



Renewable Power Project by Axis Wind Farms (MPR Dam) Private Limited



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 100 MW in Anantapuram district of Andhra Pradesh that supply the generated electricity to the National power grid.

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 02-Aug-2018 to 01-Oct.-2019 (First and last date included) the project activity has supplied 271,852 MWh of electricity, and thus contributing to the GHG reductions 257,579 tCO₂e.

Axis Wind Farm (MPR Dam Private Limited contracted **ESPL** to conduct the verification of the project “**Renewable Power Project by Axis Wind Farms (MPR Dam) Private Limited**”. The scope of verification includes confirming the implementation of the monitoring plan in the registered project activity “Renewable Power Project by Axis Wind Farms (MPR Dam) Private Limited (VCS ID – 1790) VCS PD (Ver. 03 dated 28-Nov.-2018) and the application of methodology ACM0002: Large-scale Consolidated Methodology: Grid-connected electricity generation from renewable sources, Version 18.1.

The verification consisted of three phases: a. Desk review of the project; b. Follow-up onsite visit; c. Resolution of outstanding issues and issuance of the final verification report and opinion. The overall verification, from Contract Review to Verification Report & Opinion, was conducted following ESPL's internal quality procedures.

A total of 03 CL and 03 CARs have been raised during the verification process of the project activity which were successfully closed.

- ESPL confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements.

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1 INTRODUCTION

1.1 Objective

“M/s. Axis Wind Farm (MPR Dam) Private Limited” has contracted ESPL (Hereinafter referred as Earthood) to conduct the verification of the project activity “Renewable Power Project by Axis Wind Farms (MPR Dam) Private Limited” 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 “Renewable Power Project by Axis Wind Farms (MPR Dam) Private Limited” for the period 02-Aug-2018 to 01-Oct-2019 (both days included)

1.2 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;
- the project activity is in accordance with conditions of the latest version of applied methodology ACM0002: Large Consolidated methodology — Version 18.1^{7/}.

The verification of the project activity is based on the VCS-PD and estimated GHG emission reduction calculations.

1.3 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 site visit was conducted to project plant site 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 ACM0002, Version 18.1 and the VCS standard, Ver. 4.0

1.4 Summary Description of the Project

Grid-connected wind power project in Andhra Pradesh generates renewable wind electricity and supplies power to the Indian power grid. The current monitoring period from 02-Aug-2018 to 01-Oct.-2019 (First and last date included) involved the generation and supply of 271,852 MWh wind power from plants located in Anantapuram district of Andhra Pradesh. 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 100 MW wind power project in Andhra Pradesh state of India.

Verification team confirmed the capacity by verifying commissioning certificates and also physically verified during site visit that plants are operational at all locations in Andhra Pradesh.

Project includes turbines of make Gamesa G 114 of capacity 2 MW . Technical specification of the plants as verified for all the locations and details provided in sec. 4.1 of this report.

The electricity meters are of the make L&T with a precision of 0.2s. 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 ACM0002: Large-scale Consolidated methodology: Grid-connected electricity generation from renewable sources, Version 18.1.

During the Current Monitoring Period from 02-Aug-2018 to 01-Oct-2019 (First and last date included) the project activity has supplied 271,852.50 MWh of electricity, and thus contributing to the GHG reductions 257,579 tCO₂e

2 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 validation/verification process consists of the following three phases;
- A document review of the VCS PD and VCS MR (described in Section 2.2)
- Site visit 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 (PDD, MR, validation report) and information from sources other than those used, if available, and also conducts independent 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

The site visits for the project activity were carried out on 24-Feb-2020 which covers all the locations in the state Andhra Pradesh in India. No sampling procedures were adopted either in document verification

and all the document were cross checked to ensure conservative estimation of emission reduction. The list of persons interviewed during the project assessment and on site visit is provided below:

S.N	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Raju	Murali	PP Representative	24-Feb-2020	Implementation of the project, monitoring and emission reduction calculations	Mr. Pankaj Kumar
2.	Sahu	Prakash	Consultant	24-Feb-2020		
3.	Sharma	Barun	Consultant	24-Feb-2020		
4.	-	Venkatesh	Farmer	24-Feb-2020	Local stake holder meeting consultation	Mr. Pankaj Kumar
5.	Reddy	Ila	Teacher	24-Feb-2020		

During the on-site visit, 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. Various documents like the JMR sheets, invoice slips, purchase slips etc were also verified at the site itself.

Several photographs were also clicked at the site to capture the name plate data, meter specifications, key technical specifications of the major equipment like panel, inverter and meters and to establish the current status and the implementation of the Project Activity.

2.4 Site Inspections

Duration of on-site inspection: 24/02/2020				
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.	Axis Wind Farms (MPR Dam) Private Limited: Village: Ipperu, Taluka- Kuderu in Anantapur district in Andhra Pradesh	24/02/2020	Pankaj Kumar

A site visit was undertaken by the assessment team (Pankaj Kumar) on 24-Feb-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 03 CAR and 03 CL were raised in the current verification. 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

This section is not applicable for present verification.

3.2 Methodology Deviations

No methodology deviation is envisaged for present verification.

3.3 Project Description Deviations

Not applicable as no deviation in project description observed during this monitoring period.

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 verification site visit it was concluded that the project is implemented as per the instruction of the registered PD^{/1/}, Final Validation report and commissioning certificates^{/10/}. During the current monitoring period it was observed that no unforeseen situation evolved which can impact the operation of the project activity. Breakdown summary is submitted by PP for the wind

power plants. Scheduled maintenance was carried out as per the instruction of the manufacturer and the same is acceptable to the assessment team^{/9/}.

The total installed capacity of the project is 100 MW which involves wind turbines of make Gamesa G 114 of capacity 2 MW in village- Ipperu, Mandal- Kuderu in Anantapuram district of Andhra Pradesh^{/10/}. The technical parameters have been verified with the nameplates as well as the technical specifications of WTGs^{/9/}.

The assessment team physically visited the wind power plant site in order to verify the status of the project implementation of the monitoring plan. It has also been verified as per the guidelines in ACM0002: Large-scale Consolidated Methodology: Grid-connected electricity generation from renewable sources, Version 18.1 that the calculations for the GHG emission reductions are done in accordance with the aforesaid methodology^{/7/}.

The assessment team also confirmed that the monitoring system for emission reduction calculation was in place and in accordance with the registered VCS PD^{/1/}. There was no deviation observed by the assessment team in the implementation of the monitoring system from the registered VCS PD during the current monitoring period^{/1/}.

During the current monitoring duration, no events have been found that can change the design of project.

The details of the WTGs for the project and their location of installation as confirmed during site visit are mentioned in the table below:

Name of Investor	Capacity (MW)	Village(s)	Tehsil / Mandal	District	State
Axis Wind Farms (MPR Dam) Private Limited	100 MW	Ipperu	Kuderu	Anantapuram	Andhra Pradesh

The Geo-Coordinates of all the WTGs involved in the project activity is provided in the table below:

WTG no	Latitude (N)	Longitude (E)
MPR 01	14° 50' 10.7556"	77° 23' 12.1804
MPR 02	14° 50' 02.0256"	77° 23' 29.2367"
MPR 03	14° 49' 54.7248"	77° 23' 40.2233"
MPR 04	14° 44' 46.7376"	77° 21' 28.7729"
MPR 05	14° 44' 41.3556"	77° 20' 58.3010"
MPR 06	14° 46' 45.4332"	77° 20' 42.9873"
MPR 07	14° 49' 12.3204"	77° 24' 38.6315"
MPR 08	14° 50' 41.5572"	77° 24' 29.9906"

MPR 09	14° 50' 28.7772"	77° 24' 36.2687"
MPR 10	14° 50' 04.9128"	77° 25' 03.2868"
MPR 11	14° 49' 49.7208"	77° 25' 06.6286"
MPR 12	14° 46' 32.5956"	77° 20' 19.4172"
MPR 13	14° 46' 16.2048"	77° 20' 22.3838"
MPR 15	14° 45' 14.2776"	77° 19' 27.8421"
MPR 14	14° 46' 08.4612"	77° 20' 38.6797"
MPR 16	14° 45' 45.4680"	77° 19' 27.9395"
MPR 17	14° 44' 51.4212"	77° 20' 34.3447"
MPR 18	14° 44' 38.4648"	77° 21' 48.8706"
MPR 19	14° 45' 54.9468"	77° 19' 23.3941"
MPR 21	14° 45' 01.7460"	77° 21' 36.9895"
MPR 23	14° 45' 14.2884"	77° 21' 50.7949"
MPR 24	14° 51' 06.8940"	77° 22' 02.9782"
MPR 25	14° 50' 57.6816"	77° 22' 19.6636"
MPR 26	14° 50' 47.1156"	77° 22' 28.4760"
MPR 27	14° 50' 34.8792"	77° 22' 29.2786"
MPR 30	14° 48' 44.0208"	77° 21' 52.7650"
MPR 31	14° 48' 36.4716"	77° 22' 02.6457"
MPR 32	14° 48' 31.5504"	77° 22' 35.3550"
MPR 33	14° 48' 22.0212"	77° 22' 35.0172"
MPR 34	14° 48' 12.6108"	77° 22' 36.1515"
MPR_20	14° 46' 59.0556"	77° 21' 12.2493"
MPR_22	14° 46' 47.4708"	77° 21' 09.6843"
MPR_28	14° 46' 53.7924"	77° 21' 40.3386"
MPR_29	14° 46' 31.4040"	77° 21' 22.3136"
MPR 35	14° 44' 23.2440"	77° 21' 58.4986"

MPR_36	14° 44' 09.8052"	77° 21' 43.0135"
MPR_37	14° 45' 01.5120"	77° 20' 04.7061"
MPR_38	14° 45' 11.8044"	77° 20' 03.1448"
MPR_39	14° 45' 20.9268"	77° 19' 55.3874"
MPR_40	14° 45' 30.2148"	77° 19' 59.9987"
MPR_41	14° 46' 21.7416"	77° 21' 19.4351"
MPR_42	14° 45' 03.8016"	77° 20' 54.6314"
MPR_43	14° 45' 28.9944"	77° 21' 21.8416"
MPR_44	14° 45' 16.8480"	77° 21' 16.8978"
MPR_45	14° 45' 37.8216"	77° 21' 07.6310"
MPR_46	14° 46' 30.3060"	77° 20' 52.9532"
MPR_47	14° 49' 01.3512"	77° 21' 40.6498"
MPR_48	14° 49' 12.5040"	77° 21' 41.1050"
MPR_49	14° 48' 50.7708"	77° 24' 46.6506"
MPR_50	14° 48' 50.7708"	77° 24' 46.6506"

Capacity of the projects and date of commissioning (30-March-2017) verified with commissioning certificates/^{10/}. The technical parameters/specification have been verified by the assessment team during the onsite visit/^{09/}with the nameplates as well as the same is also verified with the details as provided by the manufacturer/^{18/}

Geo coordinates checked on google earth/^{17/} and also checked during site visit and verification team conclude geo coordinates of project locations are consistent with registered PD.

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

WTG Make and Model No.	Gamesa, G114
Generator Type & Rating	Doubly-Fed Induction generator
Generator Rating	2000 kW
WTG configuration	50 X 2000 kW
Rotor Diameter	114 m
Swept Area	10,207.0 m ²
Hub Height	93
Tower Type & Shape	Conical Tubular Steel

Cut-in-wind speed	2.5 m/s
Rated wind speed	10.0 m/s
Cut-out wind speed	25.0 m/s
Survival wind speed	60.0 m/s

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

- a) The implementation status of project activity was found to be in compliance with registered PD/1/.
- b) DOE has conducted the on-site visit to confirm the implementation status of the project/9/.
- c) The commissioning date of the project activity was found to be accurately and consistently recorded/10/.
- d) The actual operation of project activity was found to be in compliance with the flow diagram provided in registered PD/1/.
- e) The emission reductions achieved during the current monitoring period are 257,579 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 02 , CL 04 and CAR 05 and CAR 06 were raised on the editorial issue of description and same resolved by revision in the MR.

The total emission reductions achieved in this monitoring period i.e. from 02-Aug-2018 to 01-Oct.-2019 are 257,579 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 on site visit and confirm that there are no any potential negative environmental and socio economical impacts attributed to the project activity.

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 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	CL 07 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 0.9726 tCO₂/MWh. Verification team found same was used in the ER calculations. Ex ante value of emission factor is taken from CEA database, Ver. 13, June, 2018. 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 0.8723 tCO₂/MWh. Verification team found same was used in the ER calculations. Ex ante value of emission factor is taken from CEA database, Ver. 13, June, 2018. 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 0.9475 tCO₂/MWh. Verification team found same was used in the ER calculations. Ex ante value of emission factor is taken from CEA database, Ver. 13, June, 2018. 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: - $BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$ Where: BE_y = Baseline emissions in year y (t CO₂/yr) EG_{PJ,y} = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr) EF_{grid,CM,y} = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (t CO₂/MWh) Monitored Parameter: EG_{PJ,y} = 271,852.5 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
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	monitoring report data with the JMR sheet and invoice and found all the values are matching. PE_y = As per ACM0002 - Version 18.1, 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 ACM0002 - Version 18.1, 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 for the monitoring period. During the verification site visit and the feeder wise location of the WTG is also checked. The metering arrangement is tri-vector bi-directional energy meters (main and check and also one standby meter) at the State Electricity Board (SEB) substation. These meters record parameters including electricity exported & imported. Moreover, the meters are located at the HT side of the transformer and are of accuracy class of 0.2S for each project activity applied for verification. 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. 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. Verification team confirms the metering process by interviewing the O&M personnel and PP representatives during site visit and found the monitoring process is in line with approved PD. 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 site visit 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. 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 site visit 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 site visit by interviewing O&M personnel and checking of records/ log books maintained at site.
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Findings	No findings was raised during verification in this section
Conclusion	Hence assessment team confirmed that the value of net electricity exported to the grid as used in emission reduction calculation is correct. 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. On-site visit and 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 195,052 tCO₂e. The days involved in present monitoring period are 426. Therefore, on pro-rate basis the estimated VERs for the monitoring period is 227,649 tCO₂e. Actual VERs obtained for the monitoring period 257,579 tCO₂e and thus the actual VER is 13.15 % higher than the estimated VER. The generation of electricity depends upon the wind availability which affects PLF, and not within the control of the project participant. Further, current monitoring period included the months from May to July which wherein maximum PLF is achieved. This variation is majorly due to the variations in climatic conditions, grid availability and other parameters which are not in the control of PP. However, the achieved GHG emission is 13.15 % is higher than the estimated value. Also, the increased PLF (Observed PLF is 25.19 %) is crossed checked with the IRR breaching values (Breaching values 14.77 % and the observed value is 11.49%), the result found within the breaching limit. Verification team also checked during site visit and confirmed that no change in project design occurred since installation of project which can affect generation of electricity. Hence, verification team confirmed that project is still additional increase in PLF during this monitoring period will not have any bearing on additionality. 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 Axis Wind Farms (MPR Dam) Private Limited has performed the independent verification of the emission reductions for the VCS project activity reference number 1790 “Renewable Power Project by Axis Wind Farms (MPR Dam) Private Limited” in India for the monitoring period 02-Aug -2018 to 01-Oct-2019 reported in the Monitoring Report Version 02 dated 06-March-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 “ACM0002 - Version 18.1”, the monitoring plan contained in the PD version 03 and VCS guidelines version 4.0, Monitoring Report Version 02 dated 06-March-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 02-Aug-2018 to 01-Oct-2019 are fairly stated in the Monitoring Report Version 02 dated 06-March-2020. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology “ACM0002 - Version 18.1” and the VCS standard.

Verification period: 02- Aug-2018 to 01-Oct-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)

2018	67,465	0	0	67,465
2019	190,114	0	0	190,114
Total	257,579	0	0	257,579

Approved by



Dr. Kaviraj Singh
Managing Director
Earthood Services Privated Limited

Date: 28/04/2020
Place: Gurgaon, Haryana

APPENDIX 1: DOCUMENTS REVIEWED OR REFERENCED (VERIFICATION)

S.No	Title of Document	Version	Date
1.	Registered VCS PD	version 03	28/09/2018
2.	VCS Monitoring Report	2	06/03/2020
3.	ER spreadsheet (corresponding to the final monitoring report)	2	06/03/2020
4.	Certificates of Calibration for meters belongs to project activity	-	21/02/2019
5.	Invoice issued by PP for the duration of monitoring period	-	02/08/2018 to 01/10/2019
6.	Joint Meter Readings for the duration of monitoring period	-	02/08/2018 to 01/10/2019
7.	"Consolidated baseline methodology for grid-connected electricity generation from renewable sources", ACM0002,	"ACM0002 - Version 18.1"	-
8.	CO ₂ Baseline Database for the Indian Power Sector published by the Central Electricity Authority (CEA), Ministry of Power, Govt.	version 13	-
9.	On-site assessment, interviews of plant staff	-	24/02/2020
10.	Commissioning certificate for all the WTGs of the project activity	-	30/03/2017
11.	Power Purchase Agreements	-	20/07/2016
12.	VCS webpage for the project, VCS ID 1790; https://www.vcsprojectdatabase.org/#/project_details/1790	-	Last accessed on 25/03/2020
13.	O&M contract for all project sites with Gamesa Renewables Power Pvt. Ltd.	-	30/12/2015
14.	VCS Standard	Version 4.0	Last accessed on 25/03/2020
15.	VCS Program Guide	Version 4.0	Last accessed on 25/03/2020
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	-	03/03/2020
17.	Google Earth desktop/Mobile application	-	Last accessed on 25/03/2020
18.	Technical specifications from technology supplier		30/12/2015
19.	Meter calibration guidelines: http://cea.nic.in/reports/regulation/CEA_metering_regulation_amendment_2019.pdf		

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

Table 1. Remaining FAR from previous verification

FAR ID	00	Section no.		Date : 27/02/2020
Description of FAR				
<i>There is no FAR from the validation/previous verifications of the project activity</i>				
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	02	Section no.	1.1 & 3.1	Date : 27/02/2020
Description of CL				
<i>In sec. 1.1 and 3.1, value of annual emission reductions is not consistent with registered PD</i>				
Project participant response				Date :06/03/2020
<i>Annual emission reduction values is now consistent in the registered PD</i>				
Documentation provided by project participant				
MR V2				
DOE assessment				Date: 25/03/2020
Value of annual emission reduction in sec. 1.1 and 3.1 of revised MR, ver. 2.0 dated 06/03/2020 is now consistent. Comment closed.				

CL ID	03	Section no.	1.9	Date : 27/02/2020
Description of CL				
<i>PP shall provide an undertaking regarding no double counting of emission reductions claimed for this monitoring period.</i>				
Project participant response				Date : 06/03/2020
<i>No Double counting undertaking is being provided.</i>				
Documentation provided by project participant				
DOE assessment				Date: 25/03/2020

PP has now provided an undertaking dated 03/03/2020 regarding participation in other GHG mechanism. Verification team found undertaking is in line and confirm that PP has not claimed and not intend to claim ER in any other GHG mechanism for this monitoring period. **Comment closed.**

CL ID	04	Section no.	1.7	Date : 27/02/2020
Description of CL				
<i>In sec. 1.7, PP shall provide geo coordinates of all 50 WTGs in line with registered PD</i>				
Project participant response				Date : 06/03/2020
<i>Geo coordinates is now being added to the registered PDD.</i>				
Documentation provided by project participant				
DOE assessment				Date: 25/03/2020
PP has now provided geo coordinates for all WTGs in sec. 1.7 of revised MR, ver. 2.0 dated 06/03/2020. Comment closed.				

Table 3. CAR from this verification

CAR ID	05	Section no.	4.1	Date: 27/02/2020
1. In sec. 4.1, CEA database, ver. 12 used which is not consistent with version referred in registered PD. Corrective action required.				
Project participant response				Date: 06/03/2020
<i>CEA version is revised as per the finding.</i>				
Documentation provided by project participant				
<i>MR V2</i>				
DOE assessment				Date: 25/03/2020
PP has now made necessary corrections in sec. 4.1 of revised MR, ver. 2.0 dated 06/03/2020. Comment closed.				

CAR ID	06	Section no.	1.10	Date: 27/02/2020
In sec. 1.11, name of host country DNA incorrectly mentioned. Corrective action required				
Project participant response				Date: 06/03/2020
<i>Host country name is being updated in the MR V2.</i>				
Documentation provided by project participant				
<i>MR V2</i>				
DOE assessment				Date: 25/03/2020
PP has now correctly mention name of host country DNA in sec. 1.11 of revised MR, ver. 2.0 dated 06/03/2020. Comment closed.				

CAR ID	07	Section no.	5.1	Date: 27/02/2020
Baseline emission calculated using CEA database, ver. 12 but in registered PD, Ver. 13 used. PP shall revise the calculation of baseline emission and provide revised MR and ER sheet.				

Project participant response	Date: 06/03/2020
<i>CEA database is being updated and the baseline emission is revised as per the comment.</i>	
Documentation provided by project participant	
<i>ER V2 and MR V2</i>	
DOE assessment	Date: 25/03/2020
PP has now provided revised ER sheet using CEA version 13 consistent with registered PD. ER value in spread sheet checked with revised MR, Ver. 2.0 dated 06/03/2020 and found to be consistent. Comment closed.	

Table 4. FAR from this verification

FAR ID	Null	Section no.	Date: 27/02/2020
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

PP	Project Participant
OM	Operating Margin
PLF	Plant Load Factor
PPA	Power Purchase Agreement

APPENDIX 5: METER CALIBRATION DETAILS

Calibration details of meter as checked during site visit and certificates submitted by PP are as follows:

Meter Details	Main Meter	Check Meter	Standby Meter
Meter Serial No	16400232	16400234	16400235
Meter Make	L & T	L & T	L & T
Accuracy Class	0.2s	0.2s	0.2s
Date of Calibration	08-March-2017	08-March-2017	08-March-2017
Date of Subsequent Calibration	21-February-2019	21-February-2019	21-February-2019
Due Date of Calibration	20-February-2024	20-February-2024	20-February-2024