelines used in the project activity • Glossary of CDM terms version 07 • VCS standard Version 4.0 • VCS Program Guide 4.0 • VCS verification report template version 4.0	UNFCCC CDM/VCS web site	UNFCCC
11.	NA	Monthly statement- JMR & invoices for the complete monitoring period	-	PP
12.	NA	Declaration regarding no participation in other GHG program for the concerned monitoring period	10-Decemeber-2020	PP
13.	NA	Breakdown details for the monitoring period	-	PP
14.	NA	Employment records for plant persons	-	PP
15.	NA	Grievance Register maintained at site	-	PP

No.	Author	Title	References to the document	Provider
16.	NA	CDM validation and verification standard for project activities, Version 02.0	-	UNFCCC
17.	NA	VCS PD		PP
18.	NA	Verification Reports for previous VCS verification	Version 02 dated 11-March-2013.	

APPENDIX 2: CORRECTIVE ACTION REQUESTS, CLARIFICATION REQUESTS AND FORWARD ACTION REQUESTS (CAR/CL/FAR)

Table 1. Remaining FAR from validation and/or previous verification

FAR ID	XX	Section no.	E.2	Date : DD/MM/YYYY
Description of FAR				
There is no FAR from the validation/previous verification of the project activity				
Project participant response				Date : DD/MM/YYYY
NA				
Documentation provided by project participant				
NA				
DOE assessment				Date: DD/MM/YYYY
NA				

Table 2. CL from this verification

CL ID	01	Section no.	4.1	Date : 30-Janaury-2021
Description of CL				
In Section 1.5 of MR, PP has mentioned three start date of project activity which is in not in line with the requirement of para 3.7 of the VCS standard version 4.0. further, as per VCS PD, "the VCS project crediting period starts from 28/03/2006 to 27/03/2016 i.e. for a maximum of 10 years which may be renewed twice". Clarification is sought.				
Project participant response				Date : 12-February-2021
Though VCS PD mentioned the start date of crediting period as 28/03/2006 which was as per VCS 2007.1 guidelines, the earliest project crediting period start date shall be 28th March 2006 for non-AFOLU projects. In actual VCS verification is started from 01/04/2006 onwards. The first VCS verification has been completed for period from 01/04/2006 to 31/12/2009. Also, first verification report clearly mentioned that project crediting period with start date of crediting period as 01/04/2006. (Please refer first VCS verification report dated 28/03/2011 by VVB TÜV NORD CERT GmbH.) Thus, project activity VCS crediting period is from 01/04/2006 to 31/03/2016 (10 Years crediting period with one time renewable as per registered PD & validation report). The VCS MR section 1.6 has been updated accordingly.				
Documentation provided by project participant				
Revised MR –version 02				
DOE assessment				Date: 20-March-2021

CL ID	01	Section no.	4.1	Date : 30-Janaury-2021
Description of CL				
Registered VCS PD is based on the VCS 2007.1 guidelines which mentioned the start date of crediting period as 28/03/2006, the earliest project crediting period start date. However, actual VCS verification is started from 01/04/2006 onwards. The first VCS verification has been completed for period from 01/04/2006 to 31/12/2009. First verification report clearly mentioned that project crediting period with start date of crediting period as 01/04/2006. Thus, VVB accept the clarification of PP regarding crediting period. CL closed.				

Table 3. CAR from this verification

Project Implementation Status

CAR ID	02	Section no.	4.1	Date: 30-Janaury-2021
Description of CAR				
During review of monitoring report DOE found that the monitoring report is not completed in line with the Guidance Provided in MR template. Further, break down details of WTGs is missing in MR. PP also requested to submit the supporting evidence of break downs (plant log book) to assessment team for verification. Corrective action is sought.				
Project participant response				Date: 12-Febaruary-2021
The monitoring report is now revised in line with the guidance mentioned in the MR template and the required correction has been made to the commented section of MR. The breakdown details are now updated in Appendix 2 of the MR, also the supporting for the same is now submitted to the assessment team.				
Documentation provided by project participant				
Revised MR –Version 02				
DOE assessment				Date: 20-March-2021
PP has revised the MR in accordance with guidelines provided in MR template. Also, included breakdown details in Appendix 2 of revised MR and submitted the break down/plant log book. There was no major's breakdown observed during the current monitoring period. CAR closed.				

CAR ID	03	Section no.	4.1	Date: 30-Janaury-2021
Description of CAR				
Technical specifications mentioned in Section 3.1 of MR is incomplete. PP requested to provide complete technical information of WTGs in MR in line with the VCS PD and also submit the manufactures technical details to assessment team.				
Project participant response				**Date:** 12-Febraury-2021
Complete Technical Specifications of WTGs is now mentioned in MR. The Supporting for technical details is now been submitted to the assessment team.				
Documentation provided by project participant				
1. Revised MR-version 02 2. Technical details supporting				
DOE assessment				**Date:** 20-March-2021
PP has included the technical specification of WTGs in Section 3.1 of revised MR and also submitted the technical specification of WTGs provided by manufacture. Assessment team has checked the same in revised MR and found with consistent VCS PD. CAR closed.				

CAR ID	04	Section no.	4.1	Date: 30-Janaury-2021
Description of CAR				
During the review of documents submitted by PP, assessment team found that the following documents are missing; 1. Power Purchase agreement(PPA) for the project activity 2. O & M Agreement 3. Commissioning Certificate of WTGs 4. Declaration regarding avoidance of double counting of emission reductions in the other GHG trading programmes and REC mechanism of India. PP is requested to submit above documents for verification.				
Project participant response				**Date: 12-Febraury-2021**
All the Documents as required are now submitted to the assessment team.				
Documentation provided by project participant				
1. Power Purchase agreement for the project activity				

2. O & M Agreement 3. Commissioning Certificate of WTGs 4. Declaration regarding avoidance of double counting of emission reductions in the other GHG trading programmes and REC mechanism of India.
DOE assessment **Date:** 20-March-2021
PP has now submitted the supporting documents to assessment team. 1. PPA is signed with Bangalore Electricity Supply Company Limited for all WTGs. 2. O & M agreement is signed with Wind World India Ltd.(formerly known as Enercon India Ltd.) 3. Commissioning dates of WTGs are verified with the commissioning certificates and found correct. 4. PP has also submitted Declaration dated 10/12/2020 regarding avoidance of double counting of emission reductions in the other GHG trading programmes and REC mechanism of India. CAR closed.

CAR ID	05	**Section no.**	4.1	**Date:** 30-January-2021
Description of CAR				
PP is requested to provide supporting documents of ongoing communication with local stakeholders as per requirement of Para 3.16.3 and 3.16.4 of the VCS standard V.4.0.				
Project participant response				**Date:** 12-Febraury-2021
The MR section 2.2 has now been updated as per the VCS standard V.4.0, also the supporting has been now submitted to the assessment team for the same.				
Documentation provided by project participant				
1. Grievance register 2. Revised MR-version 02				
DOE assessment				**Date:** 20-Febryary-2021
PP has kept grievance registered at project site for ongoing communication with Local Stakeholder and also provided the copy of grievance registered to assessment. Assessment team checked the grievance registered and confirms that during current monitoring period two grievances were received related to repair of street light and RO system. The same are addressed by the PP. CAR closed.				

Accuracy of GHG Emission Reduction and Removal Calculations

CAR ID	06	Section no.	4.4	Date:30-Janaury-2021
Description of CAR				
Comparison of actual emission reductions and estimated found missing in Section 5.4 of MR. Corrective action is sought. PP requested to submit supporting evidence of electricity supplied to grid and Invoices for cross check to assessment team.				
Project participant response				**Date:** 12-February-2021
Section 5.4 is now updated as required by the assessment team. All Supporting Documents are now submitted to the assessment team.				
Documentation provided by project participant				
1. Revised MR 2. JMRs & Invoices				
DOE assessment				**Date:** 20-March-2021
PP has updated the Section 5.4 in revised monitoring report. PP has also submitted monthly JMRs and Invoices. Assessment team has checked the export and import of electricity with the JMRs and cross checked with the Invoices. During the current monitoring period, the calibration of meters was done only for MMCL 05 site and for the other location i.e ELP 39,ELP 20 and VVS 28 no calibration was done. Further, there is delay in calibration for location ELP 39 (May 2013- March 2016),ELP 20 (May 2013- March 2016) and VVS -28 (June 2013-March 2016) for complete monitoring period and result of delayed calibration is within permissible limit of accuracy class of 0.2%. PP has applied error factor 0.2% in export and import for the same in the ER calculation as a conservative approach. CAR closed.				

Quality of Evidence to Determine GHG Emission Reductions and Removals

CAR ID	07	Section no.	4.5	Date: 30-January-2021
Description of CAR				
Detailed Information of monitoring equipment like serial number, make, calibration and validity of calibration and calibration frequency is missing in MR.				

PP is requested to submit supporting documents of electricity meters and calibration certificate for monitoring period under verification.	
Project participant response	**Date: 12-Febraury-2021**
1. The Calibration Details are now mentioned in appendix 1 of the MR	
Documentation provided by project participant	
1. Revised MR –version 02 2. Calibration certificates.	
DOE assessment	**Date: 20-March-2021**
PP has now included the information of meters including Sr.No. make, calibration dates, due date of calibration etc in Appendix 1 of revised MR. PP has also submitted the calibration certificates of meters. Assessment team has checked the same and found that the calibration of meters was done only for MMCL 05 site and for the other location i.e ELP 39, ELP 20 and VVS 28 no calibration was done. Further, there is delay in calibration for location ELP 39 (May 2013- March 2016), ELP 20 (May 2013- March 2016) and VVS -28 (June 2013-March 2016) for complete monitoring period and result of delayed calibration is within permissible limit of accuracy class of 0.2%. PP has applied error factor 0.2% in export and import for the same in the ER calculation as a conservative approach. CAR closed.	

Table 4. FAR from this verification

FAR ID	XX	**Section No.**		**Date :** DD-Month-YYYY
Description of FAR				
There is no FAR from this verification				
Project participant response				**Date :** DD-Month-YYYY
NA				
Documentation provided by project participant				
NA				
DOE assessment				**Date:** DD-Month-YYYY
NA				

APPENDIX 3: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

Verification team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Lead Auditor/Technical Expert	OR	TAKARKHEDE	ATUL	TQC-Outsourced entity	Yes	No	Yes	Yes

Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer (TR) / Technical Expert (TE)	EI	Shen	Simon	Applus+ Certification
2.	Approver	IR	Calle de Miguel	Agustín	Applus+ Certification

Short CVs of the Team:

1. Dr. Atul Takarkhede is Ph.D. (Environmental Sciences) from Institute of Science, RTM Nagpur University, Nagpur, and he has already published different technical papers related to environmental sciences. He counts with more than 11 years of experience in field of Environmental Auditing, consulting and accreditation. He is an expert in ISO 9001-14001, CO2/GHG Reporting, Carbon Foot Print, Energy, Water and Waste Management reporting for organizations' environmental performance. His professional portfolio is mainly related with carrying out EIA, conducting QA/QC of EIA Reports; conducting environmental/water audits; NABET requirements appliance, functional area expert in Water Pollution & Solid & Hazardous Waste management among others. Furthermore, he counts with solid experience on CDM-VCS-GS consultancy and auditing. Currently he is associated with True Quality Certifications Private Limited and empanelled with Applus+ Certification to carry out GHG audits in the aforementioned schemes.
2. Mr. Simon Shen (Master's Degree in Thermal Energy Engineering, Bachelor's Degree in Environmental Engineering) is an Auditor appointed by Applus+ LGAI for the GHG project

assessment, auditing and technical review. He has more than 6 years of work experience in CDM/GS4GG/VCS project assessment and review with Applus+, apart from the years of experience working as GHG Auditor and ISO 9001/14001 in TUV SUD for 3.5 years before he joined Applus+. Mr. Simon Shen has extensive experience also as former Applus+ Shanghai CDM Technical Manager.

APPENDIX 4: ABBREVIATIONS

Abbreviations	Full texts
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CEA	Central Electricity Authority
CL	Clarification request
CM	Combined Margin
CMS	Central Monitoring system
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming potential
PP	Project Participant

APPENDIX 5: CALIBRATION DETAILS OF THE METERS

Location: MMCL-05

Meter Serial Number	Make	Accuracy Class	Date of Calibration	Due Date of Calibration
0914844 (main meter)	L & T	0.2 s	13-March-2013 03-June/2013 03-June-2014 18-Sept.-2014 22-May-2015 27-February-2015 18-February-2016	12-March-2014 02-June-2014 02-June-2015 21-May-2015 26-February-2016 17-February-2017 17-February-2017
13191134* (Check meter)	L & T	0.2 s	13-March-2013 03-June/2013 03-June-2014 18-Sept.-2014 22-May-2015 27-February-2015 18-February-2016	12-March-2014 02-June-2014 02-June-2015 21-May-2015 26-February-2016 17-February-2017 17-February-2017

** check meter Sr.No. 05271164 was replaced with Sr.No 13191134 on 02/12/2013*

Location: ELP 20

Meter Number	Meter Make	Accuracy Class	Calibration dates	Due date
05389963 (main meter)	L & T	0.2s	15-May-2012 24-Dec-2020	14-May-2013 23-Dec-2021
05389964 (Check meter)	L & T	0.2s	15-May-2012 24-Dec-2020	14-May-2013 23-Dec-2021

Location-ELP 39

Meter Number	Meter Make	Accuracy Class	Calibration date	Due date
18068276 (main meter)	L & T	0.2s	15-May-2012 20-Janaury-201	14-May-2013 19-Jamiary-2022
18079752 (Check meter)	L & T	0.2s	15-May-2012 20-Janaury-201	14-May-2013 19-Jamiary-2022

Location-VVS 28

Meter Number	Meter Make	Accuracy Class	Calibration date	Due date
07022984 (main meter)	L & T	0.2s	08-June-2012 11-Nov-2019*	07-June-2013 10-Nov-2020
06675419 (Check meter)	L & T	0.2s	08/06/2012 11/11/2019*	07/06/2013 10/11/2020

*Delay in calibration

During the current monitoring period, the calibration of meters was done only for MMCL 05 site and for the other location i.e ELP 39, ELP 20 and VVS 28 no calibration was done, hence error factor has been applied for the same in the ER calculation as a conservative approach.

There is delay in calibration for location ELP 39 (May 2013- March 2016), ELP 20 (May 2013-March 2016) and VVS -28 (June 2013-March 2016) for complete monitoring period and result of delayed calibration is within permissible limit of accuracy class of 0.2%. Hence, the error factor of 0.2% is applied.