VERIFICATION REPORT OF 49.5 MW WIND POWER PROJECT BY MASTER WIND ENERGY LIMITED IN PAKISTAN

Document Prepared By Earthood Services Private Limited

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Summary:

Master Wind Energy Private Limited has contracted Earthood Services Private Limited (ESPL) to conduct an independent verification of their VCS project "49.5 MW Wind Power Project Master Wind Energy Private Limited in Pakistan" with VCS ID 1559 against VCS Standard version 4.1. The Project activity is located at Jhimpir, District Thatta, Sindh, Pakistan.

The verification is an independent third-party assessment of the project design, actual ER sheet, and encompasses a through assessment of the implementation of a project activity against the applicable VCS requirements. The project activity involves generating electricity through wind turbines and evacuated generated power into the National Power and Despatch Company Limited (Grid), thus displacing the electricity that would have been generated through a fossil fuel-based power plant, and hence reducing its GHG emissions.

The scope of the verification includes conforming to the implementation of the monitoring plan with the registered VCS PD, version 1.5, dated 18/04/2017, and the application of the monitoring methodology – ACM0002 "Grid-connected electricity generation from renewable sources" version 17.0.

The verification is being conducted for the monitoring period 14/10/2016 to 31/10/2021 (including both days).

The verification consisted of three phases:

1. Desk review of the project,
2. Follow up interview with the project proponent/ project developer
3. Resolution of outstanding issues, and the issuance of the final verification report and opinion.

The overall verification, from Contract Review to verification Report & opinion, was conducted following ESPL internal quality procedures.

A risk-based approach has been followed to perform this verification activity and there are no uncertainties associated with this verification.

During this verification, a total of 03 CARs, 04 CLs, and 00 FARs were raised and are discussed in detail in Appendix III. The review of the monitoring Report and additional documents related to baseline and monitoring methodology, the subsequent background information, follow-up remote interviews with project owners have provided ESPL with sufficient evidence to verify the fulfillment of the stated criteria of VCS. ESPL confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements.

Therefore, the emission reduction from the VCS project activity "49.5 MW Wind Power Project Master Wind Energy Private Limited in Pakistan" during the current verification period could be represent as follows:

Period (All dates are included)	Baseline emissions or removals (tCO_2)	Project emissions or removals (tCO_2)	Leakage emissions (tCO_2)	Net GHG emissions reduction or removals (tCO_2)
14/10/2016 to 31/12/2016	8,556	0	0	8,556
01/01/2017 to 31/12/2017	84,899	0	0	84,899
01/01/2018 to 31/12/2018	96,412	0	0	96,412
01/01/2019 to 31/12/2019	81,341	0	0	81,341
01/01/2020 to 31/12/2020	65,147	0	0	65,147
01/01/2021 to 31/10/2021	81,427	0	0	81,427
Total	417,782	0	0	417,782

1 INTRODUCTION

1.1 Objective

The objective of this verification is a thorough and independent, third-party verification of the emission reductions for the project. The verification includes all the documentary evidences that may be required to authenticate the sources and sinks of the GHGs within the project boundary, the processes involved, the metrics for qualification of these monitored parameters, along with their level of reliability, and validity of supporting documents shared at each stage of verification.

Verification is an independent review and retroactive determination by ESPL, of the monitored emission reductions in the GHG emissions that has occurred during the current monitoring period. Certification is the written assurance by ESPL that this project activity has achieved a total of 417,782 tCO_2e as verified emission reductions.

1.2 Scope and Criteria

Scope of the verification was an independent and objective review and the ex-post determination of the monitored emission reduction in the GHG emissions from the implementation of this project activity. The verification of the project is done against the registered project description/1/, the ER calculations/4/, the applied methodologies/8/ and supporting documents provided by the project proponent to the verification.

During the verification, following criteria was adopted:

a) Review of the project implementation against the registered project description

b) Verification of the documents and follow up interviews with the project developers

c) Review of the ER calculation against the approved methodologies

1.3 Level of Assurance

☒ Reasonable Level of Assurance

☐ Limited Level of Assurance

Reasonable level of assurance includes the understanding that there is remote likelihood that material misstatements will not be prevented or detected on a timely basis. To achieve reasonable assurance, the auditor needs to obtain sufficient appropriate evidence to reduce audit risk to an acceptable low level.

A draft verification report is prepared by the assessment team. The information provided in the report is further reviewed by an independent technical review team (one or more members) to confirm if the internal procedures established and implemented by ESPL were duly complied with and such opinion/conclusion is reached in an objective manner that complies with the applicable VCS and CDM requirements as appropriate. The technical review team is collectively required to possess the technical expertise in all the technical areas/sectoral scopes the project is related to. The technical review team members are independent of verification team.

The evidence used to achieve a reasonable level of assurance is specified in section 2.3 and 2.4 of this report.

1.4 Summary Description of the Project

The VCS project activity titled "49.5 MW Wind power project by Master wind energy private limited in Pakistan" (VCS IS - 1559) comprises of installation of grid connected wind power project in the Jhimpir, District Thatta, Sindh, Pakistan.

The project activity involves the installation of 33 wind turbines of 1.6 MW each reaching a total installed capacity of 52.8 MW, the update in installed capacity from 49.5 MW to 52.8 MW has been verified from updated generating licence/31/ shared by the PP and also, has been discussed during Remote site visit/32/ on 27/01/2022. The project harnesses the wind energy to generate and supply electricity to the national grid of Pakistan. The wind turbine works on the lift and drag principle to produce a positive turning force on the shaft, which results in the rotation moment of the shaft. The mechanical power produced by the rotary moment is converted to electricity by using a generator and a gearbox. The WTGs can only convert wind energy into electrical energy and hence, do not use any other type of fuel for the same.

The electricity generated by the project activity is being supplied to the national grid of Pakistan and hence displacing electricity that would have been generated through a carbon intensive fossil fuel-based power plant or by addition of new units in the future.

The wind power project developers have signed the Energy Purchase agreement with the National Transmission and Dispatch Company Limited (NTDCL) and Master Wind Energy Limited (MWEL)/30/. The assessment team has verified monthly JMRs/12/, Energy sales invoices/13/ and confirmed that wind power plant is connected to NTDCL through a 132kV transmission line.

The start date of project activity is 14/10/2016, which is also the date of commissioning of the wind power plant, verified through the commissioning certificate/19/. The project is registered for a fixed crediting period of 10 years. The duration of crediting period is 14/10/2016 to 13/10/2026.

Location of the wind turbines in the project activity was verified through Google map/27//Appendix V/ and found consistent with the data provided in the registered VCS PD/1/ and VCS MR/3/.

The project activity is operational since its commissioning and during the current monitoring period. The project activity has generated a total of 601,731.447 MWh of clean electricity which was verified through JMRs/12/ and Energy sales invoices/13/, resulting in 417,782 tCO_{2e} emission reduction during the current monitoring period (i.e. from 14/10/2016 to 31/10/2021) which is found to be consistent with the ER sheet/4/.

2 VERIFICATION PROCESS

2.1 Method and Criteria

The ESPL assessed and determined whether the proposed implementation and operation of the project activity and the steps taken to report the emission reductions comply with the VCS guidelines and the criteria. The verification consists of the following three phases:

- A desk review of the VCS PD/1/ and VCS MR/3/.
- Remote site visit (by Microsoft teams) follow up interviews with PP and clients.
- The resolution of outstanding issues and Issuance of the final report and opinion.

No sampling plan has been adopted by the verification team as all the data related to the Wind Power Plants were presented in the VCS MR/3/ and ER sheet/4/ was reviewed.

2.2 Document Review

The verification is performed primarily as a document review of the documents submitted at the various stages of assessments. The documents are reviewed against registered VCS PD/1/, Validation report/5/ and associated documents as stated in detail in appendix 1 of this document. The assessment is performed by the ESPL internal procedures in-line with the VCS latest standards. The information provided in the Monitoring report is cross-checked with the VCS PD/1/, Validation Report, supporting documents provided by the PP, information from sources other than those used and also conducted independent background investigations on registration in any other GHG programs, various CSR activities/35/ carried out by the PP..

2.3 Interviews

PP representatives were interviewed over the telephonic call to discuss various aspects of the project activity such as implementation of the project activity, monitoring plan, operation and maintenance at the project site, details on calibrations, local stakeholder consultation, CSR activities etc.

No.	Interviewee			Date	Verification team Member	Topics
	Last Name	First Name	Affiliation			
1.	Bawari	Deepak	Emergent ventures (Consultant)	27/01/2022	Shreya Garg and Divij Varshney	-
2.	Shahzad Ali	Syed	Master Wind Energy Private limited (Deputy General Manager - Plant)	27/01/2022	Shreya Garg and Divij Varshney	Project description, technologies implemented, Monitoring system, QA/QC procedures, calibration procedures and details, Local stakeholder consultation, CSR activities
3.	Adnan Bashir	Malik Muhammad	Master Wind Energy Private limited (Deputy Manager – O&M)	27/01/2022	Shreya Garg and Divij Varshney	Project implementation, Monitoring plan, data recording and management, major shutdowns in plant
4.	Ali	Muddasa	Master Wind Energy Private limited (Assistant Manager – O&M)	27/01/2022	Shreya Garg and Divij Varshney	Project implementation, Monitoring plan, data recording and management, major shutdowns in plant

2.4 Site Inspections

The current verification was based on the virtual means/32/ for physical site visit. This was deemed sufficient to confirm the plant operations and other aspects of the project operations. In approach was in accordance to para 4.1.2 of the VCS standard v4.1/7/ "The validation/verification body shall select samples of data and information to be validated or verified to provide a reasonable level of assurance and to meet the materiality requirements of the specific project." The representatives of the PA were interviewed through video call (via Microsoft teams), details of which is included in section 2.3 of this report.

To achieve a reasonable level of assurance, the assessment team has followed the alternative means to substantiate the verification criteria as discussed in the table below:

Requirements	Means of verification/ source documents	Assessment opinion
Project implementation and operation	The project consists of installation of 33 wind turbines of 1.6 MW each, to capture the wind power generated from the rotary action of the turbines and converting into electricity, which is supplied to the NTDCL through a 132kV transmission line. Supporting documents: 1. Commissioning certificate /19/ 2. VCS Registered PD/1/ 3. Technical specification of equipment/28/ 4. MWEL webpage/26/	The start date of the project activity has been verified through the commissioning certificate/19/ provided by the PP. This is also found to be in compliance with the registered PD/1/. The implementation of the project activity has been verified through EPA/30/, Updated generating licence/31/ and photographs and video fo the project site/33//34/. PP were interviewed during remote site visit/32/, also The continuous operation of the project activity has been verified through the JMRs/12/ issued by the NTDCL and Energy sales invoices/13/ issued by the PP

	5. Joint meter reading report/12/ 6. Energy sales invoices/13/ 7. Calibration certificates/14 - 18/ 8. Energy Purchase Agreement/30/ 9. Generating Licence/31/ 10. Photographs and videos of project site	against NTDCL, the source was found to be reliable and authentic as NTDCL is a government owned entity of Pakistan. Independent research has been carried out for the project activity to achieve a higher level of assurance about the implementation of project activity/26/. It is evident from the documents that the project is implemented as per registered PD/1/.
Monitoring systems and procedures	The approved reports from the validation and the project description could be one of the pieces of evidence for the compliance of the monitoring system. The JMRs/12/ and energy sales invoices/13/ can also act as supportive documents. The technical specification of the meter installed can be verified from the technical description/21/ and the calibration certificates/14 - 18/.	The frequency of monitoring of parameters listed under approved monitoring plan is verified through JMRs/12/ and sales invoices/13/. The photographs of the monitoring equipment/34/ sent by the PP has been verified and found to be appropriate. The PP were interviewed about the monitoring system and procedures during the RSV/32/. The documents were cross-checked by the VVB and the implementation of the monitoring system and procedure has been verified.
Calibration frequency	Calibration certificates of each energy meter/14 - 18/ NEPRA Grid code/25/ Meter M1 replacement activity report/20/ VCS registered PD/1/	Calibration frequency and energy meter specifications has been verified through calibration certificates/14 - 18/, VCS PD/1/ and NEPRA grid code requirements/25/ and was found consistent.

		Responsibility of calibration and maintenance of the energy meters is solely under control of NTDCL.
Data and calculations	Monthly JMRs issued by the NTDCL/12/ Energy sales invoices issued by the PP/13/ ER sheet/4/ VCS Registered PD/1/	Monthly values of the monitoring parameters used in the ER calculation are verified through Monthly JMRs/12/ and sales invoices/13/ and are found consistent. Methods, formulae and emission factor for calculating baseline emissions have been followed in accordance with the VCS PD/1/ and applied methodology/8/.

It is noteworthy that no sampling has been caried for the verification as 100% data is verified for the current monitoring period. Most of the reference document referred by the assessment team are either issued /endorsed by national grid (Government of Pakistan), hence is deemed authentic.

Based on the above assessment it can be concluded that the assessment team has verified sufficient data, to reduce audit risk to an acceptably low level as a requisite to achieve reasonable level of assurance for the current monitoring period.

2.5 Resolution of Findings

The objective of this step is to identify, discuss and conclude on the issues that are found during the assessment (Monitoring, implementation, and operations) of the project activity which could impair the capacity of the registered project activity to achieve emission reductions or influence the monitoring and reporting of the emission reductions. The findings may be of the following types: CAR – Corrective action Request, CL – Clarification Request, FAR – Forward Action Request.

A total of 03 CARs and 04 CLs were raised during the current verification. All the findings that were raised and communicated to project participants during the verification are included in appendix III. This section also includes the responses provided by the project participants, along with an assessment by the verification team if it was closed out or otherwise

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2.5.1 Forward Action Requests

This is the first verification of the project activity. During validation, no FAR was raised as a part of the registered validation report/5/.

2.6 Eligibility for Validation Activities

Since, no validation was performed during the current verification, this section is Not Applicable.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The Project is registered under VCS only (VCS ID - 1559) with 10 years crediting period from 14/10/2016 to 13/10/2026/1/. As verified through the records of the VCS registry/22/, no VERs has been issued and this is the first verification of the project activity. Independent research has been caried out, in which the VVB has searched through registries of different GHG programs like CDM, GS, GCC etc. which confirms that the project is not registered in CDM, GS or any other GHG registry.

3.2 Methodology Deviations

There is no deviation from the stated methodology as mentioned in registered PD during the current monitoring period.

3.3 Project Description Deviations

There is no Project Description deviation identified during the verification of current monitoring period. Details of implementation of project activity has been mentioned in section 2.4 of the report.

3.4 Grouped Project

This is not a grouped project activity. Hence, this section is Not Applicable.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The Project implementation was checked in the following manner:

- *There are no material discrepancies between project implementation and project description. This has been verified from the various information like validation report/5/, information available in MR/3/, calibration certificates of main meter and check meter/14 - 18/, against the registered VCS PD/1/.*
- *The implementation status of the monitoring plan was checked for its completeness, which included the verification of the process and schedule for obtaining, recording, compiling, and analysing the monitored data and parameters. This has been verified from Joint meter readings/12/ and Energy sales invoices/13/, along with data in the ER sheet/4/, review of the information provided in the MR/3/, Photographs and videos of project site/33/, review of calibration certificates and calibration frequency for the equipment and it was cross-checked with the project description/1/ for the parameter were adopted by the verification team.*
- *The material discrepancies between the actual monitoring system, the monitoring plan set out in VCS PD/1/ and the applied methodology/8/ were done through the review of the information available in the MR/3/ and it was cross-checked with the VCS PD/1/ and the applied methodology/8/.*
- *The project, 1559 has not been registered or rejected from any other GHG programs. The project participant has declared the same in the MR, and same has been mentioned in the validation report/5/, also independent research has been carried out by the verification team in which the VVB has searched through registries of different GHG programs like CDM, GS, GCC etc that confirms that the project is not registered or rejected in any other GHG program activity,*

- *The project has not received any other form of environmental credits or is doing so during current verification. Independent research has been carried out by the verification team in which the VVB has searched through registries of different GHG programs like CDM, GS, GCC etc that confirms the same.*
- *The project activity has not been registered for any other program, that also mentions that GHG emission reduction or removals generated by the present project activity are not part of emission trading program or any other mechanism that includes GHG allowance trading. Independent research has been caried out by the verification team that confirms the same.*
- *The PP has started the project activity for improving the atmosphere of the surrounding areas by reducing the GHG emissions occurring from his plant, that would otherwise be emitted in the project baseline. The PP regularly takes part in the number of welfare programs that is based in and on around the project activity such as running medical camps, providing hygiene facilities in school and several such CSR activities from time to time, the same has been verified from the photographs of CSR activities/35/ shared by the PP, interview during remote site visit/32/ and details of the various types of CSR activities conducted in the PP webpage/26/.*

Based on the above, it can be concluded that the verification team has thoroughly checked the project activity's implementation status, and there were no discrepancies found in this regard.

4.2 Safeguards

4.2.1 No Net Harm

Since the project is a grid-connected renewable energy power plant which involves generation of electricity through wind power, it does not have any negative environmental and socio-economic impacts.

4.2.2 Local Stakeholder Consultation

Local stakeholder consultation was conducted during the project registration as a part of the EIA assessment, which was validated at the time of project registration/1//5/ in VCS. Furthermore, it can be seen that the PP participates in various CSR activities in or around the project activity area, which has been verified from the photographs of CSR activities/35/ shared by the PP, interview during remote site visit/32/ and details of the various types of CSR activities conducted in the PP webpage/26/. For ongoing stakeholder communication, the PP is maintaining a feedback/ complaint register at the project site office. During the current monitoring period, no grievances were received from the local stakeholders between the period 14 October 2016 to 31 October 2021. Thus, the assessment team has reason to believe that the ongoing stakeholder communication under the local stakeholder consultation has been properly implemented.

4.3 AFOLU-Specific Safeguards

This section is Not Applicable as this project activity is a non-AFOLU project activity type.

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4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The project monitoring has been caried out in accordance with the registered VCS PD/1/ and the monitoring report/3/. The monitoring plan laid on the registered VCS PD/1/ was being followed at the site. The assessment team has verified the information flow (from data generation, aggregation, to recording, calculation and reporting for these parameters including the values) in the MR/3/ as per section 3.15 of the VCS standard/7/. The joint meter reading is taken by the representative of NTDCL in the presence of the PP in the form of JMRs/12/. Monthly JMRs/12/ issued by NTDCL provide the value of parameters that is directly used for emission reduction calculations.

The calculation of the emission reduction is found to be correct. The details of the reported and the verified values for all the parameters are listed in section 4.5 of this report.

The parameters $EG_{export,y}$ and $EG_{import,y}$ is directly sourced from monthly JMRs/12/ issued by the NTDCL. The PP has provided complete set of data for all the monitored parameters in the ER sheet/4/. This data has been verified as described in section 4.5 of this report. The formulae & method used to calculate the baseline emissions, project emissions and leakage emissions are appropriate and in line with the approved methodology ACM0002/8/.

The ex-ante parameters have been calculated at validation stage and remains fixed throughout the crediting period, in accordance with the tool to calculate emission factor for an electricity system/10/, and are in-line with reported value in registered VCS PD/1/.

As per ER sheet/4/ submitted by the PP, the net emission reduction achieved during the current verification period which is also the first verification of the project activity i.e. 14/10/2016 to 31/10/2021, which were verified to be 417,782 tCO_{2e}.

The calculation method and formulae used for calculating baseline emission, project emission and leakage emission are in compliance with the applied methodology ACM0002 v17.0/8/. One finding namely, CAR#02 was raised and resolved details of which can be found in appendix III.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

The ERs generated for the project activity is based on the electricity generation from the wind power. The PP has shared all the relevant evidence against the data related to the monitored parameter. List of all documents reviewed for the current verification has been listed down in appendix I of this report. The values of the parameter, electricity imported and exported has been checked by the assessment team through monthly JMRs/12/ to verify the values reported in the ER sheet/4/ and found to be consistent. Since monthly JMRs are prepared and issued by the NTDCL, they are found to be a reliable and authentic source.

The monitoring of the project activity is found to be in accordance with the monitoring plan set out in the VCS PD/1/ and monitoring methodology ACM0002/8/. The mechanism is reliable and effective. The verification of ex-ante and monitored parameter has been discussed in this section.

1. Assessment of Data and parameter

The assessment of ex-ante parameter has been caried out as method described in below table.

Ex-ante parameter	Assessment
$EF_{grid,OMy}$, Operating margin CO_2 emission factor for grid in the year y (tCO_2/MWh)	PP has applied the value of 0.7732 tCO_2/MWh, which is in line with the calculation method used in "Tool to calculate emission factor for an electricity system"/10/. It's an ex-ante value fixed at the time of validation. The value mentioned in the MR/2/ is found to be consistent with the VCS PD/1/.
$EF_{grid,BMy}$, Build margin CO_2 emission factor for grid in the year y (tCO_2/MWh)	PP has applied the value of 0.4575 tCO_2/MWh, which is line with the calculation method used in "Tool to calculate emission factor for an electricity system"/10/. It's an ex-ante value fixed at the time of validation. The value mentioned in the MR/2/ is found to be consistent with the VCS PD/1/.
$EF_{grid,CMy}$, Combined margin CO_2 emission factor for grid in the year y (tCO_2/MWh)	PP has applied the value of 0.6943 tCO_2/MWh, which is line with the calculation method used in "Tool to calculate emission factor for an electricity system"/10/. It's an ex-ante value fixed at the time of validation. The value mentioned in the MR/2/ is found to be consistent with the VCS PD/1/.

The ex-ante parameters mentioned in the MR are cross-checked with the registered VCS PD/1/ and are found to be consistent.

The assessment of monitored parameter has been caried out as per the method described in below table.

Parameter	$EG_{export,y}$, MWh, Electricity exported to the grid by the project activity in year y

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Continuous measuring, monthly recording
	Is Measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the measuring and reporting frequency is in line with the monitoring plan as set out in VCS PD/1/ and monitoring methodology/8/.
	Monitoring equipment	The energy meter is of accuracy class 0.2s/14 - 18/ and make ISKRA, model no: MT860/21/ . The serial Nos. of the equipment being 66219224, 66213696, 66807446, 66219223 and 66605338. All the energy meter used are of same make and same accuracy level. The same has been verified from the photographs of energy meter/34/ shared by the PP. One of the energy meter namely Main meter M1 was replaced with the new one on 09/04/2019, which was verified from the replacement activity report done by the NTDCL/20/.
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Yes, The accuracy of the monitoring equipment is 0.2s, which is in accordance with the monitoring plan/1/. This has been verified from the calibration certificates/14 - 18/ provided by the PP.
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Yes, the accuracy is valid for entire measuring range. The calibration certificates clearly shows that the accuracy level is valid for entire monitoring period/14 - 18/.
	Calibration frequency /interval:	As per VCS PD/1/, the calibration frequency is once in two years which is in-lines with the details provided in MR/3/ and with the NEPRA grid code/25/. During the current monitoring period, calibration was performed as per the details provided in appendix IV of this

		report. A delay of 1 year 1 month has been noted in the calibration frequency of above meters. The corrected value error has been implemented by the PP correctly in the ER calculation as per the section 3.4.2 of VCS Validation and verification Manual/29/. The calibration certificate/14 - 18/ of each of the calibration dates has been checked and the meter is found to be within the stated error range.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	No, the calibration interval isn't inline with the frequency set out by the PP in the monitoring plan/1/. A calibration delay of 1 year 1 month was identified. The corrected value based on the conservative error value has been implemented by the PP in the ER sheet/4/ according to the delay in calibration, conservative error value applied is 0.2%, which is the maximum permissible error and is found to be appropriate.
	Is the calibration of measuring equipment carried out by an accredited person or institution?	The calibration has been caried out by NTDCL itself which is the government organisation of Pakistan. This has been checked against the calibration certificates/14 - 18/ shared by the PP.
	How were the values in the monitoring report verified?	The cumulative values of $EG_{export,y}$ for the entire monitoring period is reported in the MR/3/, and the monthly values are reported in the ER calculation sheet/4/ is 603,783.118 MWh. This value is checked from the monthly JMRs/12/ and energy sales invoices/13/ shared by the PP.
	If applicable, has the reported data been cross-checked with other available data?	NA

	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the adequate QA/QC procedures were implemented by the PP. The joint meter reading is taken by the representative of NTDCL in the presence of the PP in the form of JMRs. Monthly JMRs issued by NTDCL provide the value of $EG_{PJ,y}$ that is directly used for emission reduction calculations.
Findings	CL#03 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

Parameter	$EG_{import,y}$, MWh, Electricity imported from the grid by the project activity in year y	
Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring /Reading /Recording frequency	Continuous measuring, monthly recording
	Is Measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the measuring and reporting frequency is in line with the monitoring plan as set out in VCS PD/1/ and monitoring methodology/8/.
	Monitoring equipment	The energy meter is of accuracy class 0.2s/14 - 18/ and make ISKRA, model MT860/21/. The serial Nos. of the equipment being 66219224, 66213696, 66807446, 66219223 and 66605338. All the energy meter used are of same make and same accuracy level. The same has been verified from the photographs of energy meter/34/ shared by the PP. One of the energy meter namely Main meter M1 was replaced with the new meter of similar make on 09/04/2019, which was verified from the replacement activity report done by the NTDCL/20/.

	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Yes, The accuracy of the monitoring equipment is 0.2s, which is in accordance with the monitoring plan/1/. This has been verified from the calibration certificates/14 - 18/ provided by the PP.
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Yes, the accuracy is valid for entire measuring range. The calibration certificates clearly shows that the accuracy level is valid for entire monitoring period/14 – 18/.
	Calibration frequency /interval:	As per VCS PD/1/, the calibration frequency is once in two years which is in-lines with the details provided in MR/3/ and with the NEPRA grid code/25/. During the current monitoring period, calibration was performed as per the details provided in appendix IV of this report. A delay of 1 year 1 month has been noted in the calibration frequency of above meters. The corrected value error has been implemented by the PP correctly in the ER calculation as per the section 3.4.2 of VCS Validation and verification manual/29/. The calibration certificate/14 – 18/ of each of the calibration dates has been checked and the meter is found to be within its error range.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	No, the calibration interval doesn't inline with the frequency set out by the PP in the monitoring plan/1/. A calibration delay of 1 year 1 month has been found. The error value has been implemented by the PP in the ER sheet/4/ according to the delay in calibration, conservative error value applied is 0.2%, which is the maximum permissible error and is found to be appropriate.

	Is the calibration of measuring equipment carried out by an accredited person or institution?	The calibration has been caried out by NTDCL itself which is the government organisation of Pakistan. This has been checked against the calibration certificates/14 – 18/ shared by the PP.
	How were the values in the monitoring report verified?	The cumulative values of $EG_{import,y}$ for the entire monitoring period is reported in the MR/3/, and the monthly values are reported in the ER calculation sheet/4/ is 2051.671 MWh. This value is checked from the monthly JMRs/12/ shared by the PP.
	If applicable, has the reported data been cross-checked with other available data?	NA
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the adequate QA/QC procedures were implemented by the PP. The joint meter reading is taken by the representative of NTDCL in the presence of the PP in the form of JMRs/12/. Monthly JMRs/12/ issued by NTDCL provide the value of $EG_{PJ,y}$ that is directly used for emission reduction calculations.
Findings	CL#03 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

Parameter	$EG_{PJ,y}$, MWh, Quantity of net electricity supplied to the grid as a result of the implementation of the project activity in year y	
Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring /Reading /Recording frequency	Continuous measuring, monthly recording

	Is Measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the measuring and reporting frequency is in line with the monitoring plan as set out in VCS PD/1/ and monitoring methodology/8/.
	Monitoring equipment	The energy meter of accuracy class 0.2s/14 – 18/ and make ISKRA, model MT860/21/ is used. The serial Nos. of the equipment being 66219224, 66213696, 66807446, 66219223 and 66605338. All the energy meter used are of same make and same accuracy level. The same has been verified from the photographs of the energy meter/34/ shared by the PP One of the energy meters namely Main meter M1 is replaced with the new one on 09/04/2019, which is verified from the replacement activity report done by the NTDCL.
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Yes, The accuracy of the monitoring equipment is 0.2s, which is in accordance with the monitoring plan/1/. This has been verified from the calibration certificates/14 – 18/ provided by the PP.
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Yes, the accuracy is valid for entire measuring range. The calibration certificates clearly shows that the accuracy level is valid for entire monitoring period/14 – 18/.
	Calibration frequency /interval:	As per VCS PD/1/, the calibration frequency is of once in two years which in-lines with the details provided in MR/3/ and with the NEPRA grid code/25/. During the current monitoring period, calibration was performed as per the details provided in appendix IV of this report. A delay of 1 year 1 month has been noted in the calibration frequency of above meters. The corrected value as per the conservative error was has been applied by the PP appropriately in the ER calculation as per the section 3.4.2 of VCS validation and verification manual/29/.

		The calibration certificate/14 - 18/ of each of the calibration dates has been checked and the meter is found to be within its error range.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	No, the calibration interval isn't in line with the frequency set out by the PP in the monitoring plan/1/. A calibration delay of 1 year 1 month has been found. The error value has been implemented by the PP in the ER sheet/4/ according to the delay in calibration, conservative error value applied is 0.2%, which is the maximum permissible error and is found to be appropriate.
	Is the calibration of measuring equipment carried out by an accredited person or institution?	The calibration has been caried out by NTDCL itself which is the government organisation of Pakistan. This has been checked against the calibration certificates/14 - 18/ shared by the PP.
	How were the values in the monitoring report verified?	The cumulative values of $EG_{PJ,y}$ for the entire monitoring period is reported in the MR/3/, and the monthly values are reported in the ER calculation sheet/4/ is 601,731.447 MWh. This value is checked from the monthly JMRs/12/ shared by the PP.
	If applicable, has the reported data been cross-checked with other available data?	NA
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the adequate QA/QC procedures were implemented by the PP. The joint meter reading is taken by the representative of NTDCL in the presence of the PP in the form of JMRs. Monthly JMRs issued by NTDCL provide the value of $EG_{PJ,y}$ that is directly used for emission reduction calculations.
Findings	CL#03 was raised and resolved.	

Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.

2. Assessment of Data and calculation of GHG emissions or net removal

i. Calculation of Baseline Emissions

In accordance with the applied methodology ACM0002 v17.0/8/, the baseline emissions are CO_2 emissions from the electricity generation from the fossil fuel fired power plant that are displaced due to the project activity.

The baseline emissions are calculated as follows:

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

Where,

BE_y = Baseline emissions in year y (tCO_{2e})

$EG_{PJ,y}$ = 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)

$EF_{grid,CM,y}$ = 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"/10/ (tCO2/MWh)

As per the paragraph 45, the calculation of EGPJ,y is different for Greenfield plants, capacity additions, retrofits, rehabilitations, and replacements. Since the proposed project activity is Greenfield plant, hence as per the paragraph 46 of ACM0002, Version 17.0/8/.

$EG_{PJ,y} = EG_{facility,y}$

Where,

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

$EG_{facility,y}$ = Quantity of net electricity generated that is supplied by the project plant/unit to the grid in year y (MWh/yr)

ii. Calculation of Project emissions

As per the paragraph 36 of the applied methodology, for most renewable power generation project activities, $PE_y = 0$. Since the project activity is a wind and solar energy-based power generation, the project emissions are not applicable to the project activity.

Hence, $PE_y = 0$

iii. Calculation of Leakage emissions

As per the section 5.6 of the applied methodology/8/, no leakage emissions are considered. The main emissions potentially giving rise to leakage in the context of projects in power sector are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g., extraction, processing, and transport). These emissions sources are neglected.

Therefore, $LE_y = 0$.

iv. Calculation of net emissions reduction or removal

The emission reduction as per the applied methodology/8/ equals the baseline emissions (project emissions and leakage emissions for such project activities is considered zero). The formula provided for the calculation of baseline emissions is:

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

$BE_y = 601{,}731.447 \times 0.6943$

$BE_y = 417{,}782\ tCO_{2e}$ (Round-down)

As per the paragraph 58 of the applied methodology/8/, emission reductions are calculated as:

$ER_y = BE_y - PE_y$

$ER_y = (417{,}782 - 0)\ tCO_{2e}$

$ER_y = 417{,}782\ tCO_{2e}$

The total emission reduction during the current crediting period – 14/10/2016 to 31/10/2021 (both dated included) is 417,782 tCO_{2e}.

The assessment team confirms that the appropriate methods and formulae for calculating GHG emission have been followed. The assumptions, emissions factors and default values that were applied in the calculations are justified. The actual emission reduction achieved during the current monitoring period is lesser than the estimated emission reduction as described in the registered VCS PD/1/. One finding namely, CAR#01 was raised and resolved details can be found be appendix III.

All the data were made available and have monitored as per the required monitoring frequency/1/.

No sampling has been done by the VVB as 100% of the monitored data were verified for the current monitoring period.

4.6 Non-Permanence Risk Analysis

There is no non-performance risk rating determined by the project proponent.

5 VERIFICATION CONCLUSION

Earthood Services Private Limited (ESPL), was contracted by M/S. Mater Wind Energy Limited, to perform the independent verification of the emission reductions for the VCS project activity (VCS ID - 1559) "49.5 MW Wind Power Project by Master wind energy limited in Pakistan" for the monitoring period 14/10/2016 to 31/10/2016 as reported in the Monitoring Report version 1.2, dated 26/01/2022/3/.

ESPL commenced the verification based on the baseline and approved methodology ACM0002: "Grid-connected electricity generation from renewable sources", version 17.0/8/, the monitoring plan contained in the VCS PD/1/, VCS guidelines/6//7/, Monitoring Report/3/ as per the process described under section 2 of this report.

ESPL 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 explanation that ESPL considered necessary to give reasonable assurance that the reported GHG emission reductions are fairly stated.

In our opinion, the GHG emission reductions for the project activity for the monitoring period 14/10/2016 to 31/10/2021 (both dated included) are fairly stated in the monitoring report/3/. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology ACM0002/8/ and the VCS standard/7/.

Verification period: From 14 October 2016 to 31 October 2021 (both dated included)

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

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
2016 (14/10/2016 to 31/12/2016)	8,556	0	0	8,556
2017	84,899	0	0	84,899
2018	96,412	0	0	96,412
2019	81,341	0	0	81,341
2020	65,147	0	0	65,147
2021 (01/01/2021 to 31/10/2021)	81,427	0	0	81,427

Approved by

Kaviraj Singh

Managing Director

Earthood Services Private Limited

Date: 08/02/2022

Place: Gurgaon, Haryana

APPENDIX I: DOCUMENTS REVIEWED

No.	Author	Title	Reference to documents	Provider
1.	PP	VCS Project description	Version 1.5, dated 18/04/2017	PP
2.	PP	Monitoring Report	Version 1, dated 11/12/2021	PP
3.	PP	Final Monitoring Report	Version 1.2, dated 26/01/2022	PP
4.	PP	ER Spreadsheet	Corresponding to final MR	PP
5.	Bureau Veritas Certification	Validation Report	Version 1.0, dated 20/04/2017	Others
6.	Verra	VCS Program Guide	Version 4.0, dated 19/09/2019	Others
7.	Verra	VCS Standard	Version 4.1, dated 22/04/2021	Others
8.	CDM	ACM0002 “Grid-connected electricity generation from renewable sources”	Version 17.0	Others
9.	CDM	Tool for the demonstration and assessment of additionality	Version 7.0.0	Others
10.	CDM	Tool to calculate emission factor for an electricity system	Version 5.0	Others
11.	CDM	Standard: CDM VVS for PA	Version 3.0	Others
12.	NTDCL	Joint meter Reading Reports	October 2016 – October 2021	PP
13.	Master Wind Energy	Energy Sales Invoices	October 2016 – October 2021	PP

14.	NTDCL	Calibration and testing Certificates – Main Meter M1 (Old) Serial No. – 66219224	04/09/2016	PP
15.	NTDCL	Calibration and testing Certificates – Main Meter M1 (New) Serial No. - 66213696	09/04/2018 & 26/09/2019	PP
16.	NTDCL	Calibration and testing Certificates – Backup Meter M1 Serial No. - 66807446	04/09/2016 & 26/09/2019	PP
17.	NTDCL	Calibration and testing Certificates – Main Meter M2 Serial No. - 66219223	04/09/2016 & 26/09/2019	PP
18.	NTDCL	Calibration and testing Certificates – Backup Meter M2 Serial No. - 66605338	04/09/2016 & 26/09/2019	PP
19.	REEE	Commissioning Certificate	14/10/2016	PP
20.	NTDCL	Meter M1 Replacement activity report	09/04/2018	PP
21.	Others	Technical Specifications of Energy meter http://www.smsmetering.co.uk/wp-content/uploads/2015/03/MT860_TechnicalDescription_V6.1_eng_SMS.pdf	-	Others
22.	Verra	Program Activity Webpage: https://registry.verra.org/app/projectDetail/VCS/1559	Last Assessed: 11/01/2022	Others
23.	Others	Geo-coordinates - http://www.dmap.co.uk/utmworld.htm	Last Assessed: 21/12/2021	Others
24.	IPCC	IPCC default values – fifth commitment period	2014	Others
25.	NEPRA	NEPRA grid code	June, 2005	Others
26.	Master Wind Energy	PP Website: http://masterwind.com.pk/csr.html	Last Assessed: 11/01/2022	Others
27.	Google Map	25°05'49.7"N 67°59'11.2"E - Google Maps	-	Others
28.	GE	Technical Specifications of WTGs	-	Others
29.	Verra	Validation and Verification Manual	Version 3.2, dated 19 October, 2016	Others

30.	NTDCL	Energy Purchase Agreement (EPA)	16 January, 2015	PP
31.	NTDCL	Updated Generating Licence No. WPGL/15/2011	28/06/2016	PP
32.	-	Remote Site Visit	27/01/2022	Others
33.	-	Photographs and video of Project site	-	PP
34.	-	Photographs of backup meters	-	PP
35.	-	Photographs of CSR activities	-	PP

APPENDIX II: COMPETENCE STATEMENT

Competence Statement			
Name	Shreya Garg		
Country	India		
Education	M.Sc. (Climate Science & Policy), TERI University		
Experience	6 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

Competence Statement	
Name	Divij Varshney
Education	M.Tech. Renewable energy systems B.Tech. Electrical Engineering
Experience	

Field	e.g., Climate Change & Environment / Industry		
Approved Roles			
Team Leader	NO		
Validator	NO		
Verifier	NO		
Methodology Expert	NO		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	NO		
Trainee	YES		
Reviewed by	Deepika Mahala, Quality Manager	**Date**	08/09/2021
Approved by	Ashok Kumar Gautam, Technical Manager	**Date**	17/09/2021

APPENDIX III: FINDING OVERVIEW

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

FAR ID	XX	**Section no.**	XX	**Date :** DD/MM/YYYY
Description of FAR				
X				
Project participant response				**Date :** DD/MM/YYYY
X				
Documentation provided by project participant				
X				
DOE assessment				**Date:** DD/MM/YYYY
X				

Table 2. CL from this verification

CL ID	01	**Section no.**	4.1	**Date :** 28/12/2021
Description of CL				
1. As per Section 3.6.1 of VCS Standard v4.1, Kindly provide the following documentary evidence: a. Power Purchase agreement b. Operating License 2. As per Section 3.20 of VCS Standard v4.1, PP is requested to provide documentary evidence for avoidance of double counting.				
Project participant response				**Date :** 04/01/2022

1. In line with section 3.6.1 following are provided: a. PPA b. Commissioning certificate of the project 2. The project activity is not registered in any other carbon scheme and can be verified with registered projects in Pakistan on other schemes portals. There is no double counting potential from the project.
Documentation provided by project participant
• PPA • Commissioning certificate
DOE assessment **Date:** 11/01/2022
1. The submitted documents has been reviewed and it is found to be inline with the information provided in MR and VCS project standard. Closed 2. The registered project under various carbon finance schemes like CDM and GS has been verified. As per VVB assessment, the project is not registered to any other program or claiming carbon finance through any other source. Hence, there is no double counting accounted for this project. Closed. CL#01 is closed

CL ID	02	**Section no.**	NA	**Date :** 28/12/2021
Description of CL				
The Monitoring period '14-October-2016 to 31-October-2021' has been found inconsistent in the section 1.1, page 3 of the MR. Please, Clarify.				
Project participant response				**Date :** 04/01/2022
This is an edit error which stands rectified now.				
Documentation provided by project participant				
MR Version 1.1				
DOE assessment				**Date:** 11/01/2022
The monitoring period on section 1.1, page 3 of the MR was reviewed and has been found in-line with the current monitoring period. CL#02 is closed.				

CL ID	03	**Section no.**	4.5	**Date :** 28/12/2021
Description of CL				
It has been noted that main meter M1 (Serial No. - 66219224) is replaced with New main meter M1 (Serial No. - 66213696) during the course of the current monitoring period. PP is requested to clarify the reason behind the replacement of main meter M1. Also, how the reading from the old energy meter has been accounted.				
Project participant response				**Date :** 04/01/2022
The old meter was replaced as it was found to be faulty. The consideration of energy readings was done by the state agency as recorded in the JMR of April 2018.				

Documentation provided by project participant	
• *Meter replacement report.* • *JMR of April 2018*	
DOE assessment	**Date:** 11/01/2022
As per VVB assessment, Old energy meter with serial no. 66219224 was found faulty and got replaced by new energy meter with serial no. 66213696, the new meter has been tested and sealed by the NTDCL, this has been verified through the meter replacement report and found consistent. The reading has been incorporated by the JMR issued by the NTDCL, which is a reliable source and hence, found acceptable. CL#03 is closed.	

CL ID	04	**Section no.**	1.1, 2.4	**Date :** 21/01/2022
Description of CL				
1. In section 3.1, Implementation status of the project activity, The PP claims that "There are no events that took place in the current monitoring period that might impact GHG emissions reductions. The project remained operational through the period." The PP is requested to provide the shutdown details of the project for the current monitoring period. 2. Also, the PP is requested to add the metering layout of the project to confirm how only two sets of meters (main meter and backup meter) is being used to monitor energy generation through all 33 WTGs.				
Project participant response				**Date :** 21/01/2022
1. *Outage details are now added.* 2. *Metering layout is now added in appendix 2.*				
Documentation provided by project participant				
MR V1.1.				
DOE assessment				**Date:** 02/02/2022
1. The revised MR has been reviewed and it can be observed that the PP has added the outages during the current monitoring period. The same has also been discussed during the remote site visit conducted on 27/01/2022, and the response was found to be appropriate. It can be concluded that there is no major outages during the current monitoring period that may impact GHG emission reductions. CLOSED 2. The revised MR has been reviewed. The information added is found to be inline with the registered PD and information provided during the remote survey. Hence, found appropriate. CLOSED CL#04 is closed.				

Table 3. CAR from this verification

CAR ID	01	**Section no.**	4.5	**Date :** 28/12/2021
Description of CAR				
In section 5.2 and section 5.3 of the MR, PP has indicated Project emission and Leakage emission as "NIL". Request to clarify the reason for zero project and leakage emissions as per the applied methodology.				

Project participant response	Date : 04/01/2022
MR is edited with information as per the applied meth.	
Documentation provided by project participant	
MR Version 1.1	
DOE assessment	**Date:** 11/01/2022
The updated information for leakage and project emission in the specific sections was reviewed and has been found in-line with the applied methodology. CAR#01 is closed.	

CAR ID	02	Section no.	4.4	Date : 28/12/2021
Description of CAR				
In ER, following inconsistencies has been observed: 1. In Gen Data spreadsheet, Month 'Oct-17', value of EG_{export} (Cell G11) is found to be inconsistent with the JMR of the respective month. Corrective Action is requested. 2. In Gen Data spreadsheet, Month 'Sept-21', value of EG_{import} (Cell AB10) is found to be inconsistent with the JMR of the respective month. Corrective Action is requested.				
Project participant response				**Date :** 04/01/2022
1. *This is an edit error which stands corrected now. Requisite changes made in MR too.* 2. *This is an edit error which stands corrected now. Requisite changes made in MR too.*				
Documentation provided by project participant				
ER dated 04/01/2022 *MR Version 1.1*				
DOE assessment				**Date:** 11/01/2022
1. The corrected ER sheet and MR submitted by the PP was reviewed. The value of EG_{export} has been made consistent with the JMR. The calculations in the ER sheet has also been reviewed and no discrepancy has been observed. Also, MR has been reported consistently with ER Sheet. Closed. 2. The corrected ER sheet and MR submitted by the PP was reviewed. The value of EG_{import} has been made consistent with the JMR. The calculations in the ER sheet has also been reviewed and no discrepancy has been observed. Also, MR has been reported consistently with ER Sheet. Closed. CAR#02 is closed.				

CAR ID	03	Section no.	4.2.2	Date : 28/12/2021
Description of CAR				
As per the instructions given in the template of the Monitoring report v4.0, PP is requested to give more information on Procedure or method for engaging in stakeholder along with the grievance mechanism in section 2.2 'Local Stakeholder consultation'.				
Project participant response				**Date :** 04/01/2022

Project owner engages in a number of community engagement activities which are reflected in various CSR and other programs undertaken. Project owner engages with the local communities through a number of CSR and other development programs and projects in the area. These activities revolve around children education, running medical camps, providing hygiene facilities in schools, identifying needs of the local population and providing for resources such as drinking water and several such activities from time to time. Project owner is committed to keep engaging with the local communities. Section 2.2 has such information.
Documentation provided by project participant
MR Version 1.1
DOE assessment **Date:** 11/01/2022
The PP has engaged in various CSR and other programs activities which has been verified through the photographs posted on the PP's website (http://masterwind.com.pk/csr.html). Hence, as per VVB's assessment it is concluded that Project owner frequently engages with the local communities through various CSR and other development programs. The information under section 2.2 has been updated. CAR#03 is closed.

Table 4. FAR from this verification

FAR ID	XX	**Section no.**	XX	**Date :** DD/MM/YYYY
Description of FAR				
X				
Project participant response				**Date :** DD/MM/YYYY
X				
Documentation provided by project participant				
X				
DOE assessment				**Date:** DD/MM/YYYY
X				

APPENDIX IV: CALIBRATION OVERVIEW

Equipment	Serial No.	Date of calibration	Calibration Validity	Delay in Calibration
Main Energy Meter M1 (Old)	66219224	04/09/2016 Meter replaced on 09/04/2018	2 years	N
Main Energy Meter M1 (New)	66213696	09/04/2018 Recalibrated on: 26/09/2019	2 years	N

Backup Energy Meter M1	66807446	04/09/2016 Recalibrated on: 26/09/2019	2 years	Y (Delay time: 1 Year 1 month)
Main Energy Meter M2	66219223	04/09/2016 Recalibrated on: 26/09/2019	2 years	Y (Delay time: 1 Year 1 month)
Backup Energy Meter M2	66605338	04/09/2016 Recalibrated on: 26/09/2019	2 years	Y (Delay time: 1 Year 1 month)

APPENDIX V: GEO-COORDINATES OF WTGS

Geo-Coordinates of each WTGs in UTM system are as follows:

Turbine No.	Easting 'E' (M)	Northing 'N' (M)
T-01	397799	2776086
T-02	397862	2775205
T-03	398056	2775078
T-04	398269	2774934
T-05	398447	2774799
T-06	398653	2774657
T-07	398860	2774521
T-08	399074	2774379
T-09	399280	2774243
T-10	399487	2774101
T-11	399679	2773965

T-12	399879	2773823
T-13	400028	2773713
T-14	400292	2773517
T-15	400499	2773395
T-16	400691	2773267
T-17	400891	2773132
T-18	401090	2773004
T-19	398261	2776990
T-20	398468	2776222
T-21	398661	2776094
T-22	398844	2775984
T-23	399008	2775852
T-24	399188	2775745
T-25	399363	2775611
T-26	399532	2775477
T-27	399707	2775346
T-28	399890	2775228
T-29	399522	2777939
T-30	399102	2778188
T-31	399224	2777334
T-32	398738	2776787
T-33	400087	2775076