



13.75 MW WIND POWER PROJECT IN DAVANGERE, KARNATAKA, INDIA



Document Prepared By Earthood Services Private Limited

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Summary:

The project activity involves the generation of electricity through a greenfield wind energy plant with a capacity of 13.75 MW in Davangere district of Karnataka that supply the generated electricity to the Karnataka Power Transmission Company Limited (KPTCL) which is part of National grid of India

The project has aimed to reduce the dependence on fossil fuel-powered power plants by substituting carbon-intensive energy with the inexhaustible and clean wind energy. As per the baseline scenario, "Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants that are fossil fuel fired power plants". The baseline scenario is the same as the scenario existing prior to the implementation of the project activity.

During the Current Monitoring Period from 01-Oct-2016 to 30-Mar-2019 (First and last date included) the project activity has supplied 70412.398 MWh of electricity, and thus contributing to the GHG reductions 65,271 tCO₂e.

Sargam Retails Private Limited (SRPL) contracted **ESPL** to conduct the verification of the project "13.75 MW Wind Power Project in Davangere, Karnataka, India". The scope of verification includes confirming the implementation of the monitoring plan in the registered project activity "13.75 MW Wind Power Project in Davangere, Karnataka, India" (VCS ID – 927) VCS PD dated 28-July-2011) and the application of methodology AMS-I.D. Version 15.0.

A risk-based approach has been followed to perform this verification activity. In the course of verification, 05 Corrective Action request (CAR) and 04 Clarification Requests (CLs) were raised and successfully closed in Appendix 4. No FAR raised during this verification. The review of the project description and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and PP have provided Earthood with sufficient evidence to verify the fulfilment of the stated criteria of VCS.

The only purpose of the verification is its usage during the issuance process as part of the VCS project cycle. Therefore, Earthood 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 site visit or document verifications. The entire documents checked/WTGs verification conducted to arrive at positive verification conclusions.

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INTRODUCTION

Objective

“Sargam Retails Private Limited” has contracted ESPL (Hereinafter referred as Earthood) to conduct the verification of the project activity “13.75 MW Wind Power Project in Davangere, Karnataka, India” according to the requirements of the Verified Carbon Standard version 4.0.

The objective of this verification is to verify and certify emission reductions reported for the PA” 13.75 MW Wind Power Project in Davnagere, Karnataka, India” for the period 01-Oct-2016 to 30-March-2019. (Both days included).

Scope and Criteria

The scope of the verification is to establish/verify that:

- the appropriate VCS-MR form (and other templates) was used and correctly filled up;
(as per <https://verra.org/wp-content/uploads/2019/09/VCS-V4-Summary-of-Effective-Dates.pdf> the use of updated version of all VCS Program templates and representations is mandatory from 19 March 2020)
- the project activity is in accordance with all relevant host country criteria (India);
- the project activity is in accordance with all relevant VCS rules and requirements^{14/15/};
- the project activity is in accordance with conditions of the applied methodology AMS-I.D. Version 15.0.^{17/}
- The verification of the project activity is based on the VCS registered PDD and estimated GHG emission reduction calculations

Level of Assurance

☒ Reasonable level of assurance

☐ Limited level of assurance

ESPL’s verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. ESPL planned and performed the verification by obtaining evidence and other information and explanations that ESPL considers necessary to give reasonable assurance that reported estimated GHG emission reductions are fairly stated. All documentary evidences were checked, and remote audit was conducted with PP representative and other stakeholders 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 15.0. and the VCS standard, ver. 4.0.

Summary Description of the Project

Grid-connected wind power project in Karnataka generates renewable wind electricity and supplies power to the Indian power grid. The current monitoring period from 01-Oct-2016 to 30-Mar.-2019 (First and last date included) involved the generation and supply of 70412.398 MWh wind power from plants located in Davangere district of Karnataka. The power generated by the grid will be replacing an equivalent amount of electricity from the grid system of India which is majorly dependent on fossil-fuel based grid imports for its electricity requirements.

The project is a voluntary action being undertaken by each project owner of the project activity. EKI Energy Services Limited (hereafter referred as “EKIESL”) is acting as the other party for this project activity.

The main purpose of this project activity is to generate clean form of electricity through renewable wind energy source and Sale to State Utility. The project activity involves installation of 13.75 MW wind power project in Karnataka state of India.

Verification team confirmed the capacity by verifying commissioning certificates/10/ and also verified through interview with O & M personnel during the remote audit on skype and confirmed that wind power plant is operational in Karnataka. The same was also verified through google map/17/. The start date of operation of the project activity is 31-March-2009, which is the earliest date of commissioning of the wind mill of the project activity and 29-May-2009 which is date of the commissioning of the last WTG of the project activity. The technical specification of S-82 1.5 MW 50Hz and S-64 1.25 MW 50 Hz confirmed with technical specification/18/ from technology supplier and photographs of the WTGs shared by PP. *Technical* details provided by PP discussed and confirmed as correct during remote audit provided in Sec.4.1 of this report.

The electricity meters are of the make L&T with a precision of 0.2s as verified through calibration certificate/4/. The SCADA system allows the wind power system to be manually or automatically controlled and monitored. The project is based on sectoral Scope 1: Energy Industries (renewable sources) with. AMS-I.D. Version 15.0

During the Current Monitoring Period from 01-Oct-2016 to 30-Mar-2019 (First and last date included) the project activity has supplied 70412.398 MWh of electricity, and thus contributing to the GHG reductions 65,271 tCO₂e.

VERIFICATION PROCESS

The registered VCS project is undergoing second verification and the approach adopted to ensure the quality of emission reductions is described in the following sub-sections.

2.1 Method and Criteria

The overall verification, from Contract Review to Verification Report & Opinion, was conducted using ESPL's internal procedures. The Project was verified against the latest requirements (Version 4.0) ^{/14/} and guidance set out in VCS Standards as applicable.

- The verification process consists of the following three phases;
- A document review of the VCS PD and VCS MR (described in Section 2.2)
- Remote Audit and follow up interviews with project stakeholders (described in Section 2.3 and 2.4)
- The resolution of outstanding issues and issuance of the final report and opinion. (described in Section 2.5)

DOE's Sampling Approach: No sampling approach was required for undertaking the current verification since all monitored data was verified by the assessment team.

2.2 Document Review

The verification is performed primarily as a document review of the documents submitted at various stages of assessments. The review is performed by assessment team using dedicated protocols. The assessment team cross checks the information provided in the documents (VCS PD, CDM PDD, MR, validation report) and information from sources other than those used, if available and also conducts independently background investigations.

Earthood conducted a desk review as under;

- a) A review of the data and information presented to verify their completeness.
- b) A review of the monitoring plan, the monitoring methodology including applicable tool(s) and, where applicable, the applied standardized baseline, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures.
- c) An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

2.3 Interviews

A remote audit was conducted for the project activity on 19-Sep-2020. No sampling procedures were adopted. Remote audit was conducted due to pandemic situation and technical details and metering/monitoring systems verified through site photographs/nameplates^{/9/} and calibration certificates^{/4/} shared by PP. All documents were crosschecked to ensure conservative estimation of emission reduction. The names of the persons interviewed (during remote audit through Skype^{/9/} is given below;

S.N .	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Bankar	Kailas	PP Representative	19-Sept-2020	Implementation of the project, monitoring and emission reduction calculations	Mr. Pankaj Kumar
2.	Shivapoojary	Himakara K.	O&M Contractor	19-Sept-2020		
3.	Yadav	Neetu	Consultant	19-Sept-2020		
4.	Sharma	Barun	Consultant	19-Sept-2020		
5.	Patel	Vitthal	Farmer	19-Sept-2020	Local stake holder meeting consultation	Mr. Pankaj Kumar
6.	S	Sahana	Teacher	19-Sept-2020		

During the remote audit, the PP representatives/ O & M personal were questioned about the implementation of the project activity. Several topics like the verification of commissioning date^{/10/} of meters, the generation, recording, and monitoring of the data and the error accountability were discussed. Various documents like the JMR sheets^{/06/}, invoices^{/05/}, on-site Photographs includes WTGs nameplates, meter specifications^{/04/}, key technical specifications^{/18/} of the major equipment like panel etc. provided to assessment team were verified on skype video call^{/09/} to establish the current status and the implementation of the Project Activity. Refer Sec 2.4 for details.

2.4 Site Inspections

The verification team could not perform on-site inspection due to the ongoing COVID-19 pandemic 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).

Ministry of Home Affairs, Government of India has order nationwide lockdown from 25-March-2020 to 14-April-2020^{/22/}, further extended to 03-May-2020^{/23/} and again extended up 17-May-2020^{/24/}. The MHA further extended the lockdown till 30-May-2020^{/26/} and 30-June-2020^{/27/}. However now domestic travel, passenger movement by trains, interstate buses for public transport, movement by individuals started but still due to health advisory and location specific quarantine restrictions, travel not suggested. As access to project site and sub-station was restricted, video call was also not possible from sub-station. PP clarified that they do not have any person deputed at site as access to site is denied. Furthermore, the VCS program does not explicitly mandate site visits as part of the validation and verification process during such unprecedented circumstances, 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. DOE has taken alternative measures to reach reasonable level of assurance and conducted remote audit through skype^{/9/} and telephone with the site personal & consultant (refer section 2.3) to check the project design, implementation and monitoring of the project activity.

During interview, the implementation of project activity and monitoring procedure and systems in place was confirmed. Technical specification of the plant was verified through the onsite photographs/name plates of WTGs^{/9/} shared by PP and the same was cross checked with the CDM validation report^{/20/}. Further, assessment team has also checked through interviewing O&M personal and confirmed that the monitoring plan as described in the VCS PDD is actually practiced onsite.

After skype video call with O & M personals and verifying the photographs of WTGs, Single Line diagram of monitoring arrangement, and calibration certificates of meters, verification team confirmed that monitoring procedure is followed as per registered VCS PDD and there is no change in technical specifications of plants since installation and all the meters are calibrated in accordance with registered VCS PDD and host country metering guidelines.

A remote audit was conducted by the assessment team (Mr. Pankaj Kumar) on 19-Sep-2020 to carry out the following;

- a. An assessment of the implementation and operation of the registered project activity as per the registered PD or any approved revised PD/^{1/} and MR/^{2/};
- b. A review of information flow for generating, aggregating and reporting the monitoring parameters;
- c. Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the PD;
- d. A cross-check between information provided in the monitoring report and data from other sources such as JMR sheets, invoice slips, PPA agreement etc.;
- e. A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the PD/^{1/}, the applied methodology including applicable tool(s), and, where applicable, the applied standardized baseline;
- f. A review of calculations and assumptions made in determining the GHG data and emission reductions;
- g. An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

2.5 Resolution of Findings

The findings may be of the following types: CAR- Corrective Action Request, CL- Clarification Request and FAR- Forward Action Request.

The list of findings and their resolution are presented in Appendix IV of this verification report. The section also includes the response, if provided, by the project participants and an assessment by the assessment team if it was closed or otherwise. It is to be noted that all the findings have been satisfactorily resolved by the assessment team.

A total of 05 CARs and 04 CL were raised in the current verification. No FAR was raised. All the findings that are raised and communicated to project participant during the verification are included under Appendix 2. The section also includes the response, if provided, by the project participants and an assessment by the verification team if it was closed out or otherwise.

2.5.1 Forward Action Requests

This is 2nd periodic verification of the project activity and no FAR is raised during current verification and no FAR from previous verification as well.

2.6 Eligibility for Validation Activities

As project is already validated and this is 2nd verification of the project. Hence, this section not applicable.

3. VALIDATION FINDINGS

As project is already validated and this is 2nd verification of the project. Hence, this section not applicable

3.1 Participation under Other GHG Programs

The project activity is also registered with UNFCCC under Clean Development Mechanism (CDM) program, Registration reference number is 3700/20/. The project proponent has provided undertaking/16/ that it will not claim any GHG credits for UNFCCC CDM during the current monitoring period.

3.2 Methodology Deviations

No methodology deviation is envisaged for present verification.

3.3 Project Description Deviations

Deviation 1

PP has proposed change in crediting period of the project activity from existing renewable crediting period to ten years fixed crediting period. The fixed crediting period of the project activity is now from 31-March-2009 to 30-March-2019. VVB checked the email communication/21/ from VERRA in which they confirmed the modification in crediting period from renewable to fixed one. VVB confirmed that the deviation requested by PP will not have any repercussion on applicability of methodology, additionality, baseline and emission reduction calculation of the project activity, hence can be accepted.

Apart from change in crediting period, there is no deviation has taken place in project description during the monitoring period.

Deviation 2

As per registered VCS PD, the calibration frequency is once in a quarter and the same is mentioned in PPA. However, calibration of meters is not in control of PP and same is done by

state electricity board. The state electricity board does not follow any fixed calibration frequency, hence deviation requested by PP for change in calibration frequency as once in five years. This calibration frequency is as per CEA notification

http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf

The updated version available from the year 2019 also upholds the same frequency of testing of meters. This can be found at

http://www.cea.nic.in/reports/regulation/CEA_metering_regulation_amendment_2019.pdf

As calibration of meter does not fall under the scope of PP and they do not have any control on testing / calibration of meters, VVB concludes that deviation sought by PP regarding calibration frequency can be accepted and it will not have any implication on additionality and emission reduction calculations.

3.4 Grouped Project

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

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

During the remote audit, it was concluded that the project is implemented as per the requirement of registered VCS PD/1/ and final validation report. Commissioning details verified from the commissioning certificates/10/ and breakdown log sheet of WTGs provided by PP. There was no unforeseen situation evolved which can impact the operation of the project activity or therefore affect the applicability of the methodology. Scheduled maintenance was carried out as per the instruction of the manufacturer/18/and the same is acceptable to the assessment team.

The total installed capacity of the project is 13.75 MW/10/; which involves 10 Wind Turbine Generators (WTGs) (5 nos. of Suzlon make S 82 WTGs each having installed capacity of 1500 kW & 5 nos. of Suzlon make S 64 WTGs each having generating capacity of 1250 kW) in Davangere district Karnataka by Suzlon Energy Limited. The technical specification of the plant verified through the photographs/name plates/9/ of the WTGs provided by the PP and the same is also with the technical details provided by the manufacturer/18/. The details of the WTGs for the project's location of installation are mentioned in the table below;

Capacity	Location No.	Village	Taluka	District	Latitude (N)	Longitude (E)
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1.5 MW	K-543	Yaraganal	Honnali	Davangere	14°09'17.4"	75°30'11.9"
1.5 MW	K-544	Yaraganal	Honnali	Davangere	14°09'10.4"	75°30'17.6"
1.5 MW	K-549	Kudurekonda	Honnali	Davangere	14°09'03.2"	75°30'23.1"
1.5 MW	K-550	Kudurekonda	Honnali	Davangere	14°08'57.2"	75°30'29.9"
1.5 MW	K-551	Kudurekonda	Honnali	Davangere	14°08'51.2"	75°30'36.7"
1.25 MW	K-538	Yaraganal	Honnali	Davangere	14°08'45.3"	75°30'43.7"
1.25 MW	K-539	Yaraganal	Honnali	Davangere	14°08'39.5"	75°30'50.9"
1.25 MW	K-540	Yaraganal	Honnali	Davangere	14°08'13.3"	75°31'32.4"
1.25 MW	K-541	Yaraganal	Honnali	Davangere	14°08'07.4"	75°31'38.8"
1.25 MW	K-542	Yaraganal	Honnali	Davangere	14°07'59.5"	75°31'44.1"

The assessment team conducted a remote audit through skype video call with the PP in order to verify the status of the project implementation of the monitoring plan. It has also been verified as per the guidelines in AMS-I.D. Version 15.0 that the calculations for the GHG emission reductions are done in accordance with the aforesaid methodology/7/. There was no major breakdown or shut downs during the monitoring period which might affect the applicability of methodology or might cause material errors in emission reductions. The assessment team also confirmed that the monitoring system for emission reduction calculation was in place and in accordance with the registered VCS PD.

Geo coordinates checked on google earth/17/ and verification team conclude geo coordinates of project locations are consistent with VCS PD (Refer Section 3).

Assessment team checked the technical details of the project activity from the manufactures specification and the detail are as follow:

S-82 1.5 MW 50Hz

Rated Power	1,500 kW
Rotor diameter	82 m
Swept area	5,281 m ²
No. of blades	3
Cut in wind speed	4 m/s
Cut out wind Speed	20 m/s
Rotor Speed	20.3 rpm
Regulation	Pitch
Hub Height	78.5 m
Generator Type	Asynchronous
Insulation	Class 'H'

S-64 1.25 MW 50Hz

Rated Power	1,250 kW
Rotor diameter	64 m
Swept area	3,217 m ²
No. of blades	3
Cut in wind speed	3.5 m/s
Cut out wind Speed	25 m/s
Rotor Speed	20.3 rpm
Regulation	Pitch
Hub Height	74.5 m
Generator Type	Asynchronous
Insulation	Class 'H'

The project is running smoothly ever since commissioning with regular scheduled maintenance. Assessment team concludes the following:

- The implementation status of project activity was found to be in compliance with registered PD/1/.
- DOE has conducted the remote audit to confirm the implementation status of the project/9/.
- The commissioning date of the project activity was found to be accurately and consistently recorded/10/.
- The actual operation of project activity was found to be in compliance with the flow diagram provided in registered PD/1/.
- The emission reductions achieved during the current monitoring period are 65,271 tCO₂e.

The project activity contributes to the sustainable development by utilising wind energy for generating electricity which otherwise would have been generated through fossil fuels. Thereby reduction in usage of non-renewable sources used to generate energy.

Further the GHG emission reductions generated by the project activity has not been included by any other an emissions trading program or any other mechanism that includes GHG allowance trading. Also the project has not received any other form of environmental credit and has not been participated/rejected under any other GHG programs.

Sustainable Development- The project will contribute to the sustainable development in the following ways

1. Environmental: Since the project activity leads to cleaner production of energy, it is leading to displacement of fossil fuel-based energy.
2. Social: Setting up of the project activity has created new job openings hence is supporting employment of the local people around.
3. Cleaner Air: Since the project activity leads to lesser GHG emission it results in better air quality.

Further the project has been implemented as described in the Project Description/1/. CL 01, CL 02 and CAR 05 were raised on the editorial issue of description and same were resolved by revision in the MR.

The total emission reductions achieved in this monitoring period i.e. from 01-Oct-2016 to 30-Mar.-2019 are 65,271 tCO₂e.

4.2 Safeguards

4.2.1 No Net Harm

As PP does not see and identify any potential negative environmental and socio-economic impacts, hence this section is not required. Assessment team also cross checked by interviewing stakeholders during remote audit and confirm that there are no any potential negative environmental and socio-economic impacts attributed to the project activity. VVB confirmed that as per EIA notification, 2006 by Ministry of Environment, Forest and Climate Change, Govt. of India and circular dated 07-March-2016 issued by CPCB (Central Pollution Control Board), wind power projects categorized under white category and do not need any prior clearance and project does not have any potential negative environmental and socio-economic impacts. VVB confirm the explanation provided by PP is in compliance with host country requirements.

4.2.2 Local Stakeholder Consultation

Local stakeholder consultation has been conducted at the time of project registration hence not applicable in the current monitoring period.

4.3 AFOLU-Specific Safeguards

This is non AFOLU projects, hence this section not applicable.

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 MR. The verification team has checked whether calculations of baseline GHG emissions, project GHG
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	emissions and leakage GHG emissions have been carried out in accordance with the formulae and methods described in the monitoring plan of the MR.
Findings	CAR 07 and CAR 08 raised on this section and closed successfully. Please refer Appendix 2 for further details
Conclusion	Ex-ante Parameter: EF_{grid,OM,y} = Parameter is fixed ex-ante for the entire crediting period and as per the validated VCS PD same is fixed 1.000 tCO₂/MWh. Verification team found same was used in the ER calculations. Ex ante value of emission factor is taken from CEA database, Ver. 4, Sep, 2008. Verification team checked the EF value and found in consistent with registered PD EF_{grid,BM,y} = Parameter is fixed ex-ante for the entire crediting period and as per the validated VCS PD same is fixed 0.710 tCO₂/MWh. Verification team found same was used in the ER calculations. Ex ante value of emission factor is taken from CEA database, Ver. 4, Sep, 2008. Verification team checked the EF value and found in consistent with registered PD EF_{grid,CM,y} = Parameter is fixed ex-ante for the entire crediting period and as per the validated VCS PD same is fixed 0.927 tCO₂/MWh. Verification team found same was used in the ER calculations. Ex ante value of emission factor is taken from CEA database, Ver. 4, Sep, 2008. Verification team checked the EF value and found in consistent with registered PD. 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:- $BE_y = EG_y * EF_y$ Where: BE_y = Baseline Emissions due to displacement of electricity during the year y (tCO₂) EG_y = Net units of electricity due to substituted in the grid during the year y (MWh) EF_y = Emission Factor of the grid (in tCO₂/ MWh) and y is any year within the crediting period of the project activity. $EG_y = EG_{Net\ Exported} = EG_{Exported} - EG_{Import} - EG_{Transmission\ Losses}$

	Monitored Parameter: EG Net Exported = 70412.40 MWh The verification team has checked the entire monthly JMR reports for net electricity generated & supplied to the grid and crosschecked same with the invoices raised by PP towards State Utilities for the monitoring period. All values are found correct. All the parameters are monitored and recorded as per the monitoring plan in the MR. The verification team has crosschecked the revised emission reduction sheet and monitoring report data with the JMR sheet and invoice and found all the values are matching. PE_y = As per AMS-I.D. Version 15.0, all renewable energy power generation project activities, emissions due to the use of fossil fuels for the backup generator can be neglected. As the project activity involved wind power project emissions (PE_y) are taken as zero. Leakage: As per AMS-I.D. Version 15.0 ,Leakage emissions are not considered for the project activity.
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4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

Means of verification	The verification team checked the break down log sheet/28/ for the monitoring period. The feeder wise location of the wind power plant was also confirmed during the interview with PP and same was verified with the MR and previous verification report. The metering arrangement is tri-vector bi-directional energy meters of L&T Make; accuracy class 0.2s (main and check) at the State Electricity Board (SEB) substation. These meters record parameters including electricity exported & imported. These electricity meters are being used by state electricity board for JMR (Joint Meter Reading) electricity generation statements. The Net electricity supplied to the grid is then calculated from export and import values. The net electricity exported to the grid is also cross checked from the invoices raised to respective state electricity board which is in line with Methodology requirement for large scale project activity. Electricity export to the grid and import from the grid is metered by main and check tri-vector energy meters. The main meter reading is taken jointly on a fixed day of every month for the preceding month at the delivery point and signed by the representatives of state utility and O&M personnel. In the event of failure of main meter, the check meter will be used in monitoring the electricity data. The agency is experienced in the monitoring system and is managing O&M of numerous other wind farm projects. The validation team therefore is of the opinion that the project participant through the O&M agency is capable of implementing the monitoring plan in the context of the project activity. Calibration of all the meters were conducted by state electricity board officials as per the industry standards. However, the calibration is done once in a 5 year^{19/}. The details of Calibration of the meters as confirmed during remote audit and details of calibration certificates are mentioned in Appendix 5 of this report. The assessment team checked the same and found correct. The energy meter recording the export and import from the grid at substation is under the control and supervision of state electricity board officials. Similarly O&M contractor is responsible for monitoring of the generation data at CMS.
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	PP representatives confirmed that the CMS data as well as JMR sheets and invoices will be kept for 2 years following the end of the crediting period. During remote audit and discussion with PP, assessment team confirm that the data will be kept for 2 years following the end of the crediting period. The responsibilities and authorities of project management, data handling and recording, measurement methods and QA/QC procedure have been systematically established and formalized and the same was verified during the remote audit by interviewing O&M personnel and checking of records/ log books maintained at site. Verification team also discussed existing grievance mechanism maintained at site for on going communication with local stakeholders during remote audit/09/ and confirm the system in place is appropriate and adequate.
Findings	CL 04 was raised on this section and closed successfully. Please refer Appendix 2 for further details
Conclusion	Hence assessment team confirmed that the value of net electricity exported to the grid as used in emission reduction calculation is correct. The verification team therefore is of the opinion that the project participant through the O&M agency is capable of implementing the monitoring plan in the context of the project activity. Remote audit conducted through interview with O&M personnel also confirms that the operational and organizational chart as mentioned in MR is as per the site practice and thus assessment team confirms that the details are correct. The break down log is checked and found that the WTGs undergone scheduled maintenance and break down. No unforced error observed and feeder wise WTG location is also checked and found correct. Calibration and Meter Details provided in Annex. 5 of this report. Assessment team checked the calculation of estimated VER vs. Actual VER. As per the registered PDD the amount of VERs annually is 26,475 tCO₂e. The days involved in present monitoring period are 911. Therefore, on pro-rate basis the estimated VERs for the monitoring period is 66,151 tCO₂e. Actual VERs obtained for the monitoring period 65,271 tCO₂e and thus the actual VER is 1.3 % lower than the estimated VER. As actual VER is less than estimated VER for current monitoring period, assessment team checked the same found to be appropriate and accepted.

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

Earthood Services Private Limited (Earthood), contracted by Sargam Retails Private Limited has performed the independent verification of the emission reductions for the VCS project activity reference number 927 “13.75 MW Wind Power Project in Davangere, Karnataka” in India for the monitoring period 01-Oct -2016 to 30-Mar-2019 reported in the Monitoring Report Version 02 dated 15-October-2020.

It is our responsibility to express an independent verification statement on the reported GHG emission reductions from the project activity.

Earthood commenced the verification on the basis of the baseline and monitoring methodology “AMS-I.D. Version 15.0, the monitoring plan contained in the PD version 02 and VCS guidelines version 4.0, Monitoring Report Version 02 dated 15-October-2020 as per the process described under Section 2 of this report.

Earthood’s verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. Earthood planned and performed the verification by obtaining evidence and other information and explanations that Earthood considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In our opinion the GHG emissions reductions reported for the project activity for the period 01-Oct-2016 to 30-Mar-2019 are fairly stated in the Monitoring Report Version 02 dated 15-October-2020. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology “AMS-I.D. Version 15.0” and the VCS standard.

Verification period: 01-Oct-2016 to 30-Mar-2019 (inclusive of both days).

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

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)

2016	4884	0	0	4884
2017	28523	0	0	28523
2018	27723	0	0	27723
2019	4141	0	0	4141
Total	65271	0	0	65271

Approved by

Ashok Kumar Gautam
Director-Environmental Services
Earthood Services Privated Limited

Date:
Place: Gurgaon, Haryana

APPENDIX 1: DOCUMENTS REVIEWED OR REFERENCED (VERIFICATION)

S.No	Title of Document	Version	Date
1.	Registered VCS PD	version 02	22/07/2011
2.	VCS Monitoring Report	2	15/10/2020
3.	ER spreadsheet (corresponding to the final monitoring report)	2	15/10/2020
4.	Certificates of Calibration for all the meters belongs to project activity	-	-
5.	Invoice issued by PP for the duration of monitoring period (01-Oct-2016 to 30-Mar-2019)	-	-
6.	Joint Meter Readings for the duration of monitoring period (01-Oct-2016 to 30-Mar-2019)	-	-
7.	"Grid connected renewable electricity generation", AMS-I.D. Version 15.0	"AMS-I.D. Version 15.0	-
8.	CO ₂ Baseline Database for the Indian Power Sector published by the Central Electricity Authority (CEA), Ministry of Power, Govt.	version 04	-
9.	Remote audit, interviews of plant staff	-	19/09/2020
10.	Commissioning certificate for all the WTGs of the project activity	-	31/03/2009
11.	Power Purchase Agreements	-	25/07/2009
12.	VCS webpage for the project, VCS ID 927; https://www.vcsprojectdatabase.org/#/project_details/927	-	Last accessed on 19/10/2020
13.	O&M contract for all project sites with Suzlon Energy Ltd	-	31/03/2016 29/05/2009
14.	VCS Standard	Version 4.0	Last accessed on 15/10/2020
15.	VCS Program Guide	Version 4.0	Last accessed on 15/10/2020
16.	Letter of declaration dated from PP regarding not having created or sought any other form of environmental credit for the same period and double counting	-	03/10/2020
17.	Google Earth desktop/Mobile application	-	Last accessed on 15/10/2020
18.	Technical Specifications by technology supplier from Purchase order		15/03/2016
19.	Meter calibration guidelines: http://cea.nic.in/reports/regulation/CEA_metering_regulation_amendment_2019.pdf		

S.No	Title of Document	Version	Date
20	https://cdm.unfccc.int/Projects/DB/SGS-UKL1273659698.37/view		
21	Email communication with VERRA regarding change in crediting period		
22	Ministry of Home Affairs Order https://www.mha.gov.in/sites/default/files/MHAorder%20copy.pdf		24-March-2020
23	Ministry of Home Affairs Order (D.O No.40-3/2020-DM-I(A) https://www.mha.gov.in/sites/default/files/MHA%20DO%20letter%20dt.14.4.2020%20to%20Chief%20Secretaries%20and%20Administrators%20for%20strict%20implementation%20of%20Lockdown%20Order%20during%20extended%20period.pdf		14-April-2020
24	Ministry of Home Affairs Order (Order No.40-3/2020-DM-I(A) https://www.mha.gov.in/sites/default/files/MHA%20Order%20Dt.%201.5.2020%20to%20extend%20Lockdown%20period%20for%202%20weeks%20w.e.f.%204.5.2020%20with%20new%20guidelines.pdf		01-May-2020
25	Department of Health and Family welfare, Ministry of Health and Family Welfare, Govt of India Order (D.O.No.Z.28015/19/2020-EMR) https://www.thehindu.com/news/resources/article31478595.ece/BINARY/Ltr%20to%20CSC%2030%20april.pdf.pdf		30-April-2020
26	https://www.mha.gov.in/sites/default/files/MHAOrderDt_30052020.pdf		30-May-2020
27	https://www.mha.gov.in/sites/default/files/MHAOrder_29062020.pdf		30-June-2020
28	Breakdown log sheet		

APPENDIX 2: CORRECTIVE ACTION REQUESTS, CLARIFICATION REQUESTS AND FORWARD ACTION REQUESTS

Table 1. Remaining FAR from previous verification

FAR ID	NA	Section no.	Date : 28/09/2020
Description of FAR			
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.	MR	Date :28/09/2020
Description of CL				

1. PP is requested to reframe the language of project description throughout the MR as it suggests project is proposed and not commissioned yet and also at some places project is mentioned as proposed CDM project activity but this is VCS project
2. On front page of MR, in row of monitoring period, "COD" mentioned. PP shall clarify what it implies to?
Date : 12/10/2020
1. Language in MR has been revised
2. Front page of MR has been revised with correction in monitoring period
Documentation provided by project participant
VCS MR v02
DOE assessment
Date: 15/10/2020
1. PP has reframed the language throughout in revised MR, ver. 02 dated 01/10/2020
2. On front page of revised MR, ver. 02 dated 01/10/2020, typo error rectified.
CL closed.

CL ID	02	Section no.	1.9, 1.10	Date :28/09/2020
Description of CL				
1. In section 1.9, PP shall clarify why it has mentioned project is not registered any other GHG mechanism but project is also registered under CDM. PP shall provide details of CDM registration in this section along with weblink				
2. PP shall provide undertaking for regarding no double counting, as this project is also registered under CDM.				
Project participant response				Date : 12/10/2020
1. Section 1.9 of VCS MR has been revised with inclusion of CDM UNFCCC registration id of the project along with weblink				
2. PP has provided undertaking that it will not claim any GHG credits in any GHG program other than that in VERRA in current monitoring period				
Documentation provided by project participant				
1. VCS MR v02				
2. VCS Undertaking from PP				
DOE assessment				Date: 15/10/2020
1. PP has now provided description of its registration details under CDM in sec. 1.9 of revised MR, ver. 02 dated 01/10/2020 along with weblink of registered CDM project.				
2. PP has not provided declaration regarding no double counting.				
CL Open				
Project participant response				Date: 15/10/2020
Declaration regarding no double counting has been submitted to DOE for review				
DOE assessment				Date: 15/10/2020
PP has provided double counting declaration dated 03/10/2020. CL closed.				

CL ID	03	Section no.	3.3.2	Date : 28/09/2020
Description of CL				
There is change in crediting period of the project activity from existing renewable to fixed crediting period of 10 years but description not provided in this section.				
Project participant response				Date : 14/10/2020
Deviation in project description regarding crediting period has been provided in Section 3.2.2 of VCS MR to mention the change in crediting period of the project activity from existing renewable to fixed crediting period of 10 years				
Documentation provided by project participant				
VCS MR 02				

DOE assessment			Date: 15/10/2020	
PP has now provided details of project description deviations in sec. 3.2.2 of revised MR, ver. 02 dated 01/10/2020. PP has proposed two deviations, 1 st is change in crediting period from renewable to fixed and 2 nd one is regarding calibration frequency. VVB checked and confirmed that both the deviation requested by PP will not have any repercussion on applicability of methodology, additionality, baseline and emission reduction calculation of the project activity, hence can be accepted. CL closed.				
CL ID	04	Section no.	4.2	Date : 28/09/2020
Description of CL				
1. PP shall provide the JMR/ B-forms and copies of invoices pertaining to current monitoring period along with calibration certificates of meters applicable for this monitoring period. 2. In sec. 4.2, all parameters are not included in line with approved VCS PD 3. In sec. 4.2, first parameter mentioned as “10.5” . PP shall clarify whether this typo error?				
Project participant response				Date :14/10/2020
1. JMRS/B-Forms and copy of invoices have been provided 2. Section 4.2 of MR has been revised with inclusion of all monitored parameters in accordance with VCS PD 3. First parameter in section 4.2 has been revised				
Documentation provided by project participant				
1. JMRS(Form-B) 2. Invoices 3. VCS MR v02				
DOE assessment				Date: 15/10/2020
1. PP has now provided B-forms and invoices of entire monitoring period which was cross checked with ER sheet and found to be ok 2. PP has now included all parameters to be monitored in line with approved VCS PD 3. In sec. 4.2, typo error in first parameter rectified in revised MR, ver. 02 dated 01/10/2020. CL closed.				

Table 3. CAR from this verification

CAR ID	05	Section no.	1.11, 2.1	Date: 28/09/2020
In section 1.11 and 2.1, the name of the host country's DNA is incorrect. Corrective action required.				
Project participant response				Date: 14/10/2020
Section 1.11 and 2.1 of VCS MR has been revised with correct name of host country DNA				
Documentation provided by project participant				
VCS MR v02				
DOE assessment				Date: 15/10/2020
PP has corrected name of host country DNA in sec. 1.11, however in sec. 2.1, still name of DNA is incorrect. CAR open				
Project participant response				Date: 15/10/2020
DNA name corrected & updated in section 2.1 of Monitoring report.				
DOE assessment				Date: 15/10/2020
PP has corrected name of host country DNA in sec. 2.1 of revised MR,ver. 02 dated 15/10/2020. CAR closed.				

CAR ID	06	Section no.	2.2	Date: 28/09/2020
In section 2.2, description of local stakeholder consultation provided not in line with VCS MR template guidelines				

Project participant response	Date: 14/10/2020
Section 2.2 of MR has been revised with inclusion of local stakeholder consultation in accordance with VCS MR template guidelines VCS Version 4.	
Documentation provided by project participant	
VCS MR v02	
DOE assessment	Date: 15/10/2020
PP has now provided description of LSC conducted in sec. 2.2 of revised MR, ver. 02 dated 01/10/2020. CAR closed.	

CAR ID	07	Section no.	5.1	Date: 28/09/2020
1. In sec. 5.1, PP is supposed to provide calculation of baseline emission for this monitoring period not estimated baseline emission calculation provided at validation stage. Corrective action required. 2. In ER sheet, total emission reduction value is not rounded down. PP is requested to maintain consistency of ER values in MR with ER sheet.				
Project participant response				Date: 14/10/2020
1. Section 5.1 of MR has been revised with inclusion of calculation of baseline emission for this monitoring period 2. ER sheet has been revised – total value of emission reduction has been rounded down				
Documentation provided by project participant				
1. VCS MR v02 2. ER sheet v02				
DOE assessment				Date: 15/10/2020
1. In sec. 5.1 of revised MR, ver. 02 dated 01/10/2020, necessary corrections made and emission reduction achieved in current monitoring period included by PP. 2. In ER sheet, total emission reduction value rounded down however there is still inconsistency in values of OM, BM and CM in sec. 4.1 of MR. PP shall maintain regarding digits after decimal point for OM, BM and CM.				
CAR open				
Project participant response				Date: 15/10/2020
In section 4.1 of MR has been updated the required data.				
DOE assessment				Date: 15/10/2020
PP has now corrected the values of OM, BM and CM in sec. 4.1 of MR. CAR closed.				

CAR ID	08	Section no.	5.4	Date: 28/09/2020
1. PP has not provided the comparison of estimated and actual emission reduction achieved for this monitoring period. 2. In sec. 5.4, net baseline emission is in decimal, which need to be rounded down. Corrective action required.				
Project participant response				Date: 14/10/2020
1. ER sheet has been revised with inclusion of the comparison of estimated and actual emission reduction achieved for this monitoring period. 2. Section 5.4 of MR has been revised with revision in baseline emissions value				
Documentation provided by project participant				
1. ER sheet v02 2. VCS MR v02				
DOE assessment				Date: 15/10/2020

1. PP has now provided comparison of estimated and actual VER achieved in current monitoring period in revised ER sheet dated 13/10/2020 and corresponding changes also made in sec. 5.4 of revised MR , ver. 02 dated 01/10/2020. As actual VER is lower than estimated value , no explanation needed.
 2. In sec. 5.4 of revised MR, ver. 02 dated 01/10/2020, rounded down value of emission reduction provided.
- CAR closed.**

CAR ID	09	Section no.	MR	Date: 28/09/2020
PP is requested to provide meter calibration detail and breakdown detail in the monitoring report.				
Project participant response				Date: 14/10/2020
1. Meter calibration details have been provided in APPENDIX 1 of VCS MR				
2. Plant breakdown details have been given in section 3.1 of MR				
Documentation provided by project participant				
VCS MR v02				
DOE assessment				Date: 15/10/2020
1. PP has provided meter calibration details in appendix 1 of revised MR, ver. 02 dated 01/10/2020.				
2. Plant breakdown details provided in sec. 3.1 of MR, ver. 02 dated 01/10/2020, checked and found to be ok.				
CAR closed.				

Table 4. FAR from this verification

FAR ID	Nil	Section no.		Date: 28/09/2020
Description of FAR				
Project participant response				Date:DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				Date:DD/MM/YYYY

APPENDIX 3: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

Competence Statement			
Name	Pankaj Kumar		
Education	M.Sc. in Environment Management Post Graduate Diploma in Environment Law B.Sc. (Hons.) Environment and Water Management		
Experience	15 Years		
Field	Climate Change/Waste Management/EIA		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	YES (AMS I.D, ACM0002)		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (1.2)	YES		
Reviewed by	Shreya Garg	Date	01/11/2019
Approved by	Anshika Gupta	Date	01/11/2019

Competence Statement	
Name	Shreya Garg
Country	India
Education	M.Sc. (Climate Science & Policy), TERI University
Experience	7 Years +
Field	Climate Change
Approved Roles	
Team Leader	YES
Validator	YES
Verifier	YES

Methodology Expert	AMS.I.A., AMS.I.C., AMS.I.D., AMS.I.F., AMS.II.D., AMS.II.G., AMS.II.J., AMS.III.AV., ACM0002, ACM0012		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.2, TA 3.1)		
Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Ashok Gautam	Date	01/03/2018

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 ₂ e	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
OM	Operating Margin
O&M	Operation and Maintenance
PLF	Plant Load Factor
PP	Project Participant

APPENDIX 5: METER CALIBRATION DETAILS

Calibration details of meters discussed during remote audit and certificates submitted by PP are as follows:

Main and Check Meter Details

WTGs	WTG Location No.	Main Meter Sl.No.	Check Meter Sl. No.
5 x 1.25 MW	K-538, K-539, K-540, K-541, K-542	08001351	08001352
5 x 1.5 MW	K-543, K-544, K-549, K-550, K-551	08001358	08001371

Calibration details of Main and Check Meters

Calibration date	Next calibration due on
27-April-2016	26-April-2021

Meters at 220 kV substation

Meters at Line-1	Meters at Line-2
Main meter 08001856	Main meter 08001868
Check Meter 08001858	Check Meter 08001891

Calibration details of Meters at 220 kV Substation

Calibration date	Next calibration due on
21-May-2016	20-May-2021