



**Verified Carbon
Standard**

FINAL VERIFICATION REPORT 'LONGYUAN MULILO DE AAR 2 NORTH WIND ENERGY FACILITY'



Document Prepared By Carbon Check (India) Pvt. Ltd.

Project Title	Longyuan Mulilo De Aar 2 North Wind Energy Facility
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Report Title	Verification report 'Longyuan Mulilo De Aar 2 North Wind Energy Facility'
Client	Blue World Carbon Asset Management (Pty) Ltd
Pages	30

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Summary:

Blue World Carbon Asset Management (Pty) Ltd, herein referred as BWC (One of the Project proponent), has appointed the validation/verification body (VVB) Carbon Check (India) Private Ltd. to perform verification of the greenhouse gas emission reductions reported for the project activity "Longyuan Mulilo De Aar 2 North Wind Energy Facility" in Republic of South Africa, VCS ID 1950, for the following monitoring period with regard to the relevant requirements for VCS activities.

- Monitoring Period : 1/11/2017 to 31/12/2020

The objective of the verification is to have an independent review ex-post determination of the monitored reductions in GHG emission reductions, Verification was conducted using Carbon Check procedures in line with the requirements specified in the VCS Standard 4.1, VCS validation and verification manual version 3.2, VCS Program Guide version 4.0, Registration and issuance process version 4.0, Program Definitions, V4.1/B03/ and applying standard auditing

techniques. The verification consisted of desk review, off-site assessment and the resolution of outstanding issues and the issuance of the final verification report.

The verification shall ensure that reported emission reductions are complete and accurate in accordance with applicable VCS / CDM requirements in order to be certified.

The GHG emission reductions are calculated on the basis of the approved methodology ACM0002 version 19.0 and the monitoring plan included in the registered VCS PD, version 02 dated 26/10/2019./02/

During this verification, one (1) Corrective Action Request (CAR) and 0 clarification requests (CL) were raised related to operation, GHG emission reduction estimation, monitoring and baseline scenario of the VCS project activity in relation to all relevant VCS requirements for the project activity and the applied baseline and monitoring methodology, and these CAR and CL are successfully closed after necessary corrections/clarifications by the client. The same has been discussed in Appendix B of this verification report.

In conclusion, it is Carbon Check's opinion that the project activity " Longyuan Mulilo De Aar 2 North Wind Energy Facility" in RSA, VCS project ID 1950, meets all relevant requirements for VCS standard version 4.1 and guidelines and correctly applies the baseline and monitoring methodology ACM0002 'Grid-connected electricity generation from renewable sources' version 19/B02/. The monitoring system is in place and the emission reductions are calculated without material misstatement. Hence, Carbon Check is able to certify that the emission reductions from the project during the monitoring period amount to 1,428,835 tCO_{2e}.

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1 INTRODUCTION

1.1 Objective

Carbon Check (India) Pvt. Ltd. Has been commissioned by “Blue World Carbon Asset Management (Pty) Ltd,” To perform an independent verification of its VCS project, “Longyuan Mulilo De Aar 2 North Wind Energy Facility”, already registered under VCS with Project ID. 1950 for the reported GHG emission reductions for the given monitoring period. The VCS projects must undergo independent third-party verification of emission reductions as the basis for issuance of Verified Carbon Units (VCUs).

The objectives of this verification exercise are, by review of objective evidence, to establish that:

- The project activity has been implemented and operated as per the project description (PD) /02/ and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place;
- Monitoring report /01/ and other supporting documents are complete;
- The data is recorded and stored as per the monitoring methodology /B02/ and approved monitoring plan.
- To confirm that the monitoring system is implemented and fully functional to generate Verified Carbon Units (VCUs) without any double counting, and

To establish that the data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation.

1.2 Scope and Criteria

The verification scope is:

- to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan;
- to evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement;
- to verify that reported GHG emission data is sufficiently supported by evidence.

The project is assessed against the requirements of VCS Standard 4.1, VCS validation and verification manual version 3.2, VCS Program Guide version 4.0, Registration and issuance process version 4.0. /B03/ Carbon Check has, based on the recommendations in the latest version of CDM validation and verification standard for project activities version 02.0, VCS validation and verification manual and employed a rule-based approach (as criteria) in the verification, focusing on the identification of significant reporting rules and the reliability of project monitoring.

Verification is not meant to provide any consultancy towards the project proponent. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring.

1.3 Level of Assurance

All the revisions of the verification report before being submitted to the client were subjected to an independent internal technical review to confirm that all verification activities had been completed according to the pertinent Carbon Check instructions, with reasonable level of assurance.

The technical review was performed by a technical reviewer(s) qualified in accordance with Carbon Check's qualification scheme for VCS and CDM validation and verification.

1.4 Summary Description of the Project

The purpose of this project activity is to generate clean form of electricity through renewable energy sources (Wind). Longyuan Mulilo De Aar 2 North (RF) (Pty) Ltd and BWC both are the project proponent of the project activity. The project activity involves installations of 96 x UP86 turbines 1.5 MW capacity each (aggregating to 144 MW) supplied by United Power, are employed by the project. The electricity generated from the project activity is sold to the national grid of the host country, RSA which is integrated into the grid of Southern African Power Pool (SAPP), where South Africa is represented by Eskom. Estimated annual power generation is as below:

The proposed project is located Farm 136 (Portion 1 and Portions 6), 148 (Portions 2, 4 and Remainder), 165 (Portion 1 and Portion 7), 149 (Portion 1), 150 (Portion 4 and Remainder), 151 (Portion 1 and Portion 2) outside of the town of De Aar. The coordinates of the proposed project location are at Geographical latitude -30.538320. Geographical longitude: 24.262329. The project's initial crediting period is from 01/11/2017 to 31/10/2027.

As verified during the remote interview, the Longyuan Mulilo De Aar 2 North Wind Energy Facility has an installed capacity of 144 MW. Wind generated electricity is stepped up to 33kV and transported by overhead lines to the De Aar 2 North IPP Substation, where it further stepped up to 132kV. There are 2 supplying lines from the De Aar 2 North IPP Substation to the Ndhlovu Eskom Substation. The supply voltage level is 132kV. Each line is equipped with the electricity meters (main and check). After the Ndhlovu Eskom Substation the generated renewable electricity is transmitted through the national grid of the RSA. /10/

Electricity delivered to the grid by the wind farm would have otherwise been generated by the operation of the grid-connected power plants of the SAPP and by the addition of new generation sources that is reflected in the combined margin CO₂ emission factor of 0.9871 t CO₂/MWh adopted for the electricity system of the SAPP.

The project is going for the 1st verification under the first crediting period. The emission reductions are calculated conservatively as per the applied methodology.

The main information of the project activity is summarized in the table below:

Project Proponent(s)	Blue World Carbon Asset Management (Pty) Ltd (Primary project Proponent) Longyuan Mulilo De Aar 2 North (RF) (Pty) Ltd		
Project Title	Longyuan Mulilo De Aar 2 North Wind Energy Facility		
Location of the project	The project is located on Farm 136 (Portion 1 and Portions 6), 148 (Portions 2, 4 and Remainder), 165 (Portion 1 and Portion 7), 149 (Portion 1), 150 (Portion 4 and Remainder), 151 (Portion 1 and Portion 2) outside of the town of De Aar. De Aar is the main town of the Emthanjeni Local Municipality located in the Northern Cape Province of the RSA.		
Methodology(ies)	ACM0002 version 19		
Sectoral Scope(s)	1	Carbon Check's Technical Area(s)	1.2
Registered VCS PD	Version 02 of 26/10/2019		
Starting date of the crediting period	01 November 2017		
Project's crediting period	01 November 2017– 31 October 2027 (First crediting period)		
Project documentation link	https://registry.verra.org/app/projectDetail/VCS/1950		

2 VERIFICATION PROCESS

2.1 Method and Criteria

Verification was conducted using Carbon Check procedures in line with the requirements specified in the VCS standard 4.1, VCS validation and verification manual version 3.2, VCS Program Guide version 4.0, Registration and issuance process version 4.0. /B03/ The GHG emission reductions are on the basis of the approved Baseline and monitoring methodology ACM0002 version 19./B02/

The verification consisted of the following phases

- Document review;
- Off-site assessment including Interviews;

Resolution of any Material Discrepancy and the issuance of the final verification report.

The following sections outline each step in more detail.

2.2 Document Review

The monitoring report (MR) version 02.1 of 27/07/2021 /01/, the emission reduction calculations spreadsheet /03/, were assessed as part of the verification. In addition, the registered VCS-PDs /02/ in particular the baseline estimations and the monitoring plan for the project were reviewed.

The following table lists the documentation that was reviewed during the verification:

/01/	Final monitoring report: Version 02.1 dated 27/07/2021
/02/	Registered VCS project description for project activity " Longyuan Mulilo De Aar Maanhaarberg Wind Energy Facility , version 02 dated 26/10/2019
/03/	Emission Reduction spread sheet corresponding to /01/
/04/	Evidence for the Technical specifications of the project (UP 86 Design Certificate by wind turbine manufacturer- United Power)
/05/	Monthly meter readings for the monitoring period <ul style="list-style-type: none"> • Raw data from tariff meters_De Aar 2
/06/	Calibration certificates for the electricity meters <ul style="list-style-type: none"> • Calibration Certificate from SANAS calibration laboratory dated: 08/05/2017
/07/	Tax invoices and Eskom's monthly reports for cross check of the meter readings <ul style="list-style-type: none"> • Eskom Payment Certificates • Longyuan Mulilo_Tax Invoices

/08/	Training record of the monitoring personnel
/09/	Evidence for the start of the commercial operation of the project activity/ Plant Commissioning certificate dated: 30/10/2017
/10/	Technical specifications of the project including operation and maintenance manual <ul style="list-style-type: none"> • single line diagram
/11/	Plant breakdown / shutdown records
/12/	Grievance mechanism <ul style="list-style-type: none"> • Grievance Procedure • Grievance Register
/13/	Power Purchase Agreement between PP (Longyuan Mulilo De Aar 2 North (RF) (Pty) Ltd and electricity utility (ESKOM Holdings Soc Ltd)

Background documents

S. No.	Document
/B01/	Validation report for /02/
/B02/	Approved CDM monitoring methodology: ACM0002: Grid-connected electricity generation from renewable sources – Version 19.0
/B03/	VCS Requirements: VCS Standard (v4.1, dated 19/09/2019) VCS Program Guide (v4.0, dated 19/09/2019) VCS Validation and Verification Manual version (v3.2, dated 19/10/2016) Registration & Issuance Process (v4.0, dated 19/09/2019) VCS Programme Definitions version (v4.1, dated 19/09/2019) VCS monitoring report template version 4.0
/B04/	CDM validation and verification standard for programmes of activities version 02.0 CDM project standard for programmes of activities 02.0
/B05/	Standardized baseline ASB0040-2018

2.3 Interviews

The key personnel interviewed, and the main topics of the interviews are summarized in the table below:

	Date	Name and Role	Organization	Topic
/a/	10/06/2021	Ilya Goryashin	Blue World Carbon Asset Management (Pty) Ltd	Monitoring report, emission reduction calculations, records of monitoring parameters, VCS rules, application of methodology etc.
/b/	10/06/2021	Joost Van Lier		Monitoring report, emission reduction calculations, records of monitoring parameters, VCS rules, application of methodology etc.
/c/	10/06/2021	Regardt	Longyuan Mulilo De Aar 2 North (RF) (Pty) Ltd (Longyuan Mulilo)	Technical aspects of the project activity. Operational life, environmental aspects etc.
/d/	10/06/2021	David Dai		Operational details of the project, management structure, legal compliance, health, safety and environmental aspects, data monitoring and recording procedure, safety practices, production controls, internal audits etc.

2.4 Site Inspections

Site visit for the subject project activity was avoided due to travel restrictions imposed due to COVID-19 impact. The verification body noted VERRA guideline on travel due to COVID-19 (<https://verra.org/covid-19-travel-guidance/>) and e-mail communication between verification body and VERRA clarifies that VERRA standard do not mandate site visit to be conducted in person. VVB also noted CDM Executive Board's decision to relax mandatory site visits by DOEs until 31 December 2021 because of COVID-19. The alternative means used for the purpose of verification are demonstrated as follow.

The audit team has carried out off site interviews (over phone call and video call) to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for the verification. During the desk review, the relevant documents, including the registered VCS-PD and corresponding validation report, the picture of nameplate of the main equipment (WTGs), the picture of monitoring meters and other relevant background documents were provided and assessed. The audit team can confirm the project operation and monitoring are consistent with registered monitoring plan and validation report.

The validation report was checked, comparing the relevant evidence and off-site interview with the PP representative and operation staff through telephone and video call, Carbon Check team has confirmed that the project is implemented in line with the VCS PD and the monitoring system is in line with the latest approved VS-PD and latest MR. Therefore, a reasonable level of assurance was achieved without an in-person site visit.

2.5 Resolution of Findings

The objective of this phase of the verification is to resolve any outstanding issues which need to be clarified for Carbon Check's positive conclusion on the project description. To guarantee transparency a verification protocol has been customized for the project. The protocol shows in a transparent manner the requirements, means of verification and the results from verifying the identified criteria. The verification protocol consists of three tables; the different columns in these tables are described below.

A corrective action request (CAR) is raised if one of the following occurs:

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;

- Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impair the estimate of emission reductions;
- Issues identified in a FAR during validation to be verified during verification have not been resolved by the project proponent.

A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.

In summary, one (1) CAR and 0 CL were raised during this verification which were closed successful and details are given under Appendix B of this report.

2.5.1 Forward Action Requests

Based on the review of the validation report /B01/ it is noted that no FAR raised during validation which need to be addressed during this verification.

2.6 Eligibility for Validation Activities

The project activity is registered under VCS ID 1950 /02/, hence this section is not applicable.

3 VALIDATION FINDINGS

The project was registered under the VCS registration reference N° 1950. The first crediting period is from 01/11/2017 – 31/10/2027. This verification assessment for the monitoring period 01/11/2017 to 31/12/2020 falls under the first crediting period.

3.1 Participation under Other GHG Programs

The project is registered only under VCS and not registered in any other GHG program.

3.2 Methodology Deviations

No methodology deviation has been applied.

3.3 Project Description Deviations

The project crediting period has been voluntary updated by the Project Proponents from 31 October 2017 (00:00) – 30 October 2027 (24:00) to 01 November 2017 (00:00) – 31

October 2027 (24:00). Verification team confirms that the deviation does not impact the applicability of the methodology, additionality and the appropriateness of the baseline scenario.

3.4 Grouped Project

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

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

Implementation of the project activity has been assessed through document review, off-site interview and video call with project proponent. The project activity involves 144 MW wind power plant for electricity generation and export to grid. It involves 96 UP86 sets of 1.5 MW wind turbines. The project owner is Longyuan Mulilo De Aar 2 North (RF) (Pty) Ltd (Longyuan Mulilo)/13/. The start date of the project activity is 31/10/2017,/09/ the day when the wind farm started commercial operation. The generated electricity is supplied to the grid of RSA. The project is located on Farm 136 (Portion 1 and Portions 6), 148 (Portions 2, 4 and Remainder), 165 (Portion 1 and Portion 7), 149 (Portion 1), 150 (Portion 4 and Remainder), 151 (Portion 1 and Portion 2) outside of the town of De Aar. De Aar is the main town of the Emthanjeni Local Municipality located in the Northern Cape Province of the RSA During the monitoring period. it is noted that entire project was fully operational as verified from generation records.

Based on document review, off-site interview and video call, it is confirmed that all the emission sources within the boundary have been considered appropriately. Monitoring of all parameters during the monitoring period is followed as per registered monitoring plan.

Data parameters fixed ex-ante and available at validation are given below:

DATA/PARAMETER Unit	Source of data	Reported value for the project period	Assessment/Observation
Combined margin emission factor for grid ($EF_{grid,CM,y}$) in tCO_2e/MWh	Data based on registered PD /02/ and validation report /B01/	0.871	The value is ex-ante and derived from Standardized baseline ASB0040-2018. Table 1 of this standardized baseline provides the value of the combined margin CO2 emission factor for the project electricity system applicable

			to wind and solar power generation for the determination of baseline emissions of 0.9871 t CO ₂ /MWh /B05/
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Data parameters monitored

Data/Parameter	Assessment																																																								
Data Unit	EG _{PJ,y} MWh																																																								
Description	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the project in year y																																																								
Source of data to be used	As verified during the remote interview and as per the document review of On-site measurement by electricity meters, yielding the net electricity supplied to the grid of the RSA./03/./05/./07/ There are two main meters installed in the De Aar 2 North IPP Substation on 132kV side. Each meter is accompanied with the check meter. Monthly reports with the records for delivered electricity to the Ndhlovu Eskom Substation are submitted by Eskom to PP.																																																								
Value of monitored parameter for the monitoring period	<table border="1"> <thead> <tr> <th>Monitoring Period</th> <th>Month</th> <th>Year</th> <th>Value</th> </tr> </thead> <tbody> <tr><td>1</td><td>11</td><td>2017</td><td>41,388.791997</td></tr> <tr><td>2</td><td>12</td><td>2017</td><td>42,054.144031</td></tr> <tr><td>3</td><td>1</td><td>2018</td><td>44,680.344018</td></tr> <tr><td>4</td><td>2</td><td>2018</td><td>34,201.223991</td></tr> <tr><td>5</td><td>3</td><td>2018</td><td>35,727.143980</td></tr> <tr><td>6</td><td>4</td><td>2018</td><td>26,535.959970</td></tr> <tr><td>7</td><td>5</td><td>2018</td><td>31,180.991985</td></tr> <tr><td>8</td><td>6</td><td>2018</td><td>36,057.624001</td></tr> <tr><td>9</td><td>7</td><td>2018</td><td>42,677.760015</td></tr> <tr><td>10</td><td>8</td><td>2018</td><td>38,316.936010</td></tr> <tr><td>11</td><td>9</td><td>2018</td><td>35,306.279994</td></tr> <tr><td>12</td><td>10</td><td>2018</td><td>39,853.775984</td></tr> <tr><td>13</td><td>11</td><td>2018</td><td>42,956.255981</td></tr> </tbody> </table>	Monitoring Period	Month	Year	Value	1	11	2017	41,388.791997	2	12	2017	42,054.144031	3	1	2018	44,680.344018	4	2	2018	34,201.223991	5	3	2018	35,727.143980	6	4	2018	26,535.959970	7	5	2018	31,180.991985	8	6	2018	36,057.624001	9	7	2018	42,677.760015	10	8	2018	38,316.936010	11	9	2018	35,306.279994	12	10	2018	39,853.775984	13	11	2018	42,956.255981
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	16	2	2019	32,215.368000	
	17	3	2019	36,470.543984	
	18	4	2019	31,309.848000	
	19	5	2019	30,777.024000	
	20	6	2019	38,147.423962	
	21	7	2019	46,044.312024	
	22	8	2019	30,952.511989	
	23	9	2019	38,472.288009	
	24	10	2019	46,370.471995	
	25	11	2019	40,388.544000	
	26	12	2019	45,855.432019	
	27	1	2020	43,686.335978	
	28	2	2020	35,623.968020	
	29	3	2020	34,519.751998	
	30	4	2020	34,871.615967	
	31	5	2020	20,868.408000	
	32	6	2020	30,097.655998	
	33	7	2020	36,438.791997	
	34	8	2020	45,801.216019	
	35	9	2020	33,736.176000	
	36	10	2020	44,313.959995	
	37	11	2020	45,177.984014	
	38	12	2020	41,844.551978	
Monitoring equipment			Meter Type		Serial Number

	<table border="1"> <tbody> <tr> <td>Main meter 1</td> <td>Landis+Gyr E650</td> <td>37108384</td> </tr> <tr> <td>Check meter 1</td> <td>Landis+Gyr E650</td> <td>37108385</td> </tr> <tr> <td>Main meter 2</td> <td>Landis+Gyr E650</td> <td>37108386</td> </tr> <tr> <td>Check meter 2</td> <td>Landis+Gyr E650</td> <td>37108387</td> </tr> </tbody> </table>	Main meter 1	Landis+Gyr E650	37108384	Check meter 1	Landis+Gyr E650	37108385	Main meter 2	Landis+Gyr E650	37108386	Check meter 2	Landis+Gyr E650	37108387
Main meter 1	Landis+Gyr E650	37108384											
Check meter 1	Landis+Gyr E650	37108385											
Main meter 2	Landis+Gyr E650	37108386											
Check meter 2	Landis+Gyr E650	37108387											
Accuracy of the monitoring equipment	The energy meters are of accuracy class of 0.2s /06/ which is consistent with registered VCS-PD./02/ The accuracy of the meters are as per industry standard.												
Measuring/Reading/Recording frequency	Continuous monitoring, hourly recording and aggregated monthly basis./05/												
Calculation method (if applicable)	Project Proponent compares and calculates the difference between measurements in the De Aar 2 North IPP Substation and measurements in the Eskom 132kV Switching Station. The lowest value is used for calculations of the baseline emissions./05/, /03/												
Calibration													
Calibration frequency/interval Is the calibration interval in line with the monitoring plan of the PD?	Based on the review of Power Purchase Agreement,/13/ clause 12.6.7 verification team confirms that Electricity meters are calibrated when the difference between measurements at the Ndhlovu Eskom 132Kv Substation and De Aar 2 North IPP Substation is more than 0.5%. This has been checked and compared with the tariff meter data of both the main meters and check meter/ 05/ ,/03/ and found that the difference in meter readings does not exceed 0.05%, except the readings for November 2017 which is due to the fact that the check meter started to record from 6/11/2017. Project proponent has provided the calibration certificate issued by SANAS calibration laboratory dated 08/05/2017 for all four newly installed meters. /06/												
Does the calibration cover the monitoring period? Has the calibration frequency been respected?	The monitoring period is from 01/11/2017 to 30/10/2020. The energy meters were initially calibrated on 08/05/2017 and as per the PPA/13/ requirements calibration is not required unless difference between measurements at the Phiri Eskom 132Kv Switching Station and Maanhaarberg IPP Substation is more than 0.5%. Hence, calibration of energy meters covers the monitoring period.												
Calibration certificates	All energy meters are calibrated by SANAS calibration laboratory dated 08/05/2017 /06/.												
Whether calibration done by an accredited person or institution?	The South African National Accreditation System (SANAS or SANAS Calibration Certificates) is the only national body responsible for carrying out accreditations in respect of conformity assessment, as mandated through the Accreditation for												

	Conformity Assessment, Calibration and Good Laboratory Practice Act (Act 19 of 2006). This includes the accreditation of Calibration laboratories, Proficiency testing service providers & more./06/
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4.2 Safeguards

4.2.1 No Net Harm

The project involves power generation from wind energy and supply to grid. Therefore, the project results in avoidance of CO₂ emissions in grid that would otherwise would have been generated from fossil fuel fired power plants. Therefore, there is no negative environmental impact from the project activity. In addition, due to the project activity, jobs are created in local level as verified during off-site interview which has improved socio-economic impacts in the project area. Therefore, there is no net harm from the project activity.

4.2.2 Local Stakeholder Consultation

Aurecon South Africa (Pty) Ltd Consultants was appointed to undertake the Scoping and Environmental Impact Assessment and associated Public Participation Process as per the NEMA EIA Regulations and VCS requirements. Section 2.2 of the VCS MR describes the local stakeholder's consultation process. Local stakeholder consideration process was reviewed in detailed during the initial registration process. Verification team also confirms that Longyuan Mulilo De Aar 2 North (RF) (Pty) Ltd has a Grievance Procedure in place./12/ Carbon Check confirms local stakeholders meeting was conducted as per the VCS requirements.

4.3 AFOLU-Specific Safeguards

The project is a non-AFOLU projects, this section is not required.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

GHG According to the applied methodology "ACM0002", "Consolidated baseline methodology for grid connected electricity generation from renewable sources", version 19 /B02/, the emission reductions have been calculated based on the following formula:

$$ER_y = BE_y - PE_y - L_y$$

Where,

ER_y : Emission reductions in year y (tCO₂e/yr)

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

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

L_y : Leakage in year y (tCO₂e/yr)

The baseline emissions (BE_y) for the project activity are calculated as follows:

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

Where,

Where:

BE_y = Baseline emissions in year y (tCO₂)

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

$EF_{grid,CM,y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y (tCO₂/MWh)

Combined margin emission factor was fixed ex-ante at the time of validation. The value was cross checked with the registered VCS-PD and found to be consistent.

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

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

During the verification, all relevant documents were checked to assess the correctness and quality of data submitted by the project *proponent*, which are used to determine emission reductions.

All records needed for monitoring are archived in line with the requirements of the registered monitoring plan. No significant, lack of evidence and missing data were detected during verification. Hence, the verification team confirms that the monitoring system ensures required quality of the monitoring system to ensure the quality of the monitored data. All internal data are subjected to QA/QC measures.

The generated electricity is continuously measured and recorded at least on monthly basis by the wind farm personnel. The quantity of net electricity generation that is produced and fed into the grid in year y is determined on the basis of electricity meters. The metering instruments are installed in accordance with the requirements of the Grid and the Distribution Metering Codes at the point of supply which defines the commercial boundary

between the wind farm owner and the grid. Readings of the electricity meters are cross checked with tax invoices and Eskom's monthly reports. Data on electricity supply are digitally archived and submitted to BWC. The sources of data for calculation of GHG emission reductions in the course of monitoring are the records for delivered electricity to

the RSA grid. Carbon Check is of the opinion that this method of estimation is accurate and results in conservative estimation of emission reduction and is line with the applicable VCS requirements.

4.6 Non-Permanence Risk Analysis

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

5 VERIFICATION CONCLUSION

Carbon Check (India) Pvt. Ltd. has performed verification of the emission reductions reported for the project activity “Longyuan Mulilo De Aar 2 North Wind Energy Facility” in RSA, VCS Registry Project ID 1950, for the period 01, with regard to the relevant requirements for VCS activities. The project proponent of the “Longyuan Mulilo De Aar 2 North Wind Energy Facility” project is responsible for:

- The preparation of greenhouses gas emissions data and the reported greenhouse gas emission reductions from the project on the basis set out in the monitoring plan contained in the registered VCS PD version 02 of 26/10/2019./02/
- The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of greenhouse gas emission reductions of the project.

It is the responsibility of Carbon Check to express an independent verification opinion about the project's conformity with the requirements of VCS Standard version 4.1 and GHG program applied, on the reported greenhouse gas emission reductions from the project.

Based on documented evidence and corroborated by an off-site assessment, Carbon Check can confirm that:

- the project has been implemented and operated as per the registered VCS-PD; /02/
- the monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS Standard version 4.1 requirements; /B03/
- the monitoring is in place as per the applied baseline and monitoring methodology;
- the monitoring plan in the registered VCS-PD is as per the applied baseline and monitoring methodology.

It is Carbon Check's opinion that the GHG emission reduction stated in the monitoring report version 02.1 of 27/07/2021 for the "Longyuan Mulilo De Aar 2 North Wind Energy Facility" in RSA for the monitoring period 01 are fairly stated. The GHG emission reductions are calculated on the basis of approved methodology ACM0002 version 19 and the monitoring plan included in the registered VCS PD, version 02 dated 26/10/2019./ /02/

Hence Carbon Check is able to certify that the emission reduction from the project during the monitoring period 01/11/2017 to 31/12/2020 is amount to 1,428,835 tCO₂.

Verification period: From 01/11/2017 to 31/12/2020

There are 4 vintage periods covered in this 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)
Vintage Period 1: 1-November-2017 to 31-December-2017				82 365
01/11/2017 to 30/11/2017	40,854	0	0	40,854
01/12/2017 to 31/12/2017	41,511	0	0	41,511
Vintage Period 2: 1-January-2018 to 31-December-2018				447 805
01/01/2018 to 31/01/2018	44,103	0	0	44,103
01/02/2018 to 28/02/2018	33,760	0	0	33,760
01/03/2018 to 31/03/2018	35,266	0	0	35,266
01/04/2018 to 30/04/2018	26,193	0	0	26,193
01/05/2018 to 31/05/2018	30,778	0	0	30,778

01/06/2018 to 30/06/2018	35,592	0	0	35,592
01/07/2018 to 31/07/2018	42,127	0	0	22,727
01/08/2018 to 31/08/2018	37,822	0	0	37,822
01/09/2018 to 30/09/2018	34,850	0	0	34,850
01/10/2018 to 31/10/2018	39,339	0	0	39,339
01/11/2018 to 30/11/2018	42,402	0	0	42,402
01/12/2018 to 31/12/2018	45,573	0	0	45,573
Vintage Period 3: 1-January-2019 to 31-December-2019				457 457
01/01/2019 to 31/01/2019	45,838	0	0	45,838
01/02/2019 to 28/02/2019	31,799	0	0	31,799
01/03/2019 to 31/03/2019	36,000	0	0	36,000
01/04/2019 to 30/04/2019	30,905	0	0	30,905
01/05/2019 to 31/05/2019	30,380	0	0	30,553
01/06/2019 to 30/06/2019	37,655	0	0	37,655

01/07/2019 to 31/07/2019	45,450	0	0	45,450
01/08/2019 to 31/08/2019	30,553	0	0	30,553
01/09/2019 to 30/09/2019	37,975	0	0	37,975
01/10/2019 to 31/10/2019	45,772	0	0	45,772
01/11/2019 to 30/11/2019	39,867	0	0	39,867
01/12/2019 to 31/12/2019	45,263	0	0	45,263
Vintage Period 4: 1-January-2020 to 31-December-2020				441 208
01/01/2020 to 31/01/2020	43,122	0	0	43,122
01/02/2020 to 29/02/2020	35,164	0	0	35,164
01/03/2020 to 31/03/2020	34,074	0	0	34,074
01/04/2020 to 30/04/2020	34,421	0	0	34,421
01/05/2020 to 31/05/2020	20,599	0	0	20,599
01/06/2020 to 30/06/2020	29,709	0	0	29,709
01/07/2020 to 31/07/2020	35,968	0	0	35,968

01/08/2020 to 31/08/2020	45,210	0	0	45,210
01/09/2020 to 30/09/2020	33,300	0	0	33,300
01/10/2020 to 31/10/2020	43,742	0	0	43,742
01/11/2020 to 30/11/2020	44,595	0	0	44,595
01/12/2020 to 31/12/2020	41,304	0	0	41,304
Total	1,428,835	0	0	1,428,835

APPENDIX A: ABBREVIATIONS

Abbreviations	Full texts
BE	Baseline Emissions
CAR	Corrective Action Request
CC IPL	Carbon Check India Pvt. Ltd.
CDM	Clean Development Mechanism
CDM M&P	Modalities and Procedures CDM
CEA	Clean Energy Asia LLC
CER(s)	Certified Emission Reduction(s)
CH ₄	Methane
CL	Clarification Request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EF	Emission Factor
ER	Emission Reductions
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change

LoA	Letter of Approval
MoV	Means of Verification
MWh	Mega Watt Hour
MR	Monitoring Report
NGO	Non-governmental Organization
NTPG	National Power Transmission Grid
ODA	Official Development Assistance
VCS PD	Project description
PE	Project Emission
PP(s)	Project proponent (s)
Ref.	Document Reference
SS(s)	Sectoral Scope(s)
TA(s)	Technical Area(s)
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCU	Verified Carbon Unit
VER	Voluntary Emission Reductions
VVB	Validation and verification body
VVS	Validation and Verification Standard
WTG	Wind Turbine Generator

APPENDIX B: CLARIFICATION REQUESTS, CORRECTIVE ACTION REQUESTS AND FORWARD ACTION REQUEST

Table 1. CL from this verification

CL ID		Section no.		Date:
Description of CL				
Project proponent response				Date:
Documentation provided by project proponent				
VVB assessment				Date:

Table 2. CAR from this verification


CAR ID	01	Section no.	4.2.2	Date: 15/06/2021
Description of CAR				
<p>As per the section 3.16.3 and 3.16.4 of the VCS standard version 4.1, section 2.2 of the MR has been found incomplete. The project proponent is requested to provide the following information</p> <ul style="list-style-type: none"> • The procedures or methods used for documenting the outcomes of the local stakeholder communication. • The mechanism for on-going communication with local stakeholders. 				

<ul style="list-style-type: none"> How due account of all and any input received during ongoing communication has been taken. Include details on any updates to the project design or justify why updates are not appropriate. 	
Project proponent response	Date: 23/06/2021
<p>Longyuan Mulilo has a Grievance Procedure in place, which is also used for documenting the outcomes of the local stakeholder communication. Grievance Procedure explains the mechanism for on-going communication with local stakeholders. No issues, concerns, problems, or claims have been lodged or raised through the Grievance Procedure.</p> <p>The statement was inserted into the VCS MR. Please refer to the updated monitoring report version 2 and supporting documents.</p>	
Documentation provided by project proponent	
23.06.2021 De Aar 2 VCS-Monitoring-Report_ver 02	
VVB assessment	Date: 25/06/2021
<p>Based on the review of section 2.2 of the revised monitoring report, grievance procedure and grievance register the verification team confirms that the required corrections have been done in the revised MR.</p> <p>CAR is closed</p>	

Table3: FAR from this verification:

FAR ID	Section no.	Date:
Description of CAR		
Project proponent response	Date:	
Documentation provided by project proponent		
VVB assessment	Date:	

APPENDIX C: COMPETENCY CERTIFICATE



Carbon
CHECK

Carbon Check (India) Private Ltd.

Vikash Kumar Singh

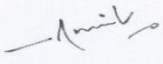
has been qualified as per CCIPL's internal qualification procedures, in accordance with requirements of Accreditation Standard (version 07.0):

For following functions:

Validator Team Leader Technical reviewer
 Verifier Technical Expert Local Assessor¹

In the following Technical Areas:

TA 1.1 TA 3.1 TA 5.2 TA 9.2 TA 13.2
 TA 1.2 TA 4.1 TA 8.1 TA 10.1 TA 14.1
 TA 2.1 TA 5.1 TA 9.1 TA 13.1



Mr. Amit Anand
CEO

Date of Approval 24/12/2020	Valid Till 24/12/2021
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Revision History of the Document

26/12/2014	Initial Adoption
24/12/2015	Annual Revision
20/01/2016	Interim Revision for office address change
23/12/2017	Annual Revision
24/12/2017	Annual Revision
24/12/2018	Annual Revision
24/12/2019	Annual Revision
01/03/2020	Interim Revision for office address change
01/09/2020	Interim Revision for CCIPL logo change
24/12/2020	Annual Revision

¹ India, South Africa

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Carbon Check (India) Private Ltd.

Amit Anand

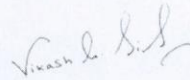
has been qualified as per CCIPL's internal qualification procedures, in accordance with requirements of Accreditation Standard (version 07.0):

For following functions:

Validator **Team Leader** **Technical reviewer**
Verifier **Technical Expert** **Local Assessor¹**

In the following Technical Areas:

TA 1.1 **TA 3.1** **TA 5.2** **TA 9.2** **TA 13.2**
TA 1.2 **TA 4.1** **TA 8.1** **TA 10.1** **TA 14.1**
TA 2.1 **TA 5.1** **TA 9.1** **TA 13.1**



Mr. Vikash Kumar Singh
Compliance Officer

Date of Approval
24/12/2020

Valid Till
24/12/2021

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¹ India and South Africa

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